

The Effectiveness of Mindfulness Techniques for Decreasing Anxiety Symptoms in Adolescents

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Abstract

Nearly 32% of adolescents demonstrate a lifetime prevalence of an anxiety disorder, making it the most common mental disorder among adolescents (Merikangas et al., 2010). Mindfulness-based interventions have shown success in reducing anxiety symptoms in adults. This study focused on the effects of an 8-session mindfulness group on the moderate to severe anxiety levels of middle and high school students. The objectives of the small-group intervention were to educate adolescents about mindfulness techniques and to practice ways in which they could make mindfulness part of their daily lives. The aim of this study was to highlight the impact of a small-group mindfulness intervention on experienced anxiety of middle school and high school students.

Keywords: adolescents, mindfulness, anxiety

Table of Contents

Abstract	2
Table of Contents	3
List of Tables	6
List of Figures	7
Introduction	8
Background	11
Mindfulness Characteristics	11
Mindfulness and Emotional Regulation	11
The History of Mindfulness	12
Mindfulness-Based Interventions	14
Mindfulness-Based Stress Reduction (MBSR)	14
Mindfulness-Based Cognitive Therapy (MBCT)	15
Other Mindfulness-Based Interventions	17
Mindfulness for Anxiety in Adult Populations	17
Prevalence of Anxiety in Adolescents	18
Mindfulness-Based Programs in School Settings	19
Inner Kids	20
MindUP™	21
Mindful Schools	22
Purpose of the Study	23
Method	24
Participants	24

MINDFULNESS FOR ADOLESCENTS WITH ANXIETY	4
Sampling Procedures	25
Measures	26
Procedure	27
Research Design.....	28
Results.....	28
Participant Flow	29
Recruitment.....	29
Missing Data and Deleted Cases.....	30
Normative Sample Data.....	30
Changes in Anxiety Symptoms.....	31
Interview Themes.....	39
Discussion.....	41
Impact of Mindfulness Techniques on Adolescents with Moderate to Severe Anxiety.....	42
Long-Term Changes in Anxiety Symptoms	43
Use of Mindfulness in Daily Activities	45
Obstacles for Participation Related to Anxiety.....	46
Limitations	47
Implications for Further Research	49
Implications for School Counselors.....	51
Conclusion	52
References.....	54
Appendix A.....	60

Appendix B61

Appendix C62

List of Tables

Table 1: Comparison of Pre-Test Participant Means (n=4) with Normative Sample Data
for Girls Aged 12-15 (n=1345).....31

Table 2: Participant Attendance and Scores for Total SCAS and SCAS Subscales
(Pre-Test, Post-Test, and Post-Post-Test).....39

List of Figures

Figure 1: Total SCAS Scores (pre-test, post-test, and post-post-test) and the number of sessions attended.....	33
Figure 2: Separation Anxiety subscale scores (pre-test, post-test, and post-post-test) and the number of sessions attended.....	34
Figure 3: Social Phobia subscale scores (pre-test, post-test, and post-post-test) and the number of sessions attended.	35
Figure 4: Obsessive Compulsive subscale scores (pre-test, post-test, and post-post-test) and the number of sessions attended.....	36
Figure 5: Panic/Agoraphobia subscale scores (pre-test, post-test, and post-post-test) and the number of sessions attended.....	37
Figure 6: Physical Injury Fears subscale scores (pre-test, post-test, and post-post-test) and the number of sessions attended.....	38
Figure 7: Generalized Anxiety subscale scores (pre-test, post-test, and post-post-test) and the number of sessions attended.....	39

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Introduction

Adolescents deal with a number of stressors in their lives, including school, relationships, family, and developmental changes (Bluth & Blanton, 2014). These stressors compound into chronic anxiety, which can take a serious toll on adolescents' mental and emotional health. While many school administrators may view anxiety as a mental health issue affecting only a small percentage of students, anxiety affects nearly one-third of U.S. adolescents (Merikangas et al., 2010) and can present obstacles to students' learning (Grills-Taquechel, Fletcher, Vaughn, Denton, & Taylor, 2013; Owens, Stevenson, Hadwin, & Norgate, 2014), making student anxiety an issue that schools cannot ignore.

Despite the anxiety so many adolescents experience today, many schools do not address anxiety with therapeutic social/emotional interventions. Instead, they often provide academic supports like study groups, test-taking skills, and test preparation. While these academic supports may help to increase students' academic and test performances, they often fail to directly address the underlying anxiety that may affect students above and beyond the academic realm. Mindfulness, or the practice of non-judgmental, purposeful attention, presents an opportunity for students to lower their anxiety symptoms through self-awareness and emotional regulation so they can improve their well-being and focus on academics.

A large body of research indicates that mindfulness-based mental health interventions are effective for depression and anxiety in adult populations (Lo, Ng, & Chan, 2015; Hofmann, Sawyer, Witt, & Oh, 2010). As a result of the success of mindfulness practice with adults, many researchers are looking into ways to modify mindfulness-based techniques for use with children and adolescents (Ames, Richardson, Payne, Smith, & Leigh, 2014; Biegel, Brown, Shapiro, &

Schubert, 2009; Bluth & Blanton, 2014; Burke, 2010; Collard, Avny, & Boniwell, 2008; Himelstein, Hastings, Shapiro, & Heery, 2012; Himelstein, Saul, Garcia-Romeu, & Pinedo, 2014; Sibinga et al., 2011). For example, existing research has explored the effectiveness of mindfulness techniques among adolescent populations struggling with depression (Ames et al., 2014), incarcerated adolescents (Himelstein, Hastings, Shapiro, & Heery, 2012), incarcerated substance-using adolescents (Himelstein, Saul, Garcia-Romeu, & Pinedo, 2014), and adolescent psychiatric outpatients (Biegel, Brown, Shapiro, & Schubert, 2009), to name a few.

School counselors may offer cognitive-based tools for students dealing with anxious situations, such as test-taking strategies, ways to identify negative self-talk and change negative thought patterns, and methods for dealing with uncomfortable social scenarios. Cognitive therapeutic approaches are often successful with people who struggle with anxiety (Kottler & Montgomery, 2011). For school counselors who are stretched thin and need to work within the time limits of a school day, brief and solutions-focused therapy that aims to achieve a specific goal and utilizes problem-solving techniques are often ideal. But school counselors may not consider how incorporating mindfulness techniques into their interventions for students may provide many benefits, such as self-awareness, personal acceptance and responsibility of decisions, ownership of thoughts, feelings, and actions, and empowerment (Tadlock-Marlo, 2011), all without taking much time.

While many qualitative studies identify decreased stress in adolescents who participate in a mindfulness-based intervention (Himelstein, Hastings, Shapiro, & Heery, 2012; Himelstein, Saul, Garcia-Romeu, & Pinedo, 2014), few studies have researched the direct effect of a mindfulness-based intervention on anxiety symptoms. There is also a lack of research to address the long-term effects of mindfulness on the anxiety symptoms of adolescents who participate in

mindfulness-based programs. While some schools have implemented mindfulness-based programs as part of their daily schedules, many of these programs target elementary school children as opposed to adolescent populations in middle or high schools.

In this research study, the principal researcher facilitated a mindfulness group for students identified as having moderate to extreme anxiety. The group consisted of eight 20-minute sessions in which students were taught how their brains create (and hold on to) anxiety, educated about how mindfulness affects the brain's processes, and given a variety of ways to practice mindfulness based on their five senses. Group members were given the Spence Children's Anxiety Scale (SCAS) three times—before the intervention, after the intervention, and five weeks after the intervention ended. The principal researcher also interviewed group members to get feedback on their perceptions of mindfulness and the group, the extent to which they use mindfulness, and barriers to using mindfulness.

It was this author's hope that, if mindfulness techniques decreased anxiety symptoms in adolescents, those effects would last beyond the intervention due to the incorporation of mindfulness into the adolescents' daily lives—and that school counselors can play a direct role in promoting and advocating for mindfulness as a way to combat the growing problem of anxiety in adolescents. By giving adolescents tools for using mindfulness even outside of the school setting, adolescents with anxiety may find more success in coping with anxiety symptoms.

The results showed that participants did demonstrate some reduced anxiety symptoms correlated with their attendance of the mindfulness group. The author discusses these results, which partly confirm the principal researcher's hypothesis that mindfulness techniques can decrease anxiety symptoms in adolescents with moderate to severe anxiety, along with implications for school counselors, and suggestions for future research.

Background

Mindfulness Characteristics

Bluth and Blanton (2014) describe mindfulness as “a state or trait in which an individual becomes increasingly aware and attentive in the moment” (p. 1299). This state of awareness is intentional, non-judgmental, and accepting; it requires a shift in perception so that one becomes disconnected from internal and external experiences. Mindfulness allows one to view his or her experience from a position outside of personal thoughts, feelings, and actions (Shapiro, Carlson, Astin, & Freedman, 2006).

Shapiro, Carlson, Astin, and Freedman (2006) proposed three main components, or *axioms*, of mindfulness: intention, attention, and attitude. They believed that the interaction of these three characteristics were the foundation of mindfulness in action. Intention speaks to the purposeful drive, or the “Why?” behind a person’s choice to practice mindfulness. What is the person’s goal? Attention addresses the ability to not only focus for long periods of time but also to change focus at will and to stop the process of judging personal thoughts, actions, and feelings. Finally, attitude insists that mindfulness must carry an underlying application of compassion and kindness. In order to remain completely open to the acceptance of internal and external experience, someone practicing mindfulness must consciously attempt to add “heart” into the equation (Shapiro et al., 2006). As a result, compassion and its role in mindfulness practice has become a point of interest in the mental health field (Bluth & Blanton, 2014; Lo, Ng, & Chan, 2015).

Mindfulness and Emotional Regulation

In recent years, researchers have begun to explore the connection between mindfulness and physical, chemical changes within the brain. Greeson (2009) describes several studies that

have linked mindfulness with an increase in the brain's emotional regulation. Research conducted in 2007 and 2008 found that people with increased mindfulness more effectively used their prefrontal cortex, the portion of the brain associated with emotional regulation, attention, and concentration, in order to control emotions that stem from the amygdala, a middle part of the brain known for its connection to the "fight or flight" reaction (Greeson, 2009).

Emotional regulation can help decrease the rumination that often leads to anxiety. Continued research on the subject of mindfulness and emotional regulation shows that mindfulness increases one's ability to recognize and respond to visceral emotional cues, such as rapid breathing due to heightened anxiety, allowing the mindful person to recognize the physical manifestation of an emotion and then self-regulate in order to control that emotion (Teper, Segal, & Inzlicht, 2013).

