USE OF A MINDFULNESS PRACTICE TO DECREASE PROBLEM BEHAVIOUR AND INCREASE ENGAGED TIME OF THREE STUDENTS IN AN ELEMENTARY SCHOOL SETTING

by

Sara Shababi Shad

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Abstract

Mental health problems in children and adolescents can impair functioning at home, in school, with peers and in the community. Children and youth with a mental illness tend to engage in problem behaviour in the classroom. Research has shown that self-management strategies are cost effective and practical ways to improve academic performance and reduce problem behaviour. Mindfulness is a self-management strategy and is defined as the awareness that emerges through intentionally and nonjudgmentally paying attention in the present moment. *Meditation on the Soles of the Feet* is an example of a mindfulness practice that enables an individual to divert his or her attention and awareness from an anxiety or anger-provoking situation to a neutral part of the body. This research study replicates and extends recent studies investigating the effectiveness of this practice. The mindfulness practice was augmented by a functional assessment to individualize the intervention for each participant. The participants were three elementary school-aged children who frequently engaged in disruptive and off-task behaviour. The study was conducted in each student's classroom and two additional non-classroom settings. A concurrent multiple baseline design across participants was employed. Intervention data for the first student showed a reduction in problem behaviour and an increase in engaged time. Intervention data are not available for the second and third students, and, as a result, a functional relation was not documented. A social validity measure was administered once to the first student, his teacher and his mother. Social validity ratings indicated that the mindfulness practice's goals, procedures and outcomes were viewed as socially valid. It is anticipated that results for the second and third students will demonstrate, as well, a decline in problem behaviour and an increase in engaged time in classroom and non-classroom settings.

Preface

This thesis is an unpublished replication of a study by Singh et al (2003; 2007), augmented by a functional assessment by the author S. Shababi-Shad. The methods section presented in chapter 2 was approved by the University of British Columbia's Research Ethics Board (Certificate number: H12-01238).

The author served as the primary observer. She also implemented the intervention throughout the study and analyzed the data under the supervision of her thesis supervisor, Dr. Joseph Lucyshyn.

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List of Abbreviations

PB – Problem behaviour

ET – Engaged time

FACTS – Functional assessment checklist for teachers and staff

SEL – Social and emotional learning

CASEL – Collaborative for Academic, Social and Emotional Learning

BC – British Columbia

ADHD – Attention-Deficit/Hyperactivity Disorder

GCP – General Case Programming

FAO – Functional assessment observation

SWPBIS – School-wide positive behaviour intervention and support program

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Dedication

To my mom, dad and brother.

CHAPTER 1: INTRODUCTION

Schools have always been considered critical for the education of students due to their access to all children and adolescents (Zins, Bloodworth, Weissberg, & Walberg, 2007). In recent years, there has been an increase in awareness that schools should be a central arena, not only for education, but also for mental health promotion, prevention and intervention services for students (Roeser, Eccles, & Sameroff, 2000). The need for these services are on the rise given the present day challenges faced by children, adolescents and their families. These challenges include increased economic and social pressures, weakening of community-based organizations that support emotional, social and mental health, and easier access to media with damaging content for children (Greenberg et al., 2003). Zins et al. (2007), argue that schools also are ideal settings in which students learn skills to become responsible and contributing citizens. However, despite students' changing developmental needs as they grow older, school environments tend to become less supportive as students move from elementary, to middle school and ultimately to high school (Roeser, Eccles, & Sameroff, 2000).

Social and Emotional Learning in Schools

The primary emphasis of schools today still remains on academic knowledge, despite recent research regarding the importance of social and emotional skills for school and life success (Durlak, Weissberg & Pachan, 2010; Schonert-Reichl & Hymel, 2007). It has been argued that social and emotional learning (SEL) can be considered "'the missing piece' because it represents a part of education that is inextricably linked to school success, but has not been explicitly stated or given much attention until recently" (Schonert-Reichl & Hymel, 2007, p. 21). Stated differently, if schools want to ensure that students are academically successful, they must

foster their social and emotional skills as well as educational knowledge. There is a growing

awareness among educators and parents of the importance of SEL to school and life success

(Zins & Elias, 2006). However, according to Greenberg et al. (2003), there exists a gap between

evidence-based practices that enhance SEL and the number of schools utilizing these practices.

Collaborative for Academic, Social and Emotional Learning (CASEL) is an organization devoted

to the promotion of SEL and adoption of these practices by organizations and schools. CASEL

has divided SEL into five core competencies: (a) self-management, (b) self-awareness, (c) social

awareness, (d) responsible decision-making, and (e) relationship skills (CASEL, 2011). Zins and

Elias (2006) define social and emotional learning (SEL) as "the capacity to recognize and

manage emotions, solve problems effectively, and establish positive relationships with others"

(p.1). In addition, Elias (1997) argues that social and emotional skills equip children and

adolescents with tools that will help them "care about others, make good decisions, behave

ethically and responsibly . . . and avoid negative behaviours" (as cited in Zins et al., 2007, p.

192).

There is an extensive amount of research regarding the benefits of SEL and its

relationship to academic achievement. First, a deficit in social and emotional skills has been

identified as one of the major reasons for student dropout and nonattendance (National Centre for

Education Statistics, 2002, as cited in Zins & Elias, 2006; Wilson, Gottfredson & Najaka, 2001,

as cited in Zins et al., 2007). Second, there is a moderate relationship between teachers' ratings

of students' problem behaviour, academic competence and achievement (Malecki & Elliott,

2002). Third, research has shown that SEL has positive effects on physical health, and life and

academic success (Zins & Elias, 2006). Fourth, according to a meta-analysis, enhancing social

and emotional skills has a positive effect on attitudes about self and school, and is associated

with an increase in positive affect and gains in achievement test scores (Durlak et al., 2010; Durlak & Weissberg, 2011). Finally, prosocial and antisocial behaviour are significantly related to academic achievement and teachers' preference of students (Wentzel, 1993).

When children and adolescents use social and emotional skills to manage their emotions, they become more likely to make responsible and ethical decisions, set positive goals, and establish healthy relationships. Children and adolescents high in social and emotional competence demonstrate resilience in stressful situations (Greenberg, 2003; Schonert-Reichl & Lawlor, 2010). Among students high in SEL, there appears to be a reduced tendency to engage in behaviour that is negatively related to academic achievement and effective classroom learning, such as maladaptive, unhealthy and antisocial behaviour (Durlak et al., 2010; Feshbach & Feshbach, 1987; Malecki & Elliott, 2002; Roeser, Eccles, & Sameroff, 2000; Wentzel, 1993, Zins et al., 2007; Zins & Elias, 2006). These students are less likely to experience emotional distress (e.g., sadness and anger), which is negatively linked to academic achievement (Roeser, Eccles, & Sameroff, 2000). They become more likely to engage in prosocial behaviour and behave more responsibly in the classroom (i.e., complying with social rules, classroom expectations and cultural norms; Malecki & Elliott, 2002). Students with social and emotional competencies tend to exhibit positive attitudes toward school, have higher school achievements and are less likely to drop out of school or be suspended (Zins et al, 2007). Zins et al (2004) argue that SEL should not be viewed as an extra duty charged to schools, but rather a crucial component to help all children and adolescents succeed both in life and school. SEL provides parents and educators with the tools needed to prepare children for "the tests of life, not a life of tests" (Elias, 2001, p. 40).

Mental Health Illness in Children and Adolescents

Fostering social and emotional skills has become even more important given that mental health problems are on the rise (Romano, Tremblay, Vitaro, Zoccolillo, & Pagani, 2001). The average prevalence rate of mental health disorders in children and youth in British Columbia (BC) is 15% (Waddell & Shepherd, 2002). This means that in BC "approximately 140,000 children and youth experience mental disorders causing significant distress" (British Columbia Ministry of Child and Family Development & Ministry of Health Services, 2003, p. 4; Waddell & Shepherd, 2002). Prevalence estimates of the presence of at least one psychiatric disorder among females range from 7.7% to 32.9% and in males from 5.5% to 21.6% of the entire population (Romano et al., 2001).

Mental disorders affect every aspect of functioning and development and can impair the child's "functioning at home, at school, with peers, or in the community" (British Columbia Ministry of Child and Family Development & Ministry of Health Services, 2003, p. 4). International research shows that if mental health problems are not treated effectively, they can lead to a host of negative outcomes including "poor educational attainment, family dysfunction, poor physical health, crime and antisocial behavior" (McDougall, 2011, p. 48). No other illness has as serious and widespread an effect on children as mental health illnesses do (British Columbia Ministry of Child and Family Development & Ministry of Health Services, 2003). Despite the high prevalence rates, both in Canada and internationally, mental health problems go unnoticed or gain importance only when they become advanced (McDougall, 2011). For instance, in the US 70% of children and youth with mental health illness are not treated adequately and in Canada only one in six children who are in need of treatment, receive the care they need (Canadian Psychiatric Association, 2012; The Facts on Adolescent Mental Health,

2006). In BC, similar to many other jurisdictions, the majority of children suffering from a

mental disorder are not identified or do not receive the effective treatment they need (British

Columbia Ministry of Child and Family Development & Ministry of Health Services, 2003).

There is general consensus in BC that the current services available for children with mental

health disorders are, at best, inadequate and the disorders' prevalence rate outpaces the clinical

treatment capacity (British Columbia Ministry of Child and Family Development & Ministry of

Health Services, 2003).

Table 1: Prevalence of Mental Disorders in Children and Youth

Disorder	Prevalence (%)	Approximate Number in BC[1]
Any anxiety disorder	6.5	60,900
Conduct disorder	3.3	30,900
Attention-deficit/hyperactivity disorder	3.3	30,900
Any depressive disorder	2.1	19,700
Substance abuse	0.8	7,500
Pervasive developmental disorder	0.3	2,800
Obsessive-compulsive disorder	0.2	1,900
Schizophrenia	0.1	900
Tourette's disorder	0.1	900
Any eating disorder	0.1	900
Bipolar disorder	<0.1	<900
Any disorder	15	140,500

Note. The approximate number who may be affected is based on a population estimate of 936,500 children and youth in BC. Adapted from "Child and Youth Mental Health Plan for British Columbia" by British Columbia Ministry of Child and Family Development, & Ministry of Health Services, 2003, retrieved from http://www.mcf.gov.bc.ca/mental_health/pdf/cymh_plan.pdf.

According to Table 1, the three most common mental health problems afflicting children

and youth in BC are: (a) anxiety disorders (6.5%; 60,900 children and youth), (b) conduct

disorder (3.3%; 30,900 children and youth), and (c) attention-deficit/hyperactivity disorder

(3.3%; 30,900 children and youth; British Columbia Ministry of Child and Family Development

& Ministry of Health Services, 2003). If mental health needs are not adequately met and treated

in childhood, they will lead to difficulties in adolescence and persistent problems in adulthood (McDougall, 2011).

In addition to negative personal outcomes, untreated mental health illnesses can have a negative impact on the society as a whole. In 2008/2009, BC spent "over $1.3 billion on services that directly addressed mental health and substance abuse" (British Columbia Ministry of Health Services & Ministry of Children and Family Development, 2010, p. 2). Indirect costs of mental illnesses in Canada are nearly $51 billion annually in lost productivity (BC's burden of indirect costs is nearly $6.6 billion each year; British Columbia Ministry of Health Services & Ministry of Children and Family Development, 2010).

According to statistics, psychiatric illnesses are the most common disorder that emerge during adolescence (The Facts on Adolescent Mental Health, 2006). For instance, nearly half of all mental health disorders emerge before the age of 14 (McDougall, 2011) and on average 80% of all psychiatric disorders begin in adolescence (The Facts on Adolescent Mental Health, 2006). If these childhood mental health disorders are not identified early and treated with effective interventions, they can progress and become much more difficult to treat in adulthood (The Facts on Adolescent Mental Health, 2006). Early interventions are likely to be effective and less costly than treatments offered after the mental disorder has progressed into adulthood (McDougall, 2011). Children and youth with mental health problems often exhibit social, emotional and behavioural problems that interfere both with life and school success (Greenberg, Domitrovich, & Bumbarger, 2001). School-based social and emotional learning programs have shown positive outcomes (Durlak et al, 2011); however, as many as three quarters of children and adolescents with mental health problems have not received evidence based treatments (McDougall, 2011, p. 52). Therefore, given the high prevalence rate of mental health illnesses in children and

adolescents and the negative outcomes of mental disorders in adulthood, it is important to focus on enhancing their emotional, social and self-management skills by providing them with effective, evidence-based interventions before the problems become more severe and persistent.

Importance of Empowerment in Recovery from Mental Illness

Traditionally, mental health services focused on problems and symptom reduction without paying much attention to the person experiencing the mental illness (Patton, 2005). A major study in the 1980s promoted the development of a "recovery-oriented" mental health system since it demonstrated that the course of mental disorders did not necessarily lead to inevitable deterioration (Jacobson & Greenley, 2001). The recovery-oriented mental health system places the person first and encourages maximum involvement of the individual both in healthcare and community (Kidd et al., 2011). It endorses the idea that people must be able to make decisions about themselves and should be allowed to manage their own problems (Patton, 2005). One of the key principles of recovery from mental health is empowering individuals and enabling them to take control (Jacobson & Greenley, 2001; Kidd et al., 2011). Empowerment aims to reverse the individual's lack of control, sense of helplessness and dependency on others by enhancing autonomy to act independently, courage to take risks and responsibility to take back control (Jacobson & Greenley, 2001).

Many children with a mental health illness, tend to engage in problem behaviour both in the classroom and in the community. Students who engage in disruptive behaviour are "the most likely to be excluded from or drop out of school" (Crimmins & Berotti, 1996; as cited in Todd, Horner, & Sugai, 1999, p. 66); "prompt teacher requests for assistance" (Horner, Diemer & Brazeu; as cited in Todd et al., 1999, p. 66); "and become involved in antisocial lifestyles" (APA; as cited in Todd et al., 1999, p. 66). Research has shown that children who exhibit

problem and aggressive behaviour do so due to the development of maladaptive strategies for regulating anger-related affect (Farbes & Eisenberg, 1992). For example, "dysregulated children" tend to engage in more externalizing behaviour and more solitary active behaviour, which further limit their opportunities to engage in behaviour that support social competence development (Bell & Calkins, 2000). Bandura, Capara, Barbaranelli, Pastorelli, and Regalia (2001) conceptualized that problem or aggressive behaviour may develop as a way to exercise a measure of control over one's thoughts, affects, actions and motivations. Based on this assumption and the current notion of recovery from mental illness, problem behaviour exhibited by students can be addressed by empowering children and adolescents through teaching them more effective self-management techniques.

Self-management is a "personal application of behaviour change tactics that produces a desired change in behaviour" (Cooper, Heron, & Heward, 2007, p. 577). Self-management procedures are particularly encouraging to use with children with problem behaviour in schools (Todd et al., 1999, p. 66). Self-management is a "pivotal skill" that, once learned, can facilitate the acquisition of additional adaptive strategies and behaviour (Todd et al., 1999). For instance, self-control, a concept closely related to self-management (Cooper et al., 2007), has been shown to successfully increase and maintain on-task behaviour of elementary school aged children in the classroom (Glynn, Thomas, & Shee, 1973). Inhibitory control (e.g., self control) early in life, which involves controlling and managing one's emotions, behaviours, thoughts and attention, can be predictive of positive outcomes throughout life (Diamond, 2013). Studies have shown that teachers of students who exhibit low inhibitory control (i.e., poor executive function) have lower expectations of self-control and quality of work from these students (Blair & Diamond, 2008). In addition, students with poor inhibitory control, have negative self-perceptions of themselves as

students (Blair & Diamond, 2008). Blair and Diamond (2008) recommended that focusing on developing social, emotional and behavioural regulation in children with low inhibitory control who are at risk for school failure can be effective in promoting long-lasting school success. Many studies have demonstrated that disruptive behaviour in the classroom can be reduced by externally mediated contingencies; however, self-regulation and self-management strategies have been found to be even more effective at reducing and maintaining desired changes in behaviour (Bolstad & Johnson, 1972). In one study, adolescent juvenile delinquents were taught self-control through learning tae kwon do (e.g., practicing self-control by waiting for an opponent to go off balance before taking advantage of it) and following intervention, there was a decrease in aggression and anxiety and an increase in social ability and self-esteem (Trulson 1986; as cited in Diamond, 2012). Other studies also have demonstrated a functional relation "between self-monitoring . . . and an increase in on-task behavior and assignment completion" (Brooks et al., 2003, p. 144). Numerous studies have shown that self-control and self-management strategies are cost-effective and practical ways to improve academic performance (Bolstad & Johnson, 1972; Brooks et al., 2003; Todd et al., 1999), reduce disruptive behaviour and increase self-control in children with aggressive behaviour (e.g., Ronen, 2004), and produce resilient behaviour changes (Alberto & Troutman 1999; as cited in Brooks et al., 2003). Self-management strategies produce such changes in behaviour by placing minimal demands on teacher time and effort (Bolstad & Johnson, 1972).

Mindfulness

A promising practice that is increasingly being used within the fields of medical, psychological and behavioural treatment is mindfulness (e.g., Teasdale et al., 2000; Davidson et al., 2003; Hözel et al., 2011). Kabat-Zinn (2003) has defined mindfulness as "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; as cited in Siegel, Germer & Olendzki, 2009). Based on the aforementioned definition, Shapiro, Carlson, Astin, and Freedman (2006) subdivided mindfulness into three axioms. First, attention ("paying attention") allows you to observe your internal and external experiences from moment-to-moment without interpreting the experience. Second, intention ("on purpose") allows you to set realistic goals and reminds you why you are practicing mindfulness. Last, attitudes ("non-judgmentally") determine how you attend to experiences and the qualities that you bring to attention (e.g., cold and critical vs. affectionate and openhearted).

