Brain Breaks in Elementary Schools:

A self-regulation intervention program for students with anxiety

by

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Abstract

It is well-established in research that childhood is a critical stage of development when students are susceptible to anxiety symptoms and the onset of anxiety disorders, due to the neuroplasticity of the brain from the ages of 5 to 13 years old. This is concerning to educational staff in elementary schools because of the negative effects anxiety symptoms have on children's learning processes, on their feelings of self-efficacy in coping with anxiety and on their well-being. Common strategies in education to intervene and foster optimal learning for children with anxiety have been through physical movement, relaxation or games-oriented brain breaks, but there have not been ones that combine mindfulness, breathing exercises, stretching and physical movement. The commonly used term 'brain breaks' in the proposed intervention merges mindfulness with physical movement and is referred to as mindful movement (MM), with yoga-like stretching and breathing exercises that follow, all with explicit self-regulation instruction. To a new and greater extent, this structured intervention, rooted in research and referred to as brain breaks, is designed to promote self-regulation skills for children to cope with their anxiety symptoms through a complete mindfulness strategy. The goal of this is to foster optimal learning, coping strategies and well-being for elementary children, regardless of the nature of individual anxiety symptoms.

Keywords: brain breaks, anxiety, mindfulness, self-regulation

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Chapter 1: Introduction

Background to the Problem

Elevated anxiety levels in students have been well-established in education as an impediment to student learning (Mayes & Calhoun, 2007). This is due to the negative impact of anxiety on children's physical and mental health, and due to children being at a critical stage of development for being vulnerable to anxiety symptoms and to the onset of anxiety disorders (Leonardo & Hen, 2008). In education, all who are involved in supporting children's learning (parents, teachers and administrators) are concerned with the well-being of students with anxiety disorders as well as the state and trait anxiety levels of all students (state anxiety refers to anxiety reactions related to adverse situations in a specific moment and trait anxiety refers to individuals' personalities and their tendency to suffer from anxiety) (Mayes & Calhoun, 2007). Anxiety negatively impacts facets of learning such as attention, executive functioning, motor skills and processing speed, and these neurological factors are a significant predictor of academic achievement (Mayes & Calhoun, 2007). Elementary school children are at a stage of their development and of the brain's neuroplasticity process when "state and trait anxiety disorders are likely to be determined by early developmental processes or events that affect the way a brain is 'wired'" (Leonardo & Hen, 2008, p. 134). Childhood is also established in brain science and developmental studies as a time that the human brain is most receptive to positive interventions from the environment, which can 'train' the brain to manage anxiety symptoms and to interpret safety signal responses of the body and mind more effectively and reduce anxiety symptoms (Jovanovic et al., 2014). This is true for a wide range of children: for those students who are genetically predisposed to high trait anxiety, for those students who are

subjected to situations which elevate state anxiety levels and for those students who are diagnosed with an anxiety disorder (Leonardo & Hen, 2008). Consistent with social cognitive theory, this supports that one's sense of self-efficacy for the ability to control potential threats from the environment on the nervous system can lower levels of anxiety arousal (Anderson & Shivakumar, 2013).

Anxiety's negative impacts on attention, executive functioning, motor skills and processing speed for early learners are common among children who are vulnerable to its symptoms and are related to not having been taught to manage the physical and mental effects of anxiety and develop a sense of self-efficacy around it (Leonardo & Hen, 2008). Physical effects such as ongoing, elevated heart rate and breathing rate, sleep problems, elevated adrenaline and cortisol levels and decreased serotonin levels are seen in conjunction with abnormalities of the brain on MRI's in several brain research studies (Mayes & Calhoun, 2007). MRI's show an exaggerated amygdala response in children with anxiety and abnormalities in their prefrontal cortex, the area of the brain associated with learning (Mayes & Calhoun, 2007). In addition, many of the youth in these studies showed deficits in attention and processing speed, which tended to occur together, both which are associated with learning problems (Mayes & Calhoun, 2007). This was consistent with findings that children with anxiety have higher rates of absenteeism due to avoiding the demands of learning, and due to their perception that school environments place too many social challenges (Malboeuf-Hurtubise et al., 2017). These difficulties seen with school work and socializing tended to perpetuate children's anxiety symptoms and foster a learned helplessness by reinforcing their 'anxiety sensitivity', which is "a term for the tendency to misinterpret and catastrophize anxiety-related sensations based on the

belief that they will result in disastrous physical, psychological, and/or social outcomes" (Anderson & Shivikumar, 2013, p. 2). These findings illustrate the need to intervene with strategies at the a critical time of growth and brain neuroplasticity in childhood.

Educational staff in Burnaby, BC see the prevalence of anxiety symptoms among students aged 8 to 13, consistent with the developmental stage of vulnerability to high state and trait anxiety levels as well as the onset of anxiety disorders (Leonardo & Hen, 2008). Research recommends that psychosocial interventions are done at this critical developmental window and age range to prevent and/or reduce the negative physical and mental effects of anxiety on children, and to improve children's difficulties focusing on learning and with social problems (Leonardo & Hen, 2008). Elementary school staff in Burnaby district have expressed this need as well, stating a need for strategies to deal with the issue in order to foster optimal learning for children with anxiety disorders and with elevated state/trait anxiety. The research reviewed in Part 2 of this capstone supports the strategies that are proposed in Part 3, which is a school-wide intervention that Burnaby schools can adopt to target all students. Such an intervention would be intended to relax the nervous system and would include a physical activity/mindful movement session (10 minutes), a stretching/breathing session (10 minutes) and/or a mindfulness activity (5 minutes), collectively working together to build self-regulation skills and increase feelings of self-efficacy to cope with anxiety symptoms.

It is important to investigate the effects of an intervention like this on elementary school students not only because of the negative implications increased anxiety levels have on learning and the fact that anxiety disorders lead to such a wide range of cognitive, behavioural and physical symptoms, but because the effects of exercise and/or mindfulness activities for reducing

anxiety is not a well-researched area in school-aged children. There have been numerous studies over the years that have shown the positive effects of physical activity on anxiety: one such study focused on the optimal exercise frequency, intensity, duration and type (FITT) to lessen symptoms for those with depression and/or anxiety (de Coverley Veale, 1987). Many studies have followed since then, such as Barton & Pretty's work on investigating the specific type of outdoor exercise in green spaces for improving mood for the prevention of mental illness (2010). The commonality of most of these studies are that the samples were of adults or aging adults. Research that has used samples of elementary-aged children has only recently been pursued. As seen in a recent review of related research, there have been studies to investigate types of exercise interventions for adults with anxiety disorders/major mental illnesses (Jayakody et al., 2013). Studies like these, using samples of people with anxiety disorders, is also an area that has been extensively researched. Therefore, the lack of strategies for schools to prevent/manage anxiety in youth and the lack of sampling of elementary-aged children with anxiety is an area where further research is warranted.

Purpose of the Study

The purpose of this capstone is to explore the research and literature on strategies to lower the anxiety levels of all students, and to propose recommendations for interventions to relax the nervous system, leading students to build self-regulation skills so they can cope more effectively with anxiety symptoms, anxious feelings and thoughts. Ideally, the study should answer the following research question: what are the effects of physical/mindful interventions on the anxiety levels, feelings of self-efficacy to cope with anxiety symptoms/anxious thoughts and the ability to focus on learning for elementary school students? The research and literature will

show that such strategies need to include physical movements, breathing exercises and activities that promote mindfulness to target the body and mind and promote regulation of anxiety symptoms.

The intention of the capstone is to use applied research to plan and implement ideal strategies to positively affect and lower the elevated anxiety levels of elementary school students in schools in Burnaby, BC. Through specific physical and mental interventions to relax the nervous system, children will be affected in a variety of different ways (physically, emotionally, cognitively and socially) and increase their ability to cope with anxiety and focus on learning over time.

Theoretical Framework

Through its progressive pyramid, Maslow's hierarchy of needs shows that learning and academic achievement cannot be effective or even occur without first ensuring that students feel safe (with safety as a basic level and a primary level in the hierarchy) (Olson, 2014). Anxiety is the antithesis to feeling safe, and when anxiety perpetuates, people will be unable to attain higher levels on the hierarchy, such as feelings of love and belonging, feelings of self-esteem/self-respect and achievement/learning, leading them to ultimately disengage from their environments (Olson, 2014). This is directly related to school life, showing that students cannot engage at school, learn or feel safe without regulating their anxiety levels to a point that is manageable to access higher levels on the hierarchy. This issue is prevalent among youth in our schools for several reasons: one argument is that the prevalence of this problem is due to the trauma/violence that have occurred in schools and that has been inherent in our culture (such as

Columbine) that has led to a neurobiology of fear that stems from educators,' parents' and/or students' perception that we are unsafe or in threatening environments (Olson, 2014). In addition, we live in a time where "[m]any of our students currently face daily stresses at home and anxiety for our fast-paced crisis-oriented society, in addition to the huge amount of information they must process at school" (Olson, 2014, p. 21). The effects of this mirror the effects of an actual anxiety disorder for a larger number of young people than ever before, bringing with it symptoms found in one's body and thoughts, with children's bodies constantly reacting as if there are real dangers or threats, with the mind keeping the body in fight, flight or freeze mode more often (Olson, 2014). To further understand this, it can be looked at in terms of biology and how the autonomic nervous system is central to feeling safe and to lowered symptoms of anxiety (Olson, 2014). Due to evolution and human survival mechanisms, the body will naturally emphasize the autonomic nervous system (ANS) versus those of the parasympathetic nervous system (PNS) in the body (Olson, 2014). These mechanisms are the suspected culprit behind the cultural-wide feelings of fear/anxiety at this point of the evolutionary process; after incidents like 9/11 and Columbine, coupled with the changing nature of childhood, young people have been experiencing increased anxiety, which has been a progressive, natural and evolutionary response to our collective and common traumas/lifestyles (Olson, 2014).

With elevated levels of anxiety in so many students, their physical sensations of anxiety (like a faster heartbeat and breathing, tense muscles, sweaty palms, queasy stomachs, and trembling hands or legs that are part of the body's fight-flight response) could also be said to have manifested through the physicality of others, suggested by the correlations established

between cortisol levels of teachers and that of students (Oberle & Schonert-Reichl, 2016). The potential of anxiety symptoms to be collective contagions in our culture could stem not only from our collective cultural trauma of school violence, from the amount of work children have to process at school and from parents' fast-paced lifestyles, but from this potential biological, reciprocal relationship as well (Oberle & Schonert-Reichl, 2016). In addition, it is relevant to note the negative effect that the wide-spread use of social media and electronics have had on children's social connections, development and self-regulation skills: the act of gaming has been slowly arousing children's brain activity, saturating them with high stimulus, while the content of social media has been allowing children to research anything fearful and access disturbing information which can elevate levels of anxiety (Keating, 2011). Added to this, our current culture has blurred the boundary between the child and adult world as compared to 50 years ago: adult problems used to be private - children were not privy to every worry that their parents faced (Keating, 2011). There was also less exposure of the child to the problems of the world; now climate change and fixing global problems are an added stressor for our youth to take on, which are problems created by their predecessors (Keating, 2011). Added to this stressor are the challenges of school life, the weak boundaries some parents have set in families and a child's own developmental processes, all contributing to anxiety levels rising. It is important to consider the effect of a collective increase in anxiety from these conditions in current society, and ponder the question: "in safeguarding childhood whose responsibility is it to prevent 'adult' secrets from being freely available to children?" (Keating, 201l, p. 302).