For adolescents, the prefrontal cortex is in development and many adolescents identify emotion using the amygdala. Whereas an adult identifies emotion using activity primarily in the prefrontal cortex, an adolescent brain uses the amygdala to identify emotion, and many of these identified emotions center around sadness, fear, and anger (Houlihan, 2015, November). If mindfulness can improve emotional regulation through brain functionality in adults, then adolescence—the time when the prefrontal cortex is developing—may be an opportune period to increase activity in the prefrontal cortex and begin to respond to emotions like anxiety intentionally with the goal of regulating anxiety.

The History of Mindfulness

Mindfulness is based on 2,500-year-old Buddhist practices (Bluth & Blanton, 2014; Collard, Avny, & Boniwell, 2008). In the Buddhist philosophy, mindfulness is one of the eight elements in the Noble Eightfold Path, which eventually leads to spiritual enlightenment and an

end to suffering (Collard, Avny, & Boniwell, 2008; Kelly, 2008). The path called Samma Sati, or right mindfulness, is the foundation for Western practices of mindfulness. Samma Sati requires one to remain fully in the present moment, paying attention to one's internal processes: body, feelings, mental states, and mental contents (Wettimuny, n.d.). Kelly (2008) explains that Buddhist psychology focuses on the senses as a doorway into cognitive processing. In Buddhism, these "door-processes" include the following sense organs: nose, eyes, ears, tongue, body, and mind. The melding of Western psychology's cognitive focus with Buddhist psychology's attention to these sense organs create the mindfulness therapeutic techniques used today, "which involves developing an alert awareness of both cognitive processes and physical phenomena as they are experienced" (Kelly, 2008, p. 10).

In the mental health field, mindfulness is used in a secular manner not rooted in any religious or spiritual notions and adapted for Western culture. But those who practice mindfulness in a secular context, such as in therapeutic practice, cannot ignore the Buddhist origins of mindfulness (Zarbock, Lynch, & Ammann, 2014), especially because the global integration of philosophies and mental health interventions has increased in recent years (Kelly, 2008). In a therapeutic context, mindfulness practice is used to raise one's self-awareness of emotional responses and ingrained habits, acknowledge these patterns (physical, mental, and emotional) in an accepting and non-judgmental way, and then, to begin the process of making desired changes. The shift from a state of action, in which one is constantly *doing*, to a state of restful and intentional attention, in which one is simply *being*, sets the stage for powerful therapeutic work through the freedom from thought patterns, automatic emotional responses, and physical reactions (van Vreeswijk, Broersen, & Schurink, 2014).

Mindfulness-Based Interventions

Research on using mindfulness as an intervention has shown benefits for behavior, the mind, and the body, leading many researchers to connect mindfulness practice with overall holistic well-being (Bluth & Blanton, 2014; Greeson, 2009). While there are many ways to incorporate mindfulness into mental health interventions, the most empirically researched methods are Mindfulness-Based Stress Reduction (MBSR) and Mindfulness-Based Cognitive Therapy (MBCT) (Burke, 2010). Other interventions, such as Dialectical Behavior Therapy (DBT), incorporate mindfulness practice without making it a core part of the intervention (Greeson, 2009). Mindfulness-based interventions like MBSR and MBCT offer a foundation for building a mindfulness-based program that school counselors can deliver in small groups to adolescents within the school setting.

Mindfulness-Based Stress Reduction (MBSR)

Mindfulness-Based Stress Reduction (MBSR) uses mindfulness techniques along with psychoeducational training in order to teach methods of incorporating the tenets of mindfulness into everyday activities (Burke, 2010). MBSR was developed by John Kabat-Zinn and other researchers in the late 1970s as part of a university medical center program for adults with many medical and mental health issues including chronic pain, depression, anxiety, body image, and psoriasis (Burke, 2010; Collard, Avny, & Boniwell, 2008). The MBSR program was presented as an 8-week group intervention with two-hour weekly sessions (Burke, 2010; Collard, Avny, & Boniwell, 2008). These group sessions included formal meditation exercises, discussion, and information about the mind/body connection, coping mechanisms, and perception of self and others (Burke, 2010).

Kabat-Zinn and his researchers found improvements in body image, anxiety, depression, psoriasis, and physical pain with MBSR, and those results often remained as long as 15 months after the program (Collard, Avny, & Boniwell, 2008). Since MBSR's creation, other researchers have replicated the program and also found positive results, such as decreased stress symptoms, improved sleep quality, decreased Attention Deficit/Hyperactivity Disorder (ADHD) symptoms, and decreases in aggressive behaviors (Biegel, Brown, Shapiro, & Schubert, 2009; Burke, 2010; Sibinga et al., 2011). While these MBSR programs may vary slightly from Kabat-Zinn's original program, most of them follow a similar 8-week group intervention structure and include components related to yoga, meditation, and body scans. Often, MBSR programs will also present ways for participants to use mindfulness practice in everyday situations (Sibinga et al., 2011).

Researchers have modified MBSR for use with adolescents and children (Biegel, Brown, Shapiro, & Schubert, 2009; Burke, 2010; Sibinga et al., 2011). MBSR is the most empirically tested intervention based on a core curriculum of mindfulness practices (Bluth & Blanton, 2014), mostly due to Kabat-Zinn's extensive research and the research inspired by his creation of MBSR.

Mindfulness-Based Cognitive Therapy (MBCT)

Segal, Williams, and Teasdale (2002) developed Mindfulness-Based Cognitive Therapy (MBCT) based on Kabat-Zinn's MBSR intervention. They tailored MBCT specifically for the population of adults with depression. It was their hope that the 8-week program with very detailed content would prevent people with depression from relapsing. Research results showed that MBCT was, in fact, an effective intervention for adolescents to prevent relapses into

depression (Ames et al., 2014) and to reduce their mood and anxiety symptoms (Hofmann, Sawyer, Witt, & Oh, 2010).

MBCT introduces a focus on cognitive thought processes that helps combat rumination, found to perpetuate depression in young populations, which makes this type of mindfulness intervention a prime candidate for work with adolescents (Ames et al., 2014). Compared with MBSR, MBCT includes additional psychoeducation components and often targets specific populations, such as people who have anxiety, eating disorders, or depression (Burke, 2009). Collard, Avny, and Boniwell (2008) studied the effects of an MBCT program on participants' levels of mindfulness, satisfaction with life, and levels of negative affect. They found that participants' levels of mindfulness increased significantly and negative affect levels decreased significantly, while positive affect was unchanged. In terms of satisfaction of life, they found increases but not at statistically significant levels (Collard, Avny, & Boniwell, 2008). These findings suggest that mindful practice can decrease negative affect (i.e., sadness) but do not necessarily increase positive affect (i.e., joy). Also, showing that the MBCT program did increase levels of mindfulness lends more validity to MBCT as a reliable way to increase one's mindfulness.

The movement from MBSR to MBCT, which incorporates cognitive therapeutic techniques, may mirror the larger-scale shift in the mental health professions toward cognitive forms of therapy even outside the realm of mindfulness. Therapeutic interventions, such as dialectical behavior therapy (DBT) and cognitive behavioral therapy (CBT), have increased in clinical use over the past few decades. And in many cases, both DBT and CBT incorporate mindfulness-based practice, linking cognitive-based Western therapeutic techniques with mindfulness-based Eastern methods of mental health treatment (Kelly, 2008).

Other Mindfulness-Based Interventions

While MBSR and MBCT are the most prevalent mindfulness-based interventions used in mental health research, there are a few other interventions that incorporate aspects of mindfulness. For example, Dialectical Behavior Therapy (DBT) combines mindfulness training with other forms of therapy, such as cognitive therapy (Greeson, 2009). Compassion-mindfulness therapy (C-MT), which was based on MBCT, emphasizes the role of compassion in mindfulness practice (Lo, Ng, & Chan, 2015). Similarly, Acceptance and Commitment Therapy (ACT) focuses on mindfulness practices that are non-meditative (Burke, 2010). Mindfulness-Based Eating Awareness Training (MB-EAT) focuses specifically on applying mindfulness practice to eating disorders, such as binge eating (Kristeller & Wolever, 2010). MB-EAT has also been researched as a therapeutic intervention for people trying to manage type 2 diabetes (Miller, Kristeller, Headings, & Nagaraja, 2014). Most of these lesser known mindfulness-based interventions focus on a specific presenting issue, but the foundational qualities remain the same: an emphasis on using purposeful and non-judgmental attention to the present moment.

Mindfulness for Anxiety in Adult Populations

Mindfulness-based interventions are growing in popularity for adult populations. Mental health practitioners and researchers have tested the efficacy of mindfulness-based interventions for many mental health disorders in adults, not to mention physical ailments like chronic pain and psoriasis (Collard, Avny, & Boniwell, 2008). John Kabat-Zinn's foundational research on MBSR, which included many different studies on adult populations, showed improvements in anxiety, depression, pain, and body image (Collard, Avny, & Boniwell, 2008).

Anxiety in particular has been well-researched in connection with mindfulness-based interventions with adult populations. Anxiety and depression decreased for people diagnosed

with Generalized Anxiety Disorder (GAD) or Panic Disorder when they completed an MBSR program (Collard, Avny, & Boniwell, 2008). Another study that used MBSR for adults with GAD found that decentering acted as a mediator between mindfulness and improvements in anxiety symptoms. Research further indicates that an increase in mindfulness correlated with a decrease in worrying because of improved awareness and non-reactivity (Hoge et al., 2014). Mindfulness is effective for adults diagnosed with Social Anxiety Disorder (SAD), but mindfulness and acceptance-based practices were no more effective than Cognitive Behavioral Therapy (CBT), which is still considered the best therapeutic intervention for adults with SAD (Norton, Abbott, Norberg, & Hunt, 2015).

Prevalence of Anxiety in Adolescents

Anxiety is not a mental disorder exclusive to adults. Nearly 32% of U.S. adolescents demonstrate a lifetime prevalence of an anxiety disorder, making it the most common mental disorder among adolescents (Merikangas et al., 2010). A recent survey measuring anxiety in high school students found that 25 out of 146 surveyed students (36%) scored high enough to qualify for a possible anxiety disorder (Hess, 2014), which mirrors the national prevalence of anxiety disorders among adolescents in the United States.

