

The Use of Mindful Awareness Practices in the Classroom

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ABSTRACT

Mindful awareness practices (MAP's) such as yoga and meditation have gained immense popularity in the United States over the past 50 years. Practitioners report increased self-control, feelings of inner peace, greater satisfaction with life, and reduced stress. Additionally, individuals with attention and behavioral difficulties have experienced greater control over and reduction of their symptoms through the practice of MAP's. This paper examines the use of MAP's in the classroom and their impact on student disruptive behavior. A critical review of the literature; based on medical and mood based studies, attentional and behavioral studies, and classroom studies; indicated the acceptability and feasibility of the use of MAP's in the classroom to the benefit of all students. This paper advocates inclusion of MAP's into the K-12 curriculum and points toward further areas of research on MAP's and students.

PREFACE

I have many individuals to thank for their contributions to my work with mindfulness in my personal and professional life, and through the development of this topic into a thesis. I would like to thank Andrew Eiji Bliesner and Jaimie Terada, friends on the path. Pamela Solarz, my partner in research and a dear soul. Dr. Terry Ford, for the introduction to the work of Dr. Daniel Siegel. Dr. George Freeman, Jr., for his compassion and continued support throughout the MIT program. Dr. Masao Sugiyama, for formatting help and good humor. His Holiness the 14th Dalai Lama and Thich Nhat Hahn, teachers and inspirations. The Peace Pilgrim, for her love and simplicity. The Little Princess and India. John, Paul, George, and Ringo, for the original spark. My mother – I look forward to more qigong. My father, for introducing Little Buddha. And Dave and Joanna – for the printer, the brownies, the wine and the good times.

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CHAPTER ONE: INTRODUCTION

Introduction

This chapter introduces mindful awareness practices (MAP's) and their development in the United States throughout the 20th century. Growing numbers of Americans adopt MAP's into their lives, receiving mental clarity, enhanced focus, and a greater sense of well-being. As MAP's move into the 21st century, adults now teach MAP's to children, increasingly in educational settings. This chapter examines the applicability and appropriateness of teaching MAP's to children in a school environment and provides an overview of current neurological findings supporting MAP's.

Rationale

The practice of mindfulness goes back centuries, appearing in various forms as prayer, meditation, or body movement in many world religions traditions. At the root of these practices lies a centering of the attention on a specific focus or feeling, whether that be a concept, a koan, a prayer, a mantra, or simply following the rhythms of the human breath. All represent the core of mindful awareness practice. Many of the mindful awareness practices (MAP's) we recognize in the United States; yoga, meditation, tai chi, etc.; developed in the Hindu and Buddhist religious traditions over the past 2,000 years. These practices gained popularity in the United States during the latter half of the 20th century (Naranjo and Ornstein, 1971). As well, many MAP's experienced removal of former religious underpinnings during their transformation in American society. Rather than diminish the value of these practices, secularization increased

accessibility to the benefits of MAP's (Olendzki, 2005; Orr, 2002; Thorton and McEntree, 1995).

PREFACE

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elevate human potential, and provide relief from suffering – represent universal goals of human existence. Therefore, individuals from various spiritual backgrounds may embrace the benefits of practice while remaining faithful to their spiritual orientation (Olendzki, 2005; Siegel, 2007).

As MAP's grow in popularity within the adult population, we begin to see the introduction of MAP's to children as school curriculum. Educators and practitioners across the country realize the potentially life-changing benefits of MAP's, and are integrating these practices into educational settings (Brown, 2007; Conis, 2005; Gravois, 2005; Hall, 1999; InnerKids.org, 2007; Linden, 1973). Educators and education advocates realize that many of the outlooks and skills developed in MAP's; mindfulness, investigation, energy, joy, tranquility, concentration, and curiosity; represent many of the skills and outlooks effective schools strive to foster (Olendzki, 2005; Tart, 1986). As well, students instructed in MAP's perform at a higher level, with less academic stress and fewer behavior problems than their uninstructed peers (Bootzin and Stevens, 2005; Flinton, 1997; Hall, 1999; Manjunath and Telles, 2003). Use of MAP's in the classroom appears to benefit students' relations with their classmates in a diverse and rapidly changing country, helping students acquire a more multicultural mindset and examine and dissolve prejudice (Lillis and Hayes, 2007; Orr, 2002; Thorton and McEntee, 1995).

Mindfulness brings the practitioner into the present moment. Developmentally, the thought processes of children and adolescents are most intently focused on immediate events. As such mindfulness practices bring them

into closer alignment with their minds and thought processes (Goodman, 2005). Along this line, MAP's have shown positive results in mitigating modern attentional and anxiety disorders such as ADHD and ADD, as well as quelling student aggression and disruptive behavior (Flinton, 1997; InnerKids.org, 2003; Jensen, 2004; Koszycki et al. 2007; Kratter, 1983; Moretti-Altuna, 1987; Peck et al., 2005; Singh et al., 2007). For example, Ballentine, Rama, and Ajaya (1976) and Linden (1973) examined basic breath awareness techniques in elementary students. Both found that this simple mindful awareness technique led to student mastery over disruptive emotional states, reducing likelihood of impulsive behavior through the ability to experience feelings in a non-judgmental way.

Further supporting MAP's in the classroom, studies indicate that physiological and psychological benefits of mindfulness show long term benefit, enhanced by regular practice (Lane, Seskevich, and Pieper, 2007). The classroom provides an ideal place for consistent practice, integrating MAP's into the student's daily routine.

The intersection of mindfulness and modern technology, such as the fMRI, EEG, and PET scans, show significant differences in brain activity of expert, novice, and non-meditators (Austin, 1998; Siegel, 2007). Activity notably increases in the prefrontal cortex, which mediates our mental life, controls executive attention, works in self regulation, and encourages pro-social behavior (Greenberg, submitted; Post and Weiss, 1997; Siegel, 2007). Slowed, attentive breathing from the diaphragm slows the firing of neurons in the brainstem, the area of the brain that regulates basic functions such as respiration and heart rate

(Miller, Ezure, and Suzuki, 1985). Additionally, diaphragmic breath with extended exhalations slows firing of neurons in the amygdala, the brain's 'smoke alarm' for potential threats (Zhang, Harper, and Frysinger, 1986). The amygdala, sensing a threat, may initiate neurotransmitter activity leading to reactive or aggressive states (Siegel, 2007; Zull, 2002). Reduced activity in the amygdala may produce the relaxed state and lowered heart rate associated with MAP's.

A sense of security and absence of threat creates an optimum environment for learning. Important to children, mindfulness increases the practitioner's feelings of control. Zull (2002) asserted that developing the student's sense of control represents one of the most vital components of effective education. Mindfulness fosters feelings of control through its calming of the amygdala. Mindfulness enhances practitioners' sense of self control, by allowing them to see that thoughts, reactions, and mental events constitute passing functions of the brain, not their actual self as a person (Hjelle, 1974; Flinton, 1998; Murphy, 1988). MAP's foster emotional and bodily control, which increases receptivity and lessens the likelihood of anxiety or acting out (Flinton, 1998; Rubin, 1996; Siegel, 2007; Singh et al. 2007). In a school setting, inclusion of MAP's into the classroom routine lessens the likelihood of student disruptive behavior and helps create a supportive learning environment for all students.

Definition of Terms

This paper uses Kabat-Zinn's (2003) encompassing definition of mindfulness, "the awareness that emerges through paying attention on purpose, in the present moment, and non-judgmentally to the unfolding of experience

moment to moment. (p.145). This paper uses Smalley's (2007) definition of a Mindful Awareness Practice, being an activity that promotes mind-body awareness and fosters mindfulness in everyday life. Brown and Ryan's (2003) definition of attention, "focusing conscious awareness, providing heightened sensitivity to a limited range of experience," provides an application of attention appropriate to mindfulness.

The Rehabilitation Research and Training Center on Positive Behavior Support's (2003) definition of disruptive behavior, used in this paper, reads as follows: "Behaviors that do not result in injury or serious property destruction. Examples of minor disruptive behaviors include talking out of turn, not paying attention, or refusing to work on in-class assignments."

Statement of Purpose

This paper aims to examine what affects mindful awareness practices, used on a regular basis on a range of individuals in classroom settings, have on disruptive student behavior. This paper examines the neurological basis for mindfulness affecting behavior; provides a qualitative evidence of the positive affects of mindful awareness practices on student behavior; and illuminates the reasons why mindful awareness practices are applicable, appropriate, and perhaps even necessary in the classroom.

Limitations

This review will not discuss the efficacy of one variety of Mindful Awareness Practice over another; rather it will analyze the effects of the combined range of MAP's. While many studies examine only one variety of MAP,

benefits of MAP's as a whole are generalizable (Siegel, 2007). At this time, no possibility exists for integration of neurological data from mindful children as studies of the neurological effects of MAP's on the developing brain are in their infancy. However, this paper agrees with Bishop (2007), that absence of evidence does not equal absence of efficacy. This paper takes the position with many adult mindfulness studies; that the physiological and psychological effects of mindfulness exhibited by adults are mirrored in children (Siegel, 2007). Additionally, few studies on MAP's on K-12 students exist, though many are in the proposal or research stages. As the widespread popularity of MAP's is still developing, this paper posits that future researchers will further explore use of MAP's in the classroom setting. At this time, most published studies are in support of the use MAP's in the classroom. This may present a body of research biased toward MAP's.

CHAPTER TWO: HISTORICAL BACKGROUND

Introduction

This chapter examines the history of Mindful Awareness Practices (MAP's) and their uses. Section one reviews the background of MAP's in the United States and the present variety of MAP's. In section two, this chapter examines past medical evidence on the physiological benefits of MAP's. Finally, section three examines progressive American education that preceded MAP's, and past uses and experiments with MAP's in classroom settings or with school aged children.

History and Variety of MAP's in the United States

Mindful awareness practices, as recognized in modern American culture, entered the country during the late 19th century. In 1893, Chicago hosted the World Parliament on Religion, which gave most visitors their first exposure to the religious traditions of Asia. The exposition created an interest in both exploring Hindu and Buddhist practices and further examination of America's Christian tradition. Later, in the 20th century, MAP's experienced a resurgence in popularity, facilitated by the writings and popularity of the Beat literary movement, writings and speeches of Catholic monk and philosopher Thomas Merton, promotion of Eastern philosophies at the Esalen Institute, and the explorations of Eastern philosophies by musicians (notably The Beatles) and celebrities (Elwood, 1994; Layman, 1976; Worthington, 1992). As well, youth culture of the 1960's embraced the alternative spiritual pathways and values offered by Buddhist and Hindu philosophies (Layman, 1976). Prior to their 60's resurgence,

mindful awareness practices such as Zen Buddhism, qigong, and tai chi existed in the Chinese and Japanese American communities for years; however MAP's did not reach the larger American consciousness via these communities (Layman, 1976). Most Americans attracted to Buddhism, meditation, and other MAP's tended to be middle to upper class European Americans. Today, while MAP's continue to increase in popularity and diversity of adherents, this population continues to comprise the core of practitioners (Prebish, 1998).

The Maharishi Mahesh Yogi, teacher, author, and founder of Transcendental Meditation (TM), brought his teachings from India to Hawaii, then California in 1959 (Blume, 1995). In 1967, The Beatles made a pilgrimage to his ashram in Rishikesh, India. This endorsement rocketed the Maharishi to celebrity status, and brought much exposure and some accompanying notoriety to the Transcendental Meditation practice (Worthington, 1982). By 1975, an estimated 900,000 Americans practiced TM to experience increased productivity, well being, and relief from stress (Michaels, Huber, and McCann, 1976). Tibetan Buddhism and Japanese Zen Buddhism re-entered the American consciousness during this period as well, formally introduced to the United States by Chogyam Trungpa Rinpoche in 1968 and through the Zen writings of D.T. Suzuki (www.shambhala.com/html/learn/features/ctr/bio/index.cfm; Austin, 1998). Suzuki gave a series of lectures at Columbia University during the 1950's which drew a crowd of urban intelligentsia and students. This group remains the core of American Buddhist practitioners (Layman, 1976; Prebish, 1998).