The strategies that I am proposing are meant to counteract this epidemic in school culture and to take responsibility for the mental health of children/youth. With their anxiety felt in the

body and seen by the thoughts in their minds, promoting safety and lowered anxiety levels can be done by interventions that affect *neuroceptions* (Olson, 2014). We can intervene by training the body and mind through easy movements, teaching children to relax their faces, slow their fast-paced thoughts and control their breathing rates (Olson, 2014). After this, the cognitive piece of mindfulness provides the pro-active/positive self-talk to promote less anxious feelings and more self-efficacy for coping with symptoms of anxiety after the child enters a point of safety on Maslow's hierarchy (Olson, 2014). With less emphasis on ANS functions through body and brain training, students can start to feel safe and have "more energy for learning, creating and exploring" (Olson, 2014). In addition, it is essential that students who engage in the intervention are also observing the facilitator of the intervention authentically practicing the strategies, distinguishing the facilitator as a model and a reference point for the intervention, so that the training is strengthened through modelling (Olson, 2014). A whole-school intervention such as this would regulate cortisol levels of children and adults; by lowering the cortisol levels for all, this would positively affect students and teachers, and could potentially regulate cortisol levels between people in proximity to each other (Oberle & Schonert-Reichl, 2016). This whole-school approach would also have the effect of building community and increasing attachment between students and teachers, which has also been established as a protective factor against anxiety in research (Cassidy et al., 2009). By both experiencing and observing the intervention, students would attain a calm alertness and a readiness to engage with learning (Olson, 2014). In the practice, the body and the mind become a focal point of intervention, and intervention strategies directly relax the nervous system through easy physical, mindful movements, stretching/breathing exercises and mindfulness activities/instruction.

Definition of Terms

Anxiety – according to the DSM-5 and finalized by the APA, anxiety is excessive feelings of fear, worry, avoidance or obsession: persons with anxiety present as frightened, worried, nervous, panicked, fixated on problems and/or avoiding problematic situations (Katzman et al., 2014).

Brain Break – a 'physical activity' session (PA) with mindfulness instruction, or a mild to moderate, aerobically-based mindful movement period (MM) (approximately 10 minutes long) followed by mindful stretching/yoga-like poses (approximately 10 minutes) and breathing meditation/instruction (approximately 5 minutes) for a total duration of 25 to 30 minutes.

Elementary-aged Children – children attending elementary school aged 5 to 13 years old.

Exercise Duration – the time spent in physical activity (in the case of this study's Brain Break, 25 to 30 minutes), also referred to as "time" and the first "T" in the FITT acronym (Cvejic & Ostojić, 2018).

Exercise Frequency – the amount of sessions that the exercise session is done per week (in the case of this study's Brain Break, 3 times per week minimum), also referred to as "F" in the FITT acronym (Cvejic & Ostojić, 2018).

Exercise Intensity – the load placed upon any type of exercise during physical activity (in the case of this study's Brain Break, a mild to moderate load for cardiovascular exercise known as 50 to 70% of maximal heart rate capacity), also referred to as "I" in the FITT acronym (Cvejic & Ostojić, 2018).

Exercise Type – the specific exercise done (in the case of this study's Brain Break, a PA/MM session followed by a yogic stretching/breathing session and a mindfulness activity session), also referred to as the last "T" in the FITT acronym (Cvejic & Ostojić, 2018).

FITT Principle – this is a concept that includes the basic principles of physical training in exercise (continuity, overload/progression, duration and specificity), applied in the acronym FITT (Frequency, Intensity, Time, Type) (Cvejic & Ostojić, 2018).

Mindfulness Instruction/phase – instructions for mindful visualization/awareness through imagery or referencing one's surroundings, through guided instruction (in the case of Brain Breaks) (Malboeuf-Hurtubise et al., 2017).

Physical Activity (PA) phase or Mindful Movement (MM) phase – an easy session of rhythmic, physical movement, such as walking or moving to music (in the case of Brain Breaks) (Malboeuf-Hurtubise et al., 2017).

Stretching/Breathing phase – stretching/yoga-like poses and breathing exercises, through guided instruction (in the case Brain Breaks) (Malboeuf-Hurtubise et al., 2017).

Significance of the Study

The significance of this study for parents, teachers, counsellors and administrators is to increase their ability to teach elementary-aged children at home and at school. If successfully implemented to elicit positive results, it could increase parents' awareness of anxiety levels in their children (the negative impacts of elevated anxiety on children's learning experiences) and offer interventions to relax the nervous system to prevent/manage their children's anxiety. Teachers will gain access to a school-wide program and will benefit from the interventions by

seeing reduced anxiety levels in students in their classrooms, just as counsellors will gain an appreciation of the school-wide intervention to relax the nervous system as a preventative factor to reduce anxiety levels for all students, including those designated students on their caseload. Administrators would see positive effects of the strategy by the decrease in the number of anxiety-related incidents/conflicts that they manage in schools and by the decrease in absenteeism in children coping with state/trait anxiety and anxiety disorders (Malboeuf-Hurtubise et al., 2017). It would also have significant implications for students themselves, who would benefit from a reduction in anxiety levels and an increased ability to focus and learn more effectively.

This research would add to the existing body of literature by specifically illuminating children aged 5 to 13 as a vulnerable population dealing with anxiety and focusing on how this unique physical movement, breathing/stretching and mindfulness strategy could positively affect children with anxiety symptoms/disorders. This study would extend as further research for those studies that have already focused on children aged 5 to 13 in other settings and for studies involving adolescents, adults and older adults who suffer from anxiety.

In Chapter 2, I will review the literature associated with creating an optimal prescription of this intervention that is intended to foster self-regulation strategies to calm the nervous system. In Chapter 3, I will summarize these findings, make recommendations for a whole school intervention, draw conclusions about the potential effect of the strategy and provide suggestions for future professional action for school counsellors, teachers and administrators. Lastly, I will consider logistical and practical considerations for the intervention in public school settings.

Chapter 2: Literature Review

Introduction

This discussion of the literature related to the effectiveness of Brain Breaks to lowered anxiety levels in elementary school students focuses on reviewing findings within four themes: physical activity (PA), mindfulness, mindful movement (MM) and group versus individual sessions with considerations to promote adherence to the program. When discussing theme one, PA as a strategy to prevent, manage and treat anxiety, the aspects of optimal frequency (F), intensity (I), time (T) and type (T) for implementing exercise (PA) for this purpose will be considered. The literature under this theme shows a lack of research on the optimal type (T) that leads to an effective reduction of anxiety levels; however, it does suggest that exercising outdoors may be superior to types of indoor exercise. To establish guidelines for other aspects of PA, it shows that the findings for optimal frequency (F), intensity (I) and time (T) are in adherence with the Canadian guidelines/recommendations for the general population. When discussing theme two, which is mindfulness as a strategy to prevent, manage and treat anxiety, the literature on mindfulness activities for youth and how this relates to youth in schools will be discussed. The literature shows support for the use of mindfulness activities in schools, with many correlations between PA and mindfulness activities and decreased anxiety levels, noting that the positive mental health benefits for offering PA sessions and mindfulness sessions are superior to offering mindfulness sessions alone. This leads into discussing mindful movement (MM) as a strategy to prevent, manage and treat anxiety, which is the third theme. This discussion shows that mindfulness incorporated with movement is more promising to positively affect youth with anxiety/anxiety disorders versus programs/sessions which separate PA sessions

and mindfulness sessions. Lastly, the effectiveness of individual versus group sessions will be discussed as a fourth theme, showing that research is well-established to support the efficacy and cost effectiveness of group sessions/therapy versus individual sessions/therapy, with the added benefit of promoting connections between individuals in a group format. This final section concludes by acknowledging the importance of treating/managing anxiety levels with incentives that promote adherence to the program and optimal and lasting change in individuals with anxiety.

Theme 1 – Physical Activity (PA) as a Strategy

Recent studies have shown that acute exercise bouts can have a positive effect on mood and feelings of well-being for those with mental illnesses, which included those who have anxiety disorders (Zschucke et al., 2013). In addition, it is widely accepted that exercise can improve the sense of well-being for the general population, and those who engage in regular physical activity experience less anxiety symptoms which are common among people than those who do not engage in regular physical activity (Anderson & Shivakumar, 2013). In addition, early studies report findings that exercise stimulus, when supported by qualified exercise health professionals and done regularly, has a promising chance for optimal/positive effects on symptoms accompanying major mental illnesses (de Coverley Veale, 1987). This has been well-researched, and collective findings among samples with those with major mental illnesses is "that exercise plays a valuable role in the treatment and prevention of some mental illnesses" (Stanton et al., 2015, p. 121). The research on the positive effects of exercise on anxiety symptoms and anxiety disorders has also been extensive in more recent studies, and one review of these shows that both anaerobic and aerobic exercise can be effective to prevent and manage

anxiety symptoms (Jayakody et al., 2014). However, researchers as a collective whole have not come to conclusions as to one optimal type of exercise that prevents/manages anxiety symptoms (Anderson & Shivakumar, 2013). There have been findings that suggest outdoor exercise may be more beneficial than physical activity (PA) indoors: one multi-study analysis established green exercise (defined by PA in the presence of nature) as the best method to improve self-esteem and mood for the prevention of mental illness (Barton & Pretty, 2010). Similarly, another study, this time with a sample of adolescents, showed a correlation between regular PA outdoors (walking and biking) with an improvement in feelings of well-being and lowered levels of anxiety/depressive symptoms, versus regular PA indoors (McMahon, 2017). In addition, McMahon (2017) found that the more frequent PA was, the lower anxiety/depressive symptoms were, and the greater the feelings of well-being. When considering physical activity as a strategy to prevent/manage anxiety, this research shows that the frequency should be as regular as possible and that there is a strong case for exercising outdoors as an optimal type of exercise to prevent/manage anxiety.