Despite the high prevalence of anxiety disorders in adolescents, they are least likely to get mental health treatment for anxiety (Merikangas et al., 2011). Adolescents with anxiety disorders were more likely to receive treatment if they were older (17 or 18 years old as opposed to 13 or 14 years old) and if they had other disorders in addition to anxiety (Merikangas et al., 2011). Females are more likely to receive mental health treatment for anxiety disorders than males (Merikangas et al., 2011) but females also self-identify as having more severe anxiety than males in all subscales of anxiety disorders, such as panic disorder, social anxiety, separation

anxiety, and generalized anxiety disorder (Hess, 2014). In terms of race and ethnicity, Merikangas et al. (2011) found that minority adolescents received less treatment for anxiety than non-Hispanic White adolescents. Prevalence rates for anxiety disorders among minority adolescents were similar to prevalence rates for non-Hispanic White adolescents, with the exception of higher anxiety among non-Hispanic Black adolescents (Merikangas et al., 2010).

When considering the high prevalence of anxiety in adolescents and the low percentage of these young people who receive treatment for anxiety disorders, there is clearly a gap between supply and demand. A large percentage of adolescents need a way to deal with moderate to severe anxiety, and they are not getting what they need. Based on the effectiveness of mindfulness practice with adult populations, mindfulness may also serve as a resource for adolescents who struggle with anxiety.

Mindfulness-Based Programs in School Settings

Mindfulness has taken root in mental health fields as an effective therapeutic intervention for issues ranging from depression to aggression to anxiety to eating disorders and substance use (Ames et al., 2014; Burke, 2010; Greeson, 2009; Himmelstein, Saul, Garcia-Romeu, & Pinedo, 2014). Based on current research, mindfulness may benefit not only students who suffer from moderate to severe anxiety, but also may help adolescents develop better emotional regulation, regardless of their anxiety level (Greeson, 2009; Teper, Segal, & Inzlicht, 2013), making mindfulness a proactive approach to dealing with anxiety instead of a reactive one.

But delivering a mindfulness-based practice in a school setting requires systemic programming. The newness of mindfulness-based educational programming means that schools and administrators do not have many evidenced-based best practices on which to base their programs yet (Lawlor, 2014). Lawlor (2014) suggests that schools take a cue from SEL (social-

emotional learning) programs, which are more established and share a common goal with mindfulness-based programming—to increase self-management, self-awareness, and well-being for students.

The increased attention to mindfulness as a beneficial way to promote well-being for children and adolescents has led to many school-based mindfulness programs, such as InnerKids, MindUP™, and Mindful Schools.

Inner Kids

The Inner Kids program, founded by Susan Kaiser-Greenland, targets students in grades K-12 in order to teach mindfulness through a series of instructional games and activities (Greenland, 2013). The program also includes an adult training component for school professionals and parents who will teach and promote mindfulness practice as part of the Inner Kids program. The Inner Kids program involves consistent lessons provided once or twice a week for about 30 minutes over 8 weeks. The frequency and length of the lessons vary depending on the age of the students. Each lesson is divided into a beginning, a middle, and an end. The beginning and end sections of the lesson involve active mindfulness practice while the middle includes an activity focused on mindfulness, such as breath awareness, the awareness of one's body in space, or the awareness of interconnection (Greenland, 2013).

The Inner Kids program was taught in at least one classroom in Los Angeles, California every year between 2000 and 2009 (Greenland, 2013). The program has also been redesigned and provided as a sleep-away camp and for a mindful eating study at the University of California in San Francisco. Flook et al. (2010) studied the Inner Kids program and its effects on the executive functions of elementary school children. Executive functions (EFs) play a role in students' academic ability because they involve activities that lead to a specific goal and require

working memory, focused attention, and response inhibition. Children with low EFs sometimes demonstrate difficulties with social and emotional adjustment and cognitive ability, and specifically may have trouble understanding cause and effect, concentrating, and controlling impulses (Flook et al., 2010). The study found that, in particular, children who demonstrated low EFs before the mindfulness program saw the greatest gains in executive functioning, including behavioral regulation and metacognition.

MindUP™

The MindUP™ program, developed in 2003 by The Hawn Foundation, combines neuroscience and mindfulness practice in order to increase concentration and self-regulated behavior in students (The Hawn Foundation, 2011-2016). This mindfulness-based program places a strong focus on academic improvement in addition to the social and emotional skills typically associated with mindfulness practice. Each MindUP™ lesson aligns with state academic standards, such as Common Core, and is developed to be implemented by teachers in the classroom (The Hawn Foundation, 2011-2016).

MindUP™ uses evidence-based research in developmental cognitive neuroscience and social and emotional learning with positive psychology and mindfulness training to align with the competencies identified by non-profit organization CASEL (Collaborative for Academic, Social, and Emotional Learning) as essential for increasing social and emotional learning in schools. These competencies are: self-awareness, self-management, social awareness, relationship skills, and responsible decision making (The Hawn Foundation, 2011). MindUP™ teaches adolescent students how their brains work and why mindfulness can help make changes that will encourage reflection, awareness, and emotional management.

Mindful Schools

Mindful Schools focuses on providing mindfulness practice training to educators, who can in turn incorporate mindfulness into their classrooms effectively and spearhead initiatives within their schools to spread mindfulness practice among the student body (Mindful Schools, 2010-2016). Mindful Schools began as a program for one school in Oakland, California in 2007 and has grown into a not-for-profit organization offering training and resources to educators through online and in-person coursework.

Mindful Schools has conducted large-scale research studies as part of their work to show the effects of mindfulness when incorporated into classrooms by trained mindful educators (Mindful Schools, 2010-2016). The organization also surveys all of the educators trained through Mindful Schools on an annual basis to get feedback on the effectiveness of mindful practice in their classrooms. Mindful Schools has found that for a low time investment, as little as four hours of mindfulness training for students over six weeks, teachers reported increases in self-calming, paying attention, self-care, and showing care for others (Mindful Schools, 2010-2016).

As with any schoolwide program, mindfulness-based school programs sometimes require a great deal of time, money, and buy-in from a school's administrators and staff. There are few examples of mindfulness-based interventions that fit the time and resource constraints facing many school counselors to address anxiety symptoms in adolescents.

Mindfulness practice has become a focus of research and neuroscience study within the mental health fields. Mindfulness has been shown to alleviate a variety of physical, mental, and emotional ailments in adults (Lo, Ng, & Chan, 2015; Hofmann, Sawyer, Witt, & Oh, 2010), and therefore shows promise as an effective way to help adolescents (Ames, Richardson, Payne,

Smith, & Leigh, 2014; Biegel, Brown, Shapiro, & Schubert, 2009; Bluth & Blanton, 2014; Burke, 2010; Collard, Avny, & Boniwell, 2008; Himelstein, Hastings, Shapiro, & Heery, 2012; Himelstein, Saul, Garcia-Romeu, & Pinedo, 2014; Sibinga et al., 2011). School counselors are in a prime position to incorporate mindfulness into the school setting as a tool for anxious adolescent students to regulate their emotions and thrive in the three school counseling domains: academic, career, and social/emotional. The interest in how mindfulness may have a positive effect on students has led to the implementation of mindfulness-based programs in school, such as Inner Kids, MindUP™, and Mindful Schools. With minimal time investment, mindfulness training and practice may offer adolescent students an opportunity to better cope with the increasing stressors in their lives.

Purpose of the Study

This study aimed to add to the growing body of research on the effectiveness of using mindfulness-based techniques with adolescents with moderate to severe anxiety in a school setting, hopefully positing an effective intervention that school counselors can deliver within the time and resource constraints of a school setting. More specifically, the study addressed the following questions: (1) Does a mindfulness-based intervention presented in a small-group school setting decrease anxiety symptoms in adolescents who present with moderate to high anxiety? (2) Are there changes in anxiety symptoms several weeks after the intervention ends? (3) Will students who have received the intervention incorporate mindfulness into their daily activities?

The next section will include a description of the mindfulness-based group conducted in order to address these research questions, including details about the Institutional Review Board (IRB) process, the group's participants, and the study procedure.

Method

The following section outlines the method used to conduct this research study, including the participant characteristics, sampling procedures, measures, procedure, and research design.

Participants

Twenty students ranging from ages 12 to 18 (14 female and 6 male) were invited to participate in the research study based on either a medical diagnosis of an anxiety disorder or a recommendation from a teacher, parent, or school counselor based on observed anxiety. These 20 students were invited to participate in the study using the forms approved by the IRB, sent to the postal addresses of the students' parents/guardians. Of the twenty students, five female students (25% of the potential participant pool) ranging from ages 13 to 17 provided both parental consent and informed assent to participate in the study. One of the students refused to complete the pre-test and attended only the first session, so her data could not be included, leaving a sample of four female students. Of these four participants, two of them have a medical diagnosis of an anxiety disorder.

Of the four female participants, all of them received free or reduced lunch from the school district, indicating low socio-economic status. Two of the students identify as Hispanic, one of the students is Caucasian, and one of the students identifies as Multiracial.

The pool of participants approached was limited to those who demonstrated higher levels of anxiety because the principal researcher hoped to target a specific population, namely those students whose anxiety often impedes everyday tasks, including the ability to achieve academically, although academic achievement was not part of the criteria for selection. While the principal researcher hoped to include six to eight students in the study, the sample size only reflected 20% of the participants approached. Even those who agreed to participate in the group

showed poor attendance (with the exception of one participant who attended every session), for reasons that will be discussed later in the “Obstacles for Participation Related to Anxiety” section of the paper. Due to the small number of participants, the generalizability of this study is severely limited (Wilson VanVoorhis & Morgan, 2007).

Sampling Procedures

As a graduate student, this research project was subject to approval from the College at Brockport, State University of New York's Institutional Review Board (IRB) in order to ensure that all ethical standards were met when conducting the research project. The principal researcher had to write and submit a detailed proposal of the mindfulness group research study to the IRB, which included written authorization from the school principal at the research site, a local middle/high school with a population of approximately 365 students in grades 6-12, for the study to take place on school premises. The principal researcher received suggestions and proposed edits to the research study, including clarification of the recruitment process necessary for working with participants who are minors. The IRB Compliance Officer and two board members reviewed the research project proposal, gave feedback, and proposed changes. After the changes were made, the IRB approved this research project approximately four weeks after the initial submission and the principal researcher was able to begin the research process by recruiting participants.

Data was collected in a rural middle/high school in Upstate New York. The school includes students in grades 6-12 and has approximately 380 students total. The student body is about 76% Caucasian, 17% Black/African-American, and 4% Hispanic, according to the school's state report card from 2014-2015. Forty-six percent of the students at the school fall

into the category of economically disadvantaged and 15% of students receive special education services.

There were no incentives offered to students for participating in the study. Mindfulness is a non-invasive therapeutic technique that posed minimal risk to the students. The only risk to the students is the risk that the mindfulness techniques may not reduce anxiety like the principal researcher hypothesized, in which case the students will have spent time that might have been spent doing other after-school activities, such as getting help from a teacher or participating in extracurricular activities, without reaping the benefits they expected. Possible benefits students may have received included a reduction in anxiety symptoms, better emotional regulation, and increased self-awareness.

