

Running Head: IMPACT OF MINDFULNESS

The Impact of Mindfulness on Anxiety and Coping Strategies in Children: A Quantitative  
Study

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### **Abstract**

This study examines the effect of a six-week mindfulness group on anxiety and coping skills in fifth grade elementary school students. Anxiety is a pervasive problem among children and adolescents. Research suggests that early intervention for anxiety is not only effective in childhood, but can produce benefits that last into adulthood. Each group consisted of teaching, discussing, and subsequently practicing mindfulness exercises at home. The group curriculum focused on paying attention to thoughts and feelings in the moment without judgment. Results show a reduction in overall perceived anxiety as well as an impact on the coping strategies used by participants. Feedback from both students and faculty demonstrate the ease and effectiveness by which mindfulness programs can be adapted into elementary schools.

Anxiety and stress continue to be of growing concern among school-age children (Muris & Broeren, 2009). One in five children will experience incapacitating anxiety or depression in childhood (Stallard et al., 2011). Children who suffer from anxiety have difficulty with social and academic functioning and are much more likely to develop more severe anxiety or depression as adults (Hirshfield-Becker & Biederman, 2002; Kirsten, Grenyer, Wagner, & Manicavasagar, 2008). Further, the presence of stress without coping strategies leaves children at a greater risk for substance abuse, escalation of violence, and can lead to depression and anxiety disorders (Foret et al., 2012).

Research links anxiety and stress in childhood to anxiety and depression in adulthood (Brydges, Hall, Nicolson, Holmes, & Hall, 2012; Hirshfield-Becker & Biederman, 2002). Reasons for the development of anxiety vary depending on parenting style, hereditary factors, environmental influence, and learning abilities (Hirshfield-Becker & Biederman, 2002; Wood, McLeod, Sigman, Hwang, & Chu, 2003). However, the rationale for early intervention for anxiety and stress has never been more compelling (Brydges et al., 2012; Muris & Broeren, 2009).

A growing body of research on children suggests that mindfulness techniques are successful in improving anxiety and anxiety related symptoms (Repetti, 2010; Semple, Reid, & Miller, 2005; Napoli, Kreech, & Holley, 2005; Mendelson, Greenberg, Daritotis, Gould, Rhoades, & Leaf, 2010). Mindfulness is most commonly defined as “paying attention in a particular way: on purpose, in the present moment, and non-judgmentally” (Kabat-Zinn, p.4, 1994). It allows for increased self-awareness with a focus on acceptance (Snyder, Shapiro, & Trevaven, 2011). In other words, mindfulness emphasizes acknowledgment of thoughts and feelings without immediate or habitual reaction. Not only is mindfulness able

to change emotional and behavioral patterns, neuroscience has documented that mindfulness practices can actually alter the circuitry of the brain (Siegel, 2007).

This study examines the impact of a six-week mindfulness group on a group of fifth grade students. Specifically, the study looks at the impact of the group on perceived anxiety and coping strategies within the group using a pre and posttest format. The paper will first thoroughly examine the existing literature on anxiety and mindfulness. Next, it will look at the methods used to understand the impact of the mindfulness group, examine the results of the group, and discuss the meaning and implications of the findings. Overall, the study aims to contribute to the growing body of research exploring the potential benefits, both academic and social-emotional, of teaching mindfulness to elementary school students.

### **Literature Review**

Existing research shows that anxiety and stress continue to be pervasive problems for both adult and youth populations. Mindfulness has been shown to help increase recognition of anxious thoughts, reduce harmful repetitive behaviors, and foster the self-monitoring of coping strategies (Semple et al., 2005). The review of the literature first examines the effects of stress and anxiety on the population as a whole. Next, it explores the impact of stress and anxiety on children. The concept of mindfulness and the contributions of neuroscience to mindfulness research are explored. Finally, applications of mindfulness in youth populations are investigated and results discussed.

### **Anxiety and Stress**

According to the World Health Organization mental illness is the leading cause of disability worldwide (Stallman, 2010). Research has shown that one half of the

adult population will be diagnosed with one or more DSM-IV mental disorder and that the onset of those disorders will likely start in childhood or adolescence (Khalsa et al., 2011). Anxiety disorders account for 18.1% of all DSM-IV diagnosis in the U.S., making anxiety disorders the most prevalent diagnostic group (Muris & Broeren, 2012). Research has shown that anxiety impacts every aspect of life, from physical to mental health (Wood et al., 2003; Brydges et al., 2012). When it comes to anxiety disorders comorbidity is the rule, most commonly leading to depression and substance abuse (Jaeschke et al., 2011).

### **Children and anxiety.**

Before research conclusively linked adult anxiety and other psychiatric disorders to childhood anxiety, research on the subject had been scarce (Muris & Broeren, 2009). Over the last two decades it has become clear that not only is anxiety the most pervasive psychological problem among youth, but the majority of childhood anxiety disorders are chronic and lead into adulthood (Muris & Broeren, 2009). Moreover, a recent study found that 7.5% of adolescents meet the DSM-IV criteria for one or more mental health conditions and that life stressors were the most reliable predictive factor across all disorders (Khalsa et al., 2012). According to Stallard and colleagues, at any given time 8% of children in the U.S. and U.K., ages 5-16 will meet the DSM-IV diagnostic criteria for severe anxiety (2011). Further, anxiety and stressors can lead to impaired development with lasting effects into adulthood (Mychailyszyn, Mendez, & Kendall (2010). The need for a greater understanding of the causes and effective interventions for childhood anxiety and stress has never been more important (Brydges et al., 2012; Hirschfield-Becker & Biederman, 2002; Kirsten et al., 2008).

An all-inclusive understanding of childhood anxiety is elusive and the cause is multifaceted (Wood et al., 2003). Many different factors contribute to the onset, severity, and duration of anxiety in children. Studies have shown that exposure to early life stressors such as traumatic events, unstable environments, or family difficulty greatly increase the risk for the development of psychiatric disorders later, including anxiety disorders (Brydes et al., 2012). Another study noted that patterns of stress developed in childhood lead to intensified patterns of stress in adulthood if those initial patterns are ignored (Napoli, Krech & Holley, 2005). Not only does stress experienced in childhood and adolescence lead to anxiety disorders, it is also associated with the development of depression and PTSD (Brydes et al., 2012).