As mentioned, collective findings have not concluded what type of PA is the most effective for mental illnesses, with both anaerobic and aerobic exercises showing benefits (Jayakody et al., 2014). While attempting to establish a specific type, other findings have found that a mix of activities were ideal to minimize the likelihood of injury, to maintain motivation and to promote adherence for regular PA among participants (Beaulac et al., 2011). Therefore, it is reasonable to advise that any mix of activities involving cardiovascular endurance (aerobic), strength (anaerobic) and flexibility could benefit those with anxiety symptoms and promote mental health (Beaulac et al., 2011). Thus, the focus for those with anxiety should be on

adopting and maintaining a regular routine of PA through a mix of different modes/types of exercise, with as much consistency and frequency as possible.

The Canadian guidelines for promoting general health recommends bouts of at least 30 minutes of PA (time) over 3 to 5 days per week (frequency) (Beaulac et al., 2011). However, the Canadian guidelines also do not point to one specific type of PA for the general public, with so many different types of aerobic/anaerobic exercises showing positive health interventions (Beaulac et al., 2011). Another study on mental health benefits showed that it is unclear at this point of research as to just what type of exercise is best to facilitate the greatest benefit for people with anxiety, but it is largely conceded that the benefits of exercise come from its regularity, and then from this regularity in frequency, "exercise offers protective effect against the development of mental disorders" (Anderson & Shivakumar, 2013, p. 1). Therefore, the variety of modes/types need to be accessible and varied enough so people can adhere to a regular PA program consistently, and that the regularity (frequency) should be a minimum of 3 times per week for 30 minutes to promote well-being and treat anxiety symptoms.

Regarding intensity (I) and its relationship with time (T), the Canadian guidelines for promoting general physical and mental health benefits recommend a minimum of 150 minutes of PA per week (Beaulac et al., 2011). This recommendation is based on participant's level of intensity in PA: at a mild to moderate intensity, 150 minutes (such as 30 minutes, 5 days per week) provides the optimal benefits, but 75 to 90 minutes of PA per week at a moderate to rigorous intensity (such as 25 to 30 minutes, 3 days per week) can provide similar benefits (Beaulac et al., 2011). In order to adjust intensity for a PA program for mental health benefits, research indicates that one that is set at a mild to moderate intensity may be the best in

comparison: it would be less likely to cause injury and be more appealing to most people, as well as be appropriate and accessible enough for most fitness levels (Beaulac et al., 2011). This is supported by other findings in a review of studies, showing that mild to moderate intensity exercise was the most appropriate and accessible intensity level for people with mental illnesses, and when this level of PA was coupled with specific psychiatric treatment, it was superior compared to getting psychiatric treatment alone (Zschucke et al., 2013).

Theme 2 – Mindfulness Activities as a Strategy

Studies in over several years have shown that mindfulness activities are a promising strategy for elementary school students struggling with anxiety/depression (Malboeuf-Hurtubise et al., 2017). This is shown in one study that specifically implemented mindfulness sessions for 10 minutes to elementary school students aged 7 to 8 years old and found that children reported decreased anxiety levels, increased attention spans and increases in relaxation after a 6-week pilot program (Semple at al., 2005). In addition, another study that compared effects of mindfulness meditations, physical activity and biofeedback exercises on the learning processes of worrying/stressed young adults showed that mindfulness meditations elicited more effective, positive results than the latter strategies (de Bruin et al., 2016). Incorporating mindfulness activities in schools have been shown to benefit youth suffering from anxiety because they learn to decrease anxiety through increasing their resilience, self-regulation and coping skills in stressful situations and when faced with anxiety symptoms (Oritz & Sibinga, 2017). These findings are shown in elementary school students (Semple et al., 2005), in middle schoolers (Oritz & Sibinga, 2017) and in secondary school students (Franco et al., 2010) in the following studies, illustrating its applicability to a variety of age groups.

In one open trial of treating children 7 to 8 years old with mindfulness activities alone, a 6-week pilot program called the "MACK" club (Mindful, Aware and Cool Kids) showed that various mindfulness activities implemented with a cognitive-behavioural therapy (CBT) approach held promise as an intervention for anxiety symptoms (Semple et al., 2005). The activities included mindful eating, mindful breathing and mindful touching and were done while encouraging children to recognize and notice anxious feelings, maladaptive thoughts or avoidant behaviours and then return one's attention to the neural stimulus at the time (eating, breathing or touching) (Semple et al., 2005). The children completed a measure called the "Feely Faces Scale" as a pre- and post-session measure, articulated their anxious feelings/worries and participated in 2 out of the 3 mindfulness activities in each session (Semple et al., 2005). The children showed an increased ability to relax and a decrease in non-attending behaviours and in test anxiety (Semple et al., 2005). Results also showed an increased ability for children to manage their attention and focus after the program, following the premise that an impaired attention span is a core symptom of anxiety (seen with items within many anxiety measures) (Semple et al., 2005). The study concluded that the program was a promising attention-enhancing technique for treatment of anxiety symptoms in children (Semple et al., 2005). The researchers acknowledged that this method is a well-established one for adults with anxiety/depression, and that children 7 to 8 years old is an age group in need of more research to establish specific interventions (Semple et al., 2005). In comparing the strategy for children versus that for adults, feedback from teachers and children indicated that there is a need to modify the sessions from the version that was offered to adults: some children found it difficult to close their eyes and to sit in breathing practice for more than 3 to 5 minutes and that one

session per week was not enough to elicit optimal effects (Semple et al., 2005). In order to take this feedback into future programming, Semple, Reid and Miller (2005) stated their plan to expand sessions over a 12-week period with more consistency per week in order to enhance practice time, so children could become accustomed to closing their eyes and breathing for longer periods. In doing this, the adult version would be modified for children by using shorter breathing sessions and by offering the choice of eyes open or closed, so they can gradually increase their duration of the practice over time, experience success and maximize adherence. The request for more consistency per week strengthens the use of Canadian guidelines in programming, which recommends a frequency of 3 to 5 days per week for optimal mental health benefits, as stated in the previous discussion (Beaulac et al., 2011).

In another review of studies focusing on middle schoolers, Oritz & Sibinga (2017) discuss the effectiveness of high-quality, structured mindfulness activities on the negative effects of stress and trauma as well as on the negative effects of related anxiety symptoms/disorders. After mindfulness-based stress reduction (MBSR) techniques, there was notable reductions in depression and anxiety in middle school-aged children seen in increasing children's resilience, coping skills and ability to self-regulate (Oritz & Sibinga, 2017). By fundamentally enhancing the ability to self-regulate and become resilient in the face of everyday stress or trauma associated with ACE's (adverse childhood events), middle school-aged children who underwent a 12-week school-based MBSR intervention showed a decrease in negative/harmful coping strategies (Oritz & Sibinga, 2017). Their previous go-to strategies included rumination, self-hostility, somatization and other negative coping behaviours (Oritz & Sibinga, 2017). In addition, a group of 104 older adolescents (aged 14 to 18) who were participants in a replicated

study showed these reductions as well, along with improved ability to manage anxiety, improved self-esteem and better sleep quality (Oritz & Sibinga, 2017). The MBSR interventions were all structured mindfulness programs, and included the Inner Resilience Program, the Wellness and Resilience Program, Mindful Schools, the Mindfulness in Schools Project and Learning to Breathe, to name a few (Oritz & Sibinga, 2017). With the inclusion of skillsets such as meditation, CBT and lessons on healthy behaviours, these high-quality, structured MBSR interventions showed improvements in mental health for middle school-aged children over time by their self-efficacy for coping with anxiety and reductions in maladaptive thoughts (Oritz & Sibinga, 2017). The authors' concluding remarks for this review state that these programs that were implemented in school settings were delivered through curriculum and were also offered as extracurricular programs, recommending that any MBSR intervention be widely available and teacher-led (with possible collaboration of student leaders) in order to offer the most accessibility and structure in delivery (Oritz & Sibinga, 2017). Although it was noted that there is no centralized accreditation for teaching mindfulness, schools offer a prime setting for MBSR interventions (in class or after school) with teachers/staff who can be trained in these specific structured programs to reach broad categories of anxious children of varying developmental stages, diagnoses and socioeconomic circumstances (Oritz & Sibinga, 2017).

In another study focusing on secondary school students, Franco, Manas, Cangas & Gallego (2010) examined the effectiveness of a specific mindfulness technique on students' academic performances, self-concepts and levels of anxiety. The experimental group consisted of 61 first-year high school students taken from three public schools in Almeria, Spain (Franco et al., 2010). The mindfulness technique implemented in the study was termed 'Meditacion

Fluir' and was given to subjects three times per week in 30-minute sessions (Franco et al., 2010). It involved repeating a word, or mantra, while directing subjects' attention towards their abdomen during focused breathing in order to notice how the air goes in and out of the body (Franco et al., 2010). There was a CBT component within the sessions with instructions/reminders to notice thought patterns without judgement and to refrain from controlling or changing them; the only goal was to be to be aware of thoughts and to breathe (Franco et al., 2010). Body scans were also part of the technique, and students were able to practice these skills on a regular basis and develop their full attention for this activity over a 10-week period (Franco et al., 2010). After examining pre- and post-tests for three measures - academic performance rates, results from a 36-item self-concept questionnaire and the 40-item State-Trait Anxiety Inventory (STAI) – secondary school students showed favourable outcomes in all three measures (Franco et al., 2010). The authors commented that 'Meditacion Fluir' differs from many other structured MBSR interventions in that it has Acceptance and Commitment Therapy (ACT) in it, which includes metaphors and tales from the Zen tradition (Vipassana meditation) (Franco et al., 2010). Therefore, further investigations isolating secondary school students are needed to establish the effectiveness of the mindfulness activity that is 'Meditacion Fluir' independent of ACT, but researchers concluded by reporting that this group of secondary school students deemed 'meditation' as an effective technique for controlling their chaotic and repetitive and/or maladaptive thoughts related to academic performance, self-concept and anxiety (Franco et al., 2010).

While these three studies show the effectiveness of mindfulness activities for anxious youth of varying developmental stages and ages, another study that is important to discuss is one

that is consistent with previous research, which cautions regarding using one type of activity – in this case, mindfulness-based interventions - as a universal treatment for youth with anxiety (Malboeuf-Hurtubise et al., 2017). While mindfulness-based activities (MBI's) have shown strong consistency in positively affecting adults with mild anxiety symptoms, persons with more severe and enduring diagnosed anxiety disorders (such as GAD, SAD, PTSD, Panic Disorder or OCD) may struggle to gain the same benefits from MBI's (Malboeuf-Hurtubise et al., 2017). In addition, many past studies have shown that mindfulness-based interventions on their own are not universally effective for children and teenagers (Malboeuf-Hurtubise et al., 2017). Youth with a presence of an anxiety disorder or even individuals with overwhelming 'busy' minds may find engaging in mindfulness activities alone too overwhelming (Russell, 2011). In one series of trials on the effects of MBI's in an elementary school, results from BASC-II measures (pre- and post- testing) indicated that MBI's were not as effective as anticipated for children with anxiety diagnoses (Malboeuf-Hurtubise et al., 2017). This supports the findings from the National Institute for Health and Clinical Excellence (NICE) that any mindfulness-based cognitive therapy infused in body-based practice (such as yogic stretching, yoga or tai-chi) safely positions attention/meditation with the 'anchor' of the body, making the process of engaging in mindfulness less overwhelming and the basis of discussion for the next theme (Russell, 2011).