Measures

The eight sessions of the mindfulness group were based loosely on the MindUP™ curriculum for middle school students (The Hawn Foundation, 2011). Session topics covered the neuroscience behind mindfulness, mindfulness as it pertains to the five senses, and the role of compassion in mindfulness practice (see Appendix A). Each session followed this structure: five minutes of psychoeducational introduction, 10 minutes of mindful practice, and five minutes of reflection and concluding thoughts. Various materials were needed depending on each session's activity. Halfway through the intervention, students were given a list of mindfulness resources including apps and websites to encourage mindfulness practice outside of group sessions (see Appendix B).

Students participating in the research study were given the Spence Children's Anxiety Scale (see Appendix C) three times during the study: the pre-test, the post-test, and again five weeks after the intervention was complete (referred to as the post-post-test). This survey

included 45 statements for which the respondent needed to indicate whether they agree with the statement never, sometimes, often, or always. The Spence Children's Anxiety Scale has shown a very high internal consistency (Cronbach alpha = .93) for the total scale and high internal consistency for the subscales, ranging from .60 to .82 (Spence, n.d.-a.). Internal consistency remained high even when taking into account different age ranges and genders (Spence, n.d.-a.). For test-retest reliability, the Spence Children's Anxiety Scale was found to have a .63 reliability coefficient for a 12-week retest of the total scale on a sample of children aged 12-14, indicating a reasonably high test-retest reliability. Test-retest reliability for the subscales ranged from .51 to .75 (Spence, n.d.-a.).

The SCAS has shown to have both convergent and divergent validity. The SCAS correlated significantly with another instrument that measures anxiety, the Revised Children's Manifest Anxiety Scale (RCMAS), both in its total scale and its subscales (Spence, Barrett, & Turner, 2003). Spence, Barrett, and Turner (2003) also tested the SCAS for divergent validity by correlating it with the Children's Depression Inventory (CDI) to ensure that the SCAS did not measure depressive symptoms but was a valid measurement for anxiety.

Procedure

After receiving parental informed consent and student assent, each participant was given the pre-test, which was the Spence Children's Anxiety Scale with the neutral title of *Questionnaire* at the top, to establish a baseline for the student's anxiety. Each pre-test was labeled with an identifying number previously matched to the student in a password-protected Excel worksheet. Students were also given a schedule of when the mindfulness group sessions would take place. Each 20-minute session occurred after school twice weekly for four weeks. After the eight sessions were completed, each participant took the post-test, which was again the

Spence Children's Anxiety Scale with the neutral title of *Questionnaire*. Once again, each post-test included an identifying number given to each student to protect student privacy. Each student's identifying number was consistent for all measurements.

Five weeks after the intervention ended, participants were given the Spence Children's Anxiety Scale a final time using the same identifying number, along with taking part in a one-on-one informal interview with the principal researcher (also the mindfulness group facilitator). During this interview, participants were asked about their perceptions of the group, whether they practiced mindfulness outside of group during the four weeks of the intervention, and whether they practiced mindfulness after the intervention ended, and if so how often. Responses were labeled with the student's identifying number in handwritten notes taken by the principal researcher. These notes were analyzed by identifying common themes.

Research Design

This study used a mixed methods research design that included both quantitative and qualitative elements. The results of the SCAS questionnaires as pre-test, post-test, and post-post-test included some quantitative and descriptive statistics within the limits of the small sample size, which prevented any statistical analysis from being statistically significant. In addition to analyzing the quantitative survey results, a one-on-one interview with all four group participants yielded additional qualitative data to enrich the results and provide helpful feedback for replicating a similar successful intervention with a population of adolescents who experience moderate to severe anxiety.

Results

This section describes the results of the eight-session mindfulness group intervention for middle and high school students with moderate to severe anxiety, including the participant flow,

recruitment, the descriptive statistics for the pre-test, post-test, and post-post-test, and the major themes of the one-on-one interviews conducted with participants. In addition, this section will discuss missing data and cases deleted from the analysis.

Participant Flow

Each participant was approached by mail after IRB research study approval and approval from the school principal. The parents/guardians of students invited to participate were sent consent letters. Students whose parents returned signed consent letters were given informed assent letters in person with the principal researcher, who ensured that participants understood the study and their rights as participants. At that time, participants took the pre-test SCAS questionnaire. After attending two sessions per week for four weeks of the mindfulness group, participants completed a post-test SCAS questionnaire (even participants who did not attend any of the mindfulness group sessions). Five weeks after the group intervention ended, participants took a post-post-test SCAS questionnaire (again, even participants who did not attend any of the mindfulness group sessions) and sat with the principal interviewer for a brief one-on-one interview about the study and the participants' use of mindfulness.

Recruitment

The principal researcher put together a list of potential participants based on their moderate to severe level of anxiety, including students who had a diagnosis of an anxiety disorder or who were identified by school personnel or parents as exhibiting moderate to extreme anxiety. When the IRB approved the research study, the principal researcher sent parent consent forms through the mail on December 22, 2015. A follow-up email including the same material that was in the original mailed letter was sent to parents who had not returned a form on January 11, 2016. The group began on January 25, 2016 and ended on February 29, 2016. The intended

three-week follow-up was unfortunately pushed back to five weeks due to the principal researcher's illness and a week off from school during March 2016. The follow-up post-post-tests and interviews were conducted the week of April 4, 2016.

Missing Data and Deleted Cases

Most of the data collected from the SCAS questionnaires were complete, except for a few of the items on the pre-test for one of the participants. Out of the 44 survey items, the participant left three items blank: #16, #33, and #35. The principal researcher counted these items as zeroes, which might have had an effect on the Separation Anxiety, Physical Injury Fears, and Social Phobia subscale scores reported for that participant's pre-test, as the items were subscale items for those subscales respectively.

There was also one deleted case from the mindfulness group intervention that bears discussion. One participant had obtained parental consent and had signed the assent form after having an informed consent discussion with the principal researcher. The participant attended the first session but had an extremely negative perception of mindfulness and refused to complete the pre-test. For all subsequent sessions, the participant could never seem to attend citing after-school activity conflicts. Due to the fact that the participant refused to complete any pre-test nor post-test questionnaires, the principal researcher was forced to eliminate the participant from the sample data.

Normative Sample Data

The SCAS website provides normative sample data based on gender and age group. The available normative sample data most closely approximating the mindfulness group participants was the normative sample data for girls aged 12-15. (Mindfulness group participants were all female and ranged in age from 13-17.) Pre-test scores demonstrated that the group participants

did, in fact, demonstrate elevated anxiety symptoms when compared with normative sample means. The normative sample data's mean Total SCAS score was 27.88 for girls aged 12-15 with a standard deviation of 15.32 (Spence, n.d.-b); the mean Total SCAS scores for the four participants' pre-tests was 58.75. These scores are roughly two standard deviations above the normative sample data means for Total SCAS scores. Table 1 compares pre-test score means for the participants with normative sample data means for girls aged 12-15 provided with the SCAS instrument.

Table 1

Comparison of Pre-Test Participant Means (n=4) with Normative Sample Data for Girls Aged 12-15 (n=1345)

<u>Scale</u>	<u>Normative Sample Data*</u>	<u>Participant Data</u>
	<u>Mean</u>	<u>Mean</u>
Total SCAS	27.88	58.75
Separation Anxiety	3.32	8.00
Social Phobia	6.85	8.50
Obsessive Compulsive	4.29	6.75
Panic/Agoraphobia	3.60	12.00
Physical Injury Fears	3.50	5.75
Generalized Anxiety	6.31	9.25

*Normative sample data retrieved from the Spence Children's Anxiety Scale website at <http://scaswebsite.com/docs/normssubscales.pdf>

Changes in Anxiety Symptoms

The changes demonstrated in anxiety symptoms support the hypothesis that mindfulness techniques may prove effective in decreasing experienced anxiety symptoms in adolescents.

These changes, however, seem to have a relationship with the number of sessions attended by participants. Overall, the more mindfulness group sessions a participant attended, the more their anxiety symptoms decreased or stayed the same. Participants who did not attend any of the group sessions showed SCAS scores that were the same or increased when comparing pre-test to post-test scores. While this trend did not hold true for all of the SCAS subscales, the Total

SCAS scores did show substantial decreases in anxiety symptoms for the participants who attended four or more sessions of the mindfulness group.

Total SCAS Score

In terms of the Total score for the SCAS questionnaire, two of the participants demonstrated decreased anxiety symptoms between the pre-test and the post-test. Both of these participants attended at least four of the mindfulness group sessions. The other two participants demonstrated increased anxiety symptoms through the Total SCAS score; both of these participants did not attend any of the mindfulness group sessions. Figure 1 shows the change in Total SCAS scores over time, in descending order based on participation. The participant who attended every mindfulness group session showed a decrease of 14 points in the Total SCAS score (41.20% decrease), the participant who attended four out of the eight group sessions showed a decrease of 15 points (32.61% decrease), and the two participants who did not attend any sessions showed increased Total SCAS scores (10 points/19.60% increase and 6 points/6.59% increase).

In terms of post-post-test results, the participant who attended every mindfulness group session increased in Total SCAS scores five weeks after the intervention by 6 points (15.00% increase from the post-test, but still a 20.00% decrease from the pre-test score). The participant who attended four of the mindfulness group sessions scored 17 points lower than her post-test score (58.62% decrease), which is 32 points lower than her pre-test score (110.30% decrease). The two participants who did not attend any sessions also scored lower than both their pre-test and post-test scores (21 points/70.00% decrease between post-test and post-post-test and 19 points/26.40% decrease between post-test and post-post-test). These two participants' post-post

test scores for Total SCAS were lower than their pre-test scores as well (11 points/37% decrease and 13 points/18.10% decrease).