Heredity and parenting style contribute to the incidence of anxiety among children (Wood et al., 2003; Hirshfeld-Becker & Bierderman, 2002). According to recent research, 20-40% of childhood anxiety is genetic (Marques, Hall, & Young, 2012). Children of parents with anxiety disorders have a 35-40% chance of developing anxiety disorders, compared to a 5-10% chance in children of parents without anxiety disorders (Hirshfeld-Becker & Biederman, 2002). Children with separation anxiety as infants are more likely to have anxiety throughout their youth and into adulthood (Kirsten et al., 2008).

The most difficult type of anxiety to treat is separation anxiety that is developed in infancy, from six months to a one-year (Kirsten et al., 2008). Kirsten and colleagues discovered that efficacy of treatment was greatly impacted by the timing of intervention (2008). The younger the sufferer was when they received the intervention the less severe the symptoms of anxiety (Kirsten et al., 2008). It can be concluded that even when treating the most severe cases of anxiety, early intervention is most effective.

Anxiety and stress manifest themselves in a variety of ways in children, often leading to significant difficulties in social and academic function (Hirshfeld-Becker, 2002). Children with social anxiety assume that they are constantly being critiqued or criticized, making social functioning extremely difficult (Reijntjes, Thomaes, Boelen, van der Schoot, de Castro, & Telch, 2011). These children are at increased risk for school failure, depression or substance abuse (Hirshfeld-Becker & Hiederman, 2002). General anxiety can cause difficulty controlling certain thoughts, avoidance of threatening situations, and manifest itself as physical illness (Duchesne & Ratelle, 2010). Further, anxiety is linked to problems with emotional regulation and cognitive perception (Semple, Lee Rosa & Miller, 2009). Anxiety changes the way children see the world, often leading them to interrupt ambiguous situations as negative or disapproving (Stallard et al., 2012).

Most significant in a school context is the impact of anxiety and stress on academic functioning (Guingnard, Jacquet, & Lubart, 2012; Lundy, Silva, Kaemingk, Goodwin & Quan, 2010; Duchesne & Ratelle, 2010; Semple et al., 2009; Mychailyszyn et al., 2010). Incidences of anxious or depressive symptoms decrease intellectual abilities and the ability to actively pay attention (Semple et al., 2009; Lundy et al., 2010). Research shows that one of the more accurate predictors of academic performance is attention (Semple et al., 2009). When children struggle in school they experience an increase in anxiety, thus the cycle of anxiety in children serves to maintain or deepen the child's initial problem (Semple et al., 2009). Children with learning disabilities are at even greater risk for anxiety and depression, often as a result of their difficulties in school (Gallegos, Langley, & Villegas, 2012). Learning disabled students have a 22.3% chance of developing anxiety and 32% chance of developing depression, as opposed to children without learning disabilities who have an



11.5% and 18% chance of developing anxiety and depression respectively (Gallegos et al., 2012).

The problem of anxiety and academic performance can become an issue of the chicken or the egg. However, it is clear that once anxiety is present, it inhibits the brain from paying attention and disrupts cognitive processing, making it much more difficult for children to succeed academically and socially (Semple et al., 2010). Moreover, school-related stressors are among the most frequently cited to intensify anxiety symptoms among children who already suffer from anxiety (Mychailyszyn et al., 2010).

The emphasis on performance-based measurement in educational institutions serves to further exacerbate the issue. After the No Child Left Behind Act was passed in 2002, the pressure to perform on state testing has forced educators to focus on testing rather than mastery (Skybo & Buck, 2007). Research in neuroscience and psychology has clearly documented that performance-based education hinders development instead of fostering it (Rushton & Juola-Rushton, 2008). Further, the pressure of testing is now felt at an earlier age, giving even more opportunity for increased anxiety (Locker & Cropely, 2004). Researchers have linked anxiety and depression with performance goals (Duchesne & Ratelle, 2010). The new benchmark of success through performance-based testing has increased the opportunity for children to experience stress and anxiety at school.

New educational pressures, environmental stressors, hereditary traits, and parenting styles all impact the risk and coping abilities of school-age children. Given the spectrum of causes, a resolution to the onset of anxiety itself is tenuous. However, the necessity to give children and adolescence the tools to cope with stress and anxiety is unmistakable.

## **Mindfulness**

In recent years there has been a surge of research on the effects of mindfulness based treatments and interventions. Mindfulness has proven effective in treating chronic pain, professional burnout, depression, anxiety, obsessive compulsive disorder, and stress (Baer, 2003; Chiesa, & Serrenti, 2009; Gold, Smith, Hopper, Herne, Tansey, & Hulland, 2010; Siegel, 2007). Other studies on mindfulness have shown benefits in coping with cancer, heart disease, psoriasis, insomnia, drug addiction, and fatigue (Gold et al., 2010; Siegel, 2007).

Based in Buddhist and other Eastern spiritual traditions, mindfulness is a learned way of paying attention (Baer, 2003). While some practitioners may differ in their approach, all emphasize nonjudgmental acceptance of thoughts and feelings (Baer, 2003). The fundamental principle behind this nonjudgmental acceptance is the recognition that all emotional experiences have a beginning and an end (Nanda, 2009). In other words, emotions and thoughts are temporary and in a constant state of change. While practicing mindfulness, practitioners are asked to cultivate an attitude that allows them to embrace each experience, whether pleasant or not (Snyder, Shapiro, & Treleaven, 2012). The practitioner abandons the habit of trying to alter experiences that are painful and instead accepts them. It is through this deep acceptance that relief can be found (Snyder et al., 2012).

Whether it is MBSR, transcendental meditation, or other forms of mindfulness practice (Tai Chi, relaxation exercises, yoga, etc.), researchers have found that mindfulness practice can lead to profound changes in physical and mental health (Baer, 2003, Zelazo & Lyons, 2012; Siegel, 2007; Gold, Smith, Hopper, Herne, Tansey, & Hulland, 2010). Kabat-

Zinn writes that the nonjudgmental observation of stressful thoughts or emotions can lead to the understanding that they are “just thoughts” (1990). It is in this way that empowerment can happen. “For example, feeling afraid does not necessarily mean that danger is imminent, and thinking ‘I am failure’ does not make it true” (Baer, p.129, 2003). The relationship between thought and perspective changes, freeing the practitioner from the power of emotive thoughts and habitual conclusion.