Yoga practice entered Western awareness via the British colonial

enterprise in India, where the yogic practice and its accompanying philosophy gained much respect from the occupying military and civilian population (Worthington, 1982). Yoga came to the United States via Chicago's 1893 World Parliament on Religions, and experienced a cult following, notably in Boston and San Francisco (Chireau, 2004). Never reaching the mainstream, yoga remained an occultist interest until the 1960's and 70's (Feurerstein, 2006). Major figures in the resurgent yoga movement were Swami Sivananda, Yogi Bhajan, and Maharishi Mahesh Yogi (Feurerstein, 2006). Yoga gained in popularity during the 1980's and currently enjoys many adherents in cities across the United States. The practice appears to be a permanent fixture in the American lifestyle. As more individuals embraced yoga and Eastern meditative traditions, a greater variety of meditative and body awareness styles such as Falun Gong/Falun Dafa, qigong, and tai chi entered popular American culture throughout the 1980's and 1990's.

Medical Evidence

While individual practitioners extolled the benefits of mindful awareness practices, academics remained skeptical on the physiological validity of the increased awareness, increased self-control, and altered mental state caused by MAP's. At the time, meditation practices were categorized as an emotion-focused coping strategy, defined as a practice designed to mitigate emotional stress. This categorization opposed individual claims of increased mental clarity, focus and insight from MAP's (Lazarus and Folkman, 1984). Lacking quantifiable data to support personal claims, many researchers doubted the efficacy of MAP's beyond a stress-relieving emotional coping strategy (Michaels et al. 1976).

Studies during the 60's, 70's, and 80's relied on skin conductance of electricity, heart rate, and EEG's to monitor the effects of meditation and other MAP's (Michaels et al. 1976; Goleman and Schwartz, 1976). Attributed to technological deficiencies, research prior to the 1980's lacked the capacity to monitor the altered brain activity taking place during meditation.

However, many psychologists, psychotherapists, and physicians found the practice of mindfulness to compliment the more conventional therapies used in their practice. In 1979, John Kabat-Zinn of the University of Massachusetts developed his Mindfulness Based Stress Reduction (MBSR) program, an eight week course of study which combines Hatha yoga and meditation techniques to relieve stress, anxiety, and chronic pain issues (Kabat-Zinn, 2003). Adoption of this program reached a global level in the past 20 years, and MBSR's ongoing integration into the medical, psychotherapy and educational fields provides benefits of mindfulness to varied individuals (<http://www.umassmed.edu/content.aspx?id=41252>).

Educational Evidence

Past American educational figures such as John Dewey and Horace Mann supported instruction methods that fostered moral fiber and compassion toward others, two traits encouraged and developed by MAP's (Spring, 2001). Horace Mann, a prominent figure in the common school movement of the 19th century, helped create the current intellectual framework on the role of education in American life (Spring, 2001). Mann believed that education represented the key mechanism of social control. He claimed students educated to be moral, calm,

and compassionate individuals posed less threat to lawful society and consumed fewer civic resources (Mann, 1907). While Mann subscribed to an educational system that taught conformity to the needs of existing socio-political and economic organizations, he supported a non-sectarian moral instruction to create a common morality among students and society. Currently, use of MAP's in the classroom strives to create common values of respect, tolerance, and self-understanding in students, values which Mann confirmed in his day.

John Dewey; active in the early and mid 20th century; advocated pragmatic educational experiences, meaning subscription to ideas, values, and institutions that best work in given social situations. Dewey argued that educational experiences should build on the student's social imagination, creating an atmosphere of community in the classroom. As well, Dewey asserted that development of the student's capability for social imagination; or meaning making of facts to their reality-based context; served to demonstrate the interdependence of society and the students' intrinsic link to all around them. Through pragmatic instruction that fostered social imagination, Dewey intended to develop qualities of community and compassion in students (Dewey, 1897; 1959).

Educational experiments on mindful awareness practices indicate the applicability of MAP's in the classroom. Kratter (1983) and Moretti-Altuna (1987) studied the effects of meditation on children with ADHD, and both determined that meditation was an effective behavioral intervention in the treatment of ADHD symptoms. In Kratter (1983), ADHD diagnosed children who completed a TM

program showed a marked decrease in impulsivity and a significant increase in their ability to focus their attention, as well as subject reports of increased feelings of self control and mental clarity. Moretti-Altuna (1987) found that ADHD diagnosed boys who underwent a four-week training in TM showed a significant decrease in disruptive classroom behavior. Linden (1973) tested the impact of breath awareness techniques in an inner-city school, and found that the meditation proved acceptable to the students as part of their class routine. Results of the Linden study indicated that instruction in basic meditation practices showed a reduction in student test anxiety, and helped with acting out in general.

Related to the themes of self control, acting out, and impulsivity, Flinton (1997) studied the effects of an eight week mindfulness meditation program on incarcerated youth. He found that post-program, youth experienced reduction in anxiety and an increased internal locus of control, meaning seeing ones' own agency and control over life situations. Some researchers contest that the concept of locus of control presents racial bias (Castenell, 1984), as many minority populations feel, rightly so, that they have limited agency in an oppressive society. While acknowledging this position, the concept of locus of control, viewed in relation to MAP's relates to the feelings of self-control, well being, and inner peace that MAP's foster. As such, Flinton's study remains a valid example for this paper, as it shows the acceptability and efficacy of MAP's in a unique group. Additionally Flinton's study, along with Linden (1973), shows the applicability of MAP's to a diverse population.

Relating to diversity and MAP's, Thorton and McEntee (1995) advocated

incorporating daily mindful reflection into the classroom as a means of supporting and developing learner-centered, multicultural schools, as well as imparting a multicultural mindset to students. They argued that mindfully attending to information, with student awareness that previously held thoughts filter what information is perceived, can result in a shift to a more open mindset.

Teaching mindfulness, therefore, may help students examine their preconceived notions of others, and their assumptions of how the world works, facilitating for the multiple realities of multiculturalism. Second to their argument, mindful reflection creates space for a learner-centered environment. Teaching mindful reflection recognizes cognitive differences among students, and allows them space and time to explore their minds and discover areas for growth and contemplation – a learner centered process, to be sure.

The evolution of MAP's toward integration into educational settings provides support for the thesis of this paper that MAP's used in the classroom will positively affect student disruptive behavior.

Summary

This chapter examined the progression of MAP's from their introduction into American culture in the late 19th century. Since that time, tremendous growth took place. Many varieties of MAP's found a place in the American physical and spiritual lifestyle. Past medical research hinted at future scientific confirmation of individual testimonies. Past progressive American educational figures John Dewey and Horace Mann advocated instruction toward many of the qualities that MAP's develop. MAP's, when used in the classroom, provided significant benefits

to children's academic performance, self-reported well being, and mitigation of symptoms of modern attention difficulties. MAP's found acceptance in diverse school environments, and were practiced by a spectrum of American students of all ages. This chapter indicated applicability of teaching MAP's to students, based on their research-based positive outcomes on both adults and children in the classroom.

CHAPTER THREE: CRITICAL REVIEW OF THE LITERATURE

Introduction

Chapter one examined the secularization of mindful awareness practices to allow for personal religious beliefs to coexist with the benefits of mindfulness. It also provided a definition of terms and a rationale explaining the applicability of MAP's in the classroom based on consistency of practice and acquisition of pro-social and compassion building skills in school. The chapter advocated an examination of the effects of MAP's on student behavior.

Section one of chapter two provided a history of the expansion of MAP's into Western consciousness and American culture. Section two addressed medical evidence supporting MAP's for therapeutic and preventative purposes. Section three highlighted past progressive American educational trends and figures that were precursors to MAP's and examined the history and late 20th century applications of MAP's in the classroom.

Chapter three reviews current research on mindful awareness practices. The chapter will analyze research on MAP's from three areas— medical and mood based studies, attention and behavioral studies, and studies on the use of MAP's in a K-12 classroom. The research is reviewed to examine how MAP's can benefit students both as participants in the academic system and throughout their lives.

Medical and Mood Based Studies

The following paragraph contains an overview of the studies examined in this section. Chang, Palesh, Caldwell, Glasgow, Abramson, and Luskin, et al.

(2004) conducted an all-encompassing study on the effects of one common form of MAP, Mindfulness-Based Stress Reduction (MBSR) on an adult population. Broderick and Korteland (2004) examined the relationship between rumination, incidence of depression (dysphoric mood), and gender identification in adolescents. Rumination sustains and perpetuates depressive thought patterns and feelings. As suicide is the second leading cause of death for adolescents, examination of depression and suicide prevention are vital for modern educators. In a young adult population, Broderick (2005) examined mindful awareness as a means to break habituated ruminations brought on by dysphoric moods. Thompson and Waltz (2007) explored the relationship between everyday mindfulness and mindfulness meditation and the immediate effect of mindfulness practice on mood. Derezotes (2000) evaluated yoga and meditation training as a therapy for adolescent sex offenders. Sibinga, Stewart, Magyari, Welsh, Hutton, and Ellen, (2008) examined a popular form of MAP, Mindfulness-Based Stress Reduction (MBSR), on HIV-positive youth. Barnes, Treiber, and Davis (2001) investigated the impact of a Transcendental Meditation program on cardiovascular functioning in pre-hypertensive youth. Continuing on this theme, Barnes, Davis, Murzynowski, and Treiber (2004) examine the effects of Transcendental Meditation used as a coping mechanism by adolescents with hypertension. Similar to the previous two studies, the Barnes studies illustrated the applicability of MAP's to a diverse population. The final two studies examined the role of mindfulness in combating substance abuse, another relevant topic for professionals working with adolescents. Bowen, Witkiewitz, Dilworth, and Marlatt

(2007) studied the interaction between mindfulness and relapse in alcohol addiction. Bootzin and Stevens (2005) examined the effects of meditation on insomnia and sleep quality adolescents.

Chang et al. (2004) examined the effects of MBSR therapy on forty-three college students in San Francisco. Their hypothesis postulated that MBSR therapy would increase subject feelings of mindful self-efficacy (non-judgmental awareness), reduce feelings of pain, and increase positive state of mind. Of 43 subjects, 28 finished the study. Participants mean age was 46.52 years, 93% self-identified as Caucasian, and over half of the finishing participants were female. Participants followed Kabat-Zinn's MBSR treatment program, consisting of eight weekly 2.5 hour group sessions and a full day retreat. Sessions were split into 45 minutes of meditation, 45 minutes of mindfulness exercise and yoga, and one hour of discussion. Subjects completed testing pre-and post intervention on the following topics: Pain rating, Positive States of Mind, Perceived Stress, and Mindfulness self-efficacy. All testing methods showed acceptable internal and external validity. Significant changes include a marked reduction in Perceived Stress scores ($t=7.29$) $p<0.05$, an increase in mindfulness self-efficacy ($t=14.32$) $p<0.01$, and increased positive states of mind ($t=17.98$), $p<0.01$. Results were not significant for pain rating. The authors concluded that the study needed to be compared to a control group for greater generalizability. As well, the subject pool experienced bias, as most subjects were older, college educated Caucasians who self-selected to participate in the study. Significant attrition occurred, with 15 participants dropping out, which posed a threat to study

validity. Additionally, the researchers questioned whether the statistically significant results on perceived stress, mindfulness self-efficacy, and positive states of mind were attributable to a supportive group environment rather than the effects of the MBSR program.