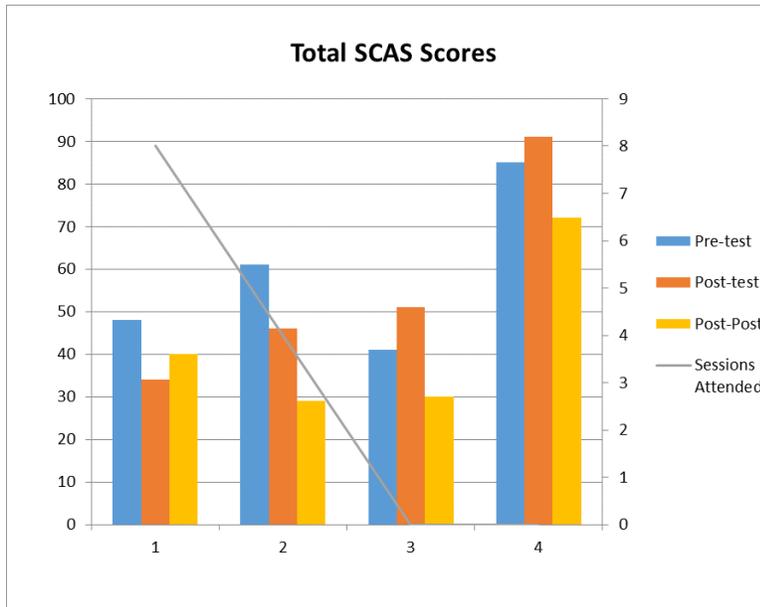


Figure 1. Total SCAS Scores (pre-test, post-test, and post-post-test) and the number of sessions attended.

Separation Anxiety Subscale

The Separation Anxiety subscale showed mixed results in terms of change over time. Three of the four participants showed decreased scores for separation anxiety. The largest decrease of four points (100.00% decrease) was shown in the participant who attended all sessions; the participant who attended four sessions showed a 3-point decrease (60.00% decrease) in separation anxiety. The two participants who did not attend sessions showed mixed changes in separation anxiety; while one participant increased by only one point (20.00% increase), the other participant decreased by one point (9.09% decrease). Post-post-test scores remained virtually stagnant compared with post-test scores, with only a 1-point decrease each for

two group members; the other group members' post-test and post-post-test Separation Anxiety scores were identical.

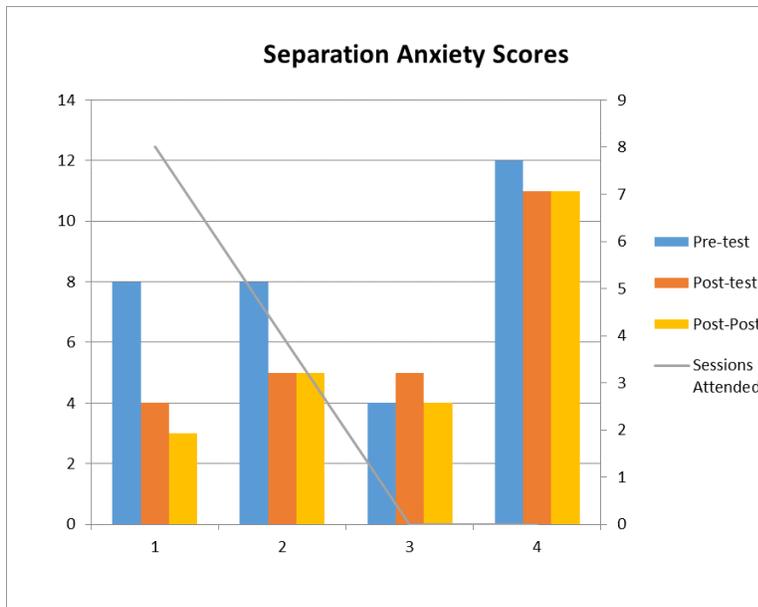


Figure 2. Separation Anxiety subscale scores (pre-test, post-test, and post-post-test) and the number of sessions attended.

Social Phobia Subscale

One participant, who attended all of the mindfulness group sessions, showed an increase in the social phobia subscale. She increased four points (40% increase) while the other participants showed either no change or a decrease (2 points/28.57% decrease and 2 points/22.20% decrease). This increase continued five weeks after the intervention ended (2 points/16.67% increase between the post-test and the post-post-test). The group member who attended four sessions saw a decrease in Social Phobia for both the post-test and the post-post-test (1 point/16.67% decrease between post-test and post-post-test), while the two group members who did not attend any sessions scored mixed results in this subscale. These results did not support a relationship between change in social phobia symptoms and group session attendance and did not show consistent decreases in social phobia symptoms.

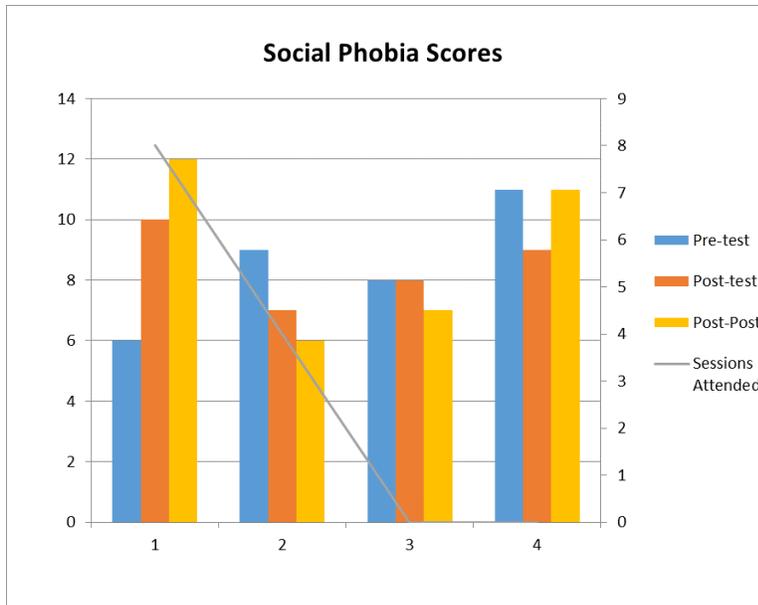


Figure 3. Social Phobia subscale scores (pre-test, post-test, and post-post-test) and the number of sessions attended.

Obsessive Compulsive Subscale

The Obsessive Compulsive subscale scores seemed to change with group attendance. Both participants who attended at least four of the group sessions showed decreased scores in the Obsessive Compulsive subscale (1 point/16.70% decrease and 6 points/150.00% decrease). The participant with higher attendance, however, showed an increase in the Obsessive Compulsive subscale at the five-week post-post-test (5 points/45.45% increase between post-test and post-post-test). This increase put her score above her pre-test baseline score. The participant who attended four group sessions saw another decrease in her Obsessive Compulsive score five weeks after the intervention (2 points/100.00% decrease) compared with her post-test score. Both participants who did not attend any sessions demonstrated increased scores in the subscale between pre-test and post-test (4 points/80.00% increase and 1 point/10.00% increase) and then returned to their pre-test scores five weeks after the intervention.

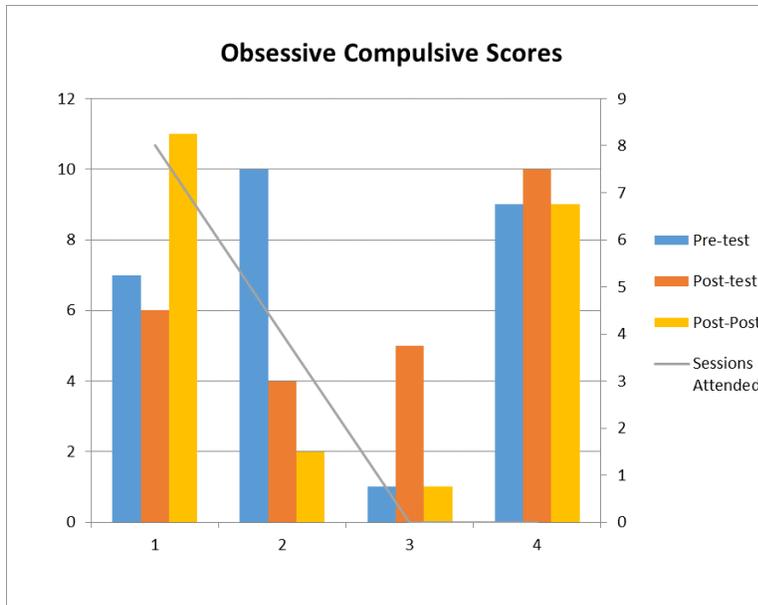


Figure 4. Obsessive Compulsive subscale scores (pre-test, post-test, and post-post-test) and the number of sessions attended.

Panic/Agoraphobia Subscale

There was a noticeable relationship between mindfulness group attendance and change in Panic/Agoraphobia subscale scores. The participant who attended all sessions saw a substantial decrease in the Panic/Agoraphobia subscale (8 points/160.00% decrease). This decrease continued five weeks after the intervention ended when compared with the post-test score (1 point/25.00% decrease). The participant who attended four sessions also showed a decreased score both at the post-test (4 points/66.67% decrease) and the post-post-test (4 points/200.00% decrease compared with the post-test score). The two participants who did not attend any sessions, however, both demonstrated increases in their Panic/Agoraphobia subscale scores (2 points/22.20% increase and 4 points/18.18% increase) between pre-test and post-test. Compared with their post-test, these participants showed decreased Panic/Agoraphobia scores on their post-post-test scores (2 points/29.00% decrease and 8 points/57.1% decrease).

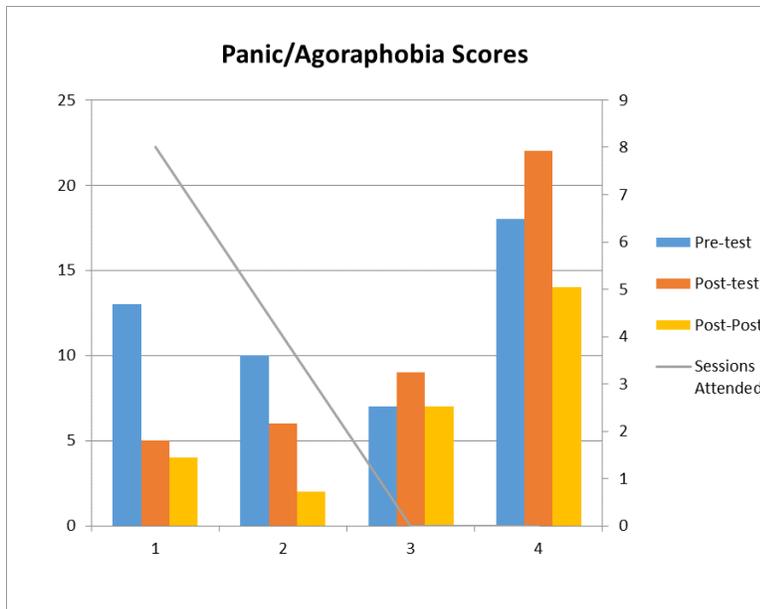


Figure 5. Panic/Agoraphobia subscale scores (pre-test, post-test, and post-post-test) and the number of sessions attended.