Theme 3 – Mindful Movement (MM) as a Strategy

Using two pilot groups in South London, one study which looked at the effectiveness and feasibility of MM on adults in residential care settings ran a pilot program called 'Body in Mind Training' for an eight-week period (Russell, 2011). After recording participants' stress levels using a six-point visual scale before and after each session, sessions showed a consistent

decrease in stress levels for each group's self-monitoring recordings (Russell, 2011). Feedback from the participants indicated a preference for the body-based mindfulness practice versus a mindfulness-alone or a body-alone practice (Russell, 2011). As mentioned in findings from the MBI study for youth in an elementary school setting, the mindfulness component of the program was intended to provide relief from distressing consequences of emotional dysregulation for individuals with anxiety or other mental illnesses, but modifications were found to be necessary for those with very busy or very distressed minds (Malboeuf-Hurtubise et al., 2017). Feedback from participants in the 'Body in Mind Training' program indicated that MM sessions felt 'safe' with its rooting movement in mindfulness, and that this allowed mindfulness to emerge at a more gradual rate: for these participants with more severe mental illnesses, just 'watching the mind' was not as effective as attending to both the mind and the body (Russell, 2011). The program focused on combining concepts of mindfulness with tai chi and yoga with direction to "bring a kind, non-judgemental and present moment awareness to the breath and bodily sensations" (Russell, 2011, p. 13). In doing this, participants with schizophrenia, for example, reported that the training allowed them to be more accepting of the 'voices' that they heard and to engage with these mental experiences in a more gentle, kinder way (Russell, 2011). In consideration of this, one of the author's plans for future investigation is to look at the use of this program for those with more acute stages of schizophrenia as well as those with milder mental illnesses such as anxiety and depression and other common conditions present in youth in school settings (Russell, 2011). By using movement emphasizing proprioceptive and kinesthetic feedback with attention to the mind, mindfulness needs to be explicitly emphasized in a program of this kind; it would be "like a tai chi class, with more talking or like a mindfulness class, with more moving"

(Russell, 2011, p. 14). With overall reductions in stress shown in self-reports after this 'psychology in action,' participants favored a gentle physical workout for the body and the mind with the low-intensity of PA (with mindful stretching, mindful walking or yoga/tai chi with mindfulness instruction) over other strategies, and it was very suitable for participants of all fitness levels (Russell, 2011).

These findings are complementary to those in a review article focusing on the effectiveness of 'meditative movement' on positively affecting symptoms of anxiety and depression in adults (Peyne & Crane-Godreau, 2013). In this review, 'meditative movement' included prescribed mindful movement (specific, learned and practiced) such as qigong, tai chi and yoga as well as spontaneous, free-form mindful movement (allowing participants to move spontaneously on their own) (Peyne & Crane-Godreau, 2013). With meditative attention to bodily sensations, proprioception and kinesthesis were part of all the forms of 'meditative movement' and indicated promise for these methods for improving negative symptoms related to mental illnesses (Peyne & Crane-Godreau, 2013). Like the 'Body in Mind Training' described by Russell (2011), these practices involved movement with a 'meditative' state of mind and explicit attending to bodily sensations and the breath (Peyne & Crane-Godreau, 2013). Findings showed that physical and mental health benefits of these methods were comparable to merging forms of exercise such as aerobics with stretching and relaxation (Peyne & Crane-Godreau, 2013). Even something as simple as walking mindfully was comparable, with its rhythmic movement of the regular shifting of one's own body weight from foot to foot while attending to the mind and thought patterns (Peyne & Crane-Godreau, 2013). The review is a broad one, including further methods involving PA and imagery and other Asian practices, but its findings

related to MM strengthens the case for offering MM as a therapy and treatment for those with mild to severe mental illnesses, including various levels of anxiety (Peyne & Crane-Godreau, 2013).

In an additional study using the MM practice of yoga for fourth and fifth graders in an urban school, researchers implemented a 12-week group yoga program (four days per week, 45-minute sessions) to assess the outcomes such as students' self-regulation skills after the program's duration (Mendelson et al, 2010). As mentioned previously, enhancing self-regulation is a key component of building resiliency and coping skills to manage the negative effects of stress and anxiety (Ortiz & Sibinga, 2017). By combining mindfulness with PA, yoga has been long-established as a means of providing mental health benefits for adults by reducing mood and anxiety disorders and was the premise of implementing this program with youth in a school setting (Mendelson et al, 2010). The measures that were used were the Responses to Stress Questionnaire (RSQ), the child's version of the Short Mood and Feelings Questionnaire (SMFQ-C) and the People in My Life (PIML) self-report (Mendelson et al, 2010). After showing the program's feasibility in this urban school setting, these measures indicated large improvements in the RSQ scale but not as much in mood or peer relations (the SMFQ-C and PIML scales) (Mendelson et al, 2010). However, the strong increases in the component subscales in the RSQ for rumination, intrusive thoughts, emotional arousal, impulsive action and physiological arousal were most impressive, and these autonomic and physiological responses were observed by teachers to be improved in students with anxiety and depression (Mendelson et al, 2010). Key components of each session involved yoga-based PA with breathing and mindfulness practice/instruction, emphasizing fluid movements, likening it to the MM of the

methods described previously (Mendelson et al, 2010). With this study's focus on the self-regulatory effects of training, researchers surmised that the practice potentially alters brain development over time and trains it to manage involuntary, persistent automatic/negative responses to stress (Mendelson et al, 2010). Just as adversity in childhood can potentially alter or halt brain development, the practice of MM – as in the training of this yoga program - could potentially re- or pre-train the brain to respond to anxiety and depression symptoms with regulatory responses that manage symptoms (Mendelson et al, 2010). In their evaluation of their experience in the program, children said that, "[t]he program has helped me because now I know different routines and exercises that I can do at home that helps me lower and reduce my stress," and, that the "[m]ost important thing I learned in the program is that it's all different ways to deal with your stress like instead of fighting and stuff" (Mendelson et al, 2010, p. 989). These reports were consistent from the other reports taken from three to seven respondents from each focus group at the school, showing that this school-based mindfulness (MM) program was attractive and valuable not only to teachers who observed positives change in students after it, but to the students themselves, when they articulated their learning. Responses showed that students generally had a positive experience in the program, and as one fifth-grade girl put it, the practice of yoga "helps you to relieve stress when you feel really stressed out or you're really mad and focus on what's inside of you and just make sure that you stay calm" (Mendelson et al, 2010, p. 989). These reports from children are as equally important as the positive indicators that came from the component subscales in the RSQ, as it shows their shift in attitude and feelings of self-efficacy for dealing with stress responses and anxiety. This study's findings are consistent with those previously discussed, indicating the MM is a powerful tool to enhance

youth's capacities to manage anxiety symptoms through the shift in emotional and cognitive regulation skills for a range of diagnoses, conditions and needs.

Theme 4 – Support for Intervention aa a Group Model

In considering a mindful movement (MM) program as a viable program for youth with anxiety/anxiety disorders, it is important to make note of the evidence suggesting that group cognitive-behavioural therapy (GCBT) is as effective as individual cognitive-behavioural therapy (ICBT) (Flannery-Schroeder et al., 2005). In a one-year study of 37 anxiety-disordered youth 8 to 14 years old, participants who were randomly assigned to an ICBT, GCBT and a wait-list control (WLC) group showed that the improvements in anxiety levels for the ICBT and GCBT groups were both promising and negotiable between each other (Flannery-Schroeder et al., 2005). Although the study failed to show significant differences in the ICBT and GCBT groups, it showed that GCBT can be just as effective in decreasing anxiety symptoms that impair the social and academic functioning in youth (Flannery-Schroeder et al., 2005). After one year, parent, teacher and child reports showed that "seventy-three percent of children in ICBT and 50% of children in GCBT no longer met the criteria for their principal anxiety disorder" (Flannery-Schroeder et al., 2005, p. 254). Furthermore, the study also showed that the GCBT group had the advantage of increasing opportunities for social interactions among peers, which had a positive influence on participant's perceptions and attitudes about their anxiety disorders/symptoms (Flannery-Schroeder et al., 2005). It also found that a connection to a group program was a motivator for many participants to adhere to the program and that GCBT was more time and cost effective than ICBT treatments (Flannery-Schroeder et al., 2005). The findings of this study were comparable to a previous one-year study in 1999, in which sixty

anxious children who were randomly assigned to a WLC, GCBT and GCBT plus a family management program for anxiety (GCBT + FAM) (Flannery-Schroeder et al., 2005). In this study, the GCBT and the GCBT + FAM groups both showed significant improvements in anxiety symptoms, averaging 64% who no longer met criteria for anxiety disorders in both groups (Flannery-Schroeder et al., 2005). With acknowledging the obvious time and cost savings of a mental health delivery method to a group versus one that targets the individual, the case for presenting treatment in a social group setting to increase peer connections and expand supports is important to consider using in programming. These studies can be considered to have furthered the research and to have added support to those of older studies, such as one that examined treatments for patients with anxiety/depression in 3 modalities: a CBT group, a traditional process-oriented group and CBT offered in an individual format (Shapiro et al., 1982). In this study, 44 outpatients suffering from depression and anxiety were randomly assigned to each group and completed pre- and post- assessments using Beck's Depression Inventory, Speilberger's State-Trait Anxiety Inventory and Gay and Galassi's Adult Self-Expression Scale for each session, over a total of 10 sessions (Shapiro et al., 1982). The findings showed that all three experimental groups improved in each measure (measures of depression, anxiety and assertiveness, respectively), and led researchers to conclude that "[g]roup psychotherapy is a less costly clinical intervention than individual treatment, and as evidenced in this study it is as effective as individual treatment" (Shapiro et al., 1982, p. 677). With the continued research with other populations (particularly with youth) after this, it is reasonable to expect encouraging outcomes in children with anxiety symptoms from a program that offers small group therapy using MM or from a program offered to a larger group.