The most empirically documented method of mindfulness practice is Mindfulness-Based Stress Reduction (MBSR) created by John Kabat-Zinn in 1979 (Chiesa & Serretti, 2009). MBSR was developed for patients with chronic pain to empower them to take control of their pain by creating a deep awareness of their body, breath, and of the present moment (Chiesa & Serretti, 2009). It has since been successful in helping treat and cope with numerous other physical and mental disorders (Chiesa & Serretti, 2009).

MBSR aims to change the practitioner’s relationship with stressful situations, thoughts, and events (Gold et al., 2010). It is designed as an 8-week mindfulness group program for adults, with a focus on three different techniques: body scan, sitting meditation, and Hatha yoga practice (Sibinga, Kerrigan, Stewart, Johnson, Magyari & Ellen, 2011). At the core of the practice is the idea of focusing attention on one thing (breath, body sensation, sound) and gently, repeatedly bringing attention back to that one thing (Kabat-Zinn, 1990). In a meta-analysis of the existing research on MBSR, researchers concluded that not only is MBSR effective at the time of participation, but participants reported lasting positive effects in their outlook and quality of life (Baer, 2003).

In an effort to streamline mindfulness, Ruth Baer and colleagues created a way to assess mindfulness that consists of five facets (Siegel, 2007). Baer’s structure has since

been widely accepted within the field (Siegel, 2007; Branstrom, Duncan, & Moskowitz, 2011; Baer, Hopkins, Krietemeyer, & Toney, 2006). The facets are: (a) observing (awareness of internal and external sensations, emotions and thoughts), (b) describing (ability to identify and describe sensations, emotions or thoughts), (c) acting with awareness (understanding of present actions/reactions, rather than automatic response), (d) non-judgment (recognizing thoughts and feelings without evaluating them), (e) non-reaction (observing thoughts and feelings and allowing them to come and go) (Branstrom et al., 2010).

The five facets describe an integrated process that demands many skills come together simultaneously (Siegel, 2007). The ability to be self-aware, monitor ones intentions, and at the same verbally communicate these processes as they are happening is essential for the practice of mindfulness (Siegel, 2007). As evidenced by the complexities of mindfulness, the fifth facet of mindfulness is reserved only for the mindfulness practitioner (Siegel, 2007). Indicating that the facets of mindfulness are not possible without training. The complexities of mindfulness practice have the power to alter the practitioner's relationship with the world, outside and in.

### **Mindfulness and neuroscience.**

Contemplative Neuroscience continues to be a growing field of science devoted to building our understanding of how the brain is impacted by mindfulness. It is through this field that we can scientifically understand the power of mindfulness that Eastern traditions have known for centuries. Daniel Siegel, neuroscientist and founder of Mindsight writes, "When individuals refine the ways in which they see the fabric of the mind itself, it becomes

possible to intentionally alter the flow of mental experience” (Siegel, p.259, 2007).

Mindfulness gives practitioners the power to change the circuitry of the brain.

The brain can be divided into two brains: the cognitive rational brain of the neocortex and the prefrontal cortex and the emotional brain of the limbic system (Hamiel, 2005). The cognitive brain is in charge of the outside world, awareness, language, attention, problem solving, and planning (Hamiel, 2005). The emotional brain is in charge of feelings and survival responses (Hamiel, 2005). The idea of two brains exists because the emotional brain is not always connected to thoughts, one does not always need the other to function (Hamiel, 2005). In other words, emotions and survival instincts can take over the body without receiving approval from the rational brain.

While all brains are structured in the same way, the functions differ between individuals who have and have not been trained in mindfulness. A groundbreaking study done by Farb and colleagues revealed that the circuitry in the brain of those trained in mindfulness and the brain of ‘novices’ who had no mindfulness training was very different (Farb, Segal, Mayberg, Bean, McKeon, Fatima, & Anderson, 2007). This groundbreaking study concluded that the subjects trained in mindfulness were able to accept and process new information from the ‘bottom up’, without the impact of history or emotional patterns and habits (Siegel, 2007). These subjects were able to be truly present. In contrast, when asked to focus on one body sensation or breath, the novice group was physically not able to do so without activating the part of the brain that pulls from past experience and past emotional patterns, known as ‘top down’ learning (Siegel, 2007). Novice brains were not able to process information without the input and judgment of the past.

The research suggests that through mindfulness training, human beings can actually create two forms of self-awareness – the self across time and the self in the present moment (Farb et al., 2007). It is now documented that the untrained brain is not capable of both types of awareness (Farb et al., 2007; Raffone, Tagini, & Srinivasan, 2010).

Siegel explains that by clearly seeing one's mind, mindfulness practitioners can understand and identify different streams of awareness (2007). Through this awareness and knowledge, it becomes possible to free oneself from the restrictions of prior learning and established patterns (Siegel, 2007). The success of mindfulness in treating some of the most difficult psychopathologies can be explained in this way. If it is assumed that psychopathologies are formed as a reaction to events that occurred in the past, mindfulness can free the practitioner from the prior learning that created these patterns of functioning by training the brain to change its circuitry and creating a new level of self-awareness.

### **Mindfulness with children and adolescents.**

From childhood to adolescence, the brain is still developing and has yet to permanently pave the path for coping mechanisms and emotional regulation that will be relied on throughout adulthood (Zelazo & Lyons, 2012). Therefore, children are neurologically more open to learning new strategies for coping and emotional regulation. Further, children are naturally mindful, they daydream and wonder about the world (Hart, 2004). However, the demands of a modern life filled with technology and pressure to produce do not give them the opportunity to nurture a mindful existence (Hart, 2004). Mindfulness can support children's natural tendency toward contemplation while giving them the ability to reduce the influence of stress and anxiety through awareness and self-regulation (Zelazo & Lyons, 2012).

Adapted versions of mindfulness practices, including MBSR, yoga, meditation, and relaxation response, have been effective in helping children and adolescents cope with stress, anxiety, depression, academic challenges, asthma, and emotional regulation (Dobson, Bray, Kehle, Theodore, & Peck, 2005; Mendelson, Greenberg, Dariotis, Gould, Rhoades, & Leaf, 2010; Foret et al., 2012; Khalsa, Hickey-Schultz, Cohen, Steiner, & Cope, 2011). In a meta-analysis done on meditation interventions used among youth, researchers found that of the 16 studies conducted, all provided evidence that meditation can be effective in treating the physiologic, psychosocial, or behavioral problems of children and adolescents (Black, Milam, & Sussman, 2009). Researchers also noted that there were 800 similar studies conducted with adults and only 16 found with children and adolescents, indicating a need for increased research on effectiveness with children (Black et al., 2009).