Broderick and Korteland (2004), in a quantitative correlational study, examined the relationship between rumination, incidence of depression, and gender role identification in urban adolescents over three years. Subjects were urban students at a charter school in the Northeastern United States. Participants on average aged 10.1 years at the initial assessment and the majority identified as Caucasian (98%). An estimated 15-20% received treatment for a learning disability. Researchers framed the study as an examination of student coping skills in problem situations. The study hypothesized that females experience greater levels of depression, and that levels of rumination served as best predictor of depression over the three years. As well as suffering from depression at a greater rate than males, females display more ruminative cognitive patterns. A ruminative thought pattern serves as a feedback loop which exacerbates depression. Students completed the following tests over a three year time period: the twenty question Nolen-Hoeksema Response Style Questionnaire, which measured ruminative vs. distraction coping styles to stress; twenty four question Children's Sex Role Test which used adjective identification to measure strength of gender role affiliation; and the Children's Depressive Inventory (CDI) which measures cognitive, behavioral, and affective signs of depression. Examination of the three assessments indicated that students who strongly identified with

socially normative gender roles (male = 10.47, SD 7.63; female = 11.00, SD 6.04, $p < 0.007$) scored higher on the CDI than students who identified as more gender neutral (4.80, SD 3.68, $p < 0.007$). As well, gender-neutral students used distraction techniques (32.10, SD 4.06, $p < 0.05$) more often than rumination (17.35, SD 4.30, $p < 0.05$) to alleviate depression to a greater degree than either strongly male or female identified students. Higher rumination scores correlated with higher CDI scores in test three, which indicated that rumination predicted increased symptoms of depression. Contradicting the hypothesis, no correlation existed between females as a gender and depressive symptoms; only female gender identification provided a link. Researchers suggested mindfulness techniques as an appropriate intervention in helping adolescents navigate socially condoned gender roles. Increased attachment to an idealized gender role increases incidence of depression, as such a more thoughtful and realistic examination of constructed roles may help alleviate depression.

In a qualitative correlational study, Broderick (2005) examined the effects of mindfulness meditation on dysphoric mood. Mindfulness was compared to the alternative coping strategies of distraction techniques and rumination on negative feelings. After patients experienced inducement of a negative mood, Broderick hypothesized that mindfulness meditation would provide greater reduction in negative outlook than either distraction or rumination on negative feelings. One hundred-seventy-seven undergraduates participated in the study, 139 females and 38 males. An initial screen disqualified participants with prior meditation experience. Patients who did not show enough change in negative mood from

initial testing to second testing were eliminated from the study.

Patients completed the mood measuring test PANAS (Positive and Negative Affect Schedule) before the mood induction, (PANAS 1), directly following the mood induction (PANAS 2), and following the experimental task (PANAS 3). Participants either engaged in mindfulness meditation, rumination on sad/negative thoughts, or a distraction task on an unrelated subject. Changes between PANAS tests for the three groups revealed that subjects in the mindfulness meditation group reported significantly higher PANAS 3 positive mood scores than either distraction or rumination groups. Participants in distraction group reported less negative mood scores (15.39) than the rumination group (18.98), who reported the highest negative mood scores ($p < .032$). The meditation group reported lower scores (14.04), as well ($p < .001$). Mediators also reported more neutral thoughts than either distraction or rumination groups. The study indicated that mindfulness meditation alleviated dysphoric mood greater than either distractions or ruminative thoughts. Critiques of the study revolve around the mood inducement techniques, which may have biased participant outcomes – rumination and distraction participants were alone and read from cards, while meditation participants listened to a voice recording. The human voice versus silence may have produced elevated positive feelings in meditation participants. However, the results of this experiment appear generalizable, as many psychological studies use college student subjects. The study served to educate professionals on coping skills against dysphoric mood and potential onset of clinical depression, and on positive coping methods that may be taught

in schools.

Thompson and Waltz (2007) examined, in a correlational study, the relationships between everyday mindfulness (trait mindfulness), mindfulness during meditation (state mindfulness), and personality characteristics. This quantitative, one time investigative study also examined the immediate impact of mindfulness meditation on mood. The researchers expected to find a positive correlation between measures of trait and state mindfulness. They also expected to find a negative correlation between neuroticism and mindfulness. They anticipated findings that indicated an initially frustrated mood in novice meditators. Participants (n=167) were novice meditators, with little to no experience with mindfulness meditation. Modal age of the participants was 19 years, and all were students in a university psychology course. Pre- and post-meditation, participants completed the Mindful Attention Awareness Scale (MAAS), which measured everyday (trait) mindfulness and focused on attention. The Cognitive and Affective Mindfulness Scale-Revised (CAMS-R) measured everyday (trait) mindfulness and focused on thoughts and feelings. The Toronto Mindfulness Scale (TMS) measured state mindfulness, the degree to which participants were mindful during their sitting meditation. The International Personality Item Pool (IPIP) measured for self-identification with five personality traits, neuroticism, openness to experience, extraversion, agreeableness, and conscientiousness. The Positive and Negative Affect Scale (PANAS) measured positive affect and negative affect, and was designed to be sensitive enough to detect changes in mood. All exams were scored on a Likert scale.

Participants split into groups of 15. Participants completed the tests, then meditated, focusing on the breath only, for 15 minutes. Participants then re-took the tests. Upon analysis, no significant relationship existed between the MAAS and TMS, or the CAMS-R and the TMS. This meant that there was no connection between the participant's mindfulness during meditation and their everyday levels of mindfulness, contrary to the researchers expectations. IPIP results, as expected, indicated a positive relationship between everyday mindfulness and agreeableness (0.29,0.43, $p<0.01$) and everyday mindfulness and conscientiousness (0.28, 0.27, $p<0.01$). As anticipated, a negative relationship existed between everyday mindfulness and neuroticism (-0.41,-0.58, $p<0.01$). PANAS results of mood pre- and post-meditation indicated that statistically significant changes in both positive (25.75, SD=7.69 to 22.25, SD=8.28, $p=0.000$) and negative affect (15.52, SD=5.68 to 14.17, SD=5.01, $p=0.000$). This indicated that post-meditation, participants entered a more neutral mood.

The lack of relationship between everyday mindfulness and mindfulness during sitting meditation may indicate that some individuals are inherently more mindful, regardless of their mindfulness practice. However, the dependability of these results is questionable based on the brevity of the study. Participants only completed the test and the 15-minute meditation once. For more credible results, participants should have gone through the testing/meditation sequence on multiple occasions, as meditators, under most definitions, are considered novices for several years. However, results of the PANAS test and everyday mindfulness corroborated with the Broderick (2005) study previously discussed, which may

show the external validity of PANAS/everyday mindfulness data.

In a qualitative study, Derezotes (2000) examined yoga and meditation instruction as a therapeutic intervention for adolescent sex offenders. Derezotes hypothesized that instruction in yoga and meditation would provide youth with mental calmness, anger reduction, and increased awareness of emotional state – skills which may reduce the likelihood of recidivism.

In Group 1, nine males participated in yoga, meditation and breath awareness training for three months. After two months (n=8) subjects completed phone interviews on their experience, and after nine months (n=8) subjects completed in-person interviews. Group 2 (n=11) included five participants and followed the same schedule. When interviewed by the researcher or graduate students, subjects answered open-ended questions developed by the researcher on their experience with yoga, breath awareness, and meditation; and how those experiences related to their urges to re-offend. Emergent themes included: an improved ability to relax and reduce feelings of anxiety, increased self awareness and feelings of self-control, increased use of learned preventative strategies to combat urges to re-offend, use of learned techniques during subject's private time, and development of a spiritual self. As well, facility staff reported increased self-esteem in boys who participated in the program, and recommended the program to the general population of adolescent students. Researcher critiques of this study included increasing participant instruction in meditation and yoga, providing a greater variety and challenge of yoga exercises, and increasing parent and community involvement in the program. A critique of the study

considers whether such positive reviews and outcomes may be attributable to the isolation of the participants. Without the distractions and demands of the outside world, participants had ample time to focus on themselves and utilize MAP techniques. This may affect the generalizability of these emergent themes.

Sibinga et al. (2008) applied the MBSR technique in a pilot study testing the feasibility of MSBR as an intervention to improve psychological and physical well being in HIV-positive youth. Patients in an urban hospitals' HIV care clinic participated in the study. Participants (n=11) were African American adolescents between the ages of 13 and 21 and aware of their HIV status. Exclusion criteria included psychological disorders and significant mental impairments. The MBSR program format was identical to the schedule used in Chang et al. (2004). At the end of the program, five subjects, four females and one male, completed the study. After completion of the study, subjects engaged in 30 minute interviews consisting of open ended questions developed by the researchers.

From subject interviews, five emergent themes of improved attitude, decreased reactivity, improved behavior, improved self-care, and importance of group solidarity were reported by the majority of completers. Mean response on importance scale was 9.6 out of 10, indicating that subjects highly valued the program's contribution to their life. Two to four weeks after the study, subjects self-reported that they continued to meditate 1-2 times per week. Subjects self-reported that they would continue to use techniques they learned from the program and would recommend the program to a friend. These results indicated the acceptability and feasibility of MBSR to a young urban population.

Strengths of the study include the transferability of MBSR from an adult to a youth therapy, and the potential for a significant increase in quality of life (based on pilot study results and adult studies) for HIV-Infected youth. These results are concurrent with MBSR studies on HIV-infected adults. Results indicate that MBSR is transferable to other urban populations. Weaknesses of the study include a small study group (n=5), perhaps too small to be generalizable. Significant attrition (six patients left the pilot study) may have biased data. As well, researchers did not use a control group for comparison, which may impact replicability.

Bowen et al. (2007) examined the effects of a 10-day Vipassana (mindfulness) meditation intervention on post-release alcohol use in Seattle jail inmates. Participants (n=173) ranged in age from 19-58. The control group (n=116) received normal alcohol counseling. Meditation participants (n=57) refrained from reading, writing or speech during the course of study. Participants completed the following tests at the beginning, end, and three and six months after release from jail: the White Bear Suppression Inventory (WBSI) on thought suppression and intrusive negative thoughts, the Daily Drinking Questionnaire, and the Short Inventory of Problems which measured alcohol-related negative consequences. Researchers hypothesized that participants in the Vipassana course, post-release, would score lower on intrusive negative thoughts (WBSI) and lower on post-release alcohol use and problems (SIP) as opposed to the control group. Comparing the baseline data to three months post-release, completers of the Vipassana course consumed significantly fewer weekly drinks,

from 64.83, SD=73.01 to 8.38, SD=13.37, compared to the control group 43.98, SD=55.61 to 27.77, SD=46.37, $p < 0.008$. As well, Vipassana completers displayed decreased scores on the WSBI Thought Avoidance subscale over the control group, indicating that completion of the course may have an effect on acceptance of the thought process and increased acceptance of one's mind. Weaknesses include high attrition, though expected. As well, the control group was nearly twice the size of the participant group. No rationale was provided for this decision, so individuals may have been arbitrarily excluded from the meditation treatment. The selection criteria may have created a biased group of meditators versus control, as discrepancies may be present in the group regarding compounding factors such as other substance abuse or mental health issues. No mention was made of random assignments for participants. Strengths include the nature of the group, being random individuals who did not seek out meditation treatment for their alcohol use. As well, the population in American jails differs from the general population of meditators and practitioners of MAP's. This study indicates the acceptability of mindfulness to a diverse population and gives generalizable results.

Bootzin and Stevens (2005) examined whether a sleep disturbance and depression treatment program proved effective in preventing substance abuse relapse in adolescents with a history of substance abuse and mental health problems. In this study, sleep disturbance was defined as difficulty falling asleep, waking during the night, poor sleep quality, and insufficient sleep time. As sleep disturbance poses a vulnerability factor for depression, the study aimed to

examine alleviation of relapse and depressive symptoms based on improvement of sleep quality. Participants were adolescents aged 13-19 (n=55) who were in the process of treatment or were recently discharged from an outpatient drug rehabilitation facility. Patients who complained of sleep disturbance or excessive sleepiness during the day received treatment. Researchers instructed participants in Kabat-Zinn's MBSR therapy as a treatment to induce relaxation prior to sleep and to teach observance of physical and cognitive impediments to sleep. Participants received MBSR training during six weekly 90 minute sessions led by graduate students. Participants kept daily sleep diaries over the nine weeks of the study, completed a substance abuse questionnaire, Epworth Sleepiness Scale, and the Penn State Worry Questionnaire at baseline, post-treatment, and 3-and 12-month follow up examinations. Patients designated as completers (n=17) attended at least four MBSR training sessions. Patients who completed the study showed significant improvement in sleep efficiency (0.84 to 0.92, SD = 0.071, $p < 0.0001$), sleep onset time (36 to 17 minutes, SD = 22.9 minutes, $p < 0.01$), number of awakenings (2.29 to 1.41, SD = 0.78, $p < 0.05$), and diary self-ratings of quality of sleep (2.71 to 3.47, SD=0.66, $p < 0.001$). Effects of improved sleep (reduced usage, cessation of abuse) on relapse of substance abuse were not seen until the 12-month follow up treatment. Critique includes the high rate of non-completion, and reasons for this may be attributable to method of instruction in MBSR. The population of substance abusing adolescents often display co-morbidity with other behavioral or attentional disorders, as such may have not responded to method of instruction used in this study. However, the

study does indicate the applicability of MBSR as an intervention for sleep disturbance and drug abuse.