Other studies that have examined CBT, mindfulness and/or MM therapy for youth have found that there should be social supports integrated into treatment programs to increase adherence to the program and to maximize the program's benefits in promoting mental wellness and managing/treating anxiety symptoms (Beaulac et al., 2011). Having social supports in place (in a group) is more likely to foster long term change in behaviour/cognition and in adopting an active lifestyle while adhering to regular PA (Beaulac et al., 2011). The social aspect of group therapy has been reported to be a major factor in adhering to the activities and keeping up with the regular frequency of many of the programs already discussed, such as the 'MACK' club (Semple et al., 2005). Seen in the summary of case reports, the children involved in this club reported a sense of belonging and a desire to stay involved in the program due to social connections they had and because they had a special name for their club/group (Semple et al., 2005). The researchers involved in 'Body in Mind' training found the same through client reports, and clients said that they preferred to be in sessions in groups, particularly single-sex groups, and this allowed "individuals to be comfortable with each other (particularly as relates to closing their eyes while completing the exercises)" (Russell, 2011, p. 14). In addition, clients said that music was a motivating factor and helped get them more engaged with the collective 'mindfulness zone' of their group members (Russell, 2011). Another study previously mentioned indicated that detailed training programs involving CBT, resilience training and meditation were more successful "if advertised as a 'social' group, [which would] enhance participation regardless of the format" (Ortiz & Sibinga, 2017, p. 11). Other findings for optimal group adherence found that providing transportation/easy access to sessions along with reminders and snacks for group members increased participation levels and attendance (Ortiz &

Sibinga, 2017). In a review of studies, McVeigh (2015) stated other findings for optimal adherence to a group mindfulness program, which are consistent with those for frequency and time recommendations (in FITT) for PA as a strategy to prevent, manage and treat anxiety, as previously mentioned. The findings within that review state that in interest of habit formation and lasting change, mindfulness in practice should be done regularly (several times per week), at least 20 minutes per session (McVeigh, 2015). It is important to emphasize the importance of habit formation in fostering changes in one's thinking and behaviour, which is the long term goal for a school-wide self-regulation program, and to take seriously any incentives that result in lasting and positive behaviour change after habit formation. Social supports within same-sex groups, easy access to sessions, playing music in sessions, giving reminders and snacks, offering regular sessions several times in each week and running 20-minute session times are such incentives/motivators/factors that foster habit formation. They do, however, bring up the debate of intrinsic versus extrinsic rewards; some people who are proponents of intrinsic incentives argue that extrinsic rewards only bring about temporary changes in habits/behaviour and thought patterns (Loewenstein et al, 2016). In line with one well-known field experiment involving adults and habit formation in the workplace, findings show that participants tend to respond positively to extrinsic incentives in health and wellness programs consistently, resulting short-term adherence (Royer et al, 2012). However, "arguments against the use of incentives sometimes overlook the role that habit formation can play in promoting long run behavioural change" (Loewenstein et al, 2016, p. 47). Several studies in the area of health and wellness have shown that if the "habit formation process occurs while individuals are incentivized to engage in a behaviour, then short-term efforts that encourage children to engage in a particular activity can,

if sufficient to overcome any crowding out of intrinsic motivation, result in positive behaviour change even after the incentives are removed" (Loewenstein et al, 2016, p. 47). Thus, implementing any of these incentives/features into a small or large group therapy program makes sense to shift the thinking, perception and attitudes of children with anxiety symptoms/disorders during the short-term duration of the program before fostering long term positive effects and lasting change.

Conclusion

In summing up the findings of the literature, there are several key points to note that are the most relevant to a proposed intervention that will serve to lower anxiety levels in elementary school students. It is important to implement a MM program on a regular basis, ideally 3 to 5 times per week in 25- to 30-minute sessions, with frequency and time dependent on the set intensity level. The intensity of such a session - regular physical activity coupled with mindfulness sessions - is best set at a mild to moderate intensity, which is consistent with the recommendations from the Canadian guidelines for promoting general health, if the program is offered for 25 to 30 minutes at least 3 times per week (Cvejic & Ostojić, 2018). Research also supports the case for outdoor sessions versus those held indoors, with a mix of modes/types of activities to decrease the likelihood of injury and promote adherence/motivation for sticking with the program (Barton & Pretty, 2010). It also has been found that the sessions are ideal when administered by a teacher trained in mindful movement, and that facilitator should be aware of the necessity to modify mindfulness meditations for children as compared to those often offered to adults (such as shortening the duration of breathing exercises while sitting and giving children the option of eyes open or closed). Indeed, the most promising MM activities have been shown

to be those based in yoga or tai chi, those using mindful walking or even those with unstructured mindful moving; all of these included a CBT component in the sessions researched. Finally, offering sessions in a group format versus in an individual format have benefits integrated into them such as cost and time efficiency, fostering social supports/connections and building community. Added to this, research shows that building incentives such as offering easy access to sessions, offering snacks and using music help build the habits related to MM training and adherence to MM programs, leading to long term changes in behaviour and thinking, more positive perceptions of one's anxiety condition/disorder and an intrinsic motivation to continue building on one's self-regulation skills and resiliency.

Chapter 3: Summary, Recommendations and Conclusion

Summary

As mentioned previously, the anxiety levels of elementary school students (ages 5 to 13) is an issue of growing concern for elementary school counsellors, teachers, administrators and parents, due to the negative effects that anxiety symptoms have on the learning processes, feelings of safety and sense of well-being of students (Mayes & Calhoun, 2007). The findings found in the literature review show that physical activity (PA) coupled with a focus on mindfulness can positively affect anxiety symptoms for youth who experience state/trait anxiety and for those who are diagnosed with an anxiety disorder, which can be collectively termed as mindful movement (MM) (Payne & Crane-Godreau, 2013). The findings in the literature review address the effects of physical/mindful interventions on the anxiety levels, feelings of self-efficacy to cope with anxiety symptoms, anxious thoughts and the ability to focus on learning for several different individuals within a school setting. The purpose of this capstone is to use these findings as a guide to devise a strategy or intervention for elementary school students to decrease their anxiety levels, increase their feelings of self-efficacy to cope with anxiety symptoms and anxious thoughts and increase their ability to focus on learning. The research findings, although limited in their indicators for elementary school-aged children, do provide guidance for constructing an intervention to address this and for piloting a project of this kind in elementary public schools.

When considering how to offer a MM period within the strategy, the research clearly shows guidance as to how to attain optimal frequency (F), intensity (I) and time (T) within the FITT principle. Planning for a period of physical activity coupled with a focus on mindfulness

for MM versus a planning for a period of physical activity without mindfulness is rooted in the research targeting those who have busy minds and/or more severe mental illnesses - controlling cognitions are far too challenging with mindfulness activities or meditation alone (Malboeuf-Hurtubise et al., 2017). Research indicates that mindfulness incorporated with movement is more promising to positively affect youth with anxiety/anxiety disorders versus programs/sessions which separate PA sessions and mindfulness sessions versus ones that separate PA from stretching, or that separate stretching/breathing from mindfulness (Payne & Crane-Godreau, 2013). After the period of MM (for a minimum of 10 minutes), the addition of explicit mindfulness instruction with an emphasis on CBT (to notice and control racing thoughts and breathing) during a period of yoga-inspired stretching/breathing exercises and/or any other mindfulness activity is best done for a duration of 10 to 15 minutes (Cvejic & Ostojić, 2018). Therefore, the optimal and total time (T) for the entire session is said to be 25 to 30 minutes to positively affect those with anxiety symptoms, regardless of the severity of anxiety, with or without anxiety diagnoses, which is in accordance with the Canadian guidelines and recommendations for time in exercise (PA) for the general population (Cvejic & Ostojić, 2018). The research shows a lack of findings on the optimal type (T) of activity that leads to an effective reduction of anxiety levels, just as the Canadian guidelines and recommendations show this lack of findings for the optimal type (T) of activity for PA for the general population (Cvejic & Ostojić, 2018). However, research does suggest that exercising outdoors may be superior to settings that lack green space, which leads one to strongly consider offering an outdoor PA/MM among the variety of activity choice options (Barton & Pretty, 2010). When considering the vast types of MM activities in such a strategy, including free-form, mindful movement and/or yoga,

the self-reports of children who engaged in yoga in a research study are important to note: children reported positive indicators, such as their shift in attitude and their feelings of self-efficacy for dealing with stress responses/anxiety after learning the skills in the program (Mendelson et al, 2010).

The research supporting a variety of MM activities is associated with research for adherence to exercise, establishing habits and long-term behavioural change. This research has shown that a variety of types of activities done as regularly as possible will have optimal, positive effects on anxiety symptoms. This is also associated with research around another aspect of FITT, which is frequency (F), indicating that the more frequent the sessions are, the better for adherence and progression, which mirrors the Canadian guidelines/recommendations for the general population (Cvejic & Ostojić, 2018). Thus, a minimum of 3 times per week and an ideal of 5 times per week in frequency is optimal (Cvejic & Ostojić, 2018). Finally, the research for intensity (I) within FITT indicates that moving/exercising at a mild to moderate intensity provides similar benefits to that at moderate to vigorous intensity for the general population, and that a MM period for the purpose of this strategy is best set at a mild to moderate intensity, making youth with anxiety symptoms less susceptible to injury and offering intensity at a level that is most appealing and most accessible for the diverse group of individuals who would be receiving the strategy (Cvejic & Ostojić, 2018).

The research on the effectiveness of this self-regulation strategy also showed a strong case for incorporating modelling by the teacher(s)-facilitator(s), for using structured programs and providing explicit instruction to control thinking and mindfulness focus in the form of CBT (by mantras/repeating words, body scans and attending/accepting one's racing or maladaptive

thoughts) (Oritz & Sibinga, 2017). Implementing this into a self-regulation strategy for elementary school students would illuminate the findings found in research with a group of secondary school students, who reported that this explicit instruction and meditative repetition effectively calmed their chaotic and maladaptive thinking over time (Franco et al., 2010). Added to this, another study showed the effectiveness of ACT (Acceptance and Commitment Therapy), which is another strategy for accepting maladaptive thoughts, as equally effective for people suffering from major mental illnesses and schizophrenia (Russell, 2011). This indicates that a strategy of rooting guided mindfulness instruction with body movements for elementary school students may be very effective for promoting self-regulation and controlling thinking related to cope with anxious thoughts. In this way, children would develop a sense of safety with the combination of the mindfulness/CBT instruction and the PA, as seen in the research of Olson (2014). In much the same way, this body/mind training would promote less anxious feelings and more self-efficacy for coping with anxiety as children enter the level of safety on Maslow's hierarchy of needs.