According to Amy Saltzman, founder of The Still Quiet Place and pioneer for mindfulness in schools, mindfulness is most effective with children when it is transformed into practices that children find creative and relatable (Saltzman & Goldin, 2008). Further, to account for children's limited regulation and attention skills, exercises are shortened and groups are given movement breaks to help keep focus (Saltzman & Goldin, 2008; Zelazo & Lyons, 2012). Many children's programs require that the adults who teach mindfulness practice mindfulness, emphasizing that the power is in the experience (Zelazo & Lyons, 2012; Saltzman & Goldin, 2008).

Saltzman has adapted an MBSR program to be used with children. The focus of her program is on exploring mindfulness through exercises and discussions that children find both relatable and exciting (Saltzman & Goldin, 2008). For example, rather than defining an exercise as "mindful breathing" she calls it a "Jewel/Treasure" exercise (Saltzman & Goldin,

2009). Here, children are asked to pick a stone from a basket, lie down on the floor, and place the stone on their bellies. They are encouraged to focus on how the stone feels on their bellies and concentrate on its rising and falling with each breath (Saltzman & Goldin, 2009). With the emphasis on the “treasure” children are practicing mindfulness breathing in a way that is relevant and exciting to them. Research found that Saltzman’s interventions were effective in improving overall attention (Saltzman & Goldin, 2009). Moreover, the study concluded that children were more compassionate and less judgmental with themselves after completing the program (Saltzman & Goldin, 2009).

In another study using an adapted MBSR format with children in grades four through six, researchers focused on teaching about the usefulness of describing rather than judging (Semple, Reid, & Miller, 2005). They focused discussions around the difference between description and judgment, examining how it feels different in the mind and in the body (Semple et al., 2005). Children were engaging in the larger and more difficult principle of acceptance in a way that was understandable and immediately applicable to their daily lives. In other programs props or metaphors to help children understand mindfulness practice were used (Zelazo & Lyons, 2012). For example, leaders turned a hula-hoop into a body scanner to make the idea of a body scan tangible and interesting (Zelazo & Lyons, 2012).

Overall, when the foundational concepts of mindfulness are adapted in a way that is understandable and enjoyable for children the results are overwhelming positive. Further, children report that they enjoy the activities, are enthusiastic about participation, and often ask for more time to practice mindfulness activities (Saltzman & Goldin, 2009; Semple et al., 2005; Zelazo & Lyons, 2012).



**Mindfulness as an intervention for stress and anxiety among children.**

Existing research on development shows that an early focus on coping skills and emotional awareness will serve to prevent or reduce the severity of anxiety from childhood into adulthood (Hirshfeld-Becker & Biederman, 2002). Mindfulness can be particularly effective in treating children with anxiety or stress due to its focus on teaching children how to reflect and observe. “Sustained, nonjudgmental observation of anxiety-related sensations, without attempts to escape or avoid them, may lead to reductions in emotional reactivity typically elicited by anxiety symptoms” (Baer, p.128, 2003). Mindfulness training teaches children how to observe their thoughts without activating the body’s ‘fight or flight’ response. The ‘fight or flight’ response releases hormones into the body that impair judgment and emotional regulation (Napoli et al., 2005). Mindfulness breaks the pattern of stress and anxiety in the body, empowering the practitioner to decide how to respond, rather than letting their body respond for them.

Semple and colleagues did a study on 25 children, ages nine to thirteen years old (2009). The program was a 12-week group based on Mindfulness-based Cognitive Therapy (MBCT), which focuses on teaching self-regulation, promoting decentering, and developing resiliency (Semple et al., 2009). Decentering is defined as “the ability to observe internal and external experiences without distortion from affective, cognitive, or physiological reactivity’s” (Semple et al., p.220, 2009). The goal was to reduce anxiety symptoms, behavior problems, and to increase attention. The results concluded that MBCT was most effective at improving attention and showed some improvements in anxiety and behavior (Semple et al., 2009). Moreover, the study followed up with students after three months

and found that the improvements made were sustained after the conclusion of the program (Semple et al., 2009).

Another study focused only on improving attention in first, second, and third grade students (Napoli et al., 2005). Researchers found that if children are able to develop the ability to be present and choose where to place their attention they would be better equipped to cope with stressful situations (Napoli et al., 2005). Further, by focusing on breath and the present moment children were able to avoid activating the physical 'fight or flight' reaction (Napoli et al., 2005). The results of the study showed that mindfulness was effective at increasing the selective attention ability as well as decreasing test anxiety (Napoli et al., 2005).

A study on the impact of mindfulness training on anxiety in school was conducted with five children ages seven to eight (Semple, Reid, & Miller, 2005). Students participated in a six-week program that consisted of six 45-minute sessions. Each session focused on a different mindfulness technique, as well as developing a home practice (Semple, et al., 2005). At the beginning of each group, participants were encouraged to write down a worry on a piece of paper and throw it away at the beginning of each group, as a way to let go (Semple et al., 2005). Participants were given the option to take the worry with them when they left. No one did. Overall, the program showed promise in reducing symptoms of anxiety in children (Semple et al., 2005). Moreover, teachers reported improvements in the academic functioning and behaviors of the students who participated (Semple et al., 2005). Three of the students who participated planned on continuing practicing mindfulness and had created a worry wastebasket at home (Semple et al., 2005).

In a large-scale study of the effects of yoga in secondary school, 73 high school students participated in a twelve-week yoga program. The impact of the yoga program was compared with a control group of 47 of their peers (Khalsa et al., 2012). At the conclusion of the program, the yoga group showed significant improvement in resilience, where the control group had a significant reduction in resilience (Khalsa et al., 2012). Resilience is linked to successful coping with stress and adversity (Khalsa et al., 2012). Similarly, a mindfulness program based on the teachings of Tai Chi combined with MBSR proved to reduce stress and promote self-awareness with a group of urban middle school students (Wall, 2005).

In Hong Kong, where 21% of high school students report suicidal ideation, 40 students enrolled in a six-week mindfulness program (Lau & Hue, 2011). The program was based on MBSR and met for 45-minutes once a week. The program was successful at reducing depressive symptoms among the participants. Research concluded mindfulness would be an effective intervention to combat the alarmingly high incidence of depression among Hong Kong adolescents (Lau & Hue, 2011).