Barnes, Treiber, and Davis (2001) examined the impact of a TM intervention on cardiovascular functioning during rest and at times of stress in pre-hypertensive youth. Predominantly African American adolescents ($n=35$) with resting systolic blood pressure (SBP) between the 85th and 95th percentile for their age and gender received random assignments to either a TM ($n=17$) or health education control group ($n=18$). The TM group engaged in 15 minute guided meditation classes twice daily for 2 months, and 15 minute home practice on the weekends. The control group attended seven weekly one-hour health classes. Subjects were paid \$150 for their participation. Pre- and post-intervention, subject blood pressure data was taken at rest and in two stressful situations, a driving simulation and an interview. The groups did not differ significantly in pre-intervention SBP.

Post-intervention results were minimally significant, with $p<.05$. In the TM group, resting SBP dropped from 124.7, SD 9.1 to 119.9, SD 9.1, roughly -5mm Hg. The control group resting SBP increased from 118.8, SD 8.2 to 121.4, SD 11.2, roughly 3mm Hg. In response to the driving simulation, the TM group's SBP dropped from 139.5, SD 8.3, to 130.2, SD 10.9, roughly -9mm Hg. The control group's SBP increased from 127.2, SD 13.2 to 131.2, SD 13.9, roughly 3mm Hg. In response to the interview, the TM group's SBP dropped from 140.0, SD 10.2 to 133.1, SD 10.9, roughly -7mm Hg. The control group's SBP showed little change, dropping from 133.8, SD 7.2, to 133.1, SD 12.2, -0.7mm Hg.

Overall, the TM group showed significant reductions in blood pressure, displaying a decrease in SBP at all measures. To achieve greater significance levels, could have been used. Additionally, hypertension is caused by multiple physiological and psychological factors. While TM may address some causes of hypertension, others, such as diet and body weight, are not remedied from the TM program. To achieve more credible results, a combination of health education, physical activity, and TM education may provide greater benefit to the participants. However, this study showed the positive impact of a TM intervention in reducing blood pressure in adolescents, and achieved similar results to adult studies.

Related to the previous study, Barnes et al. (2004) evaluated the impact of a simple breathing meditation program on resting and ambulatory blood pressure and heart rate in youth. Data from (n=73) middle school students randomly assigned by classroom to either meditation (N=34) or health education control (N=39) groups were analyzed. The meditation groups engaged in 10-minute sessions at school and at home after school each day for 3 months. Resting (seated) systolic blood pressure, diastolic blood pressure, and heart rate measurements were obtained pretest and post-test on three consecutive school days using Dinamap 1846SX monitors. Ambulatory systolic blood pressure, ambulatory diastolic blood pressure, and ambulatory heart rater were recorded over 24-hour periods at pretest and posttest every 20 minutes during self-reported normal waking hours and every 30 minutes during self-reported sleep hours using Spacelabs 90207 monitors. Significant ($p < .05$) differences in

average change from pretest to posttest were found between the meditation and health education control groups for resting systolic blood pressure (-2.7 vs. 1.1 mm Hg), daytime ambulatory systolic blood pressure after school (-2.0 vs. 3.6 mm bpm). These findings demonstrate the potential beneficial impact of meditation on blood pressure and heart rate in the natural environment of healthy normotensive youth. Critique included future need of longer-term studies to determine the lasting impact of meditation instruction and retention of learned stress-reduction skills.

The analyses of research in the effect of MAP's on medical and mood issues indicate the use of MAP's for therapeutic physical and psychological purposes. Chang et al. (2004) demonstrated the applicability of MBSR instruction on state of mind, self-efficacy, and stress. Broderick and Korteland (2004) and Broderick (2005) both indicated mindfulness as an intervention in interrupting the cycle of ruminative thoughts and depressed states in adolescents. Contrary to expected results, Thompson and Waltz's (2007) did not find a relationship with everyday mindfulness and diligent mindfulness during meditation. This countered the position that individuals will develop mindful behavior as a result of practicing MAP's. Derezotes (2000) indicated that MAP's can benefit recidivism and urges to offend in a diverse and unique population of adolescent sex offenders, which often present co-morbid disorders. Sibinga et al.'s (2008) pilot study demonstrated applicability of MBSR to HIV-positive youth, a population characteristically exposed to high environmental stressors and vulnerable to substance abuse issues and other maladaptive stress-coping mechanisms.

Barnes et al. (2001) demonstrated that a TM intervention showed some significance in lowering blood pressure in pre-hypertensive youth. Barnes et al. (2004) indicated that a TM course reduced impacts blood pressure in normotensive African American youth. Bowen et al. (2007) examined the effects of a Vipassana meditation course on alcohol use and found significant reduction in drinking and increased though acceptance in course completers. Bootzin and Stevens (2005) found that instruction and practice in MBSR resulted in greater sleep quality, duration, earlier onset of sleep, and improved self-reports of sleep in adolescents with substance abuse problems; as well adolescents engaged in fewer instances of substance abuse in a 12 month follow-up test. These studies demonstrate the therapeutic effectiveness of MAP's in dealing with mood and medical disorders relevant to modern adolescents.

Attention and Behavioral Studies

The previous section of this chapter analyzed studies that supported the use of MAP's to support greater functionality in adolescents with medical and mood disorders. This section of the chapter examines the impact of MAP's on adolescent attention and behavior. Directly relating to the use of MAP's in the classroom, Beauchamps, Hutchins, and Patterson's (2008) pilot study examined the use of mindfulness meditation to promote social skills and decrease anxiety in learning disabled adolescents. In a single subject case study, Singh, Wahler, Adkins, and Myers (2003), evaluate a simple mindfulness meditation technique as a strategy to reduce aggression in a mentally retarded adult. Following this study, Singh, Lancioni, Joy, Winton, Sabaawi, Wahler, and Singh, (2007) applied

the same method in an intervention to decrease aggression in a group of adolescents with conduct disorder. Addressing the concept of inner locus of control and sense of self, Birnbaum (2005) examined mindfulness as an interventional therapy to facilitate development of concept of self and relieve aggression in an adolescent female. Continuing the evaluation of MAP's as a therapeutic device to reduce detrimental behaviors, this paper examines three studies that use MAP's as an intervention for students with Attention Deficit-Hyperactivity Disorder (ADHD). In a correlational study, Lam and Beale (1991) examined the relationship between reading scores and student ability of sustained attention and impulse control. Using the same tests as Lam and Beale (1991), Jensen and Kenny (2004) examine the use of yoga as a complementary treatment to medication in boys with ADHD. As family involvement and support of the student can affect the child's success in school, so to does family support affect children's mental state. Harrison, Manocha, and Rubia (2004) assessed the effect of a yoga intervention on interactions between ADHD children, the family, and the child's school experience. Related to students diagnosed with ADHD, youth suffering from anxiety issues also exhibit a core symptom of attention difficulties. Attentional problems in anxious students negatively impact their school performance and quality of relationships. Semple, Reid, and Miller (2005) conducted an open trial which examined the effectiveness of a mindfulness program as an intervention to reduce symptoms of anxiety in children. In a single subject case study, Semple, Lee, and Miller (2006) illustrated the use of Mindfulness Based Cognitive Therapy (MBCT) in an adolescent boy.

This paper will analyze these studies regarding their applicability and appropriateness in the use of MAP's for modern adolescents with attentional and behavioral disorders. These studies are relevant to the K-12 classroom because an increasing number of American students are afflicted with ADD/ADHD and other learning disabilities and behavioral disorders. As such, best practice dictates that new methods be developed and implemented to address the educational needs of these students.

In a no control design by Beauchemin et al. (2008), researchers examined whether a mindfulness meditation intervention resulted in reduction of anxiety, improved academic performance and promoted social functioning in learning disabled (LD) adolescents.

Students (n=32) participated voluntarily for no credit or advantage. Students who elected not to participate were provided silent reading or library time.

Administration, parents, and students consented to the intervention. Researchers recruited subjects from four high school classes at a private residential school in Vermont. All subjects previously received a primary diagnosis of a LD. Subjects aged 13-18 were 29% female, 71% male, and 53% of subjects had some prior experience with meditation or relaxation training. Based on the Vermont population, subjects and teachers are assumed to be White. Subjects were split into two randomly assigned groups, led by a classroom teacher. Subjects received a 45-minute training by a teacher and the primary author. Subjects inhaled through the nose and exhaled through the mouth until achievement of self-reported calm. Then, subjects were instructed to observe feelings and

thoughts as they occurred to develop awareness. Thoughts, sensations, and emotions were to be observed with non-judgmental attention. Instructors' emphasized a non-judgmental approach to meditation. Post-training, the classroom teacher led meditation sessions. Subjects engaged in meditation for 5-10 minutes at the beginning of each class, daily for 5 weeks.

The study used two versions of the Social Skills Rating System (SSRS), the student form and the teacher form. The student form measured self-observed behaviors that influence student social functioning. The teacher form measured three categories – social skills, problem behaviors, and academic performance. The test compared student and teacher ratings against a national norm based on 4,000 students. The SSRS demonstrated acceptable internal validity and external validity.

Students also completed the State-Trait Anxiety Inventory (STAI), a self-report form that measured state and trait anxiety. State anxiety, defined as a transitory emotional state or condition of anxiety, may be activated by trait anxiety, defined as an individual tendency toward an anxious response in situations perceived as threatening. Authors used the adult test as the test norm group included high school age subjects. The STAI demonstrated acceptable internal and external validity and has been widely used for over thirty years. As well, the authors developed an anonymous post-intervention questionnaire. Three questions asked subjects to rate their focus in class, enjoyment of the intervention, and likeliness that subject would continue to independently practice mindfulness meditation.

For all significant test results, $p < 0.05$. From the SSRS-S, student perception of social skills increased from a pre-test score of $M=95.68$, 31 percentile to a post-test score of $M= 100.06$, 43.5 percentile, $t= 3.11$. This showed an increase in student perception of social skills. Additionally, the SSRS-T showed great improvement in teacher perception of student social skills, from a pre-test score $M= 86.65$, 18.65 percentile to a post-test score $M=94.41$, 55.5 percentile, $t = 3.35$. Teacher perception of student problem behavior decreased from a pre-test score of $M= 116.06$, 85.5 percentile, problem behaviors post-test $M=105.74$, 66 percentile, $t = 4.95$. Teachers also reported a perceived increase in student academic performance, from a pre-test score of $M=87.56$, 28.6 percentile to a post-test score of $M=92.68$, 33.6 percentile, $t = 4.84$. The STAI scores showed significant improvement from pre-test score ($M=42.56$) to post-test score ($M=39.68$), $t= 2.88$. State anxiety scores were higher at pre-test ($M=38.21$) than post-test ($M=32.59$), $t=4.88$. The attitudinal questionnaire revealed the following emergent themes: Meditation led to feelings of calmness, relaxation, peacefulness, improved sense of well-being. Sixty-four percent of respondents wanted no change in the training, 20% wanted longer meditation sessions, and 16% wanted shorter meditation sessions.

The study posited that school-based mindfulness classes are a cost-effective treatment plan for LD students. However in this study, students elected to participate. This is an area for critique because students who elected to participate in the study may have been calmer in general, and therefore biased results. For MAP's to truly benefit students, all should participate. A major critique

of this study is the absence of a control group. With a control group, researchers could examine the superiority of mindfulness meditation over other relaxation techniques. Another weakness of the study was that teachers were not blinded to which students participated in the intervention. Bias toward specific students, and teacher opinion on the efficacy of meditation may have inflated teacher evaluations on the SSRS-T. A better method for evaluating true effectiveness would have teachers blinded, and compare results meditators vs. a control on the SSRS-T. Additionally, use of a control group to examine the superiority of mindfulness meditation over other relaxation techniques. Regarding the findings, there were no significant improvements in student perception of problem behaviors, or improvement of academic performance. While teachers observed improvement, student perception of improvement would potentially increase feelings of self worth and result in a subsequent reduction of academic anxiety.