In the final theme, the research around individual versus group sessions also serves as a promising guide for an intervention for a group of elementary students; it supports implementing such a strategy as a group and/or school-wide intervention. People with anxiety symptoms in the research showed a decrease in symptoms along with a decrease in criteria for their anxiety disorder (on anxiety measures) regardless of their participation in ICBT and GCBT, illustrating the time and cost effectiveness of any group strategy as superior to individual formats (Flannery-Schroeder et al., 2005). With the added benefit of promoting connections and creating community/social supports for adherence, the offering of this intervention in a group format

would positively affect anxiety symptoms and promote long-term behavioural and cognitive change for elementary school students (Beaulac, et al., 2011). Other findings, such as advertising the intervention as a social activity, occasionally offering MM activities with music, naming the group activity/intervention to build a sense of ownership/community and offering incentives such as snacks after the sessions would all contribute to adherence to the program and the overall effectiveness of the strategy for elementary school students suffering from anxiety (McVeigh, 2015).

The proposed intervention is intended to include all of these positive findings that have been shown to comprise a successful program that offers a strategy to relax the nervous systems of those students who have anxiety symptoms, but can be based only on the limitations of the research in the literature review. As previously mentioned, the effects of exercise and/or mindfulness activities for reducing anxiety is not a well-researched area in children, so findings in this area cannot be used in the basis of the proposed intervention. Research that has examined the effects of physical activity breaks on elementary-aged children has only recently been pursued, so this is another limitation in the research within the literature review, making it difficult to base the recommended intervention on research that has the same prescriptions for replication (Bobe et al., 2014). As seen in other research in the literature review, there has been studies over more recent years to investigate types of interventions for adults with anxiety disorders/major mental illnesses (Jayakody et al., 2013). However, the lack of strategies for schools to help students with anxiety disorders/major mental illnesses and with their learning difficulties that follow are areas where further research is warranted to strengthen the validity of the recommended intervention.

Recommendations

The recommendations for an intervention to relax the nervous systems, to build self-regulation skills and increase feelings of self-efficacy to cope with anxiety symptoms for elementary students could include a school-wide program, a program to be administered in classrooms, and/or a small group program for students suffering from anxiety (with state/trait anxiety and/or with an anxiety disorder, to be recruited by a counsellor in consultation with teachers, administrative and support staff).

For a school-wide initiative, it is important to note the level of support a teacher/counsellor would need for success of a MM program. The teacher/counsellor who would facilitate the program would need to do so with collaboration of other staff and with the help of student leaders. The reasoning behind this is in interest of logistics and of effectiveness for the program: there would be a need for several teachers to lead the activity to manage the large group safely and to provide modelling, which has been shown to strengthen student participation and engagement (Olson, 2014). The theory of the collective regulation of cortisol levels between children and the teacher(s)/facilitator(s) in this model, along with community-building effect between students and teachers, would raise the effectiveness of the school-wide program, shown by these factors which have been established as protective against anxiety (Cassidy et al., 2009). Despite these strengths of the school-wide model, the logistics involved in the majority of public schools make a school-wide program of this kind nearly impossible to effectively maintain on a consistent basis: the need for enough space (as an indoor option must be provided in consideration of adverse weather conditions), the number of staff to manage such a large number of students (in many elementary schools, 400 or more), and the lack of trained

teacher(s)/facilitator(s) needed to effectively model these activities would be insufficient for proper facilitation of the program, and the scenario brings safety into question for all the children of varying developmental stages, diagnoses and socioeconomic circumstances who would be participating (Oritz & Sibinga, 2017).

The facilitation of a MM program in classrooms or with a small group of students with anxiety symptoms are much more feasible models after considering the challenging logistics of running a large-group program in public elementary schools. In facilitating a structured MM program done class by class, one facilitator/adult leader would be enough for any set class-size, and he/she could attain the necessary training to run a MM program through school funding. In addition, the facilitator could offer the program to selected students who exhibited anxiety symptoms and who were part of a small counselling group; he/she would be able to facilitate the intervention effectively after receiving training to administer a structured MM program. All of the protective factors and strengths of the proposed school-wide MM program as outlined above could be present in a classroom or in a small-group model (with the teacher/counsellor and student leaders facilitating the sessions in classes or the counsellor targeting a small group of students). In either model, the teacher/counsellor and/or the student leaders would model the intervention through full participation in order to enhance student participation and engagement. Further, the collective regulation of cortisol levels between children and the teacher/counsellor as well as the community-building effect between students and teachers would apply in each model, making these scenarios equally and even more effective than the large-group model by eliminating its associated complications (Cassidy et al., 2009).

As with the guided instruction in ACT (Acceptance and Commitment Therapy) and other structured MM programs such as 'Meditacion Fluir' in the research outlined, the proposed MM program in classrooms or in small groups should include guided CBT instruction for participants to attend to automatic thought patterns as well as to scan the body and use breathing to target areas with body tension, all while encouraging them to bring their attention back to body sensations after accepting any negative/wandering thoughts (Franco et al., 2010). Due to the effectiveness of this technique in the schools in the research, the mindful, guided instruction would start at the beginning of each session and carry through until the end of each session (Russell, 2011). This means that mindful, guided instruction would be part of any type of physical activity/mindful movement choice and thus integrated in any type of the PA/MM phase of the session. Mindful, guided instruction would also be integrated into the yogic-stretching phase, the focused breathing phase and explicitly into any added mindfulness activity phase for optimal anxiety reduction and for re- or pre-training the brain for the regulation of responses to anxiety (physical or cognitive) (Mendelson, et al., 2010). For example, one choice for the classroom (as per the FITT principle), would be to offer a teacher-led group exercise-to-music session (with the help of student leaders, if desired) of mild to moderate intensity (approximately 50 to 70 % of children's maximal heart rate during the aerobic phase) for 10 minutes, followed by mindful stretching/yoga-like poses and breathing meditation for 10 to 15 minutes, followed by mindfully eating a healthy snack (Beaulac et al., 2011). This option has the added factor of music in the MM phase, which is motivating for students and would help them get them more engaged with the collective 'mindfulness zone' of their group members (Russell, 2011). Alternatively, another choice would be to take a class outside for a short walk outdoors, as noted

by McMahon (2007). This option of mindful walking in green space (so doing so in silence) would be a MM alternative to effectively lower levels of anxiety (McMahon, 2007). With this option (as per the FITT principle), a walk of mild to moderate intensity (approximately 50 to 70 % of children's maximal heart rate) would last for 10 minutes, followed by mindful stretching/yoga-like poses and breathing meditation for 10 to 15 minutes outside (Beaulac et al., 2011). Another option could be to instruct participants to engage in spontaneous, free-form mindful movement in silence (allowing students to move spontaneously on their own), which would have the strengthening factor of meditative attention to bodily sensations, proprioception and kinesthesis as part of the MM phase (Peyne & Crane-Godreau, 2013). This choice option, like the others, incorporates the FITT principle with the free-form MM at a mild to moderate intensity (approximately 50 to 70 % of children's maximal heart rate) for 10 minutes, followed by mindful stretching/yoga-like poses and breathing meditation for 10 to 15 minutes, indoors or outdoors (Beaulac et al., 2011).

The facilitator, be it the school counsellor for a small group of students or for students in classrooms, or a teacher that can be released to implement the program in their classroom and other classrooms, has autonomy and flexibility to build variety in this structured MM program. With the structure of sessions set in 3 phases (a MM phase of mild to moderate intensity for 10 minutes, a mindful stretching/yoga-like posing phase for 10 minutes and breathing meditation phase for 5 minutes), the facilitator could offer various types of exercises within this framework, and the variety/choice factor would strengthen the effectiveness of the program for students in classrooms or who are part of a small group (Beaulac et al., 2011). This would result in a total duration of 25 minutes per session, which should be implemented regularly (at least 3 times per

week) in indoor and outdoor settings over time, at the same time of day for each class/group (Beaulac et al., 2011).

Whether done in classrooms or for a small group or for both, the MM program should have explicit instruction (as per the sample script in the appendix) involving meditative repetition, mantras/repeating words and/or body scans while attending/accepting one's racing or maladaptive thoughts throughout all three phases in each session (Oritz & Sibinga, 2017). It should be advertised as a social group in order to enhance participation, regardless of the choice options in any given session (Ortiz & Sibinga, 2017). If consistent with the research, this would build a sense of belonging and community for the students and help engage them fully in the training, as would a special name for the program (Semple et al., 2005). 'Brain Breaks' could be one such name, as well as any name a small group or a classroom of students could come up with themselves, and would feed students' desire to stay involved in the program due to the connections that they would build with each other and to the special name that they would have for their training program (Semple et al., 2005). The name 'Brain Breaks' has been used for a variety of physical or mental breaks given to school children over the past few years in many school systems, with most of them referring to vigorous physical activity (Bobe et al., 2014). Others which have been used under this term have been done by using relaxation and breathing techniques alone, by using highly physical brain breaks on their own, or by using mathematics games and other academically related activities (Weslake et al., 2015). Using the term 'Brain Breaks' for this proposed recommendation is useful to communicate the purpose of the intervention and to give it a name, but refers to a very different intervention than the ones that have been widely used and termed 'Brain Breaks' (Bobe et al., 2014). Finally, reinforcing the

intervention in scheduling through daily announcements would serve reminders and incentivize students/teachers to prioritize for ‘Brain Breaks’ as a set part of the day (Ortiz & Sibinga, 2017). In addition, the facilitator could also organize to provide healthy snacks for the students in class or for the group members to add further incentives for its effectiveness (Ortiz & Sibinga, 2017).

With a typical elementary school population, it is reasonable to offer ‘Brain Breaks’ as a 13- week group program (one term) for select classes, dividing the total number of classes by three (for three terms) to ensure that all classrooms receive the intervention in one fiscal school year (thereby taking into account time restraints of the facilitator, be it school counsellor or teacher, to facilitate the program for all students in the school). However, if ‘Brain Breaks’ are offered to a small group of selected students who have anxiety disorders/symptoms, it is reasonable that the intervention could span the entire fiscal year or for the duration of their small group counselling program by a counsellor. In addition, it would be necessary to assess the effectiveness of ‘Brain Breaks’ to get indications over time if the intervention is positively affecting the anxiety levels of students.