According to Wallace and Shapiro (2006), "well being arises from a mind that is balanced in four ways" (p. 693) and mindfulness-based practices can be used to cultivate such mental balance. First, conative balance concerns the faculties of intention and volition. It often involves identifying and committing to a range of realistic desires and aspirations concerning one's own and others' happiness. Second, attentional balance is achieved by fostering sustained and voluntary attention. It is based on the belief that human beings, not just individuals diagnosed with ADHD, are prone to attentional deficit, hyperactivity and dysfunction. Third, cognitive balance would enable an individual to engage with experiences without imposing personal assumptions and beliefs on them and thus misinterpreting and distorting them. It requires the person to be clearly and open-mindedly present with the experience. Finally, affective balance "entails a freedom from excessive emotional vacillation, emotional apathy, and inappropriate emotions" (Wallace & Shapiro, 2006, p. 698). Affective imbalance is present when an individual experiences an emotion that is inappropriate for the circumstance (e.g., feeling happiness at someone else's misfortune). In addition to fostering mental health balance, Kabat-

Zinn (2005) argues, mindfulness is empowering because when people learn to pay attention to their moment-to-moment experiences, it "opens channels of deep reservoirs of creativity, intelligence, imagination, clarity, determination, choice and wisdom within [them]" (p. 9).

Mindfulness has its roots in Eastern contemplative traditions (Wallace & Shapiro, 2006), beginning with the teachings of the Buddha 2,500 years ago and the subsequent practice of Buddhism as a form of religion (Brown & Ryan, 2003; Siegel et al., 2009). However, Grossman, Niemann, Schmidt, and Walach (2004) and Kabat-Zinn (2005) argued that mindfulness is not religious or esoteric and it does not conflict with any religious or scientific belief or tradition. Wallace and Shapiro (2006) have noted that Buddhism has in common with Western psychology the fundamental goal of reducing human suffering. Practitioners within the fields of medicine, psychology and behavioural sciences have approached the practice of mindfulness from a scientific, public health perspective (e.g., Burke, 2010; Kabat-Zinn, 1990; Grossman et al., 2004; Hölzel et al., 2011). For example, Hölzel et al. (2011) studied the effects of a Mindfulness Based Stress Reduction (MBSR) intervention to reduce stress levels in 16 physician- and self-referred individuals. The MBSR consisted of eight weekly group meetings during which the participants were trained to use body scan, mindful yoga, and sitting meditation to pay attention, without judgment to the present moment. The results showed an increase in acting with awareness and a reduction in judging stressful situations and events.

Effects of Mindfulness on Adults

Although mindfulness has been practiced for centuries, researchers in medical, psychological and behavioural fields have recently begun to study the effects of mindfulness (Siegel et al., 2009). Results of research on mindfulness have shown the effectiveness of mindfulness in reducing symptoms of a variety of physical and psychological disorders and

enhancing positive affect and well-being (Hölzel et al., 2011). The majority of these studies have focused on adult populations. A meta-analysis assessing the overall effect of mindfulness interventions with adults have showed an overall medium size effect (Zoogman, Goldberg, Hoyt, & Miller, 2014). The neurological, psychological and physiological effects of mindfulness on adults are briefly summarized below.

Neurological effects. Practicing mindfulness has been shown to have positive neurological effects. First, mindfulness has been shown to increase activation in the left side of the anterior cortical regions of the brain (Davidson, 1992). These changes to the brain result in an increase in positive emotional expression and a decrease in negative affects and anxiety (Davidson et al., 2003). Second, it has been associated with an increase in the grey matter in the left hippocampus (Lazar et al., 2005; Hölzel et al., 2011), which enhances "learning and memory processes, emotion regulation, self-referential processing and perspective taking" (Hölzel et al., 2011, p. 36). Last, it has been found to be effective in enhancing immune system functioning by increasing antibody titers (Siegel et al., 2009; Davidson et al., 2003, Siegel, 2007).

Physiological effects. Mindfulness has been shown to reduce physiological suffering and enhance coping skills in patients diagnosed with chronic disorders such as (Grossman et al., 2004; Hölzel et al., 2011): (a) chronic pain (Grossman, Tiefenthaler-Gilmer, Raysz, & Kesper, 2007; Hölzel et al., 2011), (b) fibromyalgia (Hölzel et al., 2011), (c) cancer (Hölzel et al., 2011; Teasdale et al., 2000), (d) substance abuse (Hölzel et al., 2011), and (e) eating disorders (Hölzel et al., 2011; Tapper et al., 2009).

Psychological effects. Mindfulness-based practices have been successful at reducing psychological and psychophysiological symptoms (e.g., anxiety, mood disturbance and stress) (Brown & Ryan, 2003). Practicing mindfulness has been associated with positive outcomes for

participants diagnosed as having an anxiety disorder (Hölzel et al., 2011; Roemer, Orsillo, & Salters-Pedneault, 2008), depression (Hölzel et al., 2011; Teasdale et al., 2000), or other psychiatric illnesses (Grossman et al., 2004, Hölzel et al., 2011)

Effects of Mindfulness on Children and Adolescents

There is a growing interest in the application of mindfulness-based practices to children and adolescents (Burke, 2010). Mindfulness interventions, including those that were previously used for adult participants, have been adapted and modified to be developmentally appropriate for children and youth (Zoogman, Goldberg, Hoyt, & Miller, 2014). Burke (2010), reviewed current research that used mindfulness-based interventions with elementary school children and high school adolescents. The report showed that mindfulness for children has been used to reduce internalizing behaviour (e.g., anxiety and depression; Lee, Semple, Rosa, & Miller, 2008; Saltzman & Goldin, 2008; Semple, Reid, & Miller, 2005) and externalizing behaviour (e.g., Lee et al., 2008; Semple, 2005); and to increase attention (Napoli, Krech, & Holley, 2005) and compliance (Singh et al., 2009). Studies with adolescents have examined the effects of mindfulness on internalizing behaviour (e.g., attention, anxiety, and depression; Beauchemin, Hutchins, & Patterson, 2008; Zylowska et al., 2007), externalizing behaviour (e.g., non-compliance and aggression; Singh et al., 2007), mental health (e.g., stress, psychological symptoms and self esteem; Biegel, Brown, Shapiro, & Shubert, 2009), body-weight (Singh et al., 2008), and social skills and academic performance (Beauchemin et al., 2008). A meta-analysis assessing the overall effect of mindfulness on youth showed an overall small effect size (Zoogman, Goldberg, Hoyt, & Miller, 2014). A number of these studies studying the effects of mindfulness in typically developing children, at-risk youth, adolescents with psychological

problems, and mindfulness as a self-management strategy for young adults are briefly reviewed below.

Typically developing children in classrooms. Mindfulness has been used as a universal prevention strategy in general education classrooms with typically developing children to reduce internalizing and externalizing behaviour (e.g., Lee et al., 2008; Saltzman & Goldin, 2008) and to increase attention (e.g., Napoli et al., 2005). For example, Schonert-Reichl and Lawlor (2010) compared the effects of a mindfulness-based program with 139 students who received the program in their classroom to 107 participants in a control group. The students were selected from 12 elementary schools and were from fourth to seventh grade general education classrooms. Research demonstrated that students practicing mindfulness generally expressed more happiness, well-being and mindful-awareness (Schonert-Reichl & Lawlor, 2010). They also reported significant increases in optimism and self-concept in comparison to control students who were not exposed to mindfulness practices. Teachers reported that these children were more emotionally regulated and engaged less frequently in aggressive and disruptive behaviour.

Underserved children and youth at-risk for academic failure. Mendelson et al (2010) have argued that experiencing chronic environmental stressors (e.g., poverty) can negatively effect healthy development in children and youth. For example, impoverished youth can have social and emotional difficulties, which can lead to poor social outcomes, academic performance, and school dropout (Reynolds, Temple, Robertson, & Mann, 2001). Mindfulness-based practices have been taught to underserved youth in order to reduce negative long-term outcomes. For example, in a study by Mendelson et al (2010), 97 students from fourth and fifth grade attended a mindfulness program four days a week for 12 weeks. The results showed promise that mindfulness-based practices can reduce problematic physiological and cognitive patterns of

response to stress (Mendelson et al., 2010). The mindfulness practice was well accepted and tolerated by the participants (Mendelson et al., 2010).

Adolescents exhibiting externalizing behaviour. Recent research with younger populations has shown that teaching mindfulness to children and adolescents who engage in aggressive and problem behaviour is associated with a reduction in these behaviour patterns (e.g., Singh et al, 2007). For example, Singh et al (2007) taught a mindfulness practice to three teenagers who engaged in disruptive behaviour in the classroom (e.g., bullying, aggression, and non-compliance). Following a four-week long training, all three participants had a significant reduction in target behaviours.

Adolescents with psychological disorders. Mindfulness-based practices have been taught to adolescents with psychological disorders as one component of multi-component intervention programs. For example, they have been utilized in pain management intervention (Thompson & Gauntlett-Gilbert, 2008; Burke, 2010), body weight management program (Singh et al., 2008), and for the prevention of relapse into depression (Allen, 2006; Burke, 2010). They have also been taught to adolescents as the sole intervention in reducing externalizing behaviour (e.g., aggression, non-compliance, and substance use; Bootzin & Stevens, 2005; Singh et al., 2007), and internalizing behaviour (e.g., anxiety, depression, and somatic distress; Biegel et al., 2009; Zylowska et al., 2007). The students were often able to generalize these practices to non-trained settings and behaviour patterns (Burke, 2010).

Mindfulness to increase self-management in young adults. A number of studies have looked at mindfulness as a self-management strategy. For example, Brown and Ryan (2003) studied the effects of mindfulness on self-regulation and self-management in a series of studies using undergraduate students as participants. They argued that "theories of self regulation

converge on the idea that attention to and awareness of one's current states facilitates psychological well-being" (p. 835). In other words, mindful individuals' tendency to be more attuned to and aware of their internal states facilitates psychological well-being. Their results "showed that higher levels of mindfulness were related to lower levels of both mood disturbance and stress before and after the [mindfulness] intervention" (p. 843). Their results demonstrated an association between mindfulness and heightened self-knowledge, which is a key element of self-regulation.

Meditation on the Soles of the Feet

One mindfulness-based intervention that has shown promise in reducing aggressive behaviour in individuals who engage in problem behaviour is *Meditation on the Soles of the Feet* (Singh, et al., 2003; Singh et al., 2007). Considering that many interventions for externalizing behaviours are externally mediated (i.e., by physicians, parents, behaviour therapists or teachers), Singh et al. (2003) wanted to enhance individuals' motivation to change their behaviour by providing them with meaningful involvement in intervention procedures. *Meditation on the Soles of the Feet* is a simple mindfulness technique that enables an individual to divert his or her attention and awareness from an anger-provoking situation to a neutral part of the body (i.e., soles of the feet; Singh et al., 2003). It is based on the assumption that "having a clear, calm mind that is focused on the present moment . . . allows an individual to be aware not only of external conditions but also of internal ones, especially physiological arousal states" (Singh et al. 2003, p. 160). Singh, et al. (2003, p. 162) hypothesized that by learning and following all the steps of this mindfulness practice, the individual will be able to "stop, focus the mind back on the body, calm down and then make a choice about how to react to the thought, event or situation

that triggered the arousal response". Singh et al (2003; 2007) demonstrated the effectiveness of this mindfulness-based practice in two separate studies.

In the first study, *Meditation on the Soles of the Feet* was taught to a 27-year-old male who frequently engaged in aggressive behaviour and was diagnosed with mental retardation and conduct disorder (Singh et al., 2003). Due to his highly aggressive behaviour he was admitted to an inpatient psychiatric hospital. All community providers had mandated that in order for him to be allowed to return to a group home, he had to be free of aggression for six months. Following baseline observation, the participant was taught to recognize situations that triggered verbal or physical aggression. Then the individual was guided through the steps of the *Meditation on the Soles of the feet*. Results showed that there was a major reduction in the number of incidents, physical restraints, verbal and physical aggression, and an increase in self-control. There also was a reduction in staff and resident injuries. Within three months the participant no longer needed to take medication. He also reported satisfaction with the mindfulness practice.

In the second study, *Meditation on the Soles of the Feet* was taught to three seventh-grade adolescents who were diagnosed with conduct disorder. Due to their aggressive behaviour they were at risk for expulsion from school (Singh et al., 2007). Following baseline phase, the participants were trained using the guidelines from the previous study to use the mindfulness-based practice (Singh, et al, 2003). Results showed that all three participants had a substantial decrease in aggressive behaviour and bullying. Follow-up data showed that they went on to graduate from high school without any further threats of expulsion.

MindUP^{TM}

MindUP^{TM} is a mindfulness curriculum that is implemented as a universal prevention intervention to teach children self-regulation, focused concentration and to promote optimism

and positive affect (The Hawn Foundation, 2011). The curriculum is based on principles from neuroscience, positive psychology, and mindful awareness (The Hawn Foundation, 2011). There are three separate curriculums for different age groups: (a) grades pre-K to 2, (b) grades 3 to 5, and (c) grades 6 to 8. Each curriculum consists of 15 lessons to teach social and emotional learning skills in the classroom. The lessons are divided into four units (The Hawn Foundation, 2011): (a) getting focused (introducing brain physiology, mindful attention, and core practices), (b) sharpening your sense (teaching the connection between senses and body), (c) it's all about attitudes (teaching the importance of perception) and (d) taking action mindfully (applying mindfulness to our interactions with others). The core practices, which include deep breathing and mindful listening, are practiced a few minutes every day. Research by Schonert-Reichl and Lawler (2010) has shown that students in classrooms that practiced MindUP^{TM}: (a) had improved optimism, (b) had improved self-concept, and (c) performed faster and better on academic tasks (e.g., tests). In addition, the teachers in MindUP^{TM} classrooms reported that the curriculum improved classroom culture and students' attention and reduced problem behaviour exhibited by students (Schonert-Reichl & Lawlor, 2010).

Problem Behaviour in the Classroom and the Role of Functional Assessment

A consistent finding in the literature is the relationship between student time spent on-task and academic achievement (Brookover, Erickson, & McEvoy, 1997, as cited in McEvoy & Welker, 2000). Studies often show that problem behaviour in the classroom can lead to academic failure (e.g., Venkatesan, 2011). Children who engage in aggressive and disruptive behaviour usually have difficulty complying with classroom norms, tend to spend more time out of their seats (Cobb, 1972; as cited in Patterson, 1986) and less time doing academic work (Eron & Huesmann, 1984; as cited in Patterson, 1986). Teachers of students who engage in disruptive

behaviour in the classroom tend to hold negative attitudes towards these students, expect low academic outcomes from them, assign less school work to them, and spend less time helping them (Dobbs & Arnold, 2009). The students who engage in problem behaviour are more likely to be punished, excluded and controlled (Walker et al., 1996). As a result of this punitive treatment and negative student-teacher relationship, these students hold negative attitudes toward school and end up engaging in even more problem behaviour.

Functional Assessment (FA)

Problem behaviour in the classroom is often sustained by a combination of ecological, physiological and curricular factors (e.g., Bailey & Pyles, 1989; as cited in Dunlap, Kern-Dunlap, Clarke, & Robbins, 1991). Studies have shown that in order to eliminate these behaviour patterns, it is important to understand the function that the behaviour serves for the child or adolescent (Cooper et al., 2007). In general, problem behaviour is motivated by the student's desire to escape an aversive task, demand or situation; to obtain attention; or to attain a tangible reinforcer (Day, Horner, & O'Neill, 1994). Systematic functional assessments are recommended for understanding the variables that set the stage for, occasion and maintain the occurrence or nonoccurrence of problem behaviour (O'Neill et al., 1997). O'Neill et al (1997) defined functional assessment as "a process for gathering information that can be used to maximize the effectiveness and efficiency of behavioral support" (p. 3). There are three major approaches used when completing a functional assessment (O'Neil et al., 1997). The first strategy, informant methods, involves talking to people (e.g., parents, teachers, and peers) who have direct contact with the target individual. Examples of informant methods include interviews, questionnaires, and rating scales. The major goal of an interview is to identify the most likely antecedent triggers and maintaining consequences of problem behaviour. After collecting data through interviews,

hypotheses about the functions of problem behaviour can be developed. The second strategy is direct observation, which consists of systematically observing the target person in their natural environment, during typical daily routines. During an observation, the observer records when problem behaviour occurs, what was happening before the behaviour, what happened after the behaviour and what was the most likely function of the behaviour. Direct observation can be used to prove or disprove a problem behaviour hypothesis. The third strategy is functional analysis, which involves the systematic manipulation of specific variables that are associated with the problem behaviour. This is the most precise and rigorous method of functional assessment. However, it can be expensive in terms of time and energy.

FA and behaviour support plans. Functional assessments can be used to develop student-specific interventions that are directly linked to the function of the target behaviour (e.g., Sugai, Lewis-Palmer, & Hagan-Burke, 2000). As a result of which, the interventions are associated with greater rates of success (Ingram, Lewis-Palmer, & Sugai, 2005; Newcomer & Lewis, 2004). For example, McLaren and Nelson (2009) tested the hypothesis that in order to prevent the escalation of problem behaviour in the classroom, functional assessments be used to provide student-specific information for early intervention. The participants were three male, typically developing, preschool children who engaged in aggressive and disruptive behaviour in the classroom (e.g., hitting, grabbing, kicking, and lying on the stomach). Functional assessment was conducted using structured interview forms and observation forms. Based on the information from the assessment they designed three separate interventions and measured their effectiveness using an ABAB design. Results showed that there was a significant reduction in each child's level of inappropriate behaviour.