Physical Injury Fears Subscale

Changes in the Physical Injury Fears subscale varied among study participants. Two participants showed an increase in this subscale (2 points/66.67% increase and 2 points/18.18% increase between pre-test and post-test). The other two participants showed a similar percentage of decrease in the Physical Injury Fears subscale (3 points/60.00% decrease and 2 points/67.00% decrease between pre-test and post-test). Scores taken five weeks after the intervention seemed just as varied. One participant showed a second increase in Physical Injury Fears score (2 points/40.00% increase), one participant who had decreased during the first assessment period increased during the post-intervention period (1 point/16.67% increase), one participant showed no change between post-test and post-post-test, and the final participant's score decreased despite an initial increase (1 point/10.00% decrease between post-test and post-post-test). These changes did not seem to relate in any way to the participants' group session attendance.

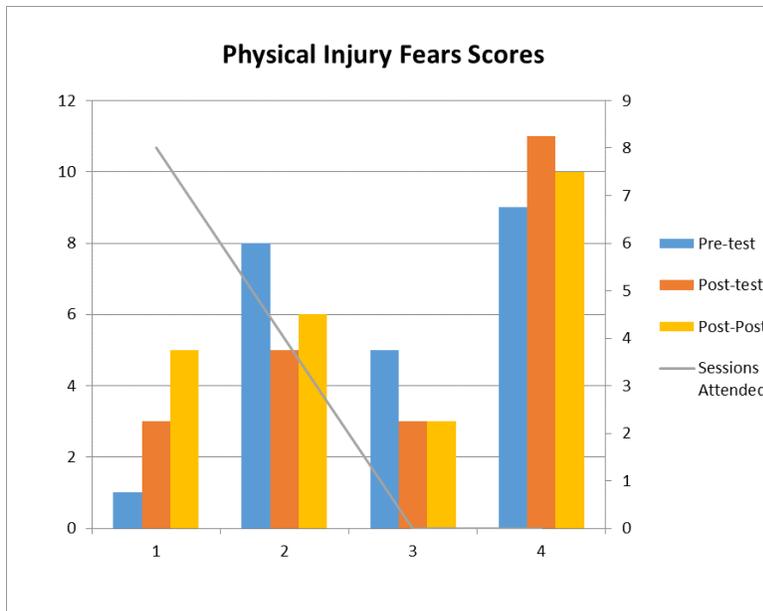


Figure 6. Physical Injury Fears subscale scores (pre-test, post-test, and post-post-test) and the number of sessions attended.

Generalized Anxiety Subscale

Half of the participants showed no change in the Generalized Anxiety subscale between pre-test and post-test. One participant even remained stagnant through all three measurements. One of the participants, who attended all of the group sessions, showed a 75% decrease in the subscale (3 points) followed by a slight increase at the post-post-test (1 point/20.00%). The participant who attended four sessions showed no change in Generalized Anxiety score between pre-test and post-test, but then scored two points lower between post-test and post-post-test, a decrease of 25 percent. One of the participants, who did not attend any of the group sessions, demonstrated an increased Generalized Anxiety subscale score (6 points/66.70% increase between pre-test and post-test), but then showed a slight decrease between the post-test and post-post-test (1 point/13.00% decrease).

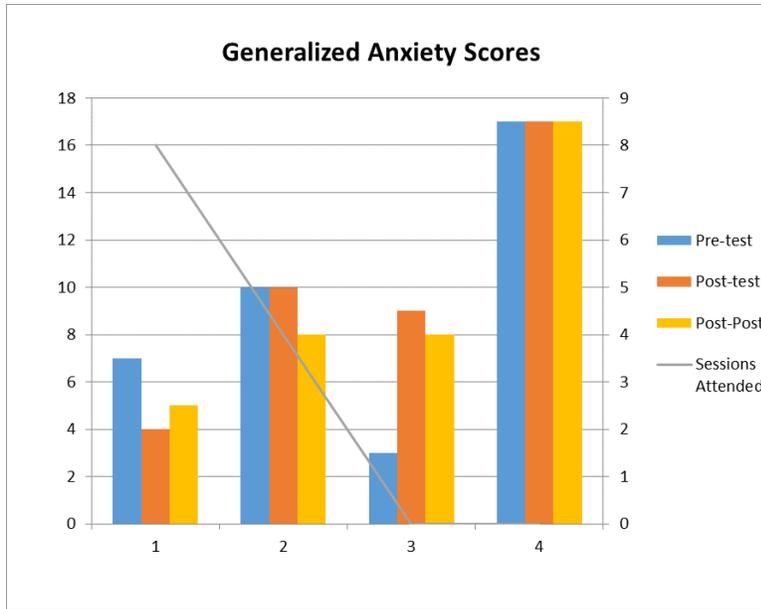


Figure 7. Generalized Anxiety subscale scores (pre-test, post-test, and post-post-test) and the number of sessions attended.

Table 2 shows all of the pre-test, post-test, and post-post-test scores for each participant’s subscale scores, in addition to how many sessions each participant attended, to show the change in these subscale anxiety symptoms over time.

Table 2

Participant Attendance and Scores for Total SCAS and SCAS Subscales (Pre-Test, Post-Test, and Post-Post-Test)

	Sessions Attended	Total SCAS				Separation Anxiety				Social Phobia				Obsessive Compulsive				Panic/ Agoraphobia				Physical Injury Fears				Generalized Anxiety			
		Pre	Post	Post-Post	Post-Post	Pre	Post	Post-Post	Post-Post	Pre	Post	Post-Post	Post-Post	Pre	Post	Post-Post	Post-Post	Pre	Post	Post-Post	Post-Post	Pre	Post	Post-Post	Post-Post	Pre	Post	Post-Post	Post-Post
1	8	48	34	40		8	4	3		6	10	12		7	6	11		13	5	4		1	3	5		7	4	5	
2	4	61	46	29		8	5	5		9	7	6		10	4	2		10	6	2		8	5	6		10	10	8	
3	0	41	51	30		4	5	4		8	8	7		1	5	1		7	9	7		5	3	3		3	9	8	
4	0	85	91	72		12	11	11		11	9	11		9	10	9		18	22	14		9	11	10		17	17	17	

Interview Themes

The brief, one-on-one interviews conducted when the third and final SCAS questionnaire was administered yielded feedback similar to the feedback received from group members during

the group intervention. In general, the group members who attended at least half of the group sessions seemed to have more invested in mindfulness.

Perceptions of mindfulness

The only participant who attended every group had, reportedly, incorporated mindfulness practice into her daily life—even after the intervention ended. She reported that she felt the group gave her more resources for handling her anxiety and that she particularly appreciated the convenience of having mindfulness apps available. She believed that using the guided meditation apps at home had helped her fall asleep easier. She had also noticed that her “normal” breathing rate seemed slower. She described herself as feeling “kind of mellow” since attending the group.

The participant who attended four out of the eight mindfulness group sessions described a neutral perception of mindfulness. She described it as yet another tool in her already overflowing toolbox for dealing with anxiety. Due to her long-term struggle with anxiety, she had a “been there, done that” attitude toward mindfulness. But she did acknowledge that she believed mindfulness can benefit anyone and wished there had been more people participating in the group.

Predictably, the two group members who did not attend any of the mindfulness group sessions had less to offer about their perceptions of mindfulness. Their feedback addressed the factors that prevented them from attending the group and suggestions for how the group might have been run differently that would have made it easier for them to participate. These two group members had difficulty even defining mindfulness.

Suggestions for future mindfulness groups

In addition to their personal perceptions of mindfulness and how it has (or has not) impacted their daily lives, group participants also weighed in on how mindfulness might be delivered more successfully in the future. The participant who attended all eight groups liked having a smaller group and reported that a classroom delivery might have made her feel uncomfortable and nervous about her peers' opinions. The other participating group member who attended four sessions thought the group should have been larger and open to students who weren't necessarily identified as having moderate to severe anxiety. She suggested making morning announcements about the group over the PA system to encourage participation.

The two group members who did not attend any group sessions cited scheduling difficulties and external factors like family illness and absences from school as the main reasons for not attending. One of the participants, when asked what might have encouraged her to attend the group sessions said, "If life wasn't so hard." These participants suggested scheduling the group during the school day instead of after school.

Discussion

This mixed-methods study aimed to address the following research questions: (1) Does a mindfulness-based intervention presented in a small-group school setting decrease anxiety symptoms in adolescents who present with moderate to high anxiety? (2) Are there changes in anxiety symptoms several weeks after the intervention ends? (3) Will students who have received the intervention incorporate mindfulness into their daily activities? This section will discuss the results of the study and how those results addressed these three research questions. The author will also discuss limitations and implications for future research.

Impact of Mindfulness Techniques on Adolescents with Moderate to Severe Anxiety

The author hypothesized that a mindfulness group intervention delivered to a group of adolescents with moderate to high anxiety would decrease anxiety symptoms immediately after the intervention and several weeks after the intervention. The findings show that, in general, there were some decreases in anxiety symptoms following the intervention and, in some cases, several weeks after the intervention ended. These decreased anxiety symptoms appeared to correlate with higher attendance of the mindfulness group sessions.

The difficulty with getting research participants to attend the group sessions was an unforeseen obstacle, but ended up providing useful information, however unintentional. The fact that two group members did not attend any of the group sessions, one participant attended four of the eight sessions, and the final participant attended all eight sessions allowed the principal researcher to discover relationships between how many sessions a participant attended and the changes in that participant's anxiety symptoms. For the Total SCAS scores and for two out of the six subscales (Obsessive Compulsive and Panic/Agoraphobia), there was a relationship between intervention attendance and change in anxiety symptoms. Group members who attended at least half of the group sessions demonstrated decreases in anxiety symptoms while those who did not attend group sessions reported increased anxiety symptoms.

This unintended outcome partially supports the hypothesis that mindfulness techniques can help reduce anxiety symptoms in adolescents who experience moderate to severe anxiety, supporting a growing body of research demonstrating the benefits of mindfulness as an effective treatment for anxiety in adolescents (Ames et al., 2014; Biegel, Brown, Shapiro, & Schubert, 2009; Himmelstein, Hastings, Shapiro, & Heery, 2012; Himmelstein, Saul, Garcia-Romeu, & Pinedo, 2014). The two participants unintentionally formed a control group because they

essentially did not receive the intervention nor learn any mindfulness techniques while the other two participants did. The consideration of attendance and the relationship between attendance and decreases in anxiety symptoms suggests that similar mindfulness groups will need to emphasize attendance in order to achieve the outcome of decreased anxiety symptoms among its group members.