There are several options that school staff can use to measure anxiety levels in students before and after the implementation of the entire intervention, or to use on ‘Brain Break’ days and on days that ‘Brain Breaks’ is not part of the schedule. Due to its long-standing and widespread use in schools, the Screen for Child Anxiety Related Disorders (SCARED), developed by Birmaher and a team of researchers in 1995, would be one reliable pre- and post-measure for anxiety levels of elementary school students to be used for the ‘Brain Breaks’ intervention (Birmaher et al., 1997). The versions offered in the appendix are both 41-item inventory questionnaires and rated on 3-point Likert-type scales (Birmaher et al., 1997). One

asks questions to the child directly and the other asks the same questions to the parents about their child, if school staff would like to involve parents in assessments (Birmaher et al., 1997). The purpose of SCARED is to reliably and validly screen anxiety-related disorders in children and/or receive perspective on the symptoms of a child's anxiety-related disorder from a parent's perspective, so school staff would need to discuss if this would be appropriate to use for specific students (Birmaher et al., 1997). The BAI survey is another widely-used anxiety measure (in the appendix), which is also a self-assessment for anxiety set on a 4-point Likert scale (ranging from 0 (not at all) to 3 (severe)), and would serve as another reliable measure for anxiety levels for elementary students (Steer & Beck, 1997). Both the SCARED and the BAI screens should be given to children or adolescents exhibiting symptoms of anxiety which significantly impede on their mental well-being and ability to cope with daily life activities (Katzman et al., 2014). For this reason, these screens would be most appropriate for students receiving 'Brain Breaks' in a small group recruited because they have anxiety disorders or more severe anxiety symptoms. For other students exhibiting more mild symptoms of anxiety, the modified Subjective Exercise Experiences Scales (SEES), which is set on a 7-point Likert scale and a self-assessment of one's feelings after exercise, is a good alternative to using the SCARED or the BAI; it is more appropriate for children who do not appear to have such severe symptoms that impede on their learning and well-being (McAuley et al. 1994). For this reason, the SEES could be used as a measure for students receiving 'Brain Breaks' in a classroom setting: the items are geared less for anxiety disorders/severe symptoms and more for general symptoms, and it has been widely used to indicate feelings of positive well-being versus psychological distress before and after exercise programs in sports science (McAuley et al. 1994). The 2 versions of the SEES (in the

appendix) have been modified, as have other versions since its original development, to include additional items that ask students about anxiety and their feelings of efficacy for their ability to focus/learn (Markland et al., 1997). These 2 versions are tailored for both primary and intermediate school-aged children and do not need to be given by the school counsellor; they can be given by teachers and other school staff (McAuley et al. 1994). As mentioned, the BAI survey and the SCARED-C is intended more for use with students who have more severe anxiety or who are designated with anxiety disorders, so they would need to be given as self-assessments and/or administered verbally by the counsellor for students, who would also score the measures and receive any SCARED-P screens from parents (Birmaher et al., 1997).

Conclusion

In conclusion, a suggestion for future professional action is to implement the proposed program for the purposes of reducing anxiety symptoms for children in elementary schools in Burnaby. Some logistical/practical considerations in doing this are allotting enough lead-up time before the initiative to present the proposal to teachers and school staff, organizing and scheduling the classes that are participating in term groupings, explaining the measure being used in the classroom to teachers (the SEES scales), having the school counsellor, teachers and other school staff collaboratively decide which of their students could be good candidates for a small group intervention and who would receive the anxiety screeners as measures (the SCARED-C, the SCARED-P and/or the BAI Survey), finding time to administer the intervention of ‘Brain Breaks’ and the measures, and training the facilitator and/or student leaders to plan and lead the sessions. After the sessions conclude for classes or a small group, there needs to be time allotted for reflecting on the process and examining the data that comes from the

screeners/measures, to follow up by offering some students additional supports, as well as time needed to organize and schedule classroom groupings for the next 13-week term. As an example, follow-up supports after the intervention for the small group could be "goody bags," given out with resources collected by the counsellor. Several resources that can support students with anxiety symptoms could be part of this take-away support, found on the resource page of the Burnaby School District Counselling blog (https://blogs.sd41.bc.ca/counselling/). Some of these would be effective to offer to some students in classrooms (selected by the counsellor) or to the small group members after receiving 'Brain Breaks,' such as links to Bounce Back Resources, the Mindshift app, information on teenmentalhealth.org, the crisis line and/or texting support via youthspace.ca (https://blogs.sd41.bc.ca/counselling/). An invitation back to a "booster session" for the small group members would also be effective to review the strategies from the intervention: in 4 weeks' time (a sort of reunion), the small group could meet again to reconnect, share, and practice 'Brain Breaks' strategies. In addition, either or both the classroom groups and the small group could volunteer to make a "Strategies for Anxiety" information board to be visible in specific classrooms or in the halls for the student body. Any of these follow-up strategies after 'Brain Breaks' concludes would solidify the learning on mindfulness, reinforce the positive effects that it brought for students with anxiety and encourage students to change their habits over time through continued practice of its mindfulness techniques (Loewenstein et al., 2016).

The implications for the immediate and long-term success of 'Brain Breaks' in elementary schools is that parents, school counsellors, teachers and administrators would all need to support the program and the facilitator who leads the weekly sessions in classrooms or

for a small group (allotting him/her time and/or financial assistance for training courses and planning). School counsellors would make ideal facilitators for this intervention with their background and expertise in social-emotional learning; therefore, he/she would need similar supports from school staff to offer 'Brain Breaks' to a small group and to classes, when responding with the follow-up strategies that have been discussed, as well as consulting with parents/teachers and making referrals to outside agencies after the interventions are complete. With these factors under consideration, parents, teachers, counsellors and administrators would be able to see the positive results of the 'Brain Breaks' initiative on students' anxiety levels, learning processes and on their ability to cope with anxiety symptoms.

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Appendix A: SCARED-C, SCARED-P and SCARED Scoring Scale

Screen for Child Anxiety Related Disorders (SCARED)

Child Version - Page 1 of 2 (To be filled out by the CHILD)

Name: _____ **Date**: _____

Directions:
Below is a list of sentences that describe how people feel. Read each phrase and decide if it is "Not True or Hardly Ever True" or "Somewhat True or Sometimes True" or "Very True or Often True" for you. Then for each sentence, fill in one circle that corresponds to the response that seems to describe you for the last 3 months.

		0 Not True or Hardly Ever True	1 Somewhat True or Sometimes True	2 Very True or Often True
1.	When I feel frightened, it is hard for me to breathe	o	o	o
2.	I get headaches when I am at school	o	o	o
3.	I don't like to be with people I don't know well	o	o	o
4.	I get scared if I sleep away from home	o	o	o
5.	I worry about other people liking me	o	o	o
6.	When I get frightened, I feel like passing out	o	o	o
7.	I am nervous	o	o	o
8.	I follow my mother or father wherever they go	o	o	o
9.	People tell me that I look nervous	o	o	o
10.	I feel nervous with people I don't know well	o	o	o
11.	My I get stomachaches at school	o	o	o
12.	When I get frightened, I feel like I am going crazy	o	o	o
13.	I worry about sleeping alone	o	o	o
14.	I worry about being as good as other kids	o	o	o
15.	When I get frightened, I feel like things are not real	o	o	o
16.	I have nightmares about something bad happening to my parents	o	o	o
17.	I worry about going to school	o	o	o
18.	When I get frightened, my heart beats fast	o	o	o
19.	I get shaky	o	o	o
20.	I have nightmares about something bad happening to me	o	o	o

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Screen for Child Anxiety Related Disorders (SCARED)

Child Version - Page 2 of 2 (To be filled out by the CHILD)

		0 Not True or Hardly Ever True	1 Somewhat True or Sometimes True	2 Very True or Often True
21.	I worry about things working out for me	o	o	o
22.	When I get frightened, I sweat a lot	o	o	o
23.	I am a worrier	o	o	o
24.	I get really frightened for no reason at all	o	o	o
25.	I am afraid to be alone in the house	o	o	o
26.	It is hard for me to talk with people I don't know well	o	o	o
27.	When I get frightened, I feel like I am choking	o	o	o
28.	People tell me that I worry too much	o	o	o
29.	I don't like to be away from my family	o	o	o
30.	I am afraid of having anxiety (or panic) attacks	o	o	o
31.	I worry that something bad might happen to my parents	o	o	o
32.	I feel shy with people I don't know well	o	o	o
33.	I worry about what is going to happen in the future	o	o	o
34.	When I get frightened, I feel like throwing up	o	o	o
35.	I worry about how well I do things	o	o	o
36.	I am scared to go to school	o	o	o
37.	I worry about things that have already happened	o	o	o
38.	When I get frightened, I feel dizzy	o	o	o
39.	I feel nervous when I am with other children or adults and I have to do something while they watch me (for example: read aloud, speak, play a game, play a sport)	o	o	o
40.	I feel nervous when I am going to parties, dances, or any place where there will be people that I don't know well	o	o	o
41.	I am shy	o	o	o

**For children ages 8 to 11, it is recommended that the clinician explain all questions, or have the child answer the questionnaire sitting with an adult in case they have any questions.*

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Screen for Child Anxiety Related Disorders (SCARED)

Parent Version - Page 1 of 2 (To be filled out by the PARENT)

Name: _____ **Date**: _____

Directions:
Below is a list of statements that describe how people feel. Read each statement carefully and decide if it is "Not True or Hardly Ever True" or "Somewhat True or Sometimes True" or "Very True or Often True" for your child. Then for each statement, fill in one circle that corresponds to the response that seems to describe your child for the last 3 months. Please respond to all statements as well as you can, even if some do not seem to concern your child.

		0 Not True or Hardly Ever True	1 Somewhat True or Sometimes True	2 Very True or Often True
1.	When my child feels frightened, it is hard for him/her to breathe	o	o	o
2.	My child gets headaches when he/she is at school	o	o	o
3.	My child doesn't like to be with people he/she doesn't know well	o	o	o
4.	My child gets scared if he/she sleeps away from home	o	o	o
5.	My child worries about other people liking him/her	o	o	o
6.	When my child gets frightened, he/she feels like passing out	o	o	o
7.	My child is nervous	o	o	o
8.	My child follows me wherever I go	o	o	o
9.	People tell me that my child looks nervous	o	o	o
10.	My child feels nervous with people he/she doesn't know well	o	o	o
11.	My child gets stomachaches at school	o	o	o
12.	When my child gets frightened, he/she feels like he/she is going crazy	o	o	o
13.	My child worries about sleeping alone	o	o	o
14.	My child worries about being as good as other kids	o	o	o
15.	When he/she gets frightened, he/she feels like things are not real	o	o	o
16.	My child has nightmares about something bad happening to his/her parents	o	o	o
17.	My child worries about going to school	o	o	o
18.	When my child gets frightened, his/her heart beats fast	o	o	o
19.	He/she gets shaky	o	o	o
20.	My child has nightmares about something bad happening to him/her	o	o	o

Screen for Child Anxiety Related Disorders (SCARED)

Parent Version - Page 2 of 2 (To be filled out by the PARENT)

		0 Not True or Hardly Ever True	1 Somewhat True or Sometimes True	2 Very True or Often True
21.	My child worries about things working out for him/her	o	o	o
22.	When my child gets frightened, he/she sweats a lot	o	o	o
23.	My child is a worrier	o	o	o
24.	My child gets really frightened for no reason at all	o	o	o
25.	My child is afraid to be alone in the house	o	o	o
26.	It is hard for my child to talk with people he/she doesn't know well	o	o	o
27.	When my child gets frightened, he/she feels like he/she is choking	o	o	o
28.	People tell me that my child worries too much	o	o	o
29.	My child doesn't like to be away from his/her family	o	o	o
30.	My child is afraid of having anxiety (or panic) attacks	o	o	o
31.	My child worries that something bad might happen to his/her parents	o	o	o
32.	My child feels shy with people he/she doesn't know well	o	o	o
33.	My child worries about what is going to happen in the future	o	o	o
34.	When my child gets frightened, he/she feels like throwing up	o	o	o
35.	My child worries about how well he/she does things	o	o	o
36.	My child is scared to go to school	o	o	o
37.	My child worries about things that have already happened	o	o	o
38.	When my child gets frightened, he/she feels dizzy	o	o	o
39.	My child feels nervous when he/she is with other children or adults and he/she has to do something while they watch him/her (for example: read aloud, speak, play a game, play a sport)	o	o	o
40.	My child feels nervous when he/she is going to parties, dances, or any place where there will be people that he/she doesn't know well	o	o	o
41.	My child is shy	o	o	o

Developed by Boris Birmaher, MD, Suneeta Khetarpal, MD, Marlane Cully, MEd, David Brent, MD, and Sandra McKenzie, PhD. Western Psychiatric Institute and Clinic, University of Pgh. (10/95). Email: birmaherb@msx.upmc.edu

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SCARED Rating Scale Scoring Aide

Use with Parent and Child Versions

Question	Panic/ Somatic	Generalized Anxiety	Separation	Social	School Avoidance
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
31					
32					
33					
34					
35					
36					
37					
38					
39					
40					
41					
Total					
	Cutoff = 7	Cutoff = 9	Cutoff = 5	Cutoff = 8	Cutoff = 3

Total anxiety ≥ 25

0 = not true or hardly true
1 = somewhat true or sometimes true
2 = very true or often true

SCORING

A total score of **≥ 25** may indicate the presence of an **Anxiety Disorder**. Scores higher than 30 are more specific.

A score of **7** for items 1, 6, 9, 12, 15, 18, 19, 22, 24, 27, 30, 34, 38 may indicate **Panic Disorder** or **Significant Somatic Symptoms**.

A score of **9** for items 5, 7, 14, 21, 23, 28, 33, 35, 37 may indicate **Generalized Anxiety Disorder**.

A score of **5** for items 4, 8, 13, 16, 20, 25, 29, 31 may indicate **Separation Anxiety Disorder**.

A score of **8** for items 3, 10, 26, 32, 39, 40, 41 may indicate **Social Anxiety Disorder**.

A score of **3** for items 2, 11, 17, 36 may indicate Significant **School Avoidance**.

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Appendix B: BAI Survey

Beck Anxiety Inventory (BAI)

Below is a list of common symptoms of anxiety. Please carefully read each item in the list. Indicate how much you have been bothered by that symptom during the past month, including today, by circling the number in the corresponding space in the column next to each symptom.

	Not at all	Mildly, but it didn't bother me much	Moderately – it wasn't pleasant at times	Severely – it bothered me a lot
Numbness or tingling	0	1	2	3
Feeling hot	0	1	2	3
Wobbliness in legs	0	1	2	3
Unable to relax	0	1	2	3
Fear of worst happening	0	1	2	3
Dizzy or lightheaded	0	1	2	3
Heart pounding / racing	0	1	2	3
Unsteady	0	1	2	3
Terrified or afraid	0	1	2	3
Nervous	0	1	2	3
Feeling of choking	0	1	2	3
Hands trembling	0	1	2	3
Shaky / unsteady	0	1	2	3
Fear of losing control	0	1	2	3
Difficulty in breathing	0	1	2	3
Fear of dying	0	1	2	3
Scared	0	1	2	3
Indigestion	0	1	2	3
Faint / lightheaded	0	1	2	3
Face flushed	0	1	2	3
Hot / cold sweats	0	1	2	3

Appendix C: Primary and Intermediate SEES Scales (adapted for anxiety)

SEES PRIMARY

Think of the words and decide how much it shows how you feel. Circle the flower that matches HOW MUCH YOU FEEL THIS RIGHT NOW.

I FEEL:

1. Happy

not at all a medium amount a lot

2. Scared

not at all a medium amount a lot

3. Shaky hands or feet

not at all a medium amount a lot

4. Racing heartbeat or breathing

not at all a medium amount a lot

5. Calm

not at all a medium amount a lot

SEES INTERMEDIATE

This inventory contains words or phrases designed to reflect how you feel at this moment. Please circle the number that indicates **HOW YOU FEEL RIGHT NOW.**

I FEEL:

1. Great

1	2	3	4	5	6	7
not at all			moderately			very much so

2. Awful

1	2	3	4	5	6	7
not at all			moderately			very much so

3. Negative

1	2	3	4	5	6	7
not at all			moderately			very much so

4. Positive

1	2	3	4	5	6	7
not at all			moderately			very much so

5. Unable to Relax

1	2	3	4	5	6	7
not at all			moderately			very much so

6. Exhausted

1	2	3	4	5	6	7
not at all			moderately			very much so

7. Strong

1	2	3	4	5	6	7
not at all			moderately			very much so

8. Worried

1	2	3	4	5	6	7
not at all			moderately			very much so

9. Fatigued

1	2	3	4	5	6	7
not at all			moderately			very much so

10. Terrific

1	2	3	4	5	6	7
not at all			moderately			very much so

11. Afraid or Terrified

1	2	3	4	5	6	7
not at all			moderately			very much so

12. Tired

1	2	3	4	5	6	7
not at all			moderately			very much so

13. Focused

1	2	3	4	5	6	7
not at all			moderately			very much so

14. Calm

1	2	3	4	5	6	7
not at all			moderately			very much so

15. Ready to Learn

1	2	3	4	5	6	7
not at all			moderately			very much so

Appendix D: Sample Script for Brain Breaks

(Outdoor Walking option)

For the Walking Phase: say,

Walk along the path/line and breathe for 8 rounds of breath (slow inhales and exhales). When you're ready and after your 8 rounds of breath, turn and walk back in the opposite direction to the other end of the path/line, while you go through 8 rounds of breath again. Then, when you're ready, turn once again and continue with the walk. Do your walk in silence and walk at a slow to medium speed. Keep up your walking and breathing pattern until you are instructed to stop.

Before starting, here are some instructions to remember while you walk:

Think and notice the basic components of your steps: the lifting of one foot, the moving of the foot a bit forward of where you're standing, the placing of the foot on the floor/ground, the shifting of the weight of the body onto the forward leg as the back heel lifts, how the toes of that foot remain touching the floor/ground and lift.

As you walk, try to focus your attention on one or more sensations that you would normally take for granted, such as your breath coming in and out of your body, the movement of your feet and legs or their contact with the ground/floor, your head balanced on your neck and shoulders, the sounds nearby or those caused by the movement of your body, or whatever your eyes take in as they focus on the world around of you.

Remember, no matter how much you try to focus and be mindful of these sensations, your mind will wander or be busy. That's OK—this is what the brain does automatically and naturally. When you notice your mind wandering, simply bring it back to the mindful moving and focus it on the sensations in your body right now.

Okay, begin in silence.

(wait 10 minutes)

Stop. Come back to the group.

For the Yogic Stretching Phase: Use the *Yoga Pretzels Card Deck* and read instructions to students from each card for 'River' (sitting forward fold), 'Down Dog', 'Warrior I', 'Warrior II', 'Tree', 'Mountain' and 'Pretzel' (sitting twist) poses (Guber & Kalish, 2005).

For the Breathing Practice Phase: say,

Go ahead and sit down with your legs crossed… you may close your eyes or choose to keep your eyes open…. drop your shoulders away from your ears, and as you relax, begin to create a picture in your mind.

Imagine that you are near the ocean…. just before sunrise. Maybe you are on the beach…. or a hammock…. or a dock. The ocean is very calm. Most of the water looks very smooth, but you can see small ripples, where gentle, peaceful waves roll in toward the shore.

Take a few moments to imagine this scene.

(pause)

Picture all the details of this relaxing place. The sun has not risen, but the sky is just starting to get light. The air is cool and comfortable. It's a calm and comfortable morning. Imagine the feel of a slight, gentle breeze on your skin. The breeze blows just enough to move the leaves of palm trees gently back and forth.

Imagine the fresh smell of the air… the smell of the clean water and sand. It is a refreshing scent.

Picture in your mind the sound of the water lapping against the shore. The sea is so calm, the waves are very quiet, but you can hear them as they move gently and calmly.

Hear the slight rustling of leaves as the palm branches sway gently.

It is early morning, and you are the only one here. This is a calm, safe, pleasant place. Relax here near the gentle ocean. Keep your eyes closed or your gaze set on a spot and breathe.

(wait for 3 minutes)

Take a slow breath in through the nose, breathing into your lower belly. Count 1, 2, 3 as you breathe in; let your belly rise. Hold the breath for 1 or 2 seconds, and then count 1, 2, 3, 4, 5 as you exhale slowly through the nose or mouth. Wait a few seconds before practicing with another breath.

See the peaceful waves gently lapping at the shore. Washing gently onto the sand.

Watch the peaceful waves flowing like your breath.... in.... and out.... in.... out.... continue to observe the rhythm of the peaceful waves, flowing with the rhythm of your breath. Count 1, 2, 3 as you breathe in; let your belly rise. Hold the breath for 1 or 2 seconds, and then count 1, 2, 3, 4, 5 as you exhale slowly through the nose or mouth.

(pause)

Begin to let go of tension and relax your body. Start with one small area of your body that is tense. Notice this area of tension and allow it to ease slightly. Take a deep breath in.... and as you exhale, feel the muscles in the area you are focusing on becoming more relaxed. Imagine breathing in relaxation.... and breathing out tension. Notice with each breath how you can relax this one area of tension. Count 1, 2, 3 as you breathe in; let your belly rise. Hold the breath for 1 or 2 seconds, and then count 1, 2, 3, 4, 5 as you exhale slowly through the nose or mouth.

As you relax, you can enjoy the beautiful sunrise. Pink and orange give everything around you a warm glow. The sun has risen above the horizon... still low in the sky...

The breeze.... the warm early sunlight.... the gently lapping, peaceful waves.... softly moving palm leaves.... all of these create a calm and peaceful place.

(pause)

Soon this place will be busy with people going about their morning routines. Enjoy the last few remaining moments of solitude as the sun rises higher in the sky.

The sun is shining, brighter each moment.

(pause)

Everything around you seems to be waking up. Getting ready for a lovely day.

When you are ready to wake up your body and your mind, open your eyes or look up.

Return your awareness to your surroundings and notice the real environment you are in.

(pause)

Thank you for sharing this time being mindful in today's Brain Break.