Filter and Horner (2009) compared the effectiveness of function-based behavioural intervention in reducing problem behaviour in the classroom, with nonfunction-based behavioural intervention. Through a functional behavioural assessment interview (FACTS; March et al., 2000) hypotheses were derived regarding the problem behaviour exhibited by two grade four students in the classroom. In addition to percentage of problem behaviour, percentage of time engaged on-task was measured. The hypotheses were validated through a functional analysis. The participants were exposed to both an intervention that matched the function of their behaviour (i.e., function-based) and one that did not (i.e., non-function based). Results showed that only with function-based intervention problem behaviour significantly decreased and on-task activity increased.

FA and self-management procedures. Self-management procedures focus on reducing inappropriate behaviour or increasing behaviour incompatible with undesirable behaviour (Kern, Ringdahl, Hilt, & Sterling-Turner, 2001). Self-management strategies are ideal for classrooms given that their administration requires very little teacher time (Smith et al., 1988, as cited in Kern & Dunlap, 1994). Kern and Dunlap (1994) also argued that self-management procedures can transfer a certain degree of control from the teacher to the student, which can help students accept additional responsibility for their own behaviour and can promote adaptive social behaviour. Self-management has been associated with improvement in the generalization and maintenance of behaviour change (Kern & Dunlap, 1994). Self-management also has been shown to be effective in reducing challenging behaviour (e.g., Dunlap et al., 1995; Kern, Childs, Dunlap, Clarke, & Falk, 1994). For example, Kern and Dunlap (1994) investigated the effectiveness of a self-management strategy for decreasing problem behaviour and increasing on-task behaviour of six boys between 11 and 13 years old with emotional and behavioural

disorders, attending a self-contained classroom. Each student met with the behaviour consultant for a 10-minute conference, during which they were taught the self-management procedure using examples of on- and off- task behaviour and specific target behaviour for each student. Results showed that each student was able to accurately monitor his or her own behaviour. There was an increase in engagement in on-task activities and a reduction in problem behaviour.

Kern et al. (2001), used a self-management procedure, augmented by functional assessment to reduce problem behaviour and increase engagement in behaviour incompatible with undesirable behaviour in three male participants who engaged in externalizing behaviours. A functional analysis was conducted for each student to identify the function of his or her problem behaviour. Following the functional analysis, a self-management strategy was taught to each student and its effects were measured using an ABAB design. Results showed a clear reduction in challenging behaviour and an increase in appropriate, functionally equivalent alternative behaviour. Kern et al. (2001) argued that linking self-management procedures to the function of problem behaviour enhanced the self-management intervention's effectiveness. Functional assessment did so by allowing the accurate identification of the function of student-specific problem behaviour and by helping to design a functionally relevant self-management strategy that accurately addressed each participant's problem behaviour.

FA and mindfulness procedures. Considering the aforementioned literature review, this study was designed to replicate and extend the study of the effectiveness of *Meditation on the Soles of the Feet* by Singh et al. (2007) with school-aged children who frequently engage in problem behaviour and off-task behaviour in classroom and non-classroom settings. In this study *Meditation on the Soles of the Feet* was adapted to include information and one practice from the first unit of the MindUP™ curriculum (i.e., information about brain physiology, and deep

breathing practice) to make the mindfulness practice more developmentally appropriate for younger participants. Functional assessment has been associated with enhancing the effectiveness of interventions that aim to reduce problem behaviour in the classroom (e.g., McLaren & Nelson, 2009). In addition, research has shown that a functional assessment can increase the effectiveness of self-management procedures by identifying functionally equivalent, appropriate behaviour that can replace student-specific problem behaviour (Kern et al., 2001). Considering that mindfulness is a self-management strategy, functional assessment was incorporated into the assessment and plan design process to enhance the efficiency and effectiveness of *Meditation on the Soles of the Feet* by linking the intervention to each student's problem behaviour. Through the functional assessment, I identified the specific triggers of problem behaviour and their maintaining consequences for each student, and incorporated this information into the mindfulness-based intervention.

General Case Programming

Increasing attention is being paid to the promotion of generalized responding (Drabman, Hammer, & Rosenbaum, 1979). To attain generalized responding, it is important to select teaching examples that sample the range of stimulus and response variations in the class of stimulus situations where the target behaviour is desired (Becker, Engelmann, & Thomas, 1975). General case programming (GCP) uses principles and procedures from Direct Instruction to facilitate generalized responding (Becker, Engelmann, & Thomas, 1975). According to Horner, Sprague, and Wilcox (1982), effective GCP increases the probability that the individual will successfully perform target responses with different stimuli or in different settings than those used for training. General case programming emphasizes the importance of systematic analysis

of the stimulus and response variations in tasks and skills, and how examples are selected and taught to students (O'Neill, 1990).

Research has shown that general case programming can effectively produce generalized responding in individuals with limited cognitive abilities (Albin, Horner, Koegel, & Dunlap, 1987). General case programing has been used to teach: dressing (Day & Horner, 1986); crossing streets (Page, Iwata, & Neef, 1976); using vending machines (Sprague & Horner, 1984), purchasing groceries (McDonnell, Horner, & Williams, 1984); and using telephones (Horner, Williams, & Stevely, 1983). GCP has also been used to teach social skills to preschool children with hearing impairment (Ducharme & Holborn, 1997).

To effectively design and implement a general case program of a skill or task, six procedural steps are followed (Horner, Sprague, & Wilcox, 1982). First, the instructional universe (i.e., stimulus conditions across which the student must perform the expected behaviours) is clearly defined. Second, the range of relevant stimulus (i.e., stimuli or situations that should occasion the response) and response variations (i.e., variations in the topography of the expected response) within the instructional universe is defined. The range of relevant stimuli determines the situations and examples used for training (Horner, Sprague, & Wilcox, 1982). Third, the instructor select the most frequently occurring examples and situations that sample the relevant stimulus and response variations for teaching and testing. It is important to teach examples of what to do and what not to do. In addition to teaching examples of stimuli that occasion the response, examples of stimuli that should not elicit the response are taught. Fourth, instructor sequence the order in which the examples will be taught. Fifth, selected examples are taught. GCP differs from traditional teaching techniques only in regard to the aforementioned steps required in defining and selecting examples, and it does not require any new teaching

strategies (O'Neill, 1990). Finally, following training of the target skills, the student's ability to perform in novel situations is assessed using untrained probe examples.

General case programming and mindfulness. Using general case analysis in teaching a mindfulness practice can potentially enhance the intervention's efficiency and effectiveness. Functional assessment adds specificity to the intervention by identifying student specific triggers for problem behaviour and the functions that the problem behaviour serves. Using general case programming can help to develop the scope and sequence of lessons. This includes identifying the range of settings in which the mindfulness practice needs to be demonstrated, the range of stimuli that should occasion the use of the mindfulness practice and self-redirection back to the task at hand, and the range of response topographies that may help the student redirect him or herself back to the task at hand. Given this potential, I integrated GCP into the design of the training of the mindfulness practice *Meditation on the Soles of the Feet*. Following the six steps in GCP, I identified and selected teaching examples that sampled the relevant stimuli and response variations across the instructional universe of school settings for each student, and incorporated the information into the design of the mindfulness training.

Research Questions

The study addressed the following research questions:

(1) Is there a functional relation between the use of a mindfulness practice, namely *Meditation on the Soles of the Feet* (Singh et al., 2003; 2007) adapted to be more developmentally appropriate for children and a reduction in problem behaviour (e.g., aggression, defiance, truancy) and an increase in engaged time of children who frequently engage in problem behaviour in classroom and non-classroom settings in a public school?

(2) What is the implementation fidelity of teaching the steps of the mindfulness practice to the target students?

(3) What is the social validity of the mindfulness practice from the perspective of the target students, the teachers with whom they work in school and the students' parents?

CHAPTER 2: RESEARCH METHODOLOGY

This study has been completed through the intervention phase with one of three students enrolled in the study. Intervention is yet to be completed with the other two students. This preliminary analysis serves as my thesis, while future research will address the remaining questions and extensions of this work. Observations with the first student have been completed in the baseline and intervention phases. Observations for the second and third students have been completed in baseline only. The following section provides a description of the study's recruitment procedures, participants, settings, measurement procedures, and research procedures.

Recruitment

The students were recruited from a school district in the lower mainland. After receiving approval to conduct research within the district, the director of instruction and learning services introduced us to the principal of an elementary school. After informing her about the goals, recruitment criteria and the process of the study, the principal gave permission to enter and conduct research at her school (see Appendix A). At the start of the 2013-2014 academic year, I met with the principal and three teachers and explained the goals and the procedures of the study. The teachers then gave permission to conduct the study in their respective classroom. After obtaining permission, I provided each teacher with a copy of the parent consent form for screening (see Appendix B). Once I received signed parent consent forms, I conducted a brief functional assessment interview using the *Functional Assessment Checklist for Teachers and Staff* (FACTS; March et al., 2000; see Appendix C) to learn more about the student's behaviour patterns and the routines in which they had the most difficulty. After the functional assessment interviews (FACTS; March et al., 2000), I scheduled functional assessment observations (FAO) and pilot observation sessions for each student.

Participants

The three elementary-school aged students, who were recruited, met the following inclusion criteria: (a) between 10 and 12 years of age; (b) high *rate* of externalizing behaviour (i.e., 60 to 80% of the time) in the classroom; (c) low to moderate *intensity* of externalizing behaviour in the classroom (e.g., non-compliance, off-task behaviour, verbal or physical aggression); and (d) attendance in a regular or special education classroom. The students also did not meet the exclusion criterion, which was engagement in severe problem behaviour that caused harm to the student, his or her peers and teachers. The enrolled teachers reported that none of the three students engaged in this level of problem behaviour.

The participants of the study were between the ages of 10 and 12 for two reasons. First, previous research with *Meditation on the Soles of the Feet* focused on older participants, and the aim of this study was to extend the findings to younger participants. Second, preadolescence is a transition point that is marked by a number of developmental challenges (Graber & Brooks-Gunn, 1996). Early adolescence is marked by more changes compared to childhood and later adolescence (Brooks-Gunn, 1991). The biological and cognitive changes that occur during pre-adolescence are more likely to cause behavioural problems. For instance, physical changes in pre-adolescents are linked to mood disturbances (Paikoff & Brooks-Gunn, 1990). In addition, adolescents who frequently experience low feelings are more likely to suffer from depression later in life (Peterson & Ebata, 1987, as cited in Graber & Brooks-Gunn, 1996). Research has shown that individuals' level of development determines how they respond to changes (Brooks-Gunn & Reiter, 1990, as cited in Graber & Brooks-Gunn, 1996). Since mindfulness as a self management strategy has been shown to decrease problem behaviour in adolescents (Singh et al., 2007) and increase positive affect in children and pre-adolescents (Schonert-Reichl & Lawlor,

2010), this study targeted pre-adolescents with problem behaviour to examine a potential tool to equip them for successful transition through the adolescent years.

All participants' names are pseudonyms. None of the students had behavioural designations; however, their behaviours were disruptive and problematic for the teacher and the student's peers.

Michael was 10 years old. The teacher identified him as a kind student who enjoyed school and had a good support system at home. He tried to do well in the classroom but tended to lack focus and got distracted easily. The teacher also mentioned that he got anxious when called on or when asked to complete a task. He took medication for his lack of focus and attention; however, he continued to struggle with maintaining focus in the classroom. His problem behaviours, based on teacher report and preliminary functional observation, were: (a) off-task behaviour (e.g., looking around the room when teacher was teaching, not engaging in completing assigned work, playing with fingers or items found on his desk), (b) disruptive behaviour (e.g., speaking with peers during silent reading), and (c) leaving assigned area (e.g., walking around the class, leaving seat multiple times for different reasons).

Edward was 11 years old. His teacher described him as a student who wanted to do well and did a lot of independent and "outside-the-box" thinking. His teacher also mentioned that Edward was very verbal and enjoyed speaking with peers and adults. He identified Edward as a gifted but learning disabled student. Edward's problem behaviours were: (a) off task behaviour (e.g., not completing assigned work), (b) non-compliance (e.g., not taking out material within 10 seconds of being asked to do so), (c) disruptive behaviour (e.g., speaking to peers and the teacher during independent activity, calling out answers and comments, and speaking out of turn), and

(d) leaving assigned area (e.g., leaving his seat multiple times for sharpening pencil, looking at peers' works, or going to the washroom).

Morgan was 11 years old. His teacher identified him as very friendly in one to one interactions with adults. He enjoyed taking on additional responsibilities and was willing to help adults. His problem behaviours were: (a) off task behaviour (e.g., not completing assigned work, looking around the classroom, engaging in a different activity than one that was assigned to him), (b) non-compliance (e.g., not taking out items within 10 seconds of being asked to do so), (c) disruptive behaviour (e.g., hitting his water bottle with a pencil, shouting across the classroom, speaking out of turn, speaking to peers during independent work), (d) leaving assigned area (e.g., walking to look at peers' works), (e) verbal aggression (e.g., challenging peers by speaking in a loud voice and confrontational tone, making comments about peers that made them feel uncomfortable) , and (f) physical aggression (e.g., threatening to hurt peers, pretending to hit peers by raising his arm with a clenched fist, taking peers' belongings and breaking them). His teacher reported that even though he made threats to hurt his peers, he had not engaged in any acts of physical aggression in the current academic year.

After the three students were selected for study participation the parents were contacted once again to obtain consent for study participation (see Appendix B). During baseline, the study and my role were explained to each student and students' assent was obtained (see Appendix D).

Settings

The study was conducted in each student's classroom in a moderate size elementary school in the lower mainland. There were approximately 465 students attending the school. The school implemented a school-wide positive behaviour intervention and support program (SWPBIS). SWPBIS encouraged and promoted pro-social and positive behaviour by teaching the

teachers and other school staff to recognize and provide students with the opportunity to be publicly recognized when students engaged in behaviours such as: (a) using an inside voice, (b) sharing activities with others, and (c) walking quietly in hallway. There was one teacher and on average 25 students in each classroom. None of the three teachers in this study practiced mindfulness with the students in their classroom. The classroom teachers identified two to three subjects or activities for each student during which they engaged in problem behaviour. I confirmed the frequency of problem behaviour in these subjects by conducting functional assessment observations (FAO) and pilot observations. All subjects started with an instruction given by the teacher about the activity, and the instruction was followed by independent work. The subjects for Michael were social studies, math, and language arts. For Edward the subjects were science, social studies and language arts. For Morgan the activities were unstructured work (e.g., craft, independent worksheets or transitions) and silent reading. In addition, for each student two non-classroom settings also were selected where problem behaviour often occurred. In one non-classroom setting the students were indirectly trained through covert rehearsal and guided imagery. In the second setting, no training was provided. Henceforth, the classroom and the indirectly trained non-classroom setting will be referred to as the trained settings and the non-trained non-classroom setting will be referred to as the non-trained setting. The trained non-classroom setting for all three students was gym. The non-trained non-classroom settings were library for Michael, assembly for Edward and band practice for Morgan.

Mindfulness training for Michael, the first participant, took place either in the school's multipurpose room or the music room. These were both quiet rooms with minimal distraction. Michael was encouraged and taught to engage in the mindfulness practice in the trained settings

and at home. The mindfulness training for Edward and Morgan will be conducted in the multipurpose room and the music room.

Measurement

Dependent Variables

The study measured three dependent variables. These were: (a) problem behaviour, (b) engaged time and (c) social validity. The dependent variables for each student were initially identified through an indirect functional assessment (i.e., function assessment interview) and subsequently confirmed through a descriptive functional assessment (i.e., functional assessment observations). For the functional assessment interview, I used the FACTS to identify problem behaviours, antecedent triggers, and maintaining consequences in the settings where problem behaviour occurred for each student (March et al., 2000). Based on these results, I generated hypotheses about the functions of each student's problem behaviour. I then conducted one or two direct functional assessments using the functional behavioural observation form (March et al., 2000) for each student to confirm the hypotheses. A summary of the results is presented in Table 2, and the results are further defined below.

Problem Behaviour

Across the three students problem behaviour included: (a) off-task behaviour (e.g., looking around the classroom when teacher was teaching, engaging in unrelated activities); (b) non-compliance (i.e., not taking the required material out within 10 seconds of the instruction); (c) disruptive behaviour (e.g., turning around to speak to peers, speaking out of turn, shouting across the classroom); (d) leaving assigned area (e.g., walking around the classroom to look at peers' work); (e) verbal aggression or teasing (e.g., threatening to beat up peers after school

when provoked or teased, speaking in a disrespectful manner with adults such as saying "you lied!"); and (f) physical aggression (e.g., pretending to hit peers by raising arm with a clenched fist when challenged by them).