Singh et al. (2003) conducted a single subject case study implementing a simple mindfulness meditation intervention to help an adult with mental retardation control physical and verbal anger outbursts. Researchers collected baseline data on aggression from the previous 12 months. Researchers recorded staff reports of subject anger outbursts over 5 months (baseline period) 12 months (intervention) and again after 12 months (follow-up). As well, subject reported incidents to staff and these self-reported incidents were included. Subject learned to recognize triggers to anger and internal cues indicating an anger outburst. When subject felt anger cues or experienced an arousing situation, researchers instructed subject to direct attention to a neutral body

place, in this case the soles of the feet. This re-direction of attention allows the subject to pause and consider their emotions, allowing them time to make an appropriate choice and avoid a reflexive anger outburst. The researcher instructed the subject in the method during 30 minute sessions held twice daily over five days.

At baseline, staff reported 25.4 incidents of aggression over the previous 12 months, while the subject reported 30.8 incidents of aggression. During the five months following the intervention, staff reported 9.5 incidents of aggression, subject 11.5. In the 12-month follow up review, staff reported 4.5 incidents of aggression, subject reported 6.3. No significance levels were given. This data over time indicates increased self-control in regulating anger impulses.

Additionally, the subject achieved his goal of joining a group home. While the subject's motivation to join the group home may have skewed the results of the mindfulness program, it also served as an impetus positively impacting the effectiveness of the program. Notably, the subject appeared to become more sensitive toward aggression, reporting more instances of aggressive behavior post-study than the staff. This may indicate that through practice of a MAP, the subject became more attuned to their emotions.

Singh et al. (2007) again used their simple 'soles of feet' mindfulness technique on three adolescents with conduct disorder, aiming to use the mindfulness based intervention to help individuals master their aggressive acts and control anger. Conduct disorder; characterized by aggressive behavior, deceptiveness, destructive habits, and open defiance of known rules; often

appears in concert with ADHD and other learning disabilities. In this study, seventh grade students (n=3) participated in the intervention, described to the students as their last resort before expulsion from school for repeated aggressive violations. From school records, researchers collected data on instances of three key behaviors: bullying/aggression, fire starting, and cruelty to animals.

Researchers collected baseline data, data during the 25 weeks of the study, and data from one year post-intervention. Notable reductions in maladaptive behaviors include a 52% reduction in fire starting for subject 1, (0.50 to 0.24) and a decrease in bullying (6.00 to 1.12). Subjects 2 and 3 showed improvements in aggressive behaviors, 5.29 to 1.84 and 2.27 to 0.88 mean infractions, respectively. No significance levels were reported. Post-intervention, all students showed the ability to self-regulate their aggressive behavior to school-acceptable levels. As well, student self-reports to their therapist indicated they accepted the mindfulness techniques and used them increasingly for self-control over the course of the study. They also reported that they experienced other benefits of mindfulness (sense of calm, enhanced focus, improved sleep, greater sense of self-control) and planned to continue using mindfulness to control their Conduct Disorder

Strengths of the study include imparting a sense of self-control in students – competence in mindfully controlling their aggressive behavior potentially increased student's internal locus of control. Weaknesses of this study come from the small sample size (n=3), as well the threat of expulsion from school potentially served as a strong impetus for students to self-regulate aggressive

behavior.

Birnbaum (2005) examined in a qualitative case study the effects of mindfulness-based insight meditation and spirituality therapy on a 20-year-old Israeli woman. In this study, the goal of mindfulness meditation is to assist in identity formation and diffusion of aggression in adolescents. Although the subject chronologically was not an adolescent, her life status (control by parents, college student, financial dependence) characterized her as adolescent. Therapy revolved around developing individuation and sense of concrete identity and presence in the current moment. This method aimed to reduce the patient's negativity and anger by exploring her motivations for these emotions, and to review past life events to non-judgmentally determine their impact on the patient's current state. The patient voluntarily met with the researcher for four 45-minute sessions. Each session began with a goal, and then the patient focused on experiences with her 'true voice' or inner-self while meditating. Sessions directed the patient to reveal the purpose behind her memories and thoughts rather than evaluating their nature. At the concluding session, three major themes emerged. The subject reported fewer feelings of victimization, a component of developing a stronger internal locus of control. The subject began to see her own agency to respond to life events, as opposed to her former passive outlook. As well, the subject reported adoption of a more non-judgmental view of life events and greater attunement with her inner voice.

Strengths of this case study included subject acceptance and enthusiasm for the treatment. While individual variability exists, the subject complied with at-

home meditation requests and reported positively on her growth and insights gained from the program. As such, positive results from mindfulness-based therapy are generalizable.

Weaknesses are the short time spent with the subject and advanced age of the subject. A case study with younger adolescents as subjects may have been more helpful. Additionally, subject chose to participate in the case study, but did reject continuing (for a cost) therapy. The subject responded enthusiastically to the treatment but did not wish or was unable to pay for continuing treatment.

Related to Linden's (1973) seminal study on MAP's as an intervention to enhance academic performance, Lam and Beale (1991) examined the relationship between student ability to sustain attention, reading scores, and teacher perception of student behavior problems. Teachers completed the Conners Teacher Rating Scale (CTRS), which measured teacher perception of attention problems in students. CTRS sub-scales measure student conduct, inattention, tension, and hyperactivity factors. Student participants (n=174) completed the Continuous Performance Test (CPT), a 600 interval rapid response letter/color recognition computer test which measured attention, and a Delay Task, a time trial shape/color recognition computer test which measured impulsiveness. Researchers hypothesized an inverse relationship existed between CPT scores and CTRS scores, showing a negative correlation between ability to sustain attention and teacher perception of student attention difficulties. As well, researchers hypothesized that student scores on New Zealand's

Progressive Achievement Test (PAT) for academic ability and CTRS scores would be positively correlated. Students completed PAT tests at the beginning of the year. This study used students' Reading Comprehension scores and Reading Vocabulary scores from the PAT test. In line with the author's hypothesis, analysis of testing scores show a significant negative correlation (-0.20 , $p < 0.01$) between the CTRS Inattention sub-scale and CPT score. Additionally, higher test scores on the PAT and a higher Delay Task scores showed positive correlation. No significant results came from Delay Test vs. CTRS findings. This study supports the idea that inattention is related to classroom performance through the correlation between PAT test results and the CTRS inattention sub-scale. The authors suggest that further research be conducted on attention training for students in the classroom. As the study examined regular classroom students rather than categorized LD students, these results are generalizable and replicable in other general student populations.

Jensen and Kenny (2004) examined the effects of yoga as a complementary (in addition to stimulant medication) intervention therapy for boys with ADHD, with future potential as a solitary therapy. Boys were assigned randomly to yoga ($n=11$) or group therapy ($n=8$), which served as control. The yoga group attended twenty weekly 1-hour yoga sessions at a hospital and instructors encouraged additional home practice and parental involvement in the child's program. Students kept a diary of their home practice.

Students completed tests during the morning in an un-medicated state. Teachers evaluated students during the school day, parents at any time when

the child was un-medicated. Testing was done pre-and-post intervention.

Teachers and parents evaluated students on the Conners' Teacher/Parent Rating Scale-Revised (CT/PRS-R). Yoga and control students took the Test of Variables of Attention (TOVA), used to identify students with ADHD measuring attention to stimuli. Parent completion of CPRS-R showed significant effects of yoga in the following five sub-scales: Oppositional ($p=0.003$, Cohen's $d=.77$), Emotional Lability ($p=0.001$, Cohen's $d=.79$), Total Score ($p=0.008$, $d=.73$), Restless/Impulsivity ($p=0.008$, Cohen's $d=.73$), and ADHD Index ($p=.019$, Cohen's $d=.29$).

No significant differences were reported on the TOVA scale between yoga and control.

There were no significant differences in CTRS-Teacher scores for the yoga or control group. This may be attributed to the fact that teachers only observed students during their medicated school hours.

Significant differences appeared within the yoga group based on number of sessions attended. Boys who attended more sessions showed greater reduction of ADHD symptoms on Hyperactivity and Restlessness/Impulsivity CPRS-R sub-scales. This reflects previous studies that indicate that longevity of yoga practice directly impacts observable benefits.

This study demonstrated applicability of yoga as a complimentary therapy when children are not under the effects medicated. As well, results encouraged further exploration of yoga as a solitary therapy for ADHD students. Strengths of yoga based on CPRS-R scores (notably emotional lability) show that parents find

their children more cooperative and easier to manage. Strength of the parent-child relationship may be positively influenced through amelioration of ADHD symptoms through yoga therapy. As previously indicated by Derezotes (2000), strength of the parent child relationship impacts academic performance and functionality. Weaknesses of this study include the male only subject pool, small (n=11) population, and need for improved access to therapy. Additionally, the control group only met once monthly for one hour, as opposed to the weekly yoga trainings. Unequal access to therapy may have skewed resulting student data. Conducting sessions after school hours and off campus excluded students and may have altered results. As well, despite randomization, differences were present between control and yoga on the CTRS sub-scales. Perhaps skewing the veracity of non-medicated parental observation, ADHD medications have half-lives of several hours (University of Virginia Children's Hospital, www.healthsystem.virginia.edu/internet/pediatrics) the child is on a continually therapeutic dose, the residual effects of medication may still be observable.

Harrison et al. (2004) evaluated the effectiveness of Sahaja Yoga Meditation as a complementary therapy for children with ADHD. This hybrid study also involved the family in the program to achievement holistic environmental improvement. Parents and children attended twice weekly yoga sessions for six weeks. Parents and children completed assessments at three points; a baseline exam, during week three of the program, and at the end of the program. Children completed self-report questionnaires, interviews, and the Peabody Picture Vocabulary Test (PPVT) to measure cognitive ability. Parents

completed the Conners Parent-Teacher Questionnaire to measure perception of ADHD symptoms, reported on any changes in child's medications, interviewed on perceived outcomes of the yoga program, and Burnett's Biobehavioral Indicators of Self-Esteem questionnaire to evaluate child's social interaction, confidence, and involvement. Parents also completed measures of their own perceptions of the yoga program, and the Child-Parent Relationship Scale (CPRS) to assess the quality of the parent-child relationship.

At the end of the study, yoga intervention treatment showed a significant relationship with all parent-rated measures. Decrease in ADHD symptoms strongly correlated with an increase in CPRS scores, meaning a more functional parent-child relationship (-0.67 , $p=0.01$). Additionally, relationship between ADHD and CPRS scores became significant as the end the program and had no significance at baseline, indicating change in family functioning over the course of the program. According to parent reports, over half of students participating in the program reduced medication intake, demonstrating effectiveness of yoga intervention in ameliorating ADHD symptoms. Child reports indicated the children enjoyed the yoga program and experienced greater mental clarity and emotional stability post-intervention.

Strengths of the study include demonstration of MAP's potential for reducing stimulant drug intake in ADHD children. Weaknesses include small sample size and potential of false responses by parents to achieve a flattering image.

Semple et al. (2005) conducted an open trial based on teacher reports

that addressed the acceptability and feasibility of a mindfulness-training program as a therapeutic treatment for anxious children. Subjects were between the ages of seven and eight ($n=5$) in second grade at an elementary school in Harlem, NYC. One boy and the two girls were Hispanic; the other two boys were African American. No subject had received an official diagnosis of anxiety or attentional disorders. The children's teachers and school psychologist referred them to the program, based on observations of anxious behavior in the classroom. Children were screened by the school psychologist for eligibility, which disqualified students with ADHD/ADD comorbidity. However, one subject tested for attentional difficulties in the clinical range. Children met for 45 minutes, once a week, for six weeks. Sessions took place during the school day in a separate, quiet room. Children sat on personal mats, and were given the option of sitting out during any activity. Sessions consisted of a child-appropriate mindfulness program of feeling acknowledgment, breath awareness, sensory mindfulness, discussion of previous session and at-home work, and breath meditation. Pretest data was collected four days before the first session; post-test data was collected following the last session.