The relationship between attendance of the mindfulness sessions and the decrease in anxiety symptoms may speak to a larger issue concerning stigma against mindfulness practice and the fears that often accompany moderate to severe anxiety. The author believes that the combination of participants' misconceptions about mindfulness and their reluctance to try (and stick with) an intervention for their anxiety symptoms create a difficult dynamic. While mindfulness techniques may prove effective for adolescents with moderate to severe anxiety, facilitators of mindfulness interventions may need to work before the intervention in order to help group members feel more comfortable so they can participate in the mindfulness practice with a more open mind.

Long-Term Changes in Anxiety Symptoms

Part of the purpose of this study was to determine whether any decrease in anxiety symptoms would continue even weeks after the mindfulness group intervention ended. After five weeks, there were mixed results when it came to long-term trends in anxiety symptoms. The group member who did seem to show some long-term continual decrease in anxiety symptoms had attended four of the group sessions and seemed to have a "take it or leave it" perception of mindfulness practice. In contrast, the group member who attended every group session and expressed positive feedback about her use of mindfulness, both inside and outside of the group, and even after the group intervention ended, saw some anxiety symptoms increase again. And

for some of the subscales (Social Phobia, Obsessive Compulsive, and Physical Injury Fears), this group member even saw anxiety symptoms surpass pre-test levels at the post-post-test. The two group members who did not attend any of the mindfulness sessions demonstrated some increased anxiety symptoms between the post-test and the post-post-test, but in most cases these increases did not surpass their pre-test anxiety scores.

This finding did not necessarily support the hypothesis that the mindfulness group intervention decreases anxiety symptoms five weeks after the end of the intervention, especially considering the limitations of the study, which are discussed in further detail in a section to follow. But it's important to note that, while the long-term change in anxiety symptoms for the six subscales of the SCAS seemed sporadic and insubstantial, the group members' Total SCAS scores for anxiety did decrease overall when comparing pre-test scores with post-post-test scores. The mean score for Total SCAS among the four group members fell from 58.75 (pre-test) to 55.50 (post-test) to 42.75 (post-post-test). While inconsistent, this decrease indicates that students may in fact benefit from mindfulness practice long after an intervention is delivered. One can conclude that continued exposure to mindfulness practice can have lasting benefits for adolescents and decrease their anxiety symptoms even after they no longer participate in an intervention. Other researchers have found inconsistent long-term results; adolescents report having trouble continuing with mindfulness practice outside of the group intervention (Ames et al., 2014). Long-term benefits may prove more consistent if adolescents have a way to "refresh" themselves with mindfulness practice in a formal group setting at regular intervals after the intervention ends. The author believes that, based on the limited data in this study, the long-term effects of similar mindfulness group interventions for adolescents with anxiety symptoms deserve further research.

Use of Mindfulness in Daily Activities

The final part of the author's research question wondered whether anxious adolescents would find a way to use mindfulness techniques in their daily lives, and whether they might continue practicing mindfulness outside of the group sessions. Toward this end, the principal researcher distributed a list of resources that may have helped participants use mindfulness techniques outside of the group, including mindfulness-related phone apps and websites with guided meditations and mindfulness exercises (see Appendix B).

In one-on-one interviews with group members, three out of four members did not use mindfulness practice in their daily lives neither during the group intervention nor after the intervention ended. The one group member who did reportedly use mindfulness practice almost daily practiced using the Stop, Breathe & Think app available for smartphones. She reported that this app's free guided meditations helped her sleep and were convenient for her to use because she always had her phone with her.

Overall, a majority of the participants did not incorporate mindfulness practice into their daily lives, which was one of the goals of the group. Even with a list of free resources including apps and websites, 75% of participants did not "buy in" to mindfulness practice as a part of their daily routines.

So how can the group be more successful in getting adolescents to use mindful practice routinely? This task may take more purposeful attention to the ways in which one can practice mindfulness without formal sitting meditation. This approach may involve dispelling misconceptions about mindfulness and reinforcing the use of the senses as a way to incorporate mindfulness into each day. The participant who did use mindfulness regularly outside of the group intervention had attended all of the group sessions and gained the most information about

the five senses and how to use them in mindful ways. It is the author's conclusion that integrating mindfulness into daily life hinges on a comprehensive understanding of how to use the five senses for mindfulness in addition to more formal meditations. Existing research does little to differentiate formal sitting meditation from other forms of mindfulness to see if one is more effective than the other, although Biegel, Brown, Shapiro, and Schubert (2009) did conclude that more time in sitting meditation practice produced greater decreases in anxiety symptoms. But if adolescents struggle with formal meditation, they may benefit more from mindful practice that focuses on the five senses.

Obstacles for Participation Related to Anxiety

Two of the study's participants hesitated or refused to attend group sessions even after assenting to be part of the study. While these adolescents with anxiety took the pre-test, post-test, and post-post-test questionnaires, there were many factors that got in the way for them when it came to attending the mindfulness group sessions.

School attendance was an obstacle for some of the group members. Simply stated, if they did not attend school, they could not attend a mindfulness group session scheduled for that day. Common reasons for missing school were family health issues and personal mental health struggles. Many students with anxiety, including this study's group members, feel overwhelmed by academic pressure and social peer relationships, which impacts their decision and ability to come to school. In other cases, they may feel compelled to stay home and support ailing family members or need to attend to their own health issues. The two group members who did not attend any sessions were absent from school on three of the days in which group sessions were scheduled. While all group members were given a schedule of when the eight group sessions

would be held before the study began, many of the circumstances leading to their absence from school were unavoidable and unplanned.

Another obstacle for group members was related to peer participation. Several of the group members asked the principal researcher who else would attend the group. Especially with a target population of adolescents with moderate to severe anxiety, their peer relationships strongly influence their participation in activities. Group members wanted to ensure their personal comfort by avoiding peers whom they don't know or don't get along with and by surrounding themselves with peers who support them.

Finally, some participants felt wary of mindfulness practice itself. They might have had pre-conceived notions about what mindfulness involves. In interviews, one participant said that she thought mindfulness, and meditation in particular, was a "hippy" thing. Once she could move past this belief and learned more about mindfulness, she became more open-minded and was able to see the benefits of mindfulness practice, both in the mindfulness group and outside of the mindfulness group.

Limitations

There were several limitations to the research study. With a small sample size of only four participants, there is no chance of generalizability. In addition to the limited number of participants, most of the participants did not attend every session. While this limitation ended up having some advantages because the researcher was able to use those participants who did not attend sessions as a control group, this was an unintended outcome. The principal researcher assumed that when students agreed to participate in the study, they would attend most, if not all, of the mindfulness group sessions. It may help future researchers to take a few moments while getting student assent to emphasize the importance of attendance, and to explore ways in which

to increase group attendance, whether that means offering the group at a different time of day or making it a mandatory part of the school day. Researchers may also pursue incentives such as extra credit for a health class to increase attendance for mindfulness group interventions.

Besides the sample size and attendance issues that limited the study, the principal researcher also had a limited amount of time in which to complete the study. The entire process was completed in less than one year, which is extremely brief compared with the amount of time devoted to similar research studies. It is the author's hope that future researchers will take the time needed to recruit larger sample sizes and circumvent possible attendance challenges.

Another limitation was that the principal researcher had no way of factoring out other influences on participants' anxiety. While the decreased anxiety symptoms that group members who attended at least half of the sessions displayed suggests a possible benefit from the mindfulness group, there may have been other factors decreasing their anxiety during the pre-test, post-test, and post-post-test questionnaires. The study did not include a way to factor out other variables that may influence anxiety symptoms. Researchers taking on similar studies may want to address other possible influences on participants' anxiety symptoms with more data, such as input from parents or teachers, changes in grade point averages indicating possible academic anxiety, and/or interview questions addressing any other areas in participants' lives that may influence their anxiety symptoms.

The Spence Children's Anxiety Scale used to evaluate anxiety symptoms before and after the intervention is a self-reported evaluation. Students gave their own perceptions of their anxiety symptoms, which may have been subject to their moods and feelings at the time that the questionnaire was administered. Another limitation of self-reported data is that, especially in the case of adolescent students, their responses may have been influenced by a desire to please the

principal researcher or by a desire to shape others' views of them. For instance, an adolescent with anxiety may have worried about responding with too many "Always" or "Often" answers, thinking that there would be a negative consequence or that the principal researcher may form a negative opinion. These worries, which are especially relevant for a population of adolescents who experience moderate to severe anxiety, may have influenced their responses. Researchers can lessen the impact of this limitation by supplementing self-reported data with data collected from teachers or parents that may provide a more comprehensive picture of the changes in participants' anxiety symptoms.

In terms of data analysis, normative data samples existed for the Spence Children's Anxiety Scale based on gender and age ranges. While the principal researcher used the normative data for girls aged 12-15 for data analysis purposes, only one of the girls who participated fell within that age range. The other three participants were 16 and 17 years old, but there were no normative sample data available for children over age 15 on the Spence Children's Anxiety Scale website. As a result, the principal researcher had to assume that normative data for girls aged 16 and 17 would be comparable to girls aged 12-15. Future research studies may want to limit the age of participants to match the normative data available.

Implications for Further Research

Even though this study has limited generalizability, the results lead to worthwhile suggestions for further research on mindfulness and its effectiveness for relieving anxiety symptoms in adolescents. This section will present suggestions for how this study might be replicated with some revisions, and also implicate how mindfulness may be beneficial for certain types of anxiety and for students with lower baseline anxiety.

The results of this study show that mindfulness groups may in fact decrease anxiety symptoms in adolescents with moderate to severe anxiety. The caveat is that the decrease in anxiety seemed more prevalent when students attended at least half of the mindfulness group sessions offered. Attending a mindfulness group, however, presented challenges for adolescents with anxiety.

The decrease in anxiety symptoms demonstrated in the findings varied based on the subscales of anxiety measured by the Spence Children's Anxiety Scale. The subscales of Separation Anxiety, Panic/Agoraphobia, and Obsessive Compulsive Anxiety showed the largest decreases in anxiety symptoms for those participants who attended at least half of the mindfulness group sessions. Because these specific types of anxiety are connected to poor emotional regulation, the results support further research on how mindfulness may help improve emotional regulation in adolescents who experience moderate to severe anxiety. The shift from the amygdala's "fight or flight" response to the pre-frontal cortex, which allows for time to apply more rational thinking (Greeson, 2009), may help adolescents with specific types of anxiety that result from poor emotional regulation, such as separation anxiety, panic/agoraphobia, and obsessive compulsive anxiety.