Table 2: Summary of Functional Assessment Results

	Michael	Edward	Morgan
Settings	- Social studies, math, and language arts	- Language arts, science, and social studies	- Unstructured activities, and silent reading
Antecedent	- Academic demand - Unstructured work - Public attention	- Peers in close proximity - Academic demand	- Academic demand - Unstructured work
Behaviour	- Off-task behaviour - Disruptive behaviour - Leaving assigned area	- Off-task behaviour - Non-compliance - Disruptive behaviour - Leaving assigned area	- Off task behaviour - Non-compliance - Disruptive behaviour - Leaving assigned area - Verbal aggression - Physical aggression
Maintaining Consequence	- Escape work - Attention – receive extra help from teacher; peer attention.	- Attention from peers and teacher - Escape assigned work	- Escape work - Adult and peer attention

Engaged Time

On-task behaviour was defined as: (a) orienting towards and attending to the teacher, speaker or performance (e.g., looking at the teacher); (b) listening to and following instructions (e.g., taking out required material when asked to do so, writing notes during lessons, looking at and completing worksheet during independent work); (c) remaining in the assigned area (e.g., remaining seated during lessons, staying with the group during transitions, leaving peers and their belongings alone); (d) keeping hands and body quiet (i.e., not playing with items on the

table); (e) remaining quiet during lessons, performances and activity time (e.g., raising hand to make a comment or ask a question, refraining from speaking to peers during class); and (f) engaging in safe behaviour (e.g., throwing and kicking the ball in a manner that is safe, calmly accepting defeat when on the losing team).

Social Validity

The target students, teachers, and parents evaluated the social validity of the mindfulness practice. Social validity was defined as the importance and acceptability of the goals, procedures, and outcomes of the mindfulness practice, *Meditation on the Soles of the Feet*. A 10-item social validity questionnaire with a 7-point Likert Scale (1 = disagree, 7 = agree) was used (see Appendices G, H and I). The questionnaire included questions regarding the acceptability and importance of the intervention's goals, procedures and outcomes. Additional space was provided following each question for comments.

Implementation Fidelity

During the intervention phase, I self-evaluated my implementation of the training protocol for teaching the mindfulness practice. I used a checklist comprised of 10 items that outlined the steps required to teach and review the mindfulness practice (see Appendix E).

Measurement Procedures

Problem behaviour and on-task behaviour were measured using direct, *in-vivo* observations in the classroom and in the non-classroom settings (e.g., gym, library, assembly). All data were scored using a paper and pencil data collection system.

Data were gathered during 20-minute observation probes. During baseline, for each participant, a minimum of five observations was conducted in the classroom. In addition, one

observation in the trained non-classroom setting and one observation in the non-trained (i.e., generalization) setting (e.g., library, gym, assembly) were conducted. For Michael four observations in the classroom and one in each of the non-classroom settings were conducted following intervention. An interval recording procedure was used (see Appendix F). A 15-second interval was divided into ten seconds for observing and five seconds for recording the observation. Partial interval recording was used to record the percentage of intervals of problem behaviour and whole interval recording was used to record percentage of engaged time. For each observation session, I used a smart phone with an application with a 20-minute audio that signaled the start of a 15 second interval and counted down the last five seconds with a beep for every second. For Morgan and Edward, additional baseline data will be gathered in conformance with the single case research design employed, and a minimum of five data points will be collected following mindfulness training.

The social validity questionnaire was administered to Michael, his teacher, and one of his parents during the intervention phase. The questionnaire will be administered again to Michael, his teacher, and his parent at the end of the intervention phase and once during the follow-up phase. During administration of the social validity questionnaire to Michael, accommodations were made due to his age. Michael was given the option of having the questions read to him and he received elaboration of the questions, as necessary. Based on Michael's preference, I read the questions to him but he did not require further explanation. In addition, Michael was given the opportunity following every question to verbally provide comments, which I wrote down. Following administration of the questionnaire, an average social validity rating was computed for Michael, his teacher, and one of his parents. The same social validity procedure will be administered to Morgan and Edward and their respective teachers and parents. After social

validity ratings for each participant have been calculated, they will be added together to yield an overall average social validity rating during the intervention and follow-up phases for the students, the teachers and the participating parents.

After each training session with Michael, I completed the implementation checklist and computed an average level of implementation of the training protocol for the mindfulness practice. The formula used was number of implementation steps completed accurately divided by the total number of steps and divided by 100. This yielded an average percentage of implementation fidelity following each training session. I will use the same implementation fidelity checklist during training sessions with Morgan and Edward, and compute my level of implementation fidelity with them as well.

Interobserver Agreement

Coding definitions initially obtained through a functional assessment were finalized following two pilot observations and one functional assessment observation.

Interobserver Agreement (IOA) Training

A Master of Art student was trained to code the independent variables for each student in the classroom setting. I served as the primary observer and the trained MA student served as the interobserver agreement observer. IOA training sessions for student behaviour were held in the classroom. We used the 20-minute audio input to score the sessions synchronously. We independently scored each session using a pencil and paper data collection method. Following the completion of each 20-minute interval we met outside the classroom to compare and discuss the results. Prior to coding baseline observation sessions, we completed four *in-vivo* IOA training observations and achieved an average interobserver agreement of 90% (range, 86% - 94%). Interobserver agreement observation has not been completed for Morgan.

Interobserver Agreement Procedure for Problem Behaviour and Engaged Time

Following training, interobserver agreement sessions were gathered across 24% of observation sessions, balanced across two participants and study phases. Interobserver agreement was calculated using an interval-by-interval equation. The formula was the total number of agreements divided by the total number of agreements plus disagreements per interval, multiplied by 100 (A÷ (A+D) × 100%, where A equals total agreements and D equals total disagreements; Kennedy, 2005). Average interobserver agreement for problem behaviour and engaged time was 92% (range, 84% - 99%).

Interobserver Agreement for Implementation Fidelity

Interobserver agreement also was assessed for implementation fidelity of the mindfulness training sessions. For every training session with Michael, I used a 10-item checklist to self-monitor and self-evaluate implementation of the mindfulness intervention. I completed the checklist 12 times across 12 training sessions. My average implementation fidelity was 94% (range, 91% – 100%). Using the same checklist the trained observer assessed interobserver agreement for implementation fidelity during one of the 12 training sessions (8%). Interobserver agreement was 100%. For Michael, two additional training sessions will be assessed for implementation fidelity during the intervention phase to increase the percentage of IOA sessions to 25%. For Morgan and Edward, once the intervention phase begins, 25% of training sessions will be assessed to measure IOA for implementation fidelity of the mindfulness training.

Research Design

A concurrent multiple probe baseline design across participants with one delayed baseline was used (Horner & Baer, 1978). The design included three phases: (a) baseline, (b) intervention and (c) follow-up. A multiple probe baseline design was appropriate for this study

for two reasons. First, mindfulness is a skill that cannot be withdrawn or reversed once it is learned. The multiple baseline design allows the ability to demonstrate experimental control without the need to withdraw the intervention (Baer, Wolf, & Risley, 1968). Second, a multiple probe design allows for conclusions to be drawn based on fewer observation sessions. Given that observation and data collection took place in the classroom and school settings, continuous data collection may have been quite distracting for the teacher and other students (Horner & Baer, 1978). Two of the participants, Michael and Edward, were recruited within the same week and subsequently data collection for both students started at the same time. The third participant, Morgan, was screened nearly two months later; therefore, the baseline depicting his behaviour was delayed.

Research Procedures

The following section provides a description of the procedures implemented and those required across four steps: (a) preparation, (b) baseline, (c) intervention and (d) follow-up.

Preparation

After obtaining all the required consents and assents for study participation, a quiet room with minimum distraction was selected in which training took place for Michael and will take place for Morgan and Edward. A brief preliminary functional assessment (FACTS; March et al., 2000) was conducted for each student in order to define specific problem behaviour, triggers and the contexts in which the behaviour patterns happened. During screening, the results of the functional assessment were used to determine the students' eligibility. The functional assessment information helped define problem behaviour and identify target settings for observation and intervention. The functional assessment results allowed for the individualization of the training by using specific examples of: (a) situations that trigger problem behaviour (i.e., triggering

stimuli), (b) behaviours (e.g., playing with hands, hitting a water bottle, talking to a friend), (c) classroom and non-classroom settings where problem behaviour occurred, and (d) the function of the behaviour which was incorporated into teaching about the short-term and long-term effects of problem behaviour. General case analysis allowed me to select appropriate examples for training by helping me (a) define the instructional universe (i.e., three classroom and two non-classroom settings for each student); (b) define the range of relevant stimulus variations (e.g., teacher talking, peers talking, someone walking in the hallway) and response variations (i.e., practicing *Meditation on the Soles of the Feet* while walking, sitting and standing; Singh et al., 2003) for each student; (c) select examples for teaching and testing, (d) sequence the examples; (e) teach the examples; and (f) test with non-trained examples (e.g., non-trained non-classroom setting). In addition, the assessment helped us identify two appropriate non-classroom settings for each student (i.e., one setting in which indirect training was provided to student through guided imagery or covert rehearsal; and one setting which remained non-trained). Table 3 outlines the general case programming examples for Michael. The functional assessment was only used to identify the settings, triggers and target behaviours and was not used to teach alternative appropriate behaviour, in addition to the mindfulness practice.

Table 3: General Case Programming Examples for Michael

Instructional universe	Range of stimulus variation	Range of response variation	Examples
Classroom: - Socials studies - Math - Language arts Non-clasroom: - Gym - Home	- Teacher talking - Teacher walking - Peers talking - Peers reading interesting book - Peers' projects - Someone walking in the hallway	Practice mindfulness while: - Walking - Standing - Sitting at desk - Sitting on the floor - Doing work - Reading a book - Doing an exam	- Sitting at your desk doing class work when you hear a sound in the hallway or hear your peers talking behind you, instead of turning around and looking you can do your mindfulness and bring you attention back to your work.

Baseline

Direct observations of each student's behaviour and engaged time were conducted in each student's classroom. A minimum of five data points were collected for each participant to establish a stable baseline. In addition, probe observations were gathered in a trained non-classroom setting and a non-trained non-classroom setting (i.e., generalization setting).

Intervention

The intervention was an adapted and enhanced form of the mindfulness practice called *Meditation on the Soles of the Fee* (Singh et al., 2003). The first unit of MindUP™ was added to make the practice more developmentally appropriate and to teach a pre-requisite skill (i.e., deep breathing). The mindfulness practice was augmented by a functional assessment to add specificity to the training examples. General case programming was added to increase the efficiency and effectiveness of the mindfulness training by promoting generalization to non-trained school settings. The intervention was implemented with Michael, and will be implemented with Morgan and Edward.

Meditation on the Soles of the Feet. The intervention is based on the study by Singh et al. (2007) in which they used *Meditation on the Soles of the Feet* to reduce aggressive behaviour in adolescents with conduct disorder. *Meditation on the Soles of the* Feet was adapted and enhanced by adding information and a practice from MindUP™ (Hawn Foundation, 2011). For the training phase Michael met with me three times a week, for 15 minutes for four weeks. In the first session, I introduced myself to him and briefly reviewed the behaviours I had noticed in the classroom (e.g., turning around in seat instead of completing classwork, looking at peers, looking outside the classroom and around when the teacher was giving instructions). We discussed the short-term and long-term effects of off-task behaviour in class. To make the activity more

developmentally appropriate, I used worksheets to interactively teach students about the negative effects of off-task behavior. As an example of the short-term effects of off-task behaviour, I explained that speaking to peers instead of paying attention to the teacher could distract peers as well and lead to their unwillingness to sit with him. I explained that a long-term effect of off-task behaviour in the classroom is the unlikelihood of learning the lesson and subsequently obtaining poor grades. I then briefly described what mindfulness is and how it can help with maintaining attention on the teacher or the activity instead of getting distracted. During this meeting, the student's cooperation was obtained. Finally, I spent the last five minutes of the first session playing a game with Michael to build rapport. When I start the intervention phase with Edward and Morgan, they also will meet with me for 15 minutes, three times a week for four weeks. During the first meeting, I will introduce who I am and explain the short-term and long-term effects of disruptive and aggressive behaviours in the classroom. I will then briefly describe what mindfulness is and how it can help them.

In the second session with Michael, I reviewed what we had discussed during the previous meeting. Given the age of the student, I followed the first unit of the MindUP^{TM} Curriculum (Hawn Foundation, 2011). Using age-appropriate activities (e.g., colouring worksheets, cut and paste activities) I taught him about three different parts of his brain (i.e., prefrontal cortex, hippocampus, and amygdala). He enjoyed colouring the different parts of the brain and expressed interest in learning the names of the three brain regions. I also demonstrated using glitter, glue and water in a bottle how mindfulness can help his mind settle and allow him to pay attention to his work. He enjoyed following the steps of making the glitter in jar demonstration, and informed me that he was planning on making his own jar with glitter to keep at home. I will follow the same lesson plan for Morgan and Edward.

During the third session with Michael, I reviewed what we had discussed in the previous two meetings. I, then, explained what mindfulness is in detail and how it can help him pay attention to the present moment and the activities assigned. I made reference to his brain using the terminology I had taught him the previous day and used the glitter and glass jar demonstration as well. In order to ensure he would be able to follow along with the mindfulness practice, I broke down the following skills involved in practicing *Meditation on the Soles of the Feet* and taught each to him individually through interactive and developmentally appropriate activities: (a) different parts of his feet, (b) mindfulness, (c) mindlessness, (d) the steps for mindful breathing, and (e) counting his breaths to 10. Finally, I explained in detail the mindfulness practice, *Meditation on the Soles of the Feet*, which allows the student to bring his or her mind from an arousing or anger-provoking situation to a neutral part of his or her body (Singh et al., 2003). The steps of *Meditation on the Soles of Feet* as described by Singh et al. (2007, p. 163) were revised prior to training given the student in this study was younger than the participants in the previous studies, and more detail, elaboration and examples were required to effectively individualize and teach the practice. Table 4 outlines the steps of the mindfulness practice. After explaining the rationale of *Meditation on the Soles of Feet* to Michael, I verbally guided him through the steps.

When I begin intervention with Edward and Morgan I will follow the steps described above to teach the steps of the mindfulness practice. In order to individualize the mindfulness training for Edward and Morgan, I will verbally guide them through the steps using specific examples of situations in which each student exhibited problem behaviour in the two trained settings and the one non-trained (i.e., generalization) setting.

Table 4: Steps of the Meditation on the Soles of the Feet for Michael

a) If you are standing, stand comfortably. Give your body a quick shake to make sure it is loose and relax. Make sure the soles of your feet are flat on the floor.

b) If you are sitting, sit comfortably. Give your body a quick shake to make sure it is loose and relaxed with the soles of your feet flat on the floor.

c) Feel the air come in through your nose and out through your mouth. Feel it fill your chest and your stomach. Calmly and slowly let the breath leave your stomach, then your chest and finally your nose. Feel your stomach rising and falling.

d) Think about a time when something happened or someone said something that distracted you from the classroom. Remember what you were feeling in your body. Maybe you heard a noise outside and really wanted to turn around and look what made the sound; maybe you heard your classmates talking and wanted to join in the conversation; maybe your body was feeling wiggly and you wanted to walk around even though the teacher was speaking; maybe you saw someone walk in the hallway and your eyes wanted to look there instead of at your worksheet.

e) You are now distracted, and distracted thoughts are flowing through your mind. Let them flow naturally without trying to stop them. Stay with how your body is feeling. You may feel your body feeling what you felt when you were in the classroom.

f) Now bring all your attention on the soles of your feet.

g) Slowly, feel your toes (you can try to wiggle them in your shoes or try to gently press them down in your shoes), feel your shoes covering your feet (are they tight or are they loose? Can you move your feet in them?), feel the texture of your socks (are they soft or are they rough? Are they sweaty and warm?), feel the curve or the bottom of your feet (is it touching your shoes?), and feel the heels of your feet against the back of your shoes (are they sore or are they comfortable? Are they touching the shoes?). If you do not have shoes on, feel the floor or carpet with the soles of your feet.

h) Keep breathing in through your nose and out through your mouth. Feel the air enter through your nose, in your chest and down in your stomach and feel it leave your stomach, out of your chest, and out through your nose. Focus on the soles of your feet until you feel calm. Slowly start counting to 10. You can count 10 breaths or you can press down each toe once and count (1, 2, 3, 4, 5, 6, 7, 8, 9, 10). When you count all your toes or when you count 10 breaths you can go back to your activity.

i) Practice this mindfulness exercise until you can use it wherever you are (e.g., in the classroom, gym, at home) and whenever something happens that may distract you from listening to the speaker or from doing your classwork or homework.

- Remember that once you are focused, you can go back to your activity or listen to your teacher with a smile on your face because you managed to stay focused instead of getting distracted.

In the fourth meeting with Michael, I reviewed what we had discussed in the first two sessions

and took him through the steps of the mindfulness practice, which I had taught him during the

third session. I asked if he had caught himself getting distracted and whether or not he practiced

mindfulness as he was asked to do so. He informed me of his concern of looking "weird" to his peers when he engaged in the mindfulness practice. I acknowledged his concern and thanked him for sharing it with me. I then came up with a game in which I practiced the mindfulness practice along with a number of other activities and he was asked to determine when I was engaging in the mindfulness practice. He expressed excitement and comfort in practicing mindfulness given that he was not able to identify when I was engaging in mindfulness practice. Finally, I provided him with a laminated instruction briefly outlining the steps of *Meditation on the Soles of the Feet*. In the following session, he notified me that he had asked his teacher to stick it on his desk to remind him to do his mindfulness practice. During this meeting, we practiced mindfulness a number of times and by the end he was ready to guide us through it without any help. Edward and Morgan will also be provided with the same reminder of the steps and can use it as a refresher whenever they would like, if they choose or need to do so. In the final eight sessions with Michael, we continued to meet three times a week and used the sessions to discuss whether he had practiced mindfulness, and if he had any examples to share. We also reviewed the steps of the practice during each session.

Following the completion of the four weeks of training, I met with Michael once a week to answer any questions he had, and encouraged him to use his practice and verbally guided him through the steps. I will gradually decrease how often I see him to once every two weeks, and finally to once per month until the end of the school year.