Researchers analyzed the results of four tests. Teachers completed the Child Behavior Checklist: Teacher Report Form (CBCL-TRF), where teachers rated 113 problem behaviors. The test provided data on eight problem scales, five adaptive functioning scales, internalized anxiety scores, externalized anxiety scores, and a total score. The CBCL-TRF test was designed for youth age 5-18. Children completed the Multidimensional Anxiety Scale for Children (MASC), a

39-question self-report created for youth age 8-19. The MASC measured physical symptoms of anxiety, social anxiety, harm avoidance, and separation anxiety. The MASC contained an answer inconsistency index, which provided internal validity. The State Trait Anxiety Inventory for Children (STAIC) assessed state anxiety and trait anxiety in children grades four to six. The test consisted of 40 questions in which children rated statements from 1-3 based on frequency of a feeling. The researchers, the age-appropriate 'Feely Faces Scale', created the final test. The scale was a three-section chart that measured child's mood state pre- and post-test, and class satisfaction. The chart was done on a Likert scale of 1="I don't feel good" to 5="I feel great." A T- test compared pretest and post-test scores.

The MASC and STAIC test results were thrown out for two reasons. First, children self-reported few anxious feelings, contrary to professional evaluation. Children may have altered their response in order to avoid treatment and/or perceived punishment. As well, the MASC test showed unacceptable inconsistency levels. Second, children were younger than the tests' target population. Many children expressed difficulty understanding words in the test, and because of this may have provided false information.

The CBCL-TRF T-test scores showed much individual variability, however four trends emerged. Teachers reported improvements in student's academic performance, noted a decrease in externalized anxiety behaviors, and a decrease in internalized anxiety behaviors. Four of five subjects responded well to the treatment program on the Feely Faces Scale. One subject showed an

increase in internalized anxiety behavior. Researchers hypothesized that as a result of the program, the subject moved from externalized to internalized manifestations of anxiety.

Strengths of this study include demonstration that MBSR can be modified and accepted in a young-childhood group. Additionally, researchers posit that child's participation in a mindfulness program increased their feelings of efficacy, as measured by the CBCL-TRF. Subsequent enhancement of self-esteem post-treatment may aid gains made during the mindfulness classes.

As a weakness of the study, researchers made no mention of efforts to work with parents. Researchers spent the first subject session instructing students in mindfulness and the class structure. However, there is no mention of outreach to parents, especially when parents potentially enforced or participated in the children's at-home exercises. Although individual variability always exists, one subject's T-test score increased for internalized anxiety – anxiety may have moved states from external to internal but may not be mitigated.

Subjects who self-reported dissatisfaction with the class and general unresponsiveness also had high CBL-TRF reports of attention problems.

Although this subject was not ADHD/ADD diagnosed, these results may indicate difficulty in instructing and engaging attention-challenged students in mindfulness activities. Additionally, the study population $n=5$ is awfully small for generalizable results.

Semple et al. (2006) provide a case study of the use of Mindfulness Based Cognitive Therapy (MBCT) in a low-income, inner city adolescent male. MBCT

involves the use of simple functional and sensory mindfulness exercises such as mindful eating, mindfulness upon waking, home meditation practice, and provides support against barriers to practice. The goal of MBCT therapy was to integrate mindfulness into the subject's everyday life. The subject's mother enrolled him in therapy to relieve attention problems and improve the subject's academic performance. The subject met with researchers for 12 MBCT sessions in a group comprised of similar adolescents. Initially, the subject disliked mindfulness and complained of headaches during exercises. Throughout the sessions, the subject became more involved in mindfulness and expressed excitement with new 'mindful' discoveries. Subject reported diligent home practice, and subject's mother reported an improved parent-child relationship. Emergent themes included improved anger management, mitigation of headaches, and improved sense of self-control and internal locus of control. Additionally, subject did not commit any discipline infractions at school during the period of treatment. Strengths of this case study include the reports of individual MBCT benefits within a group setting, and the substitution of a teacher's continuous presence for parental involvement and support. Weaknesses include the element of at home practice, which relied heavily on the mothers' support and participation early in the study. This level of parental involvement may be unfeasible for all students who are reluctant to practice, as this subject was initially. This study demonstrated the importance of parental involvement in successful routine practice of MAP's. This study also indicated that parental involvement might be substituted by the involvement and genuine caring of a

consistently present teacher.

This section of the chapter examined the impact of MAP's on adolescent attention and behavior. In Beauchemin et al. (2008), the pilot study examined the use of mindfulness meditation to promote social skills and decrease anxiety in learning disabled adolescents. In a case study, Singh et al. (2003) demonstrated reduction of aggression through a simple mindfulness meditation in a mentally retarded adult and showed acceptability of basic mindfulness to a unique learner. Following this study, Singh et al. (2007) applied the same method to decrease aggression and increase self-control in a group of adolescents with conduct disorder. Birnbaum (2005) showed the applicability of mindfulness meditation in adolescent individuation and aggression reduction. This section examined three studies that used MAP's as interventions for students with Attention Deficit-Hyperactivity Disorder (ADHD). Lam and Beale (1991) examined the relationship between reading scores and student abilities of sustained attention and impulse control. Jensen and Kenny (2004) examined the use of yoga as a complementary treatment in boys with ADHD. Harrison et al. (2004) assessed the effect of a yoga program on family relationships and the school experience of ADHD children, demonstrating the acceptability and efficacy of the yoga program through reduced medication intake, reduced ADHD symptoms, and an improved parent-child relationship. Semple et al. (2005) demonstrated the effectiveness of mindfulness in relieving symptoms of childhood anxiety and through this reduction, improved academic performance. In a case study, Semple et al. (2006) showed success of mindfulness based cognitive therapy in assisting a

student with concentration and awareness issues. Based on analysis of these nine studies, this section demonstrated multiple uses of MAP's related to aspects of the adolescent educational and life experience: functionality of the parent-child relationship, adolescent individuation, greater academic success, development of an internal locus of control, and increased self esteem. This section demonstrated the applicability and acceptability of MAP's as a therapeutic treatment for individuals with attentional and behavioral issues.

Classroom Applications

The previous section of the chapter analyzed studies of MAP's as intervention therapies for adolescents with attentional and behavioral issues. This section analyzes studies of the direct use of MAP's in the classroom. Hall (1999) conducted a study with college students examining the effects of mindfulness meditation on GPA. Manjunath and Telles (2003) studied spatial and verbal memory scores of Indian adolescents after a yoga and fine arts summer camp. Three studies directly examined the use of a MAP in a school setting. Rosaen and Benn (2006) taught a TM program to middle school students over one year. Wall (2005) created a program combining tai chi and MBSR in a Boston middle school. Witt, Becker, Bandelin, Soellner, and Willich, (2005) examined the acceptability of a qigong pilot program to German elementary students. Adolescents, notably females, display hypersensitivity to their physical appearance. As such, Impett, Daubenmier, and Hirschman's (2006) study of yoga as a means to remedy self-objectification and positively impact body image

in women is relevant to adolescents. So and Orme-Johnson (2000) examined the effects of TM on Taiwanese sixth grade students as a form of intellectual training. So and Orme-Johnson (2000) again applied TM study to Taiwanese high school students to improve cognitive ability. Lin, Kuo, Kuo, Ho, and Lin (2007) examined the effect of length of practice (in years) on meditation outcomes. In a classroom study of grade school children, Napoli (2001) implemented a pilot program on aggression reduction in an Arizona classroom. Relating to interaction between faculty and students, Napoli (2004) examined the effectiveness of a mindfulness-training program for teachers. Anderson, Levinson, Barker, and Kiewra (1999) assessed the effects of meditation on teacher occupational stress, anxiety and job burnout. This paper assesses the above-mentioned studies on their use of MAP's in educational classroom settings.

Hall (1999) conducted a meditation study on college students that addressed whether participants who meditated for a semester versus those who do not meditate had a significantly higher semester grade point average (GPA). The second question addressed whether participants who meditated versus those who do not meditate had significantly higher cumulative GPA's.

Participants were from two different sections of the same class. Participants were randomly assigned to meditation and control groups. The groups showed no major discrepancy in fall semester's GPA, with the control mean slightly lower at 2.64, meditation mean 2.77. At the beginning of the spring semester, the meditation group met and was instructed in a simple meditation process that involved breath monitoring, relaxation, and attention focusing

techniques. The group meditated for 10 minutes at the beginning and end of each 1-hour group study session. The students were asked to use the meditation techniques when studying alone and before a test. The control group met for 1-hour study sessions for the duration of the semester. At the end of the spring semester, the group's GPA's were subject to a one-factor analysis of variance, showing a significant difference in group GPA's, with meditation mean 2.85, control mean 2.55. The cumulative GPA for the meditation group rose significantly to 2.93, the control mean fell to 2.48. Participants who meditated for a semester had significantly higher GPA's than students who did not meditate. The means for cumulative GPA showed that overall academic performance increased as a result of meditation. This procedure can be easily replicated, with expected similar results. The student population at Hampton did not seem especially unique. Weaknesses of the study include the fact that initial GPA's were different. As well, researchers made no mention of student's affinity toward or prior experience with meditation, which potentially introduced bias.

Manjunath and Telles (2003) analyzed whether yoga training as opposed to fine arts training resulted in increased spatial and verbal memory test scores in children. Subjects participated in either yoga (n=30) or arts (n=30) camp activities. The camp lasted ten days. The control group (n=30) did not attend the camp and engaged in their daily routine. Subjects were tested on Day 1 (pre-test) and Day 10 (post-test). The control group tested during the same intervals. The researchers informed the subjects and the control group that the tests were for their own benefit, to measure the effectiveness of the camp (subject) or personal

growth (control).

The subjects were split into two groups of 15 for testing on verbal and spatial memory.

In the verbal memory test, ten slides were shown for ten seconds each. Two sets of ten nonsense syllables (combinations of X, O, and L) were displayed on Day 1 and Day 10.

In the spatial memory tests, ten slides were shown for ten seconds each. Ten slides of simple line drawings which could not be verbally named (i.e. square, circle) were displayed on Day 1 and Day 10. After the display, a slide of a random arithmetic equation was projected. Subjects then had 60 seconds to write (verbal test) or draw (spatial test) each slide they recalled.

In final Day 10 testing, the yoga group showed greatest change in spatial and verbal memory scores, .8 and 1.7, respectively with a $p=.001$. Only the spatial gains were statistically significant. These results indicated effectiveness of yoga training in increasing spatial memory. Campers who received arts training showed no significant change in spatial memory.

For strengths, the study suggested improvement in spatial memory in boys and girls post-yoga intervention. In adolescents as well as adults, anxiety limits memory recall. As yoga reduces anxiety and promotes relaxation, subjects may have been more relaxed and able to recall and reproduce images more effectively. Subject vs. control motivation did not affect test results, as results for spatial memory were higher overall, and verbal scores did not change significantly. A weakness of the study revolves around status of subjects. Given

the cultural position of yoga in India, the subjects were potentially biased that yoga would be effective. As the study took place in India within a majority Hindu student population, this paper assumes that subjects were familiar with yoga and meditation. Additionally, researchers made no mention of student's socioeconomic background, which may have played a role in performance.

Rosaen and Benn (2006) evaluated the results of a pilot TM program on middle school students. Five male and five female African-American 7th graders at Detroit charter school participated in the study. Subjects (n=10) were randomly selected from a larger cohort who had practiced TM the previous year for 12 months, every school day. The larger group practiced for 10 minutes in the gym at the beginning and end of each school day with a TM trained teacher. Data was collected over two days for a total time of one hour, immediately following a ten-minute morning meditation. Students met individually with the researcher to conduct semi-structured, nine question interviews that examined students experience with TM and its effects on their lives. The researchers created the questions. Significant emergent themes included student reports of increased state of restful alertness. Related to alertness, students reported that they had greater energy for their school activities. As well, students reported greater feelings of relaxation, energy, and focus. Students recommended TM to friends who were tired or had trouble concentrating in school. Students reported that their restful state made it easier to make friends, and viewed themselves as more approachable. Students reported increased self-control and a reduction of angry feelings/reactions toward adults and peers. These reported changes

indicated an improvement in skills toward the development of increased emotional intelligence (i.e. self-control, self-reflection/awareness, and flexibility to situations). Students reported that their grades improved over the grades of non-meditators in their classes. This was not supported by any quantitative evidence.