Other adapted versions of MBSR have all proven effective with adolescent populations. MBSR programs have garnered improvements in levels of hostility and emotional discomfort (Sibinga et al., 2011) and have positively impacted absenteeism, school rule infractions and suspension days (Barnes, Bauza, & Treiber, 2003). Transcendental meditation and relaxation response programs have been successful in reducing the levels of perceived stress and state anxiety (Foret et al., 2011), improving academic performance (Benson, Wilcher, Greenberg, Huggins, Ennis, Zuttermeister, Myers, & Friedman, 2000), improving the lung function of students with asthma (Dobson, Bray, &

Kehle, 2005), decreasing psychological distress and anxiety (Elder, Nidich, Colbert, Hagelin, Grayshield, Oviedo-Lim, Nidich, Rainforth, Jones, & Gerace, 2011), and positively impacting response to stress (Mendelson et al., 2010).

Startlingly high statistics indicate the depth of anxiety and stress felt by school-age children. Further, the impact of that anxiety and stress felt at a young age can have a drastic impact on social, emotional, and academic functioning. If ignored those struggles can impact development and quality of life into adulthood. The call for effective intervention has never been louder. The complexities and variability of anxiety in children makes treatment very difficult. However, due to empirical support from neuroscience and psychology, mindfulness has emerged as a promising intervention to help children develop the tools to cope with stress and anxiety.

The studies done in schools indicate that the implementation of mindfulness programs into educational institutions is not only practical but also overwhelmingly beneficial. The research design for this study was based on the documented successes of small groups conducted in elementary and middle schools (Semple et al., 2005; Semple et al., 2009; Saltzman & Goldin, 2009; Sibinga et al., 2011). These groups were not only successful at introducing mindfulness to students, but were effective at seamlessly becoming part of the school culture and curriculums from which they operated.

### **Method**

The study is a quantitative study designed to examine the impact of mindfulness exercises on anxiety and stress in elementary school students. The results of this study were based on a six-week mindfulness group that included a pre and posttest. Students were assessed with two instruments, *Schoolagers Coping Strategies Inventory (SCSI)* and

*The Perceived Stress Scale for Children (PSS-C)*. The instruments were chosen based on their level of appropriateness for the sample population and their ability to clearly assess both perceived stress and coping strategies. This section looks at the selection process for the participants in the group, the instruments selected to measure the impact of the group, the procedures by which the group was run, and the results reported.

### **Participants**

Participants' were seven fifth grade female students from a small suburban elementary school. A list of 17 students was derived through recommendations from teachers and counseling staff. Recommendations were given based on student need and perceived openness to the program. Parents were notified with phone calls from the researcher and letters sent home (See Appendix A). Both parents and students signed forms indicating their agreement to participate in the study (See Appendices B and C). The size of the group was based on parental approval for student participation and a limit of 20 participants set by the researcher due to resource constraints. A four-person boys group was also conducted. However, due to scheduling and time restraints, only the results from the girls group will be reported in this study (N = 7).

### **Instruments**

The focus of the research was to examine how a mindfulness group impacts stress and anxiety in its participants. In order to fully explore the effect of the group, it was imperative that both the efficiency of coping strategies and perceived stress were examined. If environmental stressors increased while the group was being conducted, it could be inferred that level of perceived stress would also increase regardless of the impact of the group. Therefore, it was essential that the coping skills of participants be examined

as well, a factor not necessarily impacted by outside environmental factors. Therefore, two instruments were used in the study.

### **The Perceived Stress Scale for Children (PSS-C).**

*PSS-C* was created based on the *Perceived Stress Scale (PSS)*. *PSS* is a 10-item scale, designed for adults, measuring participants' perceptions of stress over a period of a month (Branstrom, Duncan, & Moskowitz, 2011). *PSS-C* was adapted by researchers White and Smith (2010) of the University of New Hampshire. The 12-item scale also focuses on stressful events, but limits the period to the previous week. Responses are indicated on a four-point Likert-type scale representing 0 '*Never*', 1 '*A Little*', 2 '*Sometimes*', and 3 '*A Lot*'. Examples of questions include, "In the last week, how often did you feel worried about grades or school?" or "In the last week, how often did you feel happy?" (White & Smith, 2010).

### **Schoolager's Coping Strategies Inventory (SCSI).**

Designed for children ages 8-12, *SCSI* is a 32-item scale that examines children's coping strategies and their perceived effectiveness (Skybo & Buck, 2007). Research on anxiety in children indicates that effective coping strategies can reduce anxiety in childhood and even prevent the onset of adult anxiety (Hirshfeld-Becker & Biederman, 2002). The *SCSI* was chosen for its unique ability to assess not only what coping strategies are used, but also their perceived effectiveness to manage symptoms. The instrument uses a two-part question format. The frequency of the coping strategy, such as 'bite my nails' is measured on a four-point Likert-type scale, representing 0 '*Never*', 1 '*Once in a While*', 2 '*A Lot*', and 3 '*Most of the Time*'. The second part of the question asks participants to rate the effectiveness of the specific coping strategy. This section also uses a four-point Likert-type

scale and is scored as 0 'Not Helpful', 1 'Helps Sometimes', 2 'Helps Most of the Time' and 3 'Always Helps'.

### **Procedures**

Students attended a 30-minute group during school. The group met once a week for six weeks. The meeting time was decided by all fifth grade teachers and was not disruptive to classroom instruction or schoolwork. Students were given *Schoolager's Coping Strategies Inventory (SCSI)* and *The Perceived Stress Scale for Children (PSS-C)* on the first day of group and again on the last day of the six-week group.

A six-week curriculum was created based on existing mindfulness programs that were designed for elementary school children, using available research on mindfulness and anxiety as a guide (Saltzman & Goldin, 2008; Semple et al., 2005; Zelazo & Lyons, 2012). On the first day of the group students were introduced to the concept of mindfulness as "paying attention in a particular way: on purpose, in the present moment, and non-judgmentally" (Kabat-Zinn, p.4, 1994). Group rules were decided on collectively and the worry wastebasket was introduced as a weekly ritual. At the beginning of each group students were asked to write down a worry and throw it away in the wastebasket, as a way to let go of it for the 30-minute group. Students often wrote down multiple worries.

Each week, students were introduced to a new mindfulness technique. Examples included progressive muscle relaxation, mindful eating, breathing exercises, and visualization. Students were asked to take each practice home to their families and then reflect on the effects of the practice during group the following week. In addition, students were introduced to yoga poses to allow for a movement at the end of each group session.