Follow-Up

To date, follow-up data has not been gathered for any of the three participants. With permission from the school principal, the teachers and the students' parents, follow-up data will

be collected in the following school year to see whether the results maintained during the summer and into a new academic year.

CHAPTER 3: RESULTS

Intervention was implemented and post intervention data were collected only for one

student (Michael). Available data for the second and third students are limited to baseline. This

preliminary analysis serves as my thesis, while future research will address the remaining

questions and extensions of this work.

Problem Behaviour

Figure 1 displays the results of the percentage of intervals with problem behaviour across

the three students. During baseline, Michael's problem behaviour in the classroom had an

average level of 62.2% of intervals (range, 39% - 90%), with an upward trend and moderate

variability. The percentage of intervals of problem behaviour in gym (trained non-classroom

setting) and library (non-trained non-classroom setting) was 30% and 54% respectively. He

engaged in less problem behaviour during gym, as he seemed to enjoy the physical activity.

Following intervention, there was an immediate and stable reduction in the average level of

problem behaviour in the classroom to 18.5% of intervals (range, 15% - 20%). In addition,

during gym (trained, non-classroom setting) and library (generalization setting), problem

behaviour decreased to 12% and 14% of the intervals respectively. Overall, there was an average

improvement of 43.7% between the percentage of problem behaviour in the classroom before

and after intervention. In addition, there was a reduction of intervals of problem behaviour of

18% in gym and 40% in the library.

During baseline, Edward's problem behaviour in the classroom had an average level of

48.6% of intervals (range, 34% - 66%), with a slightly upward trend and moderate variability. He

also engaged in problem behaviour an average of 18% of intervals in gym (trained non-

classroom setting) and 70% (range, 69% - 71%) of intervals in assemblies (non-trained non-

classroom setting). When Edward enters the intervention phase, the percentage of problem behaviour exhibited is anticipated to decrease to low and stable levels.

During baseline, Morgan's problem behaviour in the classroom had an average level of 60.5% of intervals (range, 48% - 74%) with a stable trend and moderate variability. He also exhibited problem behaviour across 35% of intervals in gym (trained non-classroom setting) and 35% of intervals in band (non-trained non-classroom setting). He engaged in less problem behaviour in the gym for two reasons: (a) he was identified as a very physical student and appeared to enjoy the physical activity, and (b) the game did not require him to play as part of a team. When Morgan enters the intervention phase, the percentage of intervals of problem behaviour is anticipated to decrease to low and stable levels.

Engaged Time

Figure 1 displays the results of the percentage of engaged time across the three students. During baseline, Michael's intervals of engaged time in the classroom had an average level of 37.2% of intervals (range, 10% - 51%) with a downward trend and moderate variability. The percentage of on-task behaviour in gym (trained, non-classroom setting) and library (generalization setting) was 70% and 46% respectively. Following intervention, there was an immediate and stable increase in the level of engaged time in the classroom to 81% (range, 79% - 84%). There was also an increase in engaged time in the gym (non-trained) and library (generalization settings) to 87% and 86%, respectively. These increases represented an improvement over baseline of 43.8% in the classroom, 17% in gym and 37% in library.

Figure 1: Results of problem behaviour and engaged time
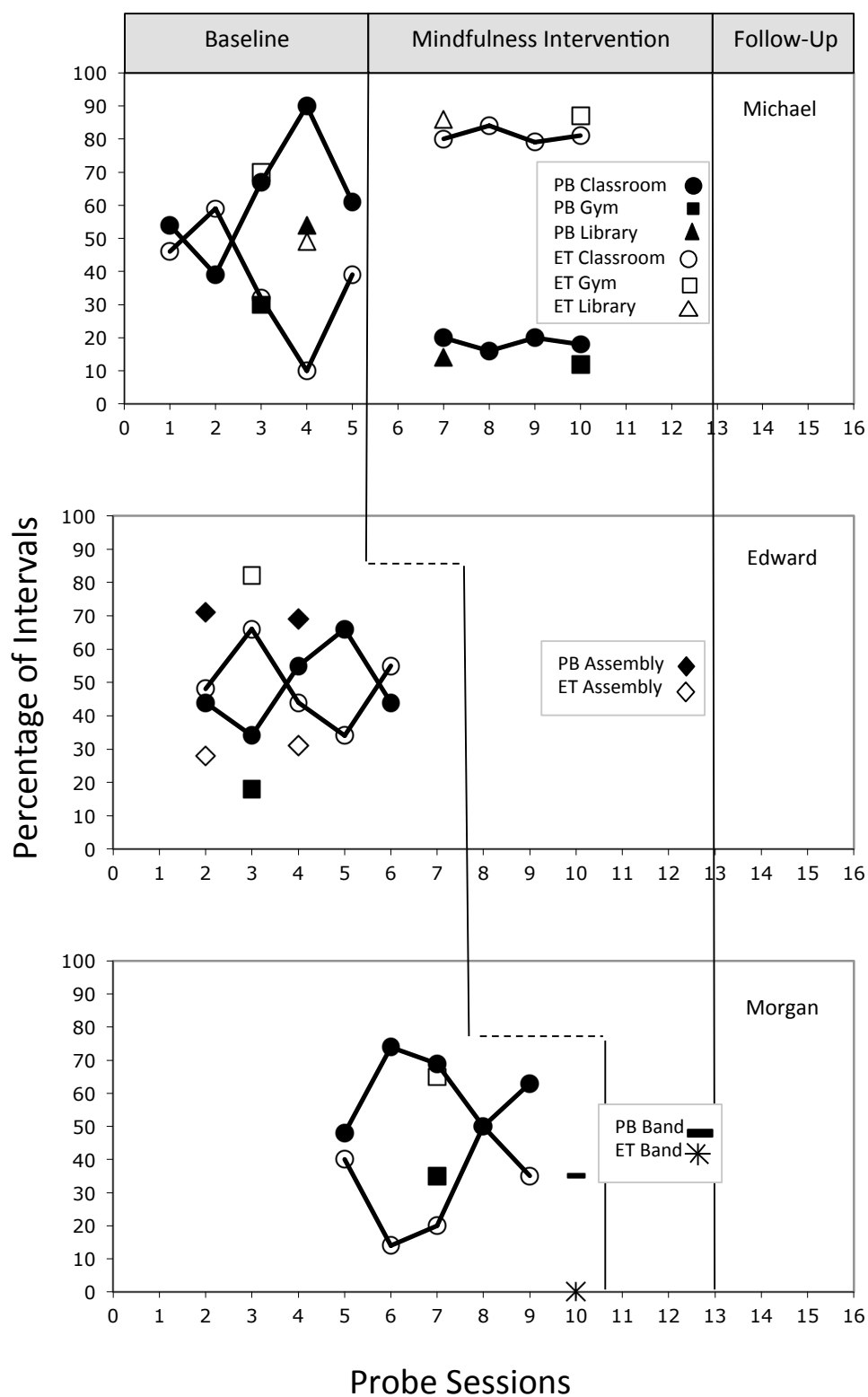
Figure 1: Percentage of intervals of problem behaviour (PB) and engaged time (ET) for each student in the classroom and two additional settings.

During baseline, Edward's average level of engaged time was 49.4% of intervals (range, 34% - 66%) in the classroom with a slightly downward trend and moderate variability. He engaged in on-task behaviour across 29.5% of intervals in assembly (range, 28% - 30%) and 82% in gym. During baseline, Morgan's average level of engaged time was 31.8% of intervals in the classroom (range, 14% - 50%) with a stable trend and moderate variability. He engaged in on-task behaviour across 65% of intervals in gym and 0% of intervals in band practice. He did not engage in any on-task behaviour during band because he had not brought his instrument to practice with him. When Edward and Morgan enter the intervention phase, it is anticipated that the average percentage of intervals of engaged time will increase to high and stable levels (e.g., more than 80%). The expectation of a reduction in problem behaviour is based both on the results that Singh et al. (2007) obtained when they used *Meditation on the Soles of the Feet* with adolescents with conduct disorder and the basic effect obtained with the first participant, Michael.

Social Validity

During the intervention phase, the social validity questionnaire was completed once by Michael, his teacher, and his mother. Michael's average rating was 6.8 on the 7-point Likert scale (1 = *disagree*, 7 = *agree*). Overall, he viewed the goals, procedures and outcomes as important and acceptable. At the same time, he also expressed concern about catching himself distracted. Representative comments included:

"[I like the goals of the mindfulness practice] because I know I won't get distracted"

"I would change nothing [about the intervention]"

"I find it hard to catch myself distracted"

"I like that no one in my class knows that I am learning this".

The teacher's average social validity rating was 5.75. Overall, Michael's teacher also viewed the goals, procedures and outcomes as important and acceptable. Representative comments included:

"Looking back, yes, I feel there has been improvement [in engaged time during classwork]".

"Talking with peers seems to have decreased a bit."

"Having the student leave the room periodically did not have a negative affect on the class."

The parent's average social validity rating was 4.7. Michael's mother viewed the goals and procedures of the study as acceptable. However, she did not notice a change in on-task or problem behaviour at home. Representative comments included:

"[I have seen] no changes in his behaviour"

"I just notice that he stops and thinks when a problem arises".

Social validity will be administered two more times for Michael (at the end of the intervention phase and during the follow-up phase). In addition, Edward and Morgan also will complete the questionnaires, along with their parents and teachers, during the intervention and follow-up phases.

Follow-up

The follow-up phase has not been started for any of the participants. I anticipate that the reduced percentage of intervals of problem behaviour and increased percentage of intervals of engaged time observed in intervention phase for Michael will maintain during follow-up measurement. I also anticipate that positive outcomes for Edward and Morgan will maintain during the follow-up phase. The expectation that the mindfulness practice will continue to be

effective after the intervention phase has been completed is based on two features of the

intervention: (a) mindfulness is a self-management strategy and self management is a strategy

that has been shown to promote generalization and maintenance" (Cooper et al, 2007); and (b)

the study includes a component, general case programming, that has been shown to promote

generalization across settings (Sprague & Horner, 1984). In addition, social validity ratings are

expected to remain at moderate to high level across participants (range 4.5 to 6.5).

CHAPTER 4: DISCUSSION

Summary of Results

The purpose of this study was to investigate whether there is a functional relation between the mindfulness practice of *Meditation on the Soles of the Feet* (Singh et al., 2003; 2007) and a reduction in problem behaviour and an increase in engaged time for children with problem behaviour in the classroom. In addition, the study investigated whether there was an association between implementation of the mindfulness practice and improvement in child behaviour and engaged time in two additional settings in the school (one trained and one non-trained). Social validity also was measured to assess the importance, acceptability and viability of the intervention's goals, procedures and outcomes.

Due to the incompletion of the study, post intervention data are currently only available for one participant. For this student there was a 43.7% reduction in problem behaviour and 43.8% increase in engaged time in the classroom. In addition, there also was a reduction of problem behaviour and an increase in engaged time in both the trained and non-trained non-classroom settings. These data document a basic effect with one student. However, a functional relation cannot be determined because to establish a functional relation, a minimum of three step-wise and stable increases in engaged time and decreases in problem behaviour has to be observed.

Based on a social validity questionnaire completed by the first student following intervention, he viewed the interventions goals, procedures and outcomes as important and acceptable. He had a positive experience with the study and enjoyed learning the mindfulness practice. He also felt comfortable with engaging in the practice in the classroom, as it was very discrete. His only concern was the difficulty of catching himself distracted. This problem could

have been addressed directly if the training had taken place in the classroom without concern for singling out the student in front of his peers. By training in the classroom, instances of off-task behaviour could have been pointed out to him in the environment and encouragement to engage in mindfulness could have been provided immediately. According to the social validity questionnaire that Michael's teacher completed, she found the goals, procedures and outcomes to be acceptable. She noticed an increase in engaged time but not a substantial decrease in his problem behaviour even though the data showed a significant reduction.

According to the social validity questionnaire completed by Michael's mother, the goals and procedures of the study were viewed as acceptable. However, she did not see a change in his problem or on-task behaviour at home. There are two possible explanations. First, the student engaged in different activities at home and school; therefore the training that focused mainly on classroom behaviours (e.g., listening to teacher, remaining in the assigned seat, completing work) may not have been applicable to the activities at home. Second, the problem behaviours at home may have been different from those at school. This study focused on mild to moderate problem behaviour in school settings (e.g., off-task, non-compliance, leaving assigned area) that may not have been as relevant in the home setting.

The implementation fidelity of teaching the steps of the mindfulness practice was very high. Lesson plans created for each day, partly based on the implementation checklist helped to keep the lessons consistent and efficient.

Contributions in Relation to the Literature

In previous studies, *Meditation on the Soles of the Feet* (Singh et al., 2003; 2007) was taught to adolescents and adults who engaged in aggressive behaviour. In replicating and

extending these previous studies, the preliminary results of this study offer five contributions to the literature.

First, the participants recruited in this study were considerably younger than the participants in the previous research. Previously, *Meditation on the Soles of Feet* (Singh et al., 2003; 2007; 2011) was used to reduce problem behaviour in adolescents and an adult who frequently engaged in aggressive behaviour. In research with typically developing pre-adolescents, mindfulness was successfully used as a universal intervention strategy to foster social and emotional learning skills (Schonert-Reichl & Lawlor, 2010). The participants of this study were pre-adolescents who engaged in disruptive behaviour. Documentation of a basic effect with the first student to enter the intervention phase provides preliminary evidence of the promise of this practice for younger students who engage in moderate topographies of problem behaviour (e.g., off-task, disruptive behaviour, non-compliance, leaving assigned area).

Second, in this study, mindfulness as a self-management strategy was combined with functional assessment to individualize the treatment plan (Horner, Albin, Sprague, Storey, & Storey, 1997). Through the use of functional assessment the antecedent conditions and the functions of each student's behaviours were identified and this information was incorporated into the training of the mindfulness practice. The individualization of the mindfulness training may potentially help students better identify the antecedents of their problem behaviour, and the first instances of problem behaviour that they exhibit in classroom and non-classroom settings. This increased awareness may then occasion the self-initiation of the mindfulness practice or the self-redirection of the student back to desired behaviour.

Third, the behaviour patterns of the study's participants (e.g., off-task behaviour, non-compliance, disruptive behaviour) were of lower intensity compared to target behaviour in

previous studies (e.g., aggressive and self-injurious behaviour). Mindfulness has previously been

taught to: (a) reduce aggressive behaviour in adolescents with conduct disorder (Singh et al.,

2007); (b) reduce self-injurious behaviour in adolescents with autism (Singh et al., 2011); (c)

increase self-concept and foster resilience in pre-adolescents (Schonert-Reichl & Lawlor, 2010);

and (d) increase self-regulatory capacities (Burke, 2009). In the current study, mindfulness was

used as a self-management strategy to increase attention and self-regulation, and decrease off-

task and disruptive behaviour in the classroom.

Fourth, the logic of general case programing was employed to promote generalization of

the mindfulness skill to non-trained settings (Horner, Sprague & Wilcox, 1982). By defining (a)

the "instructional universe", (b) the range of stimulus variation, (c) the range of response

variation, and (d) relevant teaching examples, the likelihood that students would generalize the

mindfulness to other settings than the ones trained was examined. Preliminary results for

Michael, showing improvements in problem behaviour and task engagement in one non-trained

school setting, offer preliminary but modest evidence of the potential promise of this curriculum

design strategy for promoting generalization.

Fifth, a social validity measure was included to assess the acceptability, importance and

viability of the goals, procedures and outcomes of the mindfulness practice (Wolf, 1978).

Preliminary results showed that the student and his teacher viewed the study's goals, procedures

and outcomes as important and acceptable. Preliminary results from the questionnaire completed

by the student's mother showed that even though she viewed the goals and procedures as

acceptable, the change in his behaviour at home was nominal. The preliminary results of the

social validity measure can help with revising the training for all three students during the

completion of the study. For instance, Michael reported that he was able to learn the mindfulness

practice; however, his teacher and mother reported that they had not noticed a substantial change in problem behaviour. As a result of this report, more training with Michael as well as with the other students will be scheduled and more observations with different observers will be conducted in the classroom.

Implications

Keeping in mind that the results presented are incomplete, all implications must be read with caution. The preliminary results of this study may have four implications for practitioners, researchers and educators. First, based on the current results for one student, mindfulness may help increase on-task behaviour and reduce levels of problem behaviour in class and non-classroom settings for pre-adolescents. *Meditation on the Soles of the Feet* (Singh et al., 2003) is an easy practice that does not require extensive training to teach to students. If this practice can effectively increase on-task behaviour and reduce problem behaviour, it may be a valuable strategy for teachers to use in the classroom where limited resources (e.g., time and money) are available. Second, the addition of a functional assessment may allow for the individualization of the design of training of the mindfulness practice. Problem behaviours, their triggers and functions were incorporated in the design of role-play scenarios used to teach the student the mindfulness practice. This may have allowed the student to more easily recognize common triggers for problem behaviour and also notice when he began to engage in problem behaviour. Third, the addition of general case programming may have contributed to the generalization of the practice to the non-trained, non-classroom setting. Fourth, when teaching mindfulness to young participants in a public setting it is important to be mindful of their status and handle with care and understanding any concerns regarding how the intervention or the study makes them appear to their peers (e.g., weird or strange). It may be helpful to talk through the concern with

the students and to model the intervention for them to ensure their comfort with practicing

mindfulness in public and their buy-in for the maintenance of the practice.

Cautions and Limitations

Even though the preliminary results of the study for the first student are encouraging,

there are a number of limitations to the study. First, results are based on an incomplete study.