The study concluded that transcendental meditation allowed students to be in a more contemplative place, and become more receptive to internal and external cues. Restful alertness may contribute to increased academic performance because of the student's ability to control negative emotions and focus on the present, as well as positively effect emotional regulation and interactions with peers. TM is positively associated with increased development of emotional intelligence, characterized by greater personal control, self-reflection/awareness, and increased flexibility to situations.

As a preliminary study for first hand TM experience in adolescents, this study indicated themes that can be tested for/examined in future research. Weaknesses include no documented numerical data to support increased academic performance, i.e. a GPA. Additionally, the report made no mention of who participated in the previous year's TM group, nor the composition of students in the group, notably on the presence of behavior or attentional issues.

Witt et al. (2005) conducted an intervention pilot study of qigong on German elementary students. One class from each school received 20-minute qigong sessions twice weekly over six months, and a control received no instruction. Researchers encouraged students to practice at home. Participating teachers received training in qigong during weekly 90-minute sessions, with

home practice strongly encouraged. Participants (n=90) split by the school into control (n=45) and qigong (n=45). Both schools were similar demographically. Post-intervention, the five participating teachers completed semi-structured, in-depth interviews with the researcher at the end of the project, which focused on observable changes in students over the course of the qigong intervention. Emergent themes included reports of cessation of nightmares; the calming and relaxing effects of qigong on the students throughout the school day; increased pro-social behavior (reduction in aggression, greater cooperation); and a decrease in student medical complaints i.e. common cold and allergies. In a review of class attendance, one teacher noted that during the qigong study, children experienced fewer absences than the previous year. Students also reported improved sleep quality.

This study demonstrated the acceptability of qigong to students. The researchers suggested that qigong presented an attractive option to include in physical education classes, as the physical movement of the routine keeps children engaged. Weaknesses included risk of teacher bias, as the teachers selected to participate in the intervention. Additionally, no way existed to monitor home qigong practice, which potentially affected beneficial results.

Wall (2005) implemented a five-week program combining tai chi and MBSR to middle school students. The study aimed to examine whether a tai chi and MBSR program could sustain interest of adolescents and impart benefits. Two separate groups participated in the study; six 6th grade girls and five 8th grade boys, (n=11). The school nurse and faculty selected students, and no

selection criterion was provided. Groups met for one hour weekly in the gym after school. Post-program, students interviewed with the school counselor on their experience in the program. Both boys and girls indicated they enjoyed the program but expressed a non-committal attitude on continuing. Emergent themes include student reports of feeling of calm and peacefulness, increased body and postural awareness, and increased sense of belonging within the practice group. One student reported increased patience; another reported enhanced sleep quality and greater ease of sleep onset.

This study indicated the acceptability of tai chi and MBSR to middle school students, that the practice showed the ability to retain attention of a characteristically jumpy age group. The researcher advocated teaching tai chi and MBSR in schools as a means to combat violence, enhance health, increase body awareness, and promote self-control. A weakness of this study is the nature of group cohesiveness, apparent in most group studies examined in this paper. Perceived benefits of tai chi and MBSR may be attributable to a strong sense of group belonging (as indicated in student response) rather than the MAP's. Additionally, as subjects had no selection criteria, students may have been chosen on any sort of standard, potentially impacting replicability of results.

Relating to reports of increased body consciousness in Wall (2005), Impett et al. (2006) examined the effects of a yoga program to ameliorate self-objectification and increase embodiment (positive body awareness and responsiveness) in 15 participants. Participants completed short surveys six times during the two-month yoga immersion. Researchers hypothesized that

yoga would experience increased sense of well-being and decreased objectification. The second hypothesis posited that participants who practiced more often at home would show greater well being, decreased objectification, and greater embodiment. The third hypothesis stated that increased embodiment and decreased objectification correlated with greater well-being.

Participants met six times over two months and completed a battery of surveys. Researchers measured well being through the Positive and Negative Affect Schedule (PANAS), Satisfaction with Life Scale (SLS), and Self Acceptance Scale (SAS). The Body Awareness (BA) questionnaire measured participant's sense of embodiment. The Objectified Body Consciousness Scale (OBCS) measured sense of self-objectification. Participants also reported their frequency of independent yoga practice.

Change in self-objectification comprised the most significant resultant change of post-yoga practice. Women scored significantly lower on the OBCS post-yoga ($M=3.18$, $SD=0.96$, $p<0.05$) than pre-yoga ($M=3.71$, $SD=0.93$, $p<0.05$). Supporting the second hypothesis, frequency of yoga practice marginally ($p=0.06$) correlated with well-being, and significantly correlated with measures of self-objectification ($p=0.04$). Minimal data supported the third hypothesis.

A weakness of the study is the researchers' belief that a two-month yoga program would combat years of social conditioning on self-objectification. However, this weakness in turn supports the researchers' suggestion that yoga be taught in schools to adolescents. In schools, yoga instruction would promote student sense of self, combat eating disorders, help students make more

responsible sexual choices, and instruct students in positive stress coping skills. Additionally, the physical education classroom presents an ideal place to instruct students in yoga skills for lifelong physical and mental health, as lifestyle patterns become ingrained during maturation.

So and Orme-Johnson (2000) examined the longitudinal effects of a TM intervention on cognition in Taiwanese high school students. The study measured whether time spent meditating improved intellectual abilities. Subjects attended an introductory lecture on TM and, based on interest, were randomly assigned to a TM group (n=56) or a napping (n=58) group. Subjects meditated or napped for 30 minutes prior to classes, and received instruction to meditate at home. The study lasted six months. Pre-and post-intervention, students completed computerized tests which measured issues of senses, mind, feeling, intellect, and ego. The Culture Fair Intelligence Test (CFIT) measured ability to reason in novel situations. The Inspection Time (IT) test measured speed of information processing. The Constructive Thinking Inventory (CTI) measured nonintellectual abilities and attitudes. The Group Embedded Figures Test (GEFT) measured field independence, a predictor of academic achievement. The Test for Creative Thinking-Drawing Production (TCT-DP) measured creativity. The State-Trait Anxiety Inventory (STAI) measured feelings of anxiousness.

Results showed that TM group showed improvement in all tests with the exception of the CFIT as compared to the napping group.

A weakness of this study was that TM instruction had a course fee. This barred students who were unable to afford the extra cost. As well, student

participation was voluntary. Some students may have had existing affinities to TM or previously practice. However, because the napping group was composed of students also interested in TM, the populations were equally biased.

So and Orme-Johnson (2000) repeated the procedure of their high school study on a group of Taiwanese 6th grade girls (n=77). In this examination, n=37 girls received TM instruction, n=40 girls served as napping control. Subjects meditated or napped for 30 minutes prior to class, and received instruction to meditate at home. Subjects completed the same tests as in the previous study. Results showed that the TM group experienced significant improvement on all exams. Weaknesses of this study are identical to the first.

Relating to length of time meditating, Lin et al. (2007) investigated the length of participant meditation history on factors of learning motivation, retention of learned material, and classroom climate. Taiwanese adults (n=450), split into groups based on time spent meditating, < 1 year, 1-3 years, 4-6 years, 7-10 years, and >10 years. Subjects completed surveys measuring motivation, classroom climate, and learning outcomes. Researchers analyzed survey results against length of meditation. Results showed a correlation between learning outcome and motivation, with significance between the following sub-scales: social relationship (0.795) and professional development (0.784) for motivation, and professional (.0797) and interpersonal relationship (0.792) for learning outcome ($p < 0.0001$). A higher level of learning motivation serves as an accurate predictor of learning outcome. Relating classroom climate to learning outcome ($p < 0.001$), learners perceived classroom climate in their meditation classes

affected their learning from the course. Contrary to the initial hypothesis, length of time in meditation did not increase benefits gained. Learners in the initial groups responded that they gained more benefit from meditation as opposed to the 4-6 and 7-10 year meditators. Meditators who practiced for 10+ years reported improvement in learning. Transferable to youth education, perception of classroom climate; meaning perception of stress, group cohesiveness, and relationship with teacher; significantly impacts student performance and attitude toward schooling (Valenzuela, 1999). A positive classroom climate potentially decreases student anxiousness, and as student anxiety hampers learning, a functional and de-stressed classroom environment benefits learning.

Napoli (2001) conducted a pilot study which taught MBSR skills as stress management to grade schoolers in Arizona. In the study, the researcher taught 5th grade students (n=30) age-appropriate MBSR skills to examine acceptability of MBSR in the classroom. Students completed a questionnaire post-study regarding their feelings on the class, if classes had an effect, and if they would continue the class. Findings of the study showed that 86% of the students enjoyed the class, 70% enjoyed the breathing exercises, 83% enjoyed guided the imagery exercises, and 86% wished to continue the course. Notably 86% of students wanted their teacher to use MBSR techniques in the classroom. Weaknesses of the study include minimal description the adaptation of the MBSR technique. As well, no description of the student demographic was given. To further support the use of MBSR in the classroom, the study would benefit from comparison with a control group instructed in another stress management

technique. Napoli proposed future research using standardized testing instruments to further support the use of MBSR in the classroom.

Reflecting the importance of classroom climate on student learning outcomes as discussed in Lin et al. (2007), in an experimental case study Napoli (2004) developed a pilot mindfulness-training program for teachers (n=3). The program was designed to examine the effects of mindfulness on teachers and their perception of their students. Teachers engaged in bimonthly mindfulness training with their students and met for 2.5 hours each week over the course of eight weeks for intensive mindfulness training. Post study, teachers completed semi structured interviews with the researcher. From the interviews, four emergent themes became evident: curriculum changes, breath awareness as a stress coping mechanism, improved quality of personal life, and changes in the classroom. Of these emergent themes, breath as a coping mechanism applied to both students and teachers. From interviews, teachers advocated the use of mindfulness training to combat behavior problems, reduce test anxiety, improve classroom cohesiveness, and improve student self-confidence and image (locus of control). Teachers and the researcher advocated the use of MAP's in a physical education or classroom environment. The study also stated that when students possess a greater arsenal of coping strategies, they become more capable at solving problems themselves and consequently there may be fewer interruptions of class time. Weaknesses of this pilot study include the small sample size (n=3) and self-selection for participation, which may have skewed results in favor of mindfulness and impacted generalizability.

Anderson et al. (1999) evaluated the effects of meditation on teacher stress, anxiety, and burnout. Following Lin et al. (2007) and Napoli (2004), the study focused on improved classroom environment through teaching meditation techniques to teachers. Teachers (n=91) working in all grade levels engaged in a five-week meditation program. Teachers completed a pre-and post-meditation battery of tests; the Teacher's Stress Inventory (TSI), State-Trait Anxiety Inventory (STAI), and the Maslach Burnout Inventory (MBI); to examine the hypothesis that meditation training reduces teachers' perceived stress. Scores on the pre- and post-tests supported the study hypothesis, notably reducing state anxiety (M=39.6 to 30.8) and Emotional Exhaustion on the MBI (M=27.2 to 20.6) testing showed that meditation increased teacher resiliency and emotional calm, relevant to the classroom because of need for teachers to be emotionally available to students (Valenzuela, 1999). Personal anecdotes include an improved ability to control temper, better sense of control over emotions, greater tolerance toward children's behaviors, and a generally more positive outlook.

Weaknesses of the study include the fact that teachers elected to participate, which may indicate a population with lower general stress and more open attitude than the general population. This may affect the generalizability of results. Researchers advocated repeating the study with a larger, more randomized group for greater accuracy.

