

SNAP® FOR SCHOOLS: IMPACT ON INTERNALIZING SYMPTOMS

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## Abstract

Stop Now And Plan (SNAP®) is an empirically supported cognitive behavioural program for children identified as at-risk who present with externalizing problems. The purpose of this investigation was to examine the effectiveness of the SNAP® School-based program as a universal prevention program for non-identified children, specifically, the effectiveness of the program for reducing emotion dysregulation, intolerance of uncertainty, anxiety sensitivity, and other internalizing symptoms. It was hypothesized that the SNAP® School-based program would reduce emotion dysregulation, and would reduce internalizing constructs such as intolerance of uncertainty and anxiety sensitivity in non-identified, school-aged children. The sample included 65 children ( $Mean_{age} = 8.05$ ,  $SD = .57$ ). Participants completed a battery of measures to assess emotion regulation, intolerance of uncertainty, anxiety sensitivity, health anxiety, and anxiety disorder symptoms before and after participating in the SNAP® program. Overall, results demonstrated minimal significant change in the constructs of interest. However, significant reductions in emotion dysregulation, internalizing measures of health anxiety, anxiety sensitivity, and specific anxiety symptoms were observed for children who scored in the upper 10% on the respective measures. These findings contribute to a better understanding of the effectiveness of the SNAP® School-based model for non-identified school-aged children for reducing internalizing symptoms; further, the findings shed light onto the relationships between emotion regulation and internalizing pathology in school-aged children. Limitations and future directions are discussed.

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## Introduction

Stop Now And Plan (SNAP®) is a cognitive behavioural intervention that was developed to help children and parents regulate anger and impulsivity by teaching them to stop, think, and plan positive alternatives before they act (Augimeri, Jiang, Koegl, & Carey, 2006). SNAP® was originally designed for children with or at-risk for disruptive behaviour problems (and their parents) and therefore the program targets such symptoms and associated difficulties as poor self-control and problem solving, bullying, delinquency, aggression and violence, antisocial values and conduct, negative thinking, problematic parent-child interactions, school failure, and isolation (Child Development Institute, 2012). The latter are ameliorated by teaching effective emotion regulation, self-control, and problem solving skills, promoting the generalization of these skills, and continued care (Child Development Institute, 2012). There have been numerous investigations supporting the effectiveness of SNAP® for children (mainly boys) with externalizing problems as mentioned above (e.g., Augimeri, Farrington, Koegl, & Day, 2007; Augimeri, Jiang, et al., 2006; Day, 2003; Koegl, Farrington, Augimeri, & Day, 2008; Lewis et al., 2008; Lipman et al., 2008); however, whether SNAP® is also effective in reducing internalizing symptoms, specifically anxiety and anxiety-related constructs, remains unknown. Further, limited knowledge exists regarding the utility of SNAP® for children not identified as at-risk in a school setting. As a SNAP® School-based model is beginning to be implemented into elementary curriculums, an examination of its effectiveness was necessary.

SNAP® is based on cognitive behaviour theory which assumes that children have various thoughts and problem solving techniques that underlie their undesirable

behaviour (Beck, 2005). Therefore, by altering underlying thoughts, teaching how to regulate emotions, and presenting new problem solving strategies, changes in behaviour should follow (Akande, 1997). Cognitive behaviour therapy (CBT) is effective for a range of disorders, including internalizing disorders that are the focus of the present investigation (e.g., James, Soler, & Weatherall, 2009). Internalizing pathology can result in a number of problematic consequences such as substance use (O’Neil, Conner, & Kendall, 2011), social and emotional maladjustment (Eisenberg, Spinrad, & Eggum, 2010), and isolation (American Psychiatric Association, 2000), and appears to be due to emotion dysregulation (e.g., Bender, Reinholdt-Dunne, Esbjorn, & Pons, 2012; Herts, McLaughlin, & Hatzenbuehler, 2012; McCabe & Brooks-Gunn, 2007), a primary target of SNAP®.

The following thesis includes an overview of CBT generally, and of the SNAP® programs specifically, as well as internalizing and related disorders and the possible contributing factors in their development. The relationship of emotion regulation to internalizing symptoms is discussed. The importance of these constructs in children’s current and future functioning is reviewed to establish a basis for the utility of the SNAP® program as a universal prevention program and, in turn, to outline why this investigation was appropriate.

### **Cognitive Behaviour Therapy**

The evidence-based therapy that has proven to be an effective method of treating many disorders (e.g., depression, panic disorder, social anxiety disorder), including internalizing problems in children, is CBT (see Barlow, 2008 or Beck, 2005 for reviews). Researchers have demonstrated that youth with depression, anxiety, and conduct disorder

attend to and interpret social cues (e.g., why did that boy bump into me?) differently from children without these disorders (O'Connor & Creswell, 2005). Specifically, they are more prone to see the other child as having harmful intentions (O'Connor & Creswell, 2005). From there, they generate potential solutions and evaluate the effects from a skewed viewpoint (e.g., if I hit him back, what would happen?). CBT targets each of these stages to break this stream of maladaptive thoughts and feelings that results from misattributions of others' behaviour (O'Connor & Creswell, 2005).

**CBT theory.** Thinking is the process that occurs between sensation and response. If children learn to not let the stress or anger of the initial sensation take over their thinking, they should be able to gain greater control over their emotional response, and in turn, their actions (Akande, 1997). *Cognitive restructuring* is meant to increase control of one's thoughts and direct thoughts and actions toward more favourable outcomes, which is a primary goal of CBT (Akande, 1997). CBT incorporates modeling, feedback, and reinforcement along with cognitive restructuring to build new coping styles. Additionally, through CBT children learn to identify their emotions and the source of their emotions (Izard et al., 2008). This identification enables a discourse about emotions that can result in increased social support. Importantly, increased social support should lead to greater control of emotions, perpetuating the healthy cycle of social support and emotional awareness (Izard et al., 2008).

**Efficacy of CBT.** Specifically, CBT is effective for treating internalizing symptoms and disorders such as fears (Powers, Jones, & Jones, 2005), anxiety (Elkins, McHugh, Santucci, & Barlow, 2011), depression, and somatic symptoms (Liu, Chen, & Lewis, 2011). A recent review paper including 13 studies was completed to determine

whether CBT is an effective treatment for childhood and adolescent anxiety disorders in comparison to waitlist or attention controls (James et al., 2009). Analyses of all participants based on treatment assignment showed a remission rate of anxiety diagnoses of 56% for CBT versus 28% for controls. Using data from those who actually completed the trials, the response rate for CBT was 65% versus 21% for controls (James et al., 2009). Approximately twice as many children with anxiety disorders improved through CBT than a waitlist or active control condition, which speaks to the efficacy of CBT.

Various CBT interventions have been successful with children for improving aggression management and self-control (Daunic, Smith, Brank, & Penfield, 2006; Herrmann & McWhirter, 2003), self-regulation, problem solving strategies, emotional awareness, friendship and interpersonal skills, and self-esteem (Bidgood, Wilkie, & Katchaluba, 2010; Herman, Borden, Reinke, & Webster Stratton, 2011). CBT has also been shown to reduce impulsive behaviour and the frequency and intensity of temper situations (Bidgood et al., 2010). These programs have been effective for children both with and without clinical diagnoses (e.g., Duanic et al., 2006; Herrmann & McWhirter, 2003). Overall, the effectiveness of CBT has demonstrated the greatest gains for internalizing disorders (Elkins et al., 2011), while CBT to treat anger and emotional control issues has demonstrated moderate effects (e.g., Herrmann & McWhirter, 2003; Sukhodolsky, Kassinove, & Gorman, 2004).

**CBT administration.** Two broad methods of CBT implementation are universal and targeted approaches (Bayer et al., 2011). While targeted programs are designed specifically for an at-risk population (e.g., conduct disorder), universally implemented interventions (e.g., classroom-wide) are effective for children whose emerging issues

may not be noted by caregivers yet; however, they may be beginning to demonstrate behaviours that could compromise their future success (Daunic et al., 2006). Universal interventions are often designed to enhance general mental health, build well-being and resilience, and prevent future delinquency by teaching effective coping strategies with support from socially appropriate peers (Barrett & Pahl, 2006; Daunic et al., 2006). This investigation focused on a universally implemented program.

For children and their parents, CBT delivery that is flexible and interactive is suggested to improve engagement and comprehension (Elkins et al., 2011). Additionally, if children are familiar with and comfortable in the setting (e.g., their classroom), treatment effects will likely be larger (Elkins et al., 2011). Administering CBT in a group format facilitates peer interaction and provides valuable opportunities for modeling and exposure (especially for anxiety and practicing emotion regulation). Importantly, treatment delivered in a group format may help children feel less isolated by their symptoms, particularly children with anxiety (Elkins et al., 2011). For example, CBT delivered in the classroom may reduce the stigma that children enrolled in special programs sometimes face, and ensures that children with symptom levels below the threshold for a diagnosis, but who are at greater risk for developing internalizing disorders later in life will not be inadvertently excluded (Barrett & Pahl, 2006; Elkins et al., 2011). The school setting enables children to practice skills in realistic contexts within a wide range of interpersonal situations (e.g., dealing with teachers, peers, parents) and reduces the common barriers people are faced with when seeking community services (Barrett & Pahl, 2006).

Receiving CBT treatment in a school setting is valuable as it addresses three common concerns in the delivery of mental health services: (1) cost of treatment, (2) time, and (3) access. First, receiving individual CBT from an experienced mental health provider is often costly. For example, the treatment for generalized anxiety disorder could cost over \$2000 (Barrett & Pahl, 2006). Second, treatment is time consuming (e.g., weekly sessions for three to four months) and dependent on parent, child, and therapist availability. Third, treatment may be difficult to access due to strict entry criteria into services, high service demands, overloaded caseworkers, and limited access to treatment for families living in rural areas (Barrett & Pahl, 2006). Universal prevention interventions conducted in the school context eliminate these barriers (Farrell & Barrett, 2007).

In sum, CBT is effective for use with both with at-risk children and universally, and CBT has led to many improvements in a number of disorders. The CBT program examined in this investigation was designed to target several problems at once (internalizing, as well as conduct and externalizing problems) through universal delivery in a classroom setting and is referred to as SNAP®. A more thorough review of the SNAP® program and associated outcome research is reviewed below.

### **Stop Now And Plan (SNAP®)**

The Child Development Institute is a children's mental health agency known for offering a range of evidence-based programs for healthy child development, early intervention, and family violence services for children under the age of 12 years and their families (Child Development Institute, 2012). In regards to early intervention, the Institute works with children at home, at school, and at camps to promote early learning

of coping skills and self-management with the goals of preventing children from coming into contact with the justice system, and preventing early childhood disorders (Child Development Institute, 2012). The program leaders (i.e., those who facilitate the intervention groups) also work with parents to decrease parental aggression and increase parenting confidence (Child Development Institute, 2012). Stop Now And Plan (SNAP®) was created by the Child Development Institute to help children stop, think, and plan positive alternatives before they act (Augimeri, Jiang, et al., 2006). In 2008, SNAP® was appointed by Public Safety Canada's National Crime Prevention Centre as a model crime prevention program selected to be replicated across Canada. In 2011 the Public Health Agency of Canada selected SNAP® as a Canadian Violence Prevention Best Practice (Child Development Institute, 2012).

There are three different SNAP® programs: one for boys, one for girls, and one for schools, in which children receive 12 or 13 weekly sessions. The first SNAP® program, established in 1985 in conjunction with the Toronto Police Service, was the SNAP® Under 12 Outreach Project for boys. The SNAP® program is the first of its kind designed specifically to meet the needs of children under the age of 12 years engaging in antisocial activities such as physical aggression, vandalism, and theft (Child Development Institute, 2012). Children are admitted to the program if they have a score of 70 or greater on the delinquency subscale of the Child Behaviour Checklist (CBCL; Achenbach, 1991) or have had recent police contact resulting from their own actions (Koege et al., 2008). The focus of the Outreach Project is to interrupt negative behaviour patterns and replace them with positive options. Through a structured curriculum, facilitated discussion, and role plays, children learn to solve problems in provoking

situations so that they are able to generate feasible, personalized alternative options that lead them away from further trouble (Koegl et al., 2008). Later, a SNAP® Girls program was developed. It was discovered that girls experience the same risk factors for behaviour problems as boys, but more improvement was observed when employing a program that was designed specifically for the types of situations girls face (e.g., role plays reflect verbal rather than physical bullying; Augimeri, Koegl, Ferrante, & Slater, 2006).

As previously mentioned, there have been numerous investigations supporting the effectiveness of SNAP® for boys with externalizing problems (e.g., Augimeri et al., 2007; Augimeri, Jiang, et al., 2006; Day, 2003; Koegl, Farrington, Augimeri, & Day, 2008; Lewis et al., 2008; Lipman et al., 2008). For example, Augimeri, Jiang, Koegl, and Carey (2006) found significant reductions in parent-reported delinquent behaviour in 379 boys aged 12 years, with a large overall effect. The program appeared to work best for boys with moderate levels of delinquency (Augimeri, Jiang, et al., 2006). Further, children who attended fewer than eight SNAP® sessions were almost twice as likely to be in contact with the youth justice system by age 18 years as children who attended nine or more sessions, after controlling for pre-program levels delinquency (Koegl et al., 2008). This suggests that SNAP® serves a long-term protective function in terms of decreasing subsequent involvement in crime, but may require a minimum amount of exposure to program content to observe long term effects. Another pre- to post-treatment study of 32 children under the age of 12 years found a significant decrease in the number of delinquent behaviours as reported by parents and children, as well as improvements in prosocial thinking, parenting behaviour, perceived parenting efficacy, and success of household routines (Day, 2003).

Successful emotion regulation through the SNAP® program for 42 children 8 to 12 years of age (27 scoring in the clinical range and 15 in the non-clinical range on the CBCL) was shown to reduce the ventral prefrontal activation of the brain from pre- to post-intervention, bringing children scoring in the clinical range on the CBCL in line with the non-clinical children (Lewis et al., 2008). This change in the brain functioning, measured by an electroencephalogram, was interpreted as being suggestive of a reduction in the over-controlling, rigid style of emotion regulation characteristic of children with behaviour problems (Lewis et al., 2008). These results constitute the first record of brain changes corresponding with the successful treatment of children's behaviour problems (Lewis et al., 2008).

Recently, the Child Development Institute, in partnership with the Toronto District School Boards, began delivering SNAP® for schools (Walsh & Hong, 2010). The SNAP® School-based model is a 13 week program that teaches children cognitive behavioural self-control and problem solving techniques in the classroom. An all-too-common punishment in elementary school is being sent to the principal's office, or less commonly, being suspended. It is difficult for a child to learn if he or she is excluded from the classroom. In the short term these punishments may eliminate the inappropriate behaviour; however, in the long term, coping skills that would enable self-control in the future are not developed (Banks & Zionts, 2009; Barrett, Farrell, Ollendick, & Dadds, 2006). Remediation of this problem may involve integrating the teaching of coping skills into the school curriculum by employing a program such as the SNAP® School-based model (Banks & Zionts, 2009).

In the SNAP® School-based model, school personnel (e.g., social workers, school counselors, and teachers) work in conjunction with Institute staff to identify classrooms where students are evidencing some level of behavioural difficulties. Once target children are identified, the SNAP® program is implemented in the entire class by a trained SNAP® classroom facilitator in conjunction with a school staff member; however, sometimes the identified children leave the classroom and receive SNAP® either through the boys or girls program separately (Walsh & Hong, 2010). Only the targeted students are asked to complete homework assignments that they work on with their parents and bring back to the classroom each week (Walsh & Hong, 2010). The program is comprised of the following components: (1) Introduction to SNAP®; (2) Body Cues; (3) SNAP® Learning Log; (4) Dealing with Anger; (5) Joining In; (6) Fair Play and Sportsmanship; (7) Review – Avoiding Trouble; (8) Dealing with Bullying; (9) Dealing with Peer Pressure; (10) SNAP® Problem Solving and Apologizing; (11) Understanding Stealing; (12) Complimenting and Rewarding Yourself; and (13) Final Celebration (Walsh & Hong, 2010). Additional support such as booster sessions and individual befriending (i.e., pairing the SNAP® participant with other children to increase prosocial skills) are also available.

Each 45-minute group session is composed of activities including: Check In & Practice Review (5 minutes); Let's Talk (children begin to explore problematic situations that require their use of SNAP®; 15 minutes); Lights! Camera! SNAP®! (leader modeling and child role plays; 20 minutes); Check Out (students are asked to complete homework assignment based on the week's topic; 3 minutes); and Leveling Off (relaxation; 2 minutes; Walsh & Hong, 2010). As part of the evaluation, students,

teachers, parents, and clinicians are asked to complete a series of measures including: group satisfaction evaluations; pre- to post-group behavioural checklists; mood inventories; and functional assessment scales (Walsh & Hong, 2010).

According to parent report, the SNAP® School-based model led to significant pre to post decreases in targeted behavioural issues in 28 identified children between the ages of 7 and 12 years with a moderate treatment effect (Walsh & Hong, 2010). In addition, the majority of participants who were in the clinical range for severity of behaviour shifted to the non-clinical range (Walsh & Hong, 2010). This indicates that upon completing the program, participants no longer had behavioural issues that were of a serious nature. Most teachers (80%) reported they were satisfied with the SNAP® program and that participation did help children in their class stop and think before they acted. Furthermore, many teachers could recall an instance in which they witnessed a student using SNAP® skills to deal with a situation (Walsh & Hong, 2010).

Often what occurs with the SNAP® School-based model and other CBT programs is that very few children in a school are identified (e.g., two per classroom), yet hundreds of children receive the universal program (Barrett & Pahl, 2006). For example, in the aforementioned study (Walsh & Hong, 2010) data were not collected for the 384 non-identified children who also received SNAP®. Therefore, data is collected for identified children, but no outcome data exists for the non-identified children. When the latter is combined with the fact that much of the time the identified children are removed from the class and receive a more intensive SNAP® separately, the justification for continuing to deliver the program to hundreds of children who may not be receiving any benefit is called into question. Based on the findings from the identified children, and the

successful results of CBT programs for reducing internalizing and externalizing disorders generally, it was assumed that the non-identified children were also receiving some benefits in terms of a reduction in externalizing and potentially internalizing problems. However, to-date, no investigation existed that specifically examined the utility of the SNAP® School-based program for non-identified children and its effectiveness in reducing self-reported internalizing symptoms.

### **What are Internalizing Disorders and Why are they Problematic?**

Internalizing problems include depression, anxiety, fearfulness, withdrawal, somatic complaints (e.g., anxiety-induced headaches, stomach aches, or illness), and stress that negatively impact functioning and interpersonal relationships (American Psychiatric Association, 2000). Internalizing problems are alarmingly common; for instance, by the age of 16 years, approximately 15% of children will have experienced an internalizing disorder (Ashford, Smit, van Lier, Cuijpers, & Koot, 2008). Anxiety, the most common type of psychiatric disorder in children, has a worldwide prevalence of 10% (Liu et al., 2011). Current estimates indicate that, on average, four to six students within a classroom of 30 children are at risk for developing an anxiety disorder (Barrett & Pahl, 2006).

Internalizing problems affect children at very young ages (e.g., separation anxiety disorder may be diagnosed before age 6 years; American Psychiatric Association, 2000). Internalizing disorders can impair the everyday functioning of children and should be an area of concern (Bayer et al., 2011). For example, Rapport, Denny, Chung, and Hustace (2001) found that anxiety and depression accompanied by interpersonal withdrawal predicted classroom performance and cognitive functioning in 325 children and

adolescents (7 to 15 years of age) over and above the effect of intelligence. Performing poorly in the classroom despite average intelligence will likely be detrimental to a child's future goals.

**Course.** The course of internalizing problems appears chronic. Internalizing problems at age 4 years predicted persistence of such problems at age 11 years (Ashford et al., 2008), with girls showing a higher increase in internalizing problems across time (Fanti & Henrich, 2010). Moreover, the effects of internalizing problems often persist into adulthood without treatment (American Psychiatric Association, 2000), affecting adult relationships, employment opportunities, and leading to early mortality (Bayer et al., 2011). Comorbidity rates between childhood internalizing disorders and later substance use disorders range between 9 and 48%, with rates differing by disorder (O'Neil et al., 2011).

**Underlying factors.** There are a number of factors that have been thought to underlie the development of internalizing symptoms. One factor to consider is cognitive maturation. Specifically, increases in internalizing problems might be the result of cognitive maturation because improvements in cognitive abilities enable children to self-reflect and to remember and anticipate negative or depressing events (Fanti & Henrich, 2010). A second primary cause of internalizing symptoms appears to be cognitive distortions, which are thoughts biased toward negative experiences (Epkins, 2000). For example, depressed and anxious youth tend to make biased judgments about future events being negative; also, they engage in excessive rates of self-criticism (Epkins, 2000). Beck's *content-specificity hypothesis* holds that the cognitive distortions or automatic thoughts in depression focus on loss and failure, while those in anxiety involve themes of

threat and danger (Epkins, 2000). Specific maladaptive cognitive and emotion regulation strategies have been associated with internalizing pathology in youth. These strategies include self-blame, catastrophizing, and rumination – strategies that are typically activated upon experiencing negative life events and which generally serve to worsen the situation (Garnefski, Kraaij, & van Etten, 2005).

Along with cognitive distortions, children with internalizing disorders lack regulation of attention and behaviour, exhibiting extreme behavioural inhibition (Eisenberg et al., 1996). One investigation of 190 children ages 8 to 12 years found that improvement in self-control and emotion regulation was negatively related to internalizing disorders two years after the initial assessment (Lengua, 2006). Emotion dysregulation has been found to significantly predict anxiety, accounting for 24% of the variance in children's anxiety scores (Bender et al., 2012). When examining girls and boys separately, emotion dysregulation accounted for 33% of the variance in girls' anxiety scores and 20% of the variance in boys' anxiety scores (Bender et al., 2012). Another longitudinal analysis of 663 children from age 10 to age 12 years showed that the variance in emotion awareness (the ability to monitor and differentiate one's own emotions and determine their causes) was highly predictive of the variance in internalizing problems over time (Rieffe & De Rooij, 2012). That is, children who could differentiate their emotions and identify the causes of their emotions had fewer internalizing symptoms than children who did not have these skills (Rieffe & De Rooij, 2012). These studies demonstrate that as emotion regulation increases naturally with age, children's internalizing symptoms decreases. Increased emotion regulation allows

children to feel in control of their own emotions as they know they have the requisite skills to regulate themselves (Rieffe & De Rooij, 2012).

To summarize, internalizing disorders are common and affect many areas of a child's life in the present, as well as the future. A primary cause of internalizing appears to