Absence of intervention data for two of three participants makes this study similar to an

empirical case study design involving the use of two phases: baseline (A) and intervention (B).

To demonstrate a functional relation between the independent and dependent variables in a

multiple baseline design three lagged changes in behaviour following intervention have to be

demonstrated. Although a basic effect was demonstrated for the first student, without

intervention data for the second and third students, no implication of causation is possible.

Second, results show that mindfulness was associated with an increase in task engagement and a

reduction in problem behaviour for one student; however, given the lack of intervention data for

the other two students with different problem behaviour patterns, the generalizability of the

results to other students with similar challenges cannot be assessed. Third, the unique

contribution of the functional assessment cannot be assessed because it was implemented in

tandem with the mindfulness practice. Fourth, use of *in-vivo* observations may have acted as a

prompt for the student to remain focused and engage in on-task behaviour. For four weeks, I met

with the student three days a week for 15 minutes. During this time, he formed a positive rapport

with me and came to enjoy our meetings. I served as the primary observer in this study;

therefore, my presence in the classroom may have become a prompt for the student to engage in

on-task behaviour. Fifth, the positive relationship between the student and I may have affected

the change in problem behaviour and on-task behaviour. A case in point is a study by Cavell and

Hughes (2005) in which they compared the effects of PrimeTime (i.e., a three-semester intervention that combined community-based mentoring, parent and teacher consultation and student problem-solving skills training) to a control condition called Lunch buddy mentoring in which mentors met with the students twice a week during lunchtime in noisy lunchrooms. The results showed that the children in both conditions saw gains, but the children in the lunch buddy group showed greater gains in schools with more adversity. They concluded that their findings suggested that high-quality relationships offer many advantages, and the peer and school context where the meetings take place can positively influence relationship between mentor and students. Sixth, outside of the training settings there was only one generalization setting and no observational data on child behaviour at home. Finally, generalization data were collected intermittently and, therefore were less sensitive to abrupt changes (Kennedy, 2005).

Future Research

Future research should focus on four considerations. First, additional research is necessary to strengthen the internal and external validity of the study. The study should be directly replicated in school settings with children of the same age group. In addition, the study should be systematically replicated with students of different age groups and with students who engage in moderate to high intensity problem behaviour. Second, in future research, video recording of participants without the presence of an adult observer in the school settings should replace *in-vivo* observations. Doing so should reduce the likelihood that the observer will become a prompt for the students to engage in the mindfulness practice. Third, additional generalization settings in the school as well as generalization settings in the home would provide additional evidence of the association between mindfulness training informed by general case programming in the selection of role play examples, and the occurrence of generalization in non-

trained settings. Fourth, teaching the mindfulness practice to students' parent(s) may enhance the effectiveness and ensure the long-term maintenance of the mindfulness practice.

Conclusion

This study investigated three questions: (a) is there a functional relation between the use of a mindfulness practice, *Meditation on the Soles of the Feet* (Singh et al., 2003; 2007) adapted to be more developmentally appropriate for children, and a reduction in problem behaviour (e.g., off task, disruptive, verbal aggression) and an increase in engaged time of children who frequently engage in problem behaviour in classroom and non-classroom settings in a public school; (b) what is the implementation fidelity of teaching the steps of the mindfulness practice to the target students; and (c) what is the social validity of the mindfulness practice from the perspective of the target students, the teachers with whom they work in school, and the students' parents?

Considering that, at this time, intervention data is available for one student, no firm conclusion can be drawn regarding a functional relation between the independent and the dependent variables. The limited post intervention data collected on the first student is promising. For this student, the mindfulness practice was associated with a reduction in problem behaviour and an increase in engaged time in the classroom. The results also show that the mindfulness training with this student was associated with improved behaviour and engaged time in one non-trained setting. However, given that only one observation was conducted in the generalization setting, no firm conclusion can be drawn regarding the promotion of generalization to non-trained settings.

Although the data on interventionist implementation fidelity are limited to training with

one student the results are strong. The use of a checklist and a lesson plan for each session that was based on the checklist created consistency in instructional delivery. Nevertheless, with the absence of data for the second and third students, it is not possible to make firm conclusions about the overall level of implementation fidelity for the study.

Social validity data were collected once for Michael, his teacher and his mother. The social validity rating from the point of view of Michael and his teacher were high. Social validity according to his mother was moderate. However, considering the results are limited to one rating for Michael, his teacher and his mother, it is not possible to make firm conclusions about the overall social validity of the study's goals, procedures and outcomes.

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Appendix A: Permission Forms

UBC Faculty of Education
2125 Main Mall
Vancouver, BC, Canada V6T 1Z4

PRINICPAL: PERMISSION FOR CONDUCTING RESEARCH STUDY

Use of a Mindfulness Practice to Decrease Problem Behaviour and Increase Engaged Time of Children at Risk for or with Conduct Disorder in the Classroom

Dear Principal,

The purpose of this form is to request permission for conducting a research study in your school. The study is entitled, "Use of a Mindfulness Practice to Decrease Problem Behaviour and Increase Engaged Time of Children at Risk for or with Conduct Disorder in the Classroom." The study will be conducted in a classroom and four additional settings at your school. The research study is for the fulfillment of the degree requirements for a Masters degree. I am inviting your school to participate in this study because a school staff in your school and/or school district has recommended a student at your school for participation. After reading the permission form, if you have any questions, I will be happy to answer them to ensure that the procedures are fully understood.

Purpose of the Study

The purpose of the study is to examine the effectiveness, acceptability and sustainability of a mindfulness practice called *Meditation on the Soles of the Feet* to reduce problem behaviour and increase engaged time of students who frequently engage in disruptive behaviour in the classroom and are at risk for or have received a behaviour disorder designation by the ministry of education. The approach is based on two research studies conducted previously that used the same practice in two different settings and successfully reduced problem behaviour exhibited by adolescent and adult participants. The intervention's aim is to empower the student by providing him or her with a strategy to control his or her own behaviour. The present study will evaluate the extent to which mindfulness:

- Reduces problem behaviour in the classroom.
- Reduces problem behaviour in four non-classroom settings.
- Increases child's engaged time in the classroom activities.
- Increases child's engaged time in the appropriate non-classroom activities.
- Is acceptable to the student and his or her parents.
- Is acceptable to the teachers that work with the student(s).

Summary of Student Support and Research Activities

As the school principal we will need your permission to enter and conduct research in your school. We will also need your support for (a) informing us of any school policies and procedures we will need to know about; (b) providing us with a list of classrooms that have students who fit the inclusion criteria; (c) helping us designate a quiet room where mindfulness training will take place; and (d) allowing us to interview you in order to help us determine the student's eligibility and to get a better idea of the student's problem behaviour.

Conducting this study in your school will involve the teacher and other classroom staff collaborating with the members of the research team in four student support activities and three research activities.

Research and student support activities will occur over the last six months of the academic year (i.e., January to June). During the first month the student will be screened. Once their eligibility to participate in the study is determined, his or her behaviour will be assessed. Following assessment, the student will be observed for a previously determined length of time in order to determine the current level of problem behaviour and engaged time in the classroom. In order to teach the mindfulness practice, each student will meet with the interventionist three times a week for four weeks. Following training, data will be collected to determine the effectiveness of the practice in reducing problem behaviour and increasing engaged time.

The four student support activities:

- *Comprehensive assessment of the behaviours.* I will conduct a comprehensive assessment (functional assessment) before data collection begins. This will involve one meeting of 1 to 2 hours in length with the teacher and other classroom staff. Through this assessment we will identify student specific problem behaviour, causes of problem behaviour and settings in which the behaviours are more common. Following assessment, the results will be confirmed through a number of direct observations in the classroom. This information will help us in effectively teaching the child the mindfulness practice.

- *Implementation.* We will need to identify a quiet and comfortable room in your school in which the student will be trained to use the mindfulness practice. In addition, based on the student's school schedule, appropriate meeting times will be determined.

- *Data Collection.* Trained research assistants will collect data throughout the study. The times during which data will be collected will be coordinated with the classroom teacher(s).

- *Follow-up support.* After the student's behaviour has improved, we will transition to a phase of research called follow-up support. We will collect data once or twice a month until the end of the school year.

The three research activities are:

- Assessment of the problem behaviours and classroom (and non-classroom) expectations.
- Direct (i.e., paper and pencil recording without videotaping) observations in the classroom and four non-classroom settings will occur throughout the study. The data will help us determine the initial level of problem behaviour and engaged time, the effect of the practice and the long-term maintenance of the effectiveness of the practice.
- Follow-up data collection to measure sustainability of the practice.

Recruitment Process

In order to recruit students from your school we will require your permission to enter your school. We then will obtain permission from the appropriate teachers to enter and conduct research in their classrooms. Finally, we will obtain informed consent from the prospective participants' parents and informed assents from the participants themselves.

Rights as a Principal in a Research Study

Providing us with permission to conduct research in your school is voluntary. Your decision whether or not to allow us to conduct a research study in your school, help us designate a room for mindfulness training, and to allow a student in your school to participate will not have any effect on the student's education, the services your student or school is already receiving, or future opportunities for behaviour consultation and support. By signing the permission form, you do not waive any of your legal rights. If you have any concerns about your rights or treatment, you may contact the Research Subject Information Line in the UBC Office of Research Services at (604)–822–8598. Your signature below indicates that you are providing us with your permission to conduct the study in your school and assisting us in finding a room for mindfulness training. It also indicates that you have received a copy of this permission form for your records.

Sincerely,

THE UNIVERSITY OF BRITISH COLUMBIA **UBC**

Faculty *of* Education

PERMISSION FORM FOR CONDUCTING RESEARCH STUDY

Study Title: Use of a Mindfulness Practice to Decrease Problem Behaviour and Increase Engaged Time of Children at Risk for or with Conduct Disorder in the Classroom (the "study")

I have read and understood the attached letter of request for permission for a study to be conducted in my school that is entitled "Use of a Mindfulness Practice to Decrease Problem Behaviour and Increase Engaged Time of Children at Risk for or with Conduct Disorder in the Classroom." I understand that the research team will require access to a classroom and four additional settings at my school in order to collect data. I understand that I may need to assist the research team in identifying a room in which training will take place. I also understand that data on the focus student's problem behaviour will be collected. I understand that all information will be kept confidential, that my school's participation is voluntary, and that I am not waiving any legal claims, rights or remedies. I also understand that I will receive a copy of this letter of request for permission to keep for my own records. My decision regarding my school's participation and conducting research in my school is indicated below:

_____ **YES**, I give permission for the research team to enter my school and to conduct the study as described above.

_____ **NO**, I do not give permission for the research team to enter my school and to conduct the study as described above.

Focus Student's Name:_____

Principal Signature: _____ Date: _____

Witness: _____ Date: _____

PLEASE RETURN THIS PAGE TO:
Faculty of Education
University of British Columbia
2125 Main Mall
Vancouver, BC, V6T 1Z4

THE UNIVERSITY OF BRITISH COLUMBIA
Faculty *of* Education UBC

TEACHER: PERMISSION FOR CONDUCTING RESEARCH STUDY

Use of a Mindfulness Practice to Decrease Problem Behaviour and Increase Engaged Time of Children at Risk for or with Conduct Disorder in the Classroom

Dear Teacher,

The purpose of this form is to request permission for conducting a research study in your classroom. The study will be conducted in your classroom and four additional settings at the school. The research study is for the fulfillment of the degree requirements for a Master of Arts degree. I am asking for your permission and hoping to invite one of your students to participate in the study because a school staff in your school and/or school district has recommended the student for participation. After reading the permission form, if you have any question, I will be happy to answer them to ensure that the procedures are fully understood.

Purpose of the Study

The purpose of the study is to examine the effectiveness, acceptability and sustainability of a mindfulness practice called *Meditation on the Soles of the Feet* to reduce problem behaviour and increase engaged time of three students who frequently engage in disruptive behaviour in the classroom and are at risk for or have received a behaviour disorder designation by the ministry of education. The approach is based on two research studies conducted previously that used the same practice in two different settings and successfully reduced problem behaviour exhibited by adolescent and adult participants. The intervention's aim is to empower the student by providing him or her with a strategy to control his or her own behaviour. The present study will evaluate the extent to which mindfulness:

- Reduces problem behaviour in the classroom.
- Reduces problem behaviour in four non-classroom settings.
- Increases student's engaged time in the classroom activities.
- Increases student's engaged time in the appropriate non-classroom activities.
- Is acceptable to the student and his or her parents.
- Is acceptable to the teachers that work with the student(s).

Summary of Student Support and Research Activities

Participation in the study will involve you (the teacher(s)) and other classroom staff collaborating with the members of the research team in four student support activities and four research activities:

The four student support activities:

- *Comprehensive assessment of the behaviours.* I will conduct a comprehensive assessment (functional assessment) before data collection begins. This will involve one meeting of 1 to 2 hours in length with you (i.e., the teacher and other classroom staff). Through this assessment we will identify child specific problem behaviour, causes of problem behaviour and settings in which the behaviours are more common. Following assessment, the results will be confirmed through a number of direct observations in the classroom. This information will help us in effectively teaching the child the mindfulness practice.

- *Implementation.* We will need to identify a quiet and comfortable room in which the child will be trained to use the mindfulness practice. In addition, based on the child's school schedule, appropriate meeting times will be determined.

- *Data Collection.* Trained research assistants will collect data throughout the study. The times during which data will be collected will be coordinated with the classroom teacher(s).

- *Follow up support.* After the child's behaviour has improved, we will transition to a phase of research called follow-up support. We will collect data once or twice a month until the end of the school year.

The four research activities are:

- Assessment of the problem behaviours and classroom (and non-classroom) expectations.
- Preliminary screening and reviewing the student's available records (i.e., possible diagnoses and/or designations) to determine his or her eligibility for participation.
- Direct (i.e., paper and pencil recording without videotaping) observations in the classroom and four non-classroom settings will occur throughout the study. The data will help us determine the initial level of problem behaviour and engaged time, the effect of the practice and the long-term maintenance of the effectiveness of the practice.
- Follow-up data collection to measure sustainability of the practice.

Research and student support activities will occur over six months of the academic year (i.e., September to March). During the first month the student will be screened. Once their eligibility to participate in the study is determined, his or her behaviours will be assessed. Following assessment, each student will be observed for a previously determined length of time in order to

determine the current level of problem behaviour and engaged-time in the classroom. In order to teach the mindfulness practice, each student will meet with the interventionist three times a week for four weeks. Following training, data will be collected to determine the effectiveness of the practice in reducing problem behaviour and increasing engaged time.

Teacher Support Activities

As the classroom teacher you will be asked to provide us with your permission to enter your classroom and conduct the study with one or more of your students. You will be interviewed twice throughout the study (i.e., once for screening and once for the study). You will be asked to help us identify and designate a quiet room where mindfulness training will take place. You will also identify the appropriate setting and time during which regular meetings with the student will occur. Following the conclusion of the study, you will be provided with follow-up support and training in order to help maintain the student's use of the mindfulness practice.

Recruitment Process

In order to recruit one of your students as a participant we will require your permission to enter and conduct this study in your classroom. We then will contact and obtain informed consent from the prospective participants' parents and informed assent from the participants themselves for both the screening process and study participation.

Screening Process

The screening process will allow us to determine the student's eligibility to participate in the study. The specific steps in the process are described below.

1. *Preliminary interview:* We will first meet with you and conduct a preliminary functional assessment interview. The interview will focus on understanding the student's problem behaviours at school, with a particular focus on the classroom. The interview will take approximately one hour.

2. *Preliminary observations:* If the interview indicates that the student is a good fit for the study, I will observe him or her in your classroom and four additional school-based settings. During the observation, I will use an observation form to gather data about student-specific problem behaviours. A minimum of two to four observations will be conducted. Each observation will last approximately 20 minutes.

3. *Informed consent for study participation:* If the observations confirm the presence of durable problem behaviours at school, then we will invite the student to participate in the study. At that time, we will ask the student's parents to read and sign an informed consent letter for participation and we will obtain informed assent from the student.

Rights as a Classroom Teacher in a Research Study

Providing us with permission to conduct research in your classroom is voluntary. Your decision to whether or not allow us into your classroom to conduct research with one of your students will not have any effect on the student's education, the services the student or classroom is already receiving at school, or future opportunities for behaviour consultation and support. By signing the permission form, you do not waive any of your legal rights. If you have any concerns about your rights or treatment, you may contact the Research Subject Information Line in the UBC Office of Research Services at (604)–822–8598. Your signature below indicates that you are providing us with your permission to conduct the study in your classroom. It also indicates that you have received a copy of this permission form for your records.

Sincerely,

THE UNIVERSITY OF BRITISH COLUMBIA
Faculty *of* Education

PERMISSION FORM FOR CONDUCTING RESEARCH STUDY

Study Title: Use of a Mindfulness Practice to Decrease Problem Behaviour and Increase Engaged Time of Children at Risk for or with Conduct Disorder in the Classroom (the "study")

I have read and understood the attached letter of request for permission for the research study entitled "Use of a Mindfulness Practice to Decrease Problem Behaviour and Increase Engaged Time of Children at Risk for or with Conduct Disorder in the Classroom." to be conducted in my classroom. I understand that I will be interviewed regarding the focus student's problem behaviours, and I may need to assist the research team in identifying a room in which training will take place. I understand that I will be provided with the necessary training and support in order to help the student continue using the mindfulness practice following the completion of the study. I also understand that the research staff will collect data on the student's problem behaviour in my classroom. I understand that all information will be kept confidential, that my participation is voluntary, and that I am not waiving any legal claims, rights or remedies. I also understand that I will receive a copy of this letter of request for permission to keep for my own records. My decision regarding my participation is indicated below:

_____ **YES**, I give permission for the research team to enter my classroom and to conduct the study as described above.