This section reviewed studies that applied various MAP's to classroom settings, or pertained significantly to the classroom. Hall (1999) conducted a study with college students that examined the effects of mindfulness meditation

on GPA. Manjunath and Telles (2003) studied spatial and verbal memory scores of Indian adolescents after a yoga and fine arts summer camp and determined that yoga increased test scores. Rosaen and Benn (2006) taught a TM program to middle school students over one year. Wall (2005) created a program combining tai chi and MBSR in a Boston middle school, which proved acceptable to adolescent students. Witt et al. (2005) demonstrated the acceptability of a qigong pilot program to German elementary students. Impett et al. (2006) studied yoga as a means to remedy self-objectification and positively impact body image in women is relevant to adolescents. So and Orme-Johnson (2000) examined the effects of TM on Taiwanese sixth grade students as a form of intellectual training. So and Orme-Johnson (2000) applied TM study to Taiwanese high school students to improve cognitive ability. Lin et al. (2007) examined the effect of length of practice (in years) on meditation outcomes. Napoli (2001) implemented a pilot program on aggression reduction. Relating to interaction between faculty and students, Napoli (2004) examined the effectiveness of a mindfulness-training program for teachers. Again addressing classroom environment, Anderson et al. (1999) assessed the effects of meditation on teacher occupational stress, anxiety and job burnout. This paper analyzed the above mentioned studies on their use of MAP's in educational classroom settings and determined from the studies that MAP's have an applicable and appropriate place in the classroom to enhance learning, open worldview, and improve classroom learning environment.

CHAPTER FOUR: CONCLUSION

Introduction

Chapter one gave an introduction to mindful awareness practices (MAP's) and provided an outline of their development in the United States over the course of the 20th century. As well, chapter one posed the guiding question of this paper – how do MAP's, used in the classroom, affect student disruptive behavior? Chapter one explained the rationale for using MAP's in the classroom as a remedy for student disruptive behavior, as MAP's improve ADD/ADHD symptoms, reduce aggression, and improve reactivity to student emotions.

Chapter two provided a historical background of MAP's in the United States. The chapter described the secularization of many MAP's as currently practiced, the medical benefits of MAP's, and the progressive precursors of MAP's advocated by John Dewey and Horace Mann. Past uses of MAP's in the classroom showed acceptance and academic benefits to a diverse population of American students, with MAP instruction producing a positive effect on learning, well being, and as a coping mechanism for modern attentional problems.

Chapter three analyzed and critiqued current research on MAP's, splitting studies into three subheadings: Medical and Mood-based studies, Attentional and Behavioral studies, and Classroom Applications. Each of these studies was reviewed with regards to the use of MAP's to benefit student disruptive behavior.

Chapter four will return to the original guiding question of the paper and provide a summary of the research findings of chapter three. These trends and data will apply to the future use of MAP's in the classroom. The chapter will

conclude with suggestion for future research on the instruction of MAP's to American schoolchildren.

Summary of Findings

Medical and mood based studies on the use of MAP's showed several similar trends, notably increased of feelings of self efficacy and self esteem, decreased stress, depression, anxiety, and neuroticism, and decreased substance abuse and recidivism, and lowered blood pressure. Chang et al. (2005) showed a decrease in stress, and an increase of feelings of self efficacy and positive states of mind after MBSR instruction. Broderick and Korteland (2004) showed a decrease in depression in young adolescents instructed in basic mindfulness, additionally Broderick (2005) demonstrated that mindfulness instruction in adolescents correlated with an increase in positive states of mind as measured by the PANAS. Correlating with Lin et al. (2007), Thompson and Waltz (2004) found no correlation between everyday mindfulness and mindfulness during meditation. However, based on the questionable methodology of this study, the relevance of these findings is rather weak. Additionally, Thompson and Waltz (2007) found a negative correlation between mindfulness and neuroticism.

Three studies showed similar favorable findings on recidivism and self esteem when teaching MAP's to incarcerated/drug addicted individuals. In a study of adolescent sex offenders, Derezotes (2000) found mindfulness training to reduce urges to re-offend, reduce anxiety and stress, and increase feelings of

self efficacy and self control. In an adult prison population, Bowen et al. (2007) found that MBSR instruction reduced alcohol intake post-release and increased feelings of self and thought acceptance. Through teaching basic mindfulness techniques to adolescent drug offenders, Bootzin and Stevens (2005) observed a decrease in post-release substance abuse and an increase in sleep quality.

Three studies showed positive medical and emotional benefits of MAP's on adolescents with medical conditions. Sibinga et al. (2008) found that HIV positive adolescents instructed in MBSR found the method acceptable and showed increased self-care, self-esteem, and improved behavior. Barnes et al. (2001) and Barnes et al. (2004) demonstrated blood pressure reductions in pre-hypertensive adolescents instructed in TM. However, results of the Barnes studies are weak due to the minimal significance of the results.

Research on the use of MAP's to aid youth with attentional and behavioral issues, Based on analysis of these nine studies, this section demonstrated multiple uses of MAP's related to aspects of the adolescent educational and life experience. Common themes include increased functionality of the parent-child relationship, adolescent individuation, greater academic success, development of an internal locus of control, and increased self esteem. Beauchemin et al. (2008) showed the effectiveness of mindfulness meditation to promote social skills and decrease anxiety in learning disabled adolescents. Singh et al. (2003) and Singh et al. (2007) found that instruction in a basic mindfulness technique reduced aggression and increased self control in individuals with violent behavior

disorders. Related to Derezotes (2000) and many other studies mentioned, Birnbaum (2005) showed basic mindfulness to assist in development of an internal locus of control and decrease aggression in an adolescent female. However, because of the nebulous description of the methodology, these findings are weak. Related to the previous study, Semple et al. (2006) and Semple et al. (2003) demonstrated the effectiveness of MBSR instruction for adolescents and children, finding increased senses of self efficacy, self acceptance, reduction of headaches, reduction of anxiety and development of an internal locus of control. Two studies examined the use of MAP's as a therapy for ADHD children. Jensen and Kenney (2004) found that yoga instruction improved parent-child relationships and increased attention. Harrison, Manocha, and Rubia (2004) as well noted a significant improvement in the parent-child relationship and a reduction of ADHD symptoms and reduced medication intake. Related to Jensen and Kenney (2004), Lam and Beale (1991) observed a positive correlation between attention and mindfulness instruction, and an increase in reading scores. This section demonstrated the applicability and acceptability of MAP's as a therapeutic treatment for individuals with attentional and behavioral issues.

Research on classroom application of MAP's demonstrated the acceptability of MAP's to both teachers and students. Many students reported increased feelings of relaxation, improved memory, and better attention in their studies. As MAP's reduce anxiety, and anxiety inhibits memory recall and increases disruptive behavior, student who practice MAP's may be more

engaged in the classroom environment and achieve greater material retention. Hall (1999) conducted a study showing an improvement in GPA in students who meditated prior to study sessions versus those who did not. However, this study suffered from bias in the initial discrepancy between GPA's of the meditation and control group. Related to improved academic performance, Manjunath and Telles (2003) found that students who received yoga instruction showed improvement in memory recall. Improved working memory will give students an advantage in material retention and meaning making. Rosaen and Benn (2006) found a TM program acceptable to urban middle school students. Students also reported greater energy, focus, and relaxation. Especially important to the school setting, students observed greater self control and less emotional reactivity to adults and peers. This study, as well as most of the studies on MAP's in American classrooms, focused on diverse urban students. This strengthens the case for MAP's in the classroom, as the United States population becomes increasingly diverse in the 21st century. In an interventional pilot study, Witt et al. (2005) introduced a qigong PE program to German elementary students. Students reported improved sleep quality and better health, and replicating findings of Rosaen and Benn (2006) teachers noted increased pro-social behavior and fewer student absences. Related to the two previous studies, Wall (2005) implemented a tai chi/MBSR program in an urban middle school. Students found the program acceptable, noted improved posture and embodiment, and a sense of belonging within the practice group. As sense of belonging is of significant developmental importance in the social lives of adolescents, group instruction of

MAP's can center students and create a team mentality and an environment of compassion in the classroom. Related to development of the adolescents' social life and perception of the self within the group, Impett et al. (2006) found that a yoga program increased sense of embodiment and decreased self-objectification in adolescent females. Decreased self-objectification is linked to greater self esteem and resultant pro-social and pro-health decision making. So and Orme-Johnson (2000) conducted two studies on Taiwanese adolescents, examining the longitudinal effects of a TM program on cognition. Results showed that students notably improved on measures of creativity, personal attitudes, and state anxiety. However, students did not show improvement in reasoning abilities. Related to time spent meditating, Lin et al. (2007) conducted a longitudinal study on the effects of years spent meditating on learning outcomes and material retention. The study found that length of time spent meditating did not have a relationship with material retention. This corroborates with Thompson and Waltz's (2004) findings that everyday mindfulness did not correlate with mindfulness during meditation. These results may show that some individuals are inherently more mindful than others, and instruction may have minimal impact on their daily mindfulness. However, both of these studies were conducted with adult subjects. Students, instructed in MAP's throughout their K-12 experience, may show different results in daily mindfulness and material retention. In a study of a young population, Napoli (2001) conducted a pilot study which examined the acceptability of MBSR to grade school children. Students showed enthusiasm toward the course and wished it to continue. Napoli (2004) also introduced a pilot

mindfulness program for teachers. Emergent themes from this program included changes in class curriculum, improved relationships with students, and increased coping mechanisms for job stress. Both Napoli studies suffered from small populations which affected replicability of results. Relating to mindfulness for teachers, Anderson et al. (1999) conducted a meditation program to reduce teacher stress, anxiety and burnout. Teachers reported reduced anxiety and greater emotional availability to students. If teachers are more relaxed, they are more likely to help create a relaxed and caring classroom environment, better attending to the needs of students.

Classroom Implications

Based on analysis of the research, this paper determines that the physical education classroom is an ideal place to instruct students in movement oriented MAP's such as qigong, tai chi, and yoga. Locally, yoga instruction is being implemented in physical education in the Highline School District of south Seattle, as well as many other districts around the country. Seated MAP's such as MBSR, TM and Vipassana meditation can be routinized into the classroom, for example as an entry task or closure at the end of the day or period. For example, students on the Hopi reservation, in New York City, and in the Los Angeles School District engage in mindfulness meditation during their school day (Nelson, 2003; Brown, 2007; Conis, 2005). Showing the flexibility of secularized MAP's, Hopi students mindfully meditate in a way that speaks to their Native religious traditions. MAP's can be strictly secular or related to any spiritual tradition. While MAP's are a means to attune with the body and mind, the specific

focus of the MAP can be interpreted and changed by the practitioner or instructor.

The studies analyzed in this paper show that MAP's are acceptable to students across the K-12 spectrum. Students, as well as teachers, can gain greater sense of self acceptance, display improved memory recall, experience reduced stress and increased positive mood, and have more emotional energy and resilience. These changes can result in an improved classroom environment, improved learning, enhanced self confidence, and potentially greater student enthusiasm and involvement in their education. As many personality traits, health patterns, and behaviors become ingrained during adolescence, instruction in MAP's from an early age may impart lifelong health and learning benefits on student practitioners. For teachers, engaging in MAP's in the classroom can reduce stress and increase resilience, increase emotional availability to students, and decrease job burnout. As teachers set the tone for the classroom, a relaxed and satisfied teacher can create a more nurturing and rewarding classroom for their students, resulting in more and better quality learning taking place.,

Implications for Further Research

Studies analyzed in this paper suffered from many similar issues. As studies on MAP's have been conducted for less than forty years, few longitudinal studies exist on the benefits of MAP's. For example, Hall's (1999) study would be better replicated as a longitudinal study over the student's college career. This method would provide more credibility to Hall's finding that mindfulness

meditation increases GPA. The credibility of Hall's results, as well as most research examined in this paper, suffered from the brevity of the study.

Additionally, most research on MAP's suffers from small study populations. To better analyze the effects of MAP's and provide more replicable and credible results, larger populations need to be recruited. Many studies, notably studies involving children, suffered bias from selection criteria. Most studies allowed participants to elect whether they engaged in the mindfulness experiments. Blinded studies would provide more credible results and reduce student and researcher bias towards mindfulness.

Related to bias, exhaustive research of MAP studies for this paper found overwhelmingly supportive studies, with only two in contradiction of the benefits of MAP's in the classroom. This can be attributed to the relative newness of MAP's in the United States, and the virtual absence of MAP's in the classroom prior to the 1990's. This paper assumes that over time, more studies will be conducted supporting, refuting, or critiquing the use of MAP's in the classroom.

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