Thoughts and feelings about anxiety, as well reactions to the effects of the practices were encouraged during each group.

Pre and posttest data was collected and compared. The researcher examined the impact of the group by comparing total mean scores from instrument. Analysis of individual questions that were specifically poignant to the study was also conducted.

### **Results**

This study examined the impact of a six-week mindfulness group on perceived anxiety and coping strategies among fifth grade elementary school students. Using existing published research as a predictor, it was hypothesized that participation in the group would have a positive impact on the effectiveness of coping strategies and perceived anxiety (Foret et al., 2011; Semple et al., 2005; Saltzman & Goldin, 2008).

Outcome evaluation was conducted by comparing pre and posttest results from both the *PSS-C* and the *SCSI*. Furthermore, verbal feedback from both group participants and teachers was reported. Due to incomplete data, assessments from one participant could not be reported. Therefore, the sample size was reduced to six participants ( $n = 6$ ).

As shown in Figure 1, data from the *PSS-C* were evaluated by comparing pretest and posttest mean scores from the entire test. The average pretest total score on the *PSS-C* was 23.83 as compared with a lower average posttest score of 21.33. Moreover, when analyzing the data from the three questions that asked directly about worry and fear, the means scores were all lower at posttest.



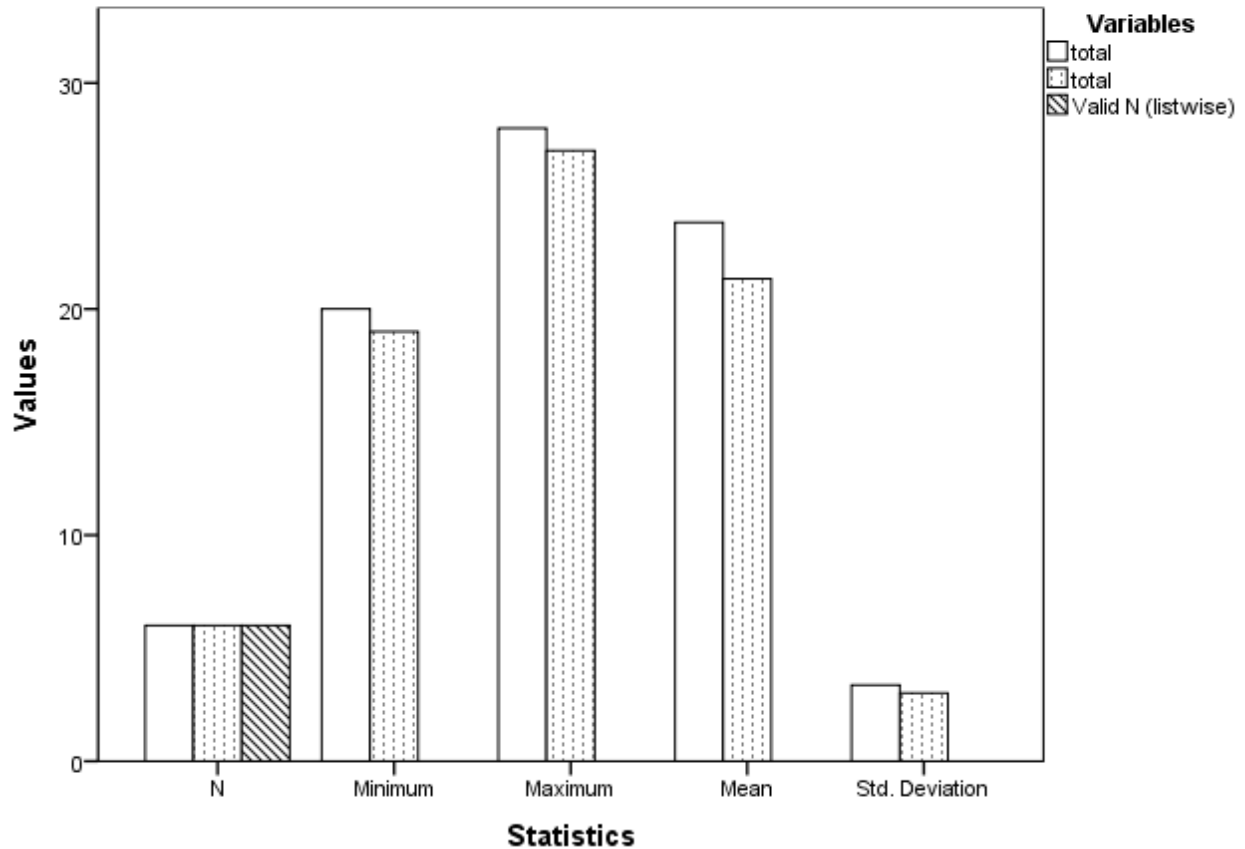


Figure 1. PSS-C Pre and Post Test Comparison. This figure illustrates the improvement in total score on the PSS-C by comparing total mean scores from pre and posttest.

Further analysis of the PSS-C was conducted by comparing the individual pre and posttest scores of the three questions that most acutely focused on anxiety, guised as questions on worry and fear for a younger population. Using a four point Likert-type scale where 0 is 'never', 1 'a little', 2 'sometimes', and 3 'a lot', the PSS-C pretest average on question number three, "In the last week, how often did you feel worried about being too busy?" was 2.16 with a standard deviation of .75. When asked the same question on the posttest, the average dropped significantly to 1 with a standard deviation of .89. Similar results were found when looking at questions four ("In the last week, how often did you feel worried about grades or school?") and seven ("In the last week, how often did you feel scared or nervous?"). The mean scores dropped by at least .5 on both questions. Therefore,

it can be deduced that the perceived level of anxiety was lower after completing the six-week program.

The *SCSI* is divided into two sections: using a four point Likert-type scale, section A lists various coping strategies and asks participants whether or not they use the strategy. Also using a four point Likert-type scale, section B asks participants to rate the effectiveness of each individual strategy. Rather than examining what specific strategies were used, evaluation focused on the results from section B, what coping strategies were most effective.

Answers in section B are scored from 0 to 3, 0 is '*not helpful*', 1 is '*helps sometimes*', 2 is '*helps most of the time*', and 3 is '*always helps*'. The mean score of section B at pretest was 27.83 with a standard deviation of 5.49. The posttest scores indicate that the effectiveness of coping strategies slightly increased, with a mean score of 29.33 and standard deviation of 8.93. However, due to large variations in scores between participants, no definitive conclusions can be made. Some scores increased after the group and others decreased. The large variation in scores can be attributed to the structure of the instrument. Students rated strategies that they did not use as ineffective. A low score could indicate that the student had ineffective coping strategies or it might show that the student only used a few strategies effectively. Therefore, the researcher found it more useful to look at the highest and lowest means on individual questions in part B during pre and posttest. In other words, the researcher compared the most and least effective coping strategies before and after the group (see table).