_____ **NO**, I do not give permission for the research team to enter my classroom and to conduct the study as described above.

Focus Student's Name:_____

Teacher Signature: _____ Date: _____

Witness: _____ Date: _____

PLEASE RETURN THIS PAGE TO:
Faculty of Education
University of British Columbia
2125 Main Mall
Vancouver, BC, V6T 1Z4

Appendix B: Consent Forms

THE UNIVERSITY OF BRITISH COLUMBIA UBC
Faculty *of* Education

PARENTS: CONSENT FOR PARTICIPATION IN SCREENING PROCESS

**Use of a Mindfulness Practice to Decrease Problem Behaviour and Increase Engaged Time
of Children at Risk for or with Conduct Disorder in the Classroom**

Dear Parent/Guardian,

The purpose of this form is to request consent for your child's participation in a screening
process for a research study. The study will be conducted in your child's classroom and four
additional settings at his or her school. The research study is for the fulfillment of the degree
requirements for a Masters of Arts degree. I am inviting your child to participate in the screening
process because a school staff in your child's school and/or school district has recommended
your child for participation. After reading the consent form, if you have any question, I will be
happy to answer them to ensure that the screening procedures are fully understood.

Purpose of the Study

The purpose of the study is to examine the effectiveness, acceptability and sustainability of a
mindfulness practice called *Meditation on the Soles of the Feet* to reduce problem behaviour and
increase engaged time of students who frequently engage in disruptive behaviour in the
classroom and are at risk for or have received a behaviour disorder designation by the ministry of
education. The approach is based on two research studies conducted previously that used the
same practice in two different settings and successfully reduced problem behaviour exhibited by
adolescent and adult participants. The intervention's aim is to empower the child by providing
him or her with a strategy to control his or her own behaviour. The present study will evaluate
the extent to which mindfulness:

- Reduces problem behaviour in the classroom.
- Reduces problem behaviour in four non-classroom settings.
- Increases child's engaged time in the classroom activities.
- Increases child's engaged time in appropriate non-classroom activities.
- Is acceptable to the student and his or her parents.
- Is acceptable to the teacher(s) that work with the student(s).

Summary of Student Support and Research Activities

Participation in the study will involve the student's teacher(s) and other classroom staff
collaborating with the members of the research team in three student support activities and five
research activities:

The three student support activities:

- Comprehensive assessment of the behaviours.
- Identifying the appropriate setting and time during which regular meetings with the student will occur.
- Follow-up support to help maintain the child's use of the mindfulness practice.

The five research activities are:

- Preliminary screening and reviewing the student's available records (i.e., possible diagnoses and/or designations) to determine his or her fit for the study.
- Assessment of the problem behaviours and classroom (and non-classroom) expectations.
- Direct observation by an observer to verify the child specific problem behaviours and their respective function/purpose.
- Direct observation by one or two observers in the classroom and in four non-classroom settings to measure outcomes.
- Follow-up data collection to measure the durability of improvements in child behaviour across classroom and non-classroom settings.

Research and student support activities will occur over six months of the academic year (i.e., September to March). During the first month the child will be screened. Once their eligibility to participate in the study is determined, his or her behaviours will be assessed. Following assessment, each child will be observed for a previously determined length of time in order to determine the current level of problem behaviour and engaged time in the classroom. In order to teach the mindfulness practice, each student will meet with the interventionist three times a week for four weeks. Following training, data will be collected to determine the effectiveness of the practice in reducing problem behaviour and increasing engaged time.

Criteria for Participation in Study

Before a child can participate in the study, we first need to confirm that the child meets the criteria for participation. A total of three (3) students will participate in this research study. The children will meet the following criteria:

- The student is between the ages of 10 and 12 (Pre-adolescent).
- According to the BC's special needs categories, the student experiences moderate to severe behaviour, social/emotional, or mental health problems; or according to the DSM-IV-TR the child is at risk for or has a diagnosis of conduct disorder due to persistent problem behaviour at school.
- The child has a high rate of externalizing behaviour (i.e., 60 to 80% of the time).
- The child frequently engages in low to moderate levels of problem behaviour; that is, he or she has not engaged in problem behaviour that has caused physical injury to him or herself or to others.
- Attends either a regular or special education classroom.

- The principal gives permission to teach the focus student the mindfulness practice in a separate room in the school, and permission to conduct direct observations (i.e., paper and pencil recording without videotaping) in the classroom and school.
- Both the teacher and the focus student's parents are willing to participate in the study for the last six months of the academic year (i.e., September to March).
- The child and his or her teacher(s) and parent(s) give permission for pulling out the child from the classroom for 15 minutes, three times a week, for four weeks to teach the mindfulness intervention.
- The focus student will remain in the same classroom for the duration of the study (i.e., September to March).
- The family of the focus student does not plan to move out of their neighborhood for the duration of the study (i.e., September to March).

Screening Process

The screening process will allow us to determine your child's eligibility to participate in the study. First, we will contact you by telephone, review the criteria for participation and answer any questions you may have. We will then decide together whether to proceed with the screening process. The specific steps in the process are described below.

4. *Preliminary interview:* We will first meet with your child's classroom teacher and conduct a preliminary functional assessment interview. The interview will focus on understanding your child's problem behaviours at school, with a particular focus on the classroom. The interview will take approximately one hour.

5. *Preliminary observations:* If the interview indicates that your child may be a good fit for the study, then we will conduct observations in the classroom to attain a better understanding of your child's behaviours. I will observe your child in his or her classroom and four additional school-based settings. During the observation, I will use an observation form to gather data about child problem behaviours. A minimum of two to four observations will be conducted. Each observation will last approximately 20 minutes.

6. *Informed consent for study participation:* If the observations confirm the presence of durable problem behaviours at school, then we will invite your child to participate in the study. At that time, we will ask you to read and sign an informed consent letter for participation.

Potential Risks and Safeguards

If you agree to permit your child to participate in the screening process, you will need to consider three potential risks: (1) physical, (2) psychological, and (3) loss of confidentiality.

1. *Physical risk:* Because your child engages in problem behaviour, there is more than a minimal risk that your child, the teacher or a peer may experience physical injury during the screening process. Every precaution will be taken to minimize this risk:

a. We will recruit a child who engages in low to moderate levels of problem behavior, and who has not in the past year engaged in problem behavior that has caused injury to him or herself or to others.

b. Members of the project team have extensive experience working with children who engage in problem behaviour.

c. Observations will be terminated if your child begins to engage in high intensity problem behaviour.

d. As needed, project staff will be available to assist you, your child or your child's teacher during observations.

2. *Psychological risk*: Because your child will be observed in his or her classroom, you, your child's teacher or your child may experience some discomfort or stress during this activity. Several steps will be taken to guard against this risk:

a. During observations, the observer will maintain a low profile and not call attention to him or herself.

b. You, your child's teacher or your child can terminate an observation any time.

c. Preliminary interviews will be conducted at a time and place that is convenient for you, your child's teacher and your child.

3. *Loss of confidentiality*: There is a risk that you, your child, or your child's teacher may experience a loss of confidentiality. To guard against this risk we will:

a. Change the names of all persons, places, and programs described on assessment forms.

b. Allow access to information only to members of the research team.

c. The purpose of our presence in the classroom will not be made explicit to the student's peers and/or their parents; therefore he or she will not be identified as a participant.

d. Keep all data, and notes in a locked file in a secure office.

e. Destroy all data, collected solely for the purposes of screening, five years after the study is completed.

Potential Benefits

By participating in the screening process, your child may experience one of the two potential benefits outlined below.

1. Your child's participation in a research study: If the screening process indicates that your child is a good fit for the mindfulness study, your child will be invited to participate in the research study. There are three specific benefits of participation:

a. Your child's problem behaviours may decrease to near zero levels in the classroom and four additional school-based settings.

b. The child's engaged time in appropriate classroom activities may increase which can benefit him or her academically.

c. The child may be able to use the mindfulness practice in settings outside the school (e.g., home, grocery store, park).

However, because behavioural and quality of life improvements cannot be assured, it is possible that your child may not experience all of the benefits listed above.

2. Assessment report and recommendations: If the screening process does not indicate that your child is a good fit for the study, then we will provide you with three benefits:
   a. Summary of the preliminary interview and/or observations.
   b. Recommendations for behaviour support that are based on the interview and/or observations.
   c. Referral to appropriate, alternative sources for classroom behaviour support.

Alternatives

If during the screening process, you choose not to participate in the study, we will refer you to appropriate, alternative sources for behaviour support in the classroom.

Rights as a Research Participant

Your child's participation in the screening process is voluntary. Your decision of whether or not to participate and allow your child to participate will not have any effect on your child's education, the services your child is already receiving at school, or future opportunities for behaviour consultation and support. If you agree to allow your child to participate you are free to withdraw consent and refuse to continue your child's participation. You may do so at any time without penalty or loss of benefits to which your child is entitled. Terminating participation in the study will have no negative impact on the graduate student's thesis research whatsoever. If you withdraw early in the research, the graduate student will recruit another child for the study. If you withdraw later, the graduate student will complete her thesis, with your permission, using the data gathered up to the point of study termination. By signing the consent form, you do not waive any of your legal rights. If you have any concerns about your rights or treatment as a research participant, you may contact the Research Subject Information Line in the UBC Office of Research Services at (604)–822–8598. Your signature below indicates that you consent to your child's participation in the study. It also indicates that you have received a copy of this consent form for your records.

Sincerely,

THE UNIVERSITY OF BRITISH COLUMBIA
Faculty *of* Education **UBC**

CONSENT FORM FOR PARTICIPATION IN SCREENING PROCESS

Study Title: Use of a Mindfulness Practice to Decrease Problem Behaviour and Increase Engaged Time of Children at Risk for or with Conduct Disorder in the Classroom (the "study")

I have read and understood the attached letter of request to participate in a screening process for the study entitled "Use of a Mindfulness Practice to Decrease Problem Behaviour and Increase Engaged Time of Children at Risk for or with Conduct Disorder in the Classroom." I understand that all information will be kept confidential, that my child's and my participation is voluntary, and that I may withdraw consent at any time and discontinue my child's and my participation at any time without penalty or loss of benefits to which my child and I am otherwise entitled, and that I am not waiving any legal claims, rights or remedies. I also understand that I will receive a copy of this letter of request for consent for my own records. My decision regarding my child's and my participation is indicated below:

_____ **YES**, I consent for my child's and my participation in the screening process.

_____ **NO**, I do not consent for my child's and my participation in the screening process.

Focus Child's Name: _____

Parent/Guardian Signature: _____ Date: _____

Parent/Guardian Signature: _____ Date: _____

Witness: _____ Date: _____

PLEASE RETURN THIS PAGE TO:
Faculty of Education
University of British Columbia
2125 Main Mall
Vancouver, BC, V6T 1Z4

THE UNIVERSITY OF BRITISH COLUMBIA UBC

Faculty *of* Education

PARENT: CONSENT FOR PARTICIPATION IN RESEARCH STUDY

Use of a Mindfulness Practice to Decrease Problem Behaviour and Increase Engaged Time of Children at Risk for or with Conduct Disorder in the Classroom

Dear Parent/Guardian,

The purpose of this form is to request consent for your child's participation in a research study. The study is entitled, "Use of a Mindfulness Practice to Decrease Problem Behaviour and Increase Engaged Time of Children at Risk for or with Conduct Disorder in the Classroom." The study will be conducted in your child's classroom and four additional settings at his or her school. The research study is for the fulfillment of the degree requirements for a Masters degree. I am inviting your child to participate in this study because through the screening process we have determined that your child is a good fit for the study. After reading the consent form, if you have any questions, I will be happy to answer them to ensure that the procedures are fully understood.

Purpose of the Study

The purpose of the study is to examine the effectiveness, acceptability and sustainability of a mindfulness practice called *Meditation on the Soles of the Feet* to reduce problem behaviour and increase engaged time of students who frequently engage in disruptive behaviour in the classroom and are at risk for or have received a behaviour disorder designation by the ministry of education. The approach is based on two research studies conducted previously that used the same practice in two different settings and successfully reduced problem behaviour exhibited by adolescent and adult participants. The intervention's aim is to empower the child by providing him or her with a strategy to control his or her own behaviour. The present study will evaluate the extent to which mindfulness:

- Reduces problem behaviour in the classroom.
- Reduces problem behaviour in four non-classroom settings.
- Increases child's engaged time in the classroom activities.
- Increases child's engaged time in appropriate non-classroom activities.
- Is acceptable to the student and his or her parents.
- Is acceptable to the teacher(s) that work with the student(s).

Summary of Student Support and Research Activities

Participation in the study will involve the student's teacher(s) and other classroom staff collaborating with the members of the research team in four student support activities and three research activities.

Research and student support activities will occur over six months of the academic year (i.e., September to March). During the first month your child was screened. Now that we have determined your child's eligibility to participate in the study, his or her behaviours will be assessed. Following assessment, each child will be observed for a previously determined length of time in order to determine the current level of problem behaviour and engaged time in the classroom. In order to teach the mindfulness practice, each student will meet with the interventionist three times a week for four weeks. Following training, data will be collected to determine the effectiveness of the practice in reducing problem behaviour and increasing engaged time.

The four student support activities:

- *Comprehensive assessment of the behaviours.* I will conduct a comprehensive assessment (functional assessment) before data collection begins. This will involve one meeting of 1 to 2 hours in length with the teacher(s) and other classroom staff. Through this assessment we will identify child specific problem behaviour, causes of problem behaviour and settings in which the behaviours are more common. Following assessment, the results will be confirmed through a number of direct observations in the classroom and four additional non-classroom settings. This information will help us in effectively teaching the child the mindfulness practice.

- *Implementation.* We will need to identify a quiet and comfortable room in which the child will be trained to use the mindfulness practice. In addition, based on the child's school schedule, appropriate meeting times will be determined.

- *Data Collection.* Trained research assistants will collect data throughout the study. The times during which data will be collected will be coordinated with the classroom teacher(s).

- *Follow-up support to help maintain the child's use of the mindfulness practice.* After the child's behaviour has improved, we will transition to a phase of research called follow-up support. We will collect data once or twice a month until the end of the school year.

The three research activities are:

- Assessment of the problem behaviours and classroom and non-classroom expectations.

- Direct observations (i.e., paper and pencil recording without videotaping) in the classroom and four non-classroom settings will occur throughout the study. The data will help us determine the initial level of problem behaviour and engaged time, the effect of the practice and the long-term maintenance of the effectiveness of the practice.
- Follow-up data collection to measure sustainability of the practice.

Potential Risks and Safeguards

If you agree to permit your child to participate in the research study, you will need to consider three potential risks: (1) physical, (2) psychological, and (3) loss of confidentiality.

4. *Physical risk:* Because your child engages in problem behaviour, there is more than a minimal risk that your child, the teacher or a peer may experience physical injury during the assessment process. Every precaution will be taken to minimize this risk:
    a. We will recruit a child who engages in low to moderate levels of problem behavior, and who has not in the past year engaged in problem behavior that has caused injury to him or herself or to others.
    b. Members of the project team have extensive experience working with children who engage in problem behaviour.
    c. Observations will be terminated if your child begins to engage in high intensity problem behaviour.
    d. As needed, project staff will be available to assist you, your child or your child's teacher during observations.

5. *Psychological risk*: Because your child will be observed in his or her classroom, you, your child's teacher or your child may experience some discomfort or stress during this activity. Several steps will be taken to guard against this risk:
    a. During observations, the observer will maintain a low profile and not call attention to him or herself.
    b. You, your child's teacher or your child can terminate an observation any time.
    c. Preliminary interviews will be conducted at a time and place that is convenient for you, your child's teacher and your child.

6. *Loss of confidentiality*: There is a risk that you, your child, or your child's teacher may experience a loss of confidentiality. To guard against this risk we will:
    a. Change the names of all persons, places, and programs described on assessment forms.
    b. Allow access to information only to members of the research team.
    c. The purpose of our presence in the classroom will not be made explicit to the student's peers and/or their parents; therefore he or she will not be identified as a participant.
    d. Keep all data, and notes in a locked file in a secure office.
    e. Destroy all data, collected solely for the purposes of screening, five years after the study is completed.

Potential Benefits

By participating in the research study, your child may experience the potential benefits outlined below.

3. Your child's problem behaviours may decrease to near zero levels in the classroom and four additional school-based settings.
4. Your child's engaged time in appropriate classroom activities may increase which can benefit him or her academically.
5. Your child may be able to use the mindfulness practice in settings outside the school (e.g., home, grocery store, park).

However, because behavioural and quality of life improvements cannot be assured, it is possible that your child may not experience all of the benefits listed above.

Alternatives

If during the assessment process, you choose not to participate in the study, we will refer you to appropriate, alternative sources for behaviour support in the classroom.

Rights as a Research Participant

Your child's participation in the research study is voluntary. Your decision of whether or not to participate and to allow your child to participate will not have any effect on your child's education, the services your child is already receiving at school, or future opportunities for behaviour consultation and support. If you agree to allow your child to participate you are free to withdraw consent and refuse to continue your child's participation. You may do so at any time without penalty or loss of benefits to which your child is entitled. Terminating participation in the study will have no negative impact on the graduate student's thesis research whatsoever. If you withdraw early in the research, the graduate student will recruit another child for the study. If you withdraw later, the graduate student will complete her thesis, with your permission, using the data gathered up to the point of study termination. By signing the consent form, you do not waive any of your legal rights. If you have any concerns about your rights or treatment as a research participant, you may contact the Research Subject Information Line in the UBC Office of Research Services at (604)–822–8598. Your signature below indicates that you consent to your child's participation in the study. It also indicates that you have received a copy of this consent form for your records.