Better emotional regulation can reduce the high-level anxiety symptoms that often result from the brain's "fight or flight" response, which cannot differentiate a perceived threat from an actual threat. If mindfulness practice can improve emotional regulation, adolescents with anxiety may gain the control needed to ease themselves out of "fight or flight" mode and reduce anxiety symptoms such as racing thoughts, quick breathing, sweaty palms, and elevated heart rate. Two studies in which incarcerated adolescents participated in a mindfulness-based intervention both showed that participants experienced increased self-regulation (Himmelstein, Hastings, Shapiro, &

Heery, 2012; Himmelstein, Saul, Garcia-Romeu, & Pinedo, 2014), and this study's results support the existing evidence that mindfulness-based interventions may increase adolescents' regulation skills.

Finally, the author suggests that a similar mindfulness-based intervention should be researched on a population of adolescents beyond those who already experience moderate to severe anxiety. School counselors and researchers can achieve this shift in population by revising the current study so that it is implemented as a classroom lesson or as a school-wide initiative. Widening the number of participants in a similar study would provide more information as to the generalizability of the results and help explore the possibility that mindfulness practice may serve as a way to *prevent* moderate to severe anxiety symptoms in adolescents by giving them methods to cope with their anxiety in a healthy way.

Implications for School Counselors

The author suggests that if this mindfulness group intervention were replicated, it may be more effective as a classroom guidance lesson instead of a small group. A school counselor can implement mindfulness as a part of a comprehensive school counseling program's in-class presentations. This approach may normalize the practice instead of singling out students with anxiety, which in turn may raise their anxiety symptoms or cause them not to attend sessions. By delivering the sessions during class time, a school counselor can get better attendance. It is also possible that once a classroom-based intervention is delivered, school counselors may find better success if they want to follow up with a small-group mindfulness intervention targeting students with severe anxiety symptoms. That way, students may feel more comfortable with mindfulness and may increase their attendance, particularly if the group sessions take place during the regular school day as opposed to before or after school. Even better, implementing a

school-wide mindfulness program like the ones discussed in the “Mindfulness-Based School Interventions” section would incorporate mindfulness into the school climate and support the use of mindfulness in everyday activities. While a school counselor can advocate for a mindfulness-based school-wide intervention, school-wide interventions require support from a variety of stakeholders, such as faculty, staff, parents, administrators, and board members, which can sometimes prove difficult to obtain.

Conclusion

This study sought to answer the question of whether mindfulness techniques would help decrease anxiety symptoms in adolescents with moderate to severe anxiety. In particular, the author hoped to discover whether a small-group mindfulness intervention delivered by a school counselor could help the ever-growing population of adolescent students who struggle with anxiety each day. The study specifically aimed to address these questions: (1) Does a mindfulness-based intervention presented in a small-group school setting decrease anxiety symptoms in adolescents who present with moderate to high anxiety? (2) Are there changes in anxiety symptoms several weeks after the intervention ends? (3) Will students who have received the intervention incorporate mindfulness into their daily activities?

Based on the results, this study found that a mindfulness-based group intervention delivered in a school setting does have the potential to decrease anxiety symptoms in adolescents with moderate to severe anxiety. Despite the small sample size, the results support existing research that shows the benefits of mindfulness for adolescent populations with mental health issues (Ames et al., 2014; Biegel, Brown, Shapiro, & Schubert, 2009; Himmelstein, Hastings, Shapiro, & Heery, 2012; Himmelstein, Saul, Garcia-Romeu, & Pinedo, 2014). These decreases in anxiety symptoms, overall, continued even five weeks after the intervention ended. While a

majority of the participants did not incorporate mindfulness into their daily activities, they still seemed to demonstrate lower anxiety symptoms, although in some cases these decreases cannot be attributed to the mindfulness group intervention due to lack of attendance.

Further research on the effect of mindfulness techniques on adolescents' anxiety symptoms is needed. This study is important for school counselors who are positioned to provide interventions to help ease the anxiety symptoms that plague today's adolescents—adolescents who often do not get the treatment needed for anxiety (Merikangas et al., 2011). Despite the study's limitations, the results support existing research that indicates mindfulness-based interventions as effective ways to decrease anxiety symptoms. More specifically, school counselors may use the study's methods as a starting point for implementing similar interventions in their own schools, and the positive results from this study may help gain the support of other stakeholders.

It is the author's hope that school counselors can work with school stakeholders to encourage mindfulness practice as part of school culture and conduct research on other effective mindfulness-based interventions that a school counselor can deliver as part of a comprehensive school counseling program. Given the growing issue of anxiety in adolescents, it is in students' best interests to offer interventions that have the potential to reduce anxiety symptoms and help students thrive academically, in future careers, and in their social/emotional development.

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Appendix A

The following list provides a brief outline for the topics covered during the eight sessions of the mindfulness group intervention. These topics were based on the MindUp™ curriculum for grades 6-8 (The Hawn Foundation, 2011).

Session 1: Introduction/How Our Brains Work

Session 2: What is Mindful Awareness?

Session 3: Mindful Listening

Session 4: Mindful Seeing

Session 5: Mindful Smelling

Session 6: Mindful Tasting

Session 7: Mindful Movement

Session 8: Taking Mindful Action into the World/Termination

Appendix B

Mindfulness Resources for Teens

Mobile Apps

Stop, Breathe, and Think (Free): Emotional check-ins and guided meditations for mindfulness and compassion

Calm.com (Free): Guided meditation and relaxation exercises

Insight Timer (Free): Meditation timer

MindShift (Free): Mindfulness and coping skills for anxiety

Smiling Mind (Free): Mindfulness for young people

Take a Break (Free): Guided meditations with background sounds/music

Take a Chill (\$1.99): Daily mindfulness exercises, audio, stress assessment, and reminders

Websites

Mindfulness for Teens (<http://mindfulnessforteens.com>): Resources and guided meditations

Stressed Teens (<http://www.stressedteens.com>): Mindfulness activities and resources for teens, parents, and professionals

Local Connections

Rochester Zen Center (www.rzc.org): Zen Buddhist-based center

The Assisi Institute (www.assisi-institute.org): Not-for-profit meditation center for any faith offering meditation times, yoga classes, and retreats

Living Stress Free Wellness Center (<http://livingstressfree.org>): For-profit wellness organization offering classes in mindfulness and tai chi as well as counseling services

Appendix C

Questionnaire

Your Name: Date: _____

PLEASE PUT A CIRCLE AROUND THE WORD THAT SHOWS HOW OFTEN EACH OF THESE THINGS HAPPEN TO YOU. THERE ARE NO RIGHT OR WRONG ANSWERS.

1. I worry about things.....	Never	Sometimes	Often	Always
2. I am scared of the dark.....	Never	Sometimes	Often	Always
3. When I have a problem, I get a funny feeling in my stomach.....	Never	Sometimes	Often	Always
4. I feel afraid.....	Never	Sometimes	Often	Always
5. I would feel afraid of being on my own at home.....	Never	Sometimes	Often	Always
6. I feel scared when I have to take a test.....	Never	Sometimes	Often	Always
7. I feel afraid if I have to use public toilets or bathrooms.....	Never	Sometimes	Often	Always
8. I worry about being away from my parents.....	Never	Sometimes	Often	Always
9. I feel afraid that I will make a fool of myself in front of people.....	Never	Sometimes	Often	Always
10. I worry that I will do badly at my school work.....	Never	Sometimes	Often	Always
11. I am popular amongst other kids my own age.....	Never	Sometimes	Often	Always
12. I worry that something awful will happen to someone in my family.....	Never	Sometimes	Often	Always
13. I suddenly feel as if I can't breathe when there is no reason for this.....	Never	Sometimes	Often	Always
14. I have to keep checking that I have done things right (like the switch is off, or the door is locked).....	Never	Sometimes	Often	Always
15. I feel scared if I have to sleep on my own.....	Never	Sometimes	Often	Always
16. I have trouble going to school in the mornings because I feel nervous or afraid.....	Never	Sometimes	Often	Always
17. I am good at sports.....	Never	Sometimes	Often	Always
18. I am scared of dogs.....	Never	Sometimes	Often	Always
19. I can't seem to get bad or silly thoughts out of my head.....	Never	Sometimes	Often	Always
20. When I have a problem, my heart beats really fast.....	Never	Sometimes	Often	Always
21. I suddenly start to tremble or shake when there is no reason for this...	Never	Sometimes	Often	Always
22. I worry that something bad will happen to me.....	Never	Sometimes	Often	Always
23. I am scared of going to the doctors or dentists.....	Never	Sometimes	Often	Always
24. When I have a problem, I feel shaky.....	Never	Sometimes	Often	Always
25. I am scared of being in high places or lifts (elevators).....	Never	Sometimes	Often	Always

26.	I am a good person.....	Never	Sometimes	Often	Always
27.	I have to think of special thoughts to stop bad things from happening (like numbers or words).....	Never	Sometimes	Often	Always
28.	I feel scared if I have to travel in the car, or on a Bus or a train.....	Never	Sometimes	Often	Always
29.	I worry what other people think of me.....	Never	Sometimes	Often	Always
30.	I am afraid of being in crowded places (like shopping centres, the movies, buses, busy playgrounds).....	Never	Sometimes	Often	Always
31.	I feel happy.....	Never	Sometimes	Often	Always
32.	All of a sudden I feel really scared for no reason at all.....	Never	Sometimes	Often	Always
33.	I am scared of insects or spiders.....	Never	Sometimes	Often	Always
34.	I suddenly become dizzy or faint when there is no reason for this.....	Never	Sometimes	Often	Always
35.	I feel afraid if I have to talk in front of my class.....	Never	Sometimes	Often	Always
36.	My heart suddenly starts to beat too quickly for no reason.....	Never	Sometimes	Often	Always
37.	I worry that I will suddenly get a scared feeling when there is nothing to be afraid of.....	Never	Sometimes	Often	Always
38.	I like myself.....	Never	Sometimes	Often	Always
39.	I am afraid of being in small closed places, like tunnels or small rooms.	Never	Sometimes	Often	Always
40.	I have to do some things over and over again (like washing my hands, cleaning or putting things in a certain order).....	Never	Sometimes	Often	Always
41.	I get bothered by bad or silly thoughts or pictures in my mind.....	Never	Sometimes	Often	Always
42.	I have to do some things in just the right way to stop bad things happening.....	Never	Sometimes	Often	Always
43.	I am proud of my school work.....	Never	Sometimes	Often	Always
44.	I would feel scared if I had to stay away from home overnight.....	Never	Sometimes	Often	Always
45.	Is there something else that you are really afraid of?.....	YES	NO		
	Please write down what it is _____				

	How often are you afraid of this thing?.....	Never	Sometimes	Often	Always