Table: Most and Least Effective Coping Strategies: Pretest and Posttest Comparisons

	Pretest Mean	Pretest Standard Deviation	Posttest Mean	Posttest Standard Deviation	T-Test	DF	P-Value (sig. level)
Give up	0.167	0.408	0	0	1	5	
Hit, throw, break	0.333	0.816	0.833	0.753	-1.17	5	0.838
Yell	0.667	1.21	0.667	0.817	0	5	1
Relax	2	0.894	2.5	0.837	-1.46	5	0.275
Solve the problem	2.167	0.753	2.167	0.983	0	5	0.318
Talk to someone	1.5	1.049	2.167	0.983	-1.195	5	0.855
Truth	2.33	0.817	2	1.265	0.791	5	0.227

N = 6

The table shows the four most effective coping strategies and the three least effective coping strategies at pre and posttest. At pretest, 'Telling the truth' had the highest mean, with a score of 2.33, indicating it was the most effective strategy. 'Solve the problem' and 'relax' rounded out the top three with means of 2 and 2.166 respectively.

The posttest results show 'relax' to be the favored coping strategy of participants, with a mean of 2.5. Further, four of the six participants gave 'relax' a score of 3 '*always helps*'. 'Talk to someone' rose to the top three at posttest with a mean score of 2.1667 and 'solve the problem' remained in the top three with a mean score of 2.1667. The least effective coping strategies, 'yell', 'hit, throw or break things', and 'give up' were the same at pre and posttest.

A t-test was conducted to examine whether any of the changes were statistically significant. While, 'relax' and 'talk to someone' changed from pre to posttest, neither of the results proved to be statistically significant.

Students reported changes within themselves throughout the six-week group. Participants described feeling more aware of what they were doing in a variety of situations, from math homework to dinnertime. Almost all participants reported that they were experiencing less anxiety at bedtime and finding it easier to fall asleep using techniques from the group. Teachers reported that the group had a positive impact on their students. They described students as eager and excited to attend the group. When participants requested the group be extended past the original six-week period, teachers unanimously agreed to allow the group to continue.

After comparing pre and posttest data, the results from the group support the hypothesis that the group had a positive impact on perceived anxiety and coping strategies. The results from the *PSS-C* show an overall improvement in perceived anxiety, as well as a decrease in the levels of fear and worry among group members. The *SCSI* results point to an impact on the type of coping strategies participants found most effective, showing a shift in how students handle stress and anxiety.

### **Discussion**

In this study, the author hoped to contribute to the growing evidence that teaching mindfulness in schools garners positive results. Upon evaluation of the data, findings are in line with the existing research (Mendelson et al., 2010; Semple et al., 2009; Foret et al., 2008). The mindfulness group decreased perceived anxiety, as shown by the lower mean score from the *PSS-C*. Furthermore, when the researcher looked at the three questions on

the *PSS-C* that most directly addressed anxiety, there were clear improvements in levels of worry and fear among group members.

The impact on coping strategies was more difficult to decipher due to a large disparity in scores and the structure of the instrument. However, when the researcher looked closely at the individual coping strategies listed on the *SCSI*, rather than the overall instrument, a shift in effective strategies due to skills learned in the group was detected.

In the posttest, four of the six participants reported relaxation as '*always effective*'. As demonstrated by the data table 'relax' on the posttest had the highest mean of any coping strategy during pre or posttest. This is a particularly important finding as 'relax' is the coping strategy listed on the *SCSI* that most directly reflects the mindfulness exercises learned in the group. Furthermore, the coping strategy 'talk to someone' became one of the most effective coping strategies after the group had concluded. Given that the group encouraged members to share their struggles with anxiety in an open and protective environment, this increase in effectiveness could be due to group participation.

Overall, the findings from both assessments produced encouraging results. There was a decrease in perceived anxiety, less worry and fear, and a shift toward the use of positive and largely effective coping strategies when faced with stressful situations. Students themselves reported noticing changes within themselves and, similar to other studies, asked for more time to practice mindfulness (Saltzman & Goldin, 2009; Semple et al., 2005; Zelazo & Lyons, 2012). Furthermore, teachers reported positive attitudes among their students and encouraged the group to continue for a longer period of time.

### **Limitations & Future Research**

The central limitation to this study is found in sample size and population. The group was made up of seven participants all Caucasian fifth grade females. Further, due to incomplete assessments, only the scores from six participants could be reported. Future research needs to expand to a diverse and larger sample in order to the overall impact of mindfulness.

Another limitation can be found in the research methods chosen for the study. While a quantitative method can be very effective, the impact of mindfulness is difficult to quantify given the unique way it impacts individuals. In this study, the verbal feedback from both participants and teachers proved to add as much value to the findings as the quantitative results. Therefore, future research that combines quantitative and qualitative research methods would allow for an even deeper understanding of the programs' effectiveness.

Finally, conducting the group for a longer period of time would allow for a stronger mindfulness foundation to be established among participants. Furthermore, a follow up after three months would strengthen the study by showing whether or not student perception and coping strategies remained changed beyond the group (Semple et al., 2009). However, as this study shows, even a small amount of exposure to mindfulness can produce positive results.

### **Conclusion**

Research has shown that stress and anxiety negatively impact many students, even at the youngest levels (Muris & Broeren, 2008). Anxiety can have devastating effects on attention, academic performance, and self-esteem (Semple et al., 2009). Moreover, a lack of

effective coping strategies among children has been shown to increase risk for depression, severe anxiety, and substance abuse (Foret et al., 2012). Existing research on teaching mindfulness in schools continues to strengthen the argument that imparting these techniques to all students at all ages will have a positive impact on anxiety, coping strategies, and many other social-emotional issues (Siegel, 2007; Zelazo & Lyons, 2012).

This study provided further evidence that exposure to mindfulness techniques can have an overwhelmingly positive impact. Participants in the study showed an overall decrease in perceived anxiety, reduced levels of worry and fear, and a collective shift toward more effective coping strategies. Further, participants eagerly partook in the study and asked to continue practicing mindfulness after the six-week group period had ended. Teachers showed equal support and enthusiasm for the program. The reactions of teachers and students add to the evidence that program implementation and community support is not an obstacle to the success of mindfulness program implementation.

More research is needed to comprehensively understand the impact of mindfulness on anxiety and coping skills over a longer period of time and with a more diverse sample group. However, it is clear from this study and existing research that mindfulness programs make powerful and positive contributions to students and school communities. As the evidence of success and ease of implementation continues to grow, the researcher hopes that mindfulness will be adapted into mainstream educational culture. Given the rise in anxiety among children and the debilitating effects it can have, the potential benefit of mindfulness programs for students and communities is seemingly endless.

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*Appendix A: Parent letter*

Hello \_\_\_\_\_ School Parents!

I am Stephanie Cicero. I have the privilege of being the school counselor intern at \_\_\_\_\_ School, from January 2013 thru December 2013. Working with your children three days a week has been an absolute delight.

I am completing my Master's work at SUNY Brockport in Counselor Education. My thesis, based on my work at \_\_\_\_\_ School, is a study of how an six-week mindfulness group effects stress and stress related symptoms. Beginning with early studies at the University of Massachusetts Medical School in the 90's, there is now a large and growing body of research internationally, consistently showing that mindfulness training significantly reduces stress in both adults and children. Mindfulness in its simplest form is heightened awareness of self.

I am writing to ask your permission to allow your child to participate in the eight-week group, which will meet for 30 minutes a week and consist of a different mindfulness exercise each time. Activities will include muscle relaxation plus mindful eating, walking, and breathing exercises. Students will be encouraged to share their feelings and experiences while doing the exercises and discuss how those perspectives relate to situations outside of the group. Students will be asked to practice their mindfulness exercises with you at home.

Each student will be asked to take an assessment at the beginning of the group and at the end of the six weeks, and will be assigned an identification number to ensure confidentiality. The manner in which the results of the assessments will be reported in my thesis will make it impossible to ascertain the identity of individual students. Further, confidentiality within the group will be explained and emphasized throughout the eight-week course.

I cannot tell you how excited I am to be able to introduce skills to your children that I believe will help guide them throughout their academic careers. I bring to this course many years of personal study and practice. Mindfulness, especially its relevance to education, has been a passion of mine for quite some time.

If you are comfortable allowing your child to participate, please sign and return the informed consent and assent forms enclosed with your child. Do not hesitate to contact me anytime with questions, concerns, or just to talk about the group.

My sincerest thanks,

Stephanie Cicero  
[xxxx@brockport.edu](mailto:xxxx@brockport.edu)

*Appendix B: Statement of Informed Consent***Examining how mindfulness impacts stress in fourth and fifth grade elementary school students**

Department of Counselor Education  
The College at Brockport, SUNY

**Statement of Informed Consent**

The purpose of this research study is to examine the impact of an eight-week mindfulness group on stress and stress symptoms in fourth and fifth grade students. The study is a requirement for the researcher's Master's thesis in Counselor Education from The College at Brockport, SUNY.

In order to allow your child to participate in this study, your informed consent is required. You are being asked to make a decision whether or not your child can participate in this study. If you want to allow your child to participate in the project, and agree with the statements below, please sign your name in the space provided at the end. You may change your mind at any time and remove your child from the study, even after the study has begun.

I understand that:

1. My child's participation is voluntary and he/she has the right to refuse to answer any questions.
2. My child's confidentiality is **protected**. He or she will never be identified by name.
3. The potential risks to participating in the study are minimal and include time devoted to the group away from the classroom and possible emotional response to topic discussion. The potential benefits of the study include improved coping strategies, a decrease in perceived stress and an increase in self-awareness. Should my child need additional counseling, school counselor \_\_\_\_\_ will be available for support at \_\_\_\_\_ or \_\_\_\_\_.
4. My child's participation involves completing Schoolager's Coping Strategies Inventory and The Perceived Stress Scale for children, taking part in an eight-week mindfulness group and participating in various home practices with a family member.
5. The maximum number of people who will participate in the study is 20. Participants will be asked to attend eight thirty-minute groups over a period of eight weeks. The results will be used to contribute to the completion of the researcher's thesis and subsequent graduation.
6. Data will be kept in password-protected electronic filing system or in a locked filing cabinet. When the research is complete, all of the collected data and consent forms will be destroyed by deleting or shredding.
7. My child was selected to participate in the group based on a teacher or counselor recommendation.
8. I understand that when participating in the group, my child will be missing time in the classroom. The group will be held in the counseling offices at the school and will meet at a teacher agreed upon time, making sure my child will not miss any core classes. Further, I understand that participation or non-participation will have no impact on my child's grades or class standing and that my child may decide not participate even if parent permission is given.

I am 18 years or older. I have read and understand the above statements. All questions about my child's participation in this study have been answered to my satisfaction. I agree to give consent for my child to



participate in the study realizing I may withdraw him or her at any time during the research process. Returning this signed consent form indicates my consent to allow my child to participate.

*I am exceedingly grateful for your considering allowing your child to participate in this study. If you have any questions please do not hesitate to contact me at any time. Should you need to contact my graduate school advisor, Patricia Goodspeed-Grant, with any questions she can be reached at xxx@brockport.edu*

Stephanie Cicero  
xxx@brockport.edu

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Parent or Guardian Signature                      Date

*Appendix C: Statement of Informed Assent***Statement of Informed Assent**

Dear Student,

You are invited to be in a mindfulness group with other fourth and fifth graders. In the group, you will learn how to do breathing exercises, yoga exercises and other “mindfulness” exercises meant to help when things get stressful or overwhelming. The group will meet once per week for eight weeks.

At the beginning and end of the group I will ask you to take a survey so I know if the things you learn in the group are helpful when things get stressful. At the end of the group I will use the surveys as part of my thesis for graduate school. However, no one will ever know who filled out the surveys, your identity will be completely protected. By joining the group, you are agreeing to let me use the surveys as part of the research. You cannot participate in the group and not take part in the research.

Even if your parents give permission for you to be in the group, you can decide you do not want to be in the group at any time; just let your parents or me know. Everyone will completely understand.

If you decide you want to join the group, please sign below and return the form to me. Returning the form will let me know that you want to join the group.

*I am every excited to start the group and so happy that you are considering joining! Let me know if you have any questions about the group or want to talk about it.*

Stephanie Cicero

xxx@brockport.edu

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Student Signature

Date