Sincerely,

THE UNIVERSITY OF BRITISH COLUMBIA

Faculty _of_ Education UBC

CONSENT FORM FOR PARTICIPATION IN RESEARCH STUDY

Study Title: Use of a Mindfulness Practice to Decrease Problem Behaviour and Increase Engaged Time of Children at Risk for or with Conduct Disorder in the Classroom (the "study")

I have read and understood the attached letter of request to participate in the study entitled "Use of a Mindfulness Practice to Decrease Problem Behaviour and Increase Engaged Time of Children at Risk for or with Conduct Disorder in the Classroom." I understand that all information will be kept confidential, that my child and my participation is voluntary, and that I may withdraw consent at any time and discontinue my child's and my participation at any time without penalty or loss of benefits to which my child and I am otherwise entitled, and that I am not waiving any legal claims, rights or remedies. I also understand that I will receive a copy of this letter of request for consent to keep for my own records. My decision regarding my child's and my participation is indicated below:

_____ **YES**, I consent for my child's and my participation in the research study.

_____ **NO**, I do not consent for my child's and my participation in the research study.

Focus Child's Name: _____

Parent/Guardian Signature: _____ Date: _____

Parent/Guardian Signature: _____ Date: _____

Witness: _____ Date: _____

PLEASE RETURN THIS PAGE TO:
Faculty of Education
University of British Columbia
2125 Main Mall
Vancouver, BC, V6T 1Z4

Appendix C: Functional Assessment Checklist for Teachers and Staff

Step 1   Student/ Grade: _____   Date: _____
              Interviewer: _____   Respondent(s): _____

Step 2   **Student Profile:** Please identify at least three strengths or contributions the student brings to school.
            _____
            _____

Step 3   **Problem Behavior(s**): **Identify problem behaviors**

___ Tardy	___ Fight/physical Aggression	___ Disruptive	___ Theft
___ Unresponsive	___ Inappropriate Language	___ Insubordination	___ Vandalism
___ Withdrawn	___ Verbal Harassment	___ Work not done	___ Other _____
	___ Verbally Inappropriate	___ Self-injury	

Describe problem behavior: _____

Step 4   **Identifying Routines: Where, When and With Whom Problem Behaviors are Most Likely.**

Schedule (Times)	Activity	Likelihood of Problem Behavior						Specific Problem Behavior
		Low 1	2	3	4	5	High 6	
		1	2	3	4	5	6	
		1	2	3	4	5	6	
		1	2	3	4	5	6	
		1	2	3	4	5	6	
		1	2	3	4	5	6	
		1	2	3	4	5	6	
		1	2	3	4	5	6	
		1	2	3	4	5	6	
		1	2	3	4	5	6	
		1	2	3	4	5	6	

Step 5   **Select 1-3 Routines for further assessment: Select routines based on (a) similarity of activities (conditions) with ratings of 4, 5 or 6 and (b) similarity of problem behavior(s). Complete the FACTS-Part B for each routine identified.**

March, Horner, Lewis-Palmer, Brown , Crone, Todd & Carr (2000)   4/24/00

Functional Assessment Checklist for Teachers & Staff (FACTS-Part B)

Step 1

Student/ Grade: _____   Date: _____
Interviewer: _____   Respondent(s): _____

Step 2

Routine/Activities/Context: Which routine(only one) from the FACTS-Part A is assessed?

Routine/Activities/Context	Problem Behavior(s)

Step 3

Provide more detail about the problem behavior(s):

What does the problem behavior(s) look like?
How often does the problem behavior(s) occur?
How long does the problem behavior(s) last when it does occur?
What is the intensity/level of danger of the problem behavior(s)?

What are the events that predict when the problem behavior(s) will occur? (Predictors)

Related Issues (setting events)		*Environmental Features*	
___ illness	Other:_____	___ reprimand/correction	___ structured activity
___ drug use	_____	___ physical demands	___ unstructured time
___ negative social	_____	___ socially isolated	___ tasks too boring
___ conflict at home	_____	___ with peers	___ activity too long
___ academic failure	_____	___ Other	___ tasks too difficult

Step 4

What consequences appear most likely to maintain the problem behavior(s)? (Most powerful – 1, least powerful -3 ; do not choose more than 3)

Things that are Obtained		*Things Avoided or Escaped From*	
___ adult attention	Other: _____	___ hard tasks	Other: _____
___ peer attention	_____	___ reprimands	_____
___ preferred activity	_____	___ peer negatives	_____
___ money/things	_____	___ physical effort	_____
		___ adult attention	_____

Step 5

SUMMARY OF BEHAVIOR

Identify the summary that will be used to build a plan of behavior support.

Setting Events & Predictors	Problem Behavior(s)	Maintaining Consequence(s)

Step 6

How confident are you that the Summary of Behavior is accurate?

Not very confident					Very Confident
1	2	3	4	5	6

What current efforts have been used to control the problem behavior?

Strategies for preventing problem behavior		*Strategies for responding to problem behavior*	
___ schedule change	Other: _____	___ reprimand	Other: _____
___ seating change	_____	___ office referral	_____
___ curriculum change	_____	___ detention	_____

Step 7

March, Horner, Lewis-Palmer, Brown , Crone, Todd, & Carr (2000)   4/24/00

Step 8

Appendix D: Assent Form

THE UNIVERSITY OF BRITISH COLUMBIA
Faculty *of* Education UBC

STUDENT: INFORMED ASSENT FOR RESEARCH PARTICIPATION

**Use of a Mindfulness Practice to Decrease Problem Behaviour and Increase Engaged Time
of Children at Risk for or with Conduct Disorder in the Classroom**

I have talked with your parents and teacher about a research project that you will do with me.
Through the screening process you were identified as a qualified participant for this study.
During the research study, I will visit your classroom, talk with your teacher(s), and observe you
doing different things in your school. For example, when you are doing worksheets in the
classroom or when you are playing with your peers in the playground.

My team and I will do our very best to keep your identity as a participant secret. This means that
we will try very hard to make sure none of your friends find out that you are helping us in this
study. During an observation, if you want me to stop, you just have to tell me (or your teacher) to
stop. Also, anytime you want to stop the research study (that is, stop me from coming over a few
times to observe) just tell me, your teacher or parents and I will stop. After initial observations to
understand your behaviour better, we will teach you a practice that will help you stay calm when
you feel upset or angry. Then we will do more observation to determine if the practice is actually
helping you.

I am telling you what I will do, so that you can tell me whether you would like to participate in
the research study, or would prefer not to participate. If you choose to participate, then your
parent(s) will sign their name(s) below. Remember, you can change your mind and stop the
research study at any time.

Name of Participant: _____

_____ **YES**, I agree to participate in the study.

Parent/Guardian Signature: _____   Date: _____

Parent/Guardian Signature: _____   Date: _____

Witness: _____   Date: _____

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University of British Columbia
2125 Main Mall
Vancouver, BC, V6T 1Z4

Appendix E: Implementation Fidelity Checklist for the Training Sessions

Date: ———————   Person completing the checklist:———————————

	Not in place			Fully in place	
1. Review with the student the purposes of the practice (e.g., control physical and verbal aggression, learn to self-manage emotions, and accept what is happening and moving on)	1	2	3	4	5
2. Review the rationale for the skill (e.g., build and maintain friendships, feel happy, and succeed in school and life)	1	2	3	4	5
3. Review the homework assigned on the previous meeting.	1	2	3	4	5
4. Talk about situations that are triggers or precursors to verbal or physical aggression and give the student a chance to ask questions or make comments.	1	2	3	4	5
5. Steps of the practice:					
a) If you are standing, stand in a neutral rather than aggressive posture; with the soles of your feet flat on the floor.	1	2	3	4	5
b) If you are sitting, sit comfortably with the soles of your feet flat on the floor.	1	2	3	4	5
c) Breathe naturally, and do nothing.	1	2	3	4	5
d) Cast your mind back to an incident that made you very angry. Stay with the anger.	1	2	3	4	5
e) You are feeling angry, and angry thoughts are flowing through your mind. Let them flow naturally without restriction. Stay with the anger. Your body may show signs of anger (e.g., rapid breathing).	1	2	3	4	5
f) Now shift all your attention on the soles of your feet.	1	2	3	4	5
g) Slowly, feel your toes, feel your shoes covering your feet, feel the texture of your socks or hose, the curve of your arch, and the heels of your feet against the back of your shoes. If you do not have shoes on, feel the floor or carpet with the soles of your feet.	1	2	3	4	5
h) Keep breathing naturally and focus on the soles of your feet until you feel calm.	1	2	3	4	5
i) Practice this mindfulness exercise until you can use it wherever you are and whenever an incident occurs that may lead to you being verbally or physically aggressive.	1	2	3	4	5
j) Remember that once you are calm, you can walk away from the incident or situation with a smile on your face because you controlled your anger. Alternatively, if you need to, you can respond to the incident or situation without verbal threats or physical aggression.	1	2	3	4	5
6. Remind the individual to breathe naturally (it is not necessary to take deep breaths)	1	2	3	4	5
7. Remind the individual to continue using the practice after they leave the training room.	1	2	3	4	5

8. Remind them that angry thoughts happen to everyone but not all of us act on all of them.	1	2	3	4	5
9. Give the student homework for the following session (e.g., think of an example of when you were angry, practice the skill using our examples: (a) in the classroom, (b) in the lunchroom, and (c) in the playground)	1	2	3	4	5
10. Finish the session on a positive note (e.g., tell a joke, play a game, or praise the child for something they did)	1	2	3	4	5

Appendix F: Partial and Whole Interval Recording Form

Student's Name: ----------------------   Time of Day: -----------------

Observer's Name: ---------------------   Date: --------------------------

Behaviour: Problem behaviour

Definition and examples: Specific to each child

Total observation time: 20 minutes

Length of each interval: 15 seconds (10 seconds for observation and 5 seconds for recording)

- If any of the specified problem behaviour examples occur at <u>ANY</u> time during the first ten seconds of each interval, the interval is scored as an occurrence of the problem behaviour (+).

- If the same behaviour occurs multiple times within a ten second interval, it is simply scored only as an occurrence (+).

- If the behaviour examples are not observed during the ten second interval, it is scored as non-occurrence (-).

Behaviour: On-task/engaged time behaviour

Definition and examples: Specific to each child

Total observation time: 20 minutes

Length of each interval: 15 seconds (10 seconds for observation and 5 seconds for recording)

- If none of the specified problem behaviour examples occur <u>THROUGHOUT</u> the first ten seconds of each interval, the interval is scored as an occurrence of on-task/engaged time behaviour (+).

- If the behaviour examples occur for most of the interval but not all, it is scored as non-occurrence of on-task behaviour (-).

(+) occurrence (-) non-occurrence	:15 sec	:15 sec	:15 sec	:15 sec	:15 sec	:15 sec	:15 sec	:15 sec	:15 sec	:15 sec	:15 sec	:15 sec	Total "+"
Problem Behaviour													
On-task or Engaged time													

(+) occurrence (-) non-occurrence	:15 sec	:15 sec	:15 sec	:15 sec	:15 sec	:15 sec	:15 sec	:15 sec	:15 sec	:15 sec	:15 sec	:15 sec	Total "+"
Problem Behaviour													
On-task or Engaged time													

(+) occurrence (-) non-occurrence	:15 sec	:15 sec	:15 sec	:15 sec	:15 sec	:15 sec	:15 sec	:15 sec	:15 sec	:15 sec	:15 sec	:15 sec	Total "+"
Problem Behaviour													
On-task or Engaged time													

(+) occurrence (-) non-occurrence	:15 sec	:15 sec	:15 sec	:15 sec	:15 sec	:15 sec	:15 sec	:15 sec	:15 sec	:15 sec	:15 sec	:15 sec	Total "+"
Problem Behaviour													
On-task or Engaged time													

(+) occurrence (-) non-occurrence	:15 sec	:15 sec	:15 sec	:15 sec	:15 sec	:15 sec	:15 sec	:15 sec	:15 sec	:15 sec	:15 sec	:15 sec	Total "+"
Problem Behaviour													
On-task or Engaged time													

Appendix G: Social Validity Measure for Teacher

Date: _____   Teacher:_____

This questionnaire is to obtain information that will allow: (a) the improvement of the intervention strategy implemented in the classroom, and (b) the improvement of the process of providing the teachers and families with the necessary information. Please circle the number that best described your agreement or disagreement with each statement (1 = disagree; 7 = agree). In the space below each item, please write additional comment (e.g., suggestions for change or improvement).

		Disagree						Agree
1.	The goals of the mindfulness practice are appropriate for the student. Comments:	1	2	3	4	5	6	7
2.	The goals of the mindfulness practice are consistent with classroom goals, values and beliefs for the student. Comments:	1	2	3	4	5	6	7
3.	The strategies and steps of the mindfulness practice are too difficult to carry out everyday. Comments:	1	2	3	4	5	6	7
4.	The mindfulness practice has reduced problem behaviour. Comments:	1	2	3	4	5	6	7
5.	The outcomes of the mindfulness practice has increased the time the student is engaged doing assigned classroom work. Comments:	1	2	3	4	5	6	7

6. Due to the reduction in problem behaviour of the student, his/her peers are able to engage in classroom activities without distraction.
Comments:

    1   2   3   4   5   6   7

7. The mindfulness practice has caused unanticipated problems in the classroom (e.g., time consuming for the teacher, distracting for the student(s)).
Comments:

    1   2   3   4   5   6   7

8. Communication regarding the goals, steps and anticipated outcomes of the mindfulness practice has been clear and helpful.
Comments:

    1   2   3   4   5   6   7

9. The person(s) providing technical assistance has/have shown respect to my classroom's rules, values, and beliefs.
Comments:

    1   2   3   4   5   6   7

10. Overall the outcomes of the mindfulness training for the student have been meaningful and important.
Comments:

    1   2   3   4   5   6   7

Appendix H: Social Validity Measure for Parent

Date:_____   Parent:_____

This questionnaire is to obtain information that will allow: (a) the improvement of the intervention strategy implemented in the classroom, and (b) the improvement of the process of providing the teachers and families with the necessary information. Please circle the number that best described your agreement or disagreement with each statement (1 = disagree; 7 = agree). In the space below each item, please write additional comment (e.g., suggestions for change or improvement).

		Disagree					Agree	
1.	The goals of the mindfulness practice are appropriate for my child. Comments:	1	2	3	4	5	6	7
2.	The goals of the mindfulness practice are consistent with my family's goals, values and beliefs for the child. Comments:	1	2	3	4	5	6	7
3.	The strategies and steps of the mindfulness practice are too difficult for me to carry out everyday. Comments:	1	2	3	4	5	6	7
4.	The mindfulness practice has reduced problem behaviour at home. Comments:	1	2	3	4	5	6	7
5.	The outcomes of the mindfulness practice have increased the time the student is engaged doing homework and chores. Comments:	1	2	3	4	5	6	7

6. Due to the reduction in problem behaviour of my child, he/she is more able to interact positively with his/her siblings.   1   2   3   4   5   6   7
Comments:

7. The mindfulness practice has caused unanticipated problems at home.   1   2   3   4   5   6   7
Comments:

8. Communication regarding the goals, steps and anticipated outcomes of the mindfulness practice has been clear and helpful.   1   2   3   4   5   6   7
Comments:

9. The person(s) providing technical assistance has/have shown respect to my family's rules, values, and beliefs.   1   2   3   4   5   6   7
Comments:

10. Overall the outcomes of the mindfulness training for my child have been meaningful and important.   1   2   3   4   5   6   7
Comments:

Appendix I: Social Validity Measure for Student

Date:_____   Student:_____

This questionnaire is to obtain information that will allow: (a) the improvement of the intervention strategy implemented in the classroom, and (b) the improvement of the process of providing the teachers and families with the necessary information. Please circle the emotion that best described your agreement or disagreement with each statement. In the space below each item, please write additional comment (e.g., suggestions for change or improvement).

Disagree   Agree

1. I like the goals of the mindfulness practice (they are appropriate for me).
   Comments:

2. The goals of the mindfulness practice are similar to the goals that my family and teacher(s) have for me.
   Comments:

3. The steps of the mindfulness practice are difficult for me to do in the classroom.
   Comments:

4. The mindfulness practice has helped me control my problem behaviour by focusing on the soles of my feet when I am upset (e.g., hitting, kicking).
   Comments:

5. Because of the mindfulness practice I am able to spend more time engaging in classroom activities.
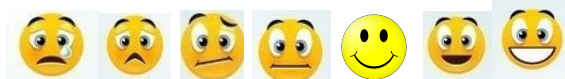   Comments:

6. Because I am able to control my behaviour and engage in classroom activities, my friends are also able to do their work without distraction.
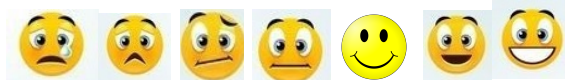Comments:

7. The mindfulness practice and the research study have caused problems in the classroom that I was not expecting.
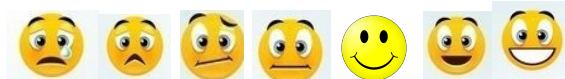Comments:

8. I found training to be helpful, clear and easy to understand.
Comments:

9. I was comfortable with the person(s) working with me during the mindfulness training and felt respected.
Comments:

10. Overall I am happy that I learned to do a mindfulness practice.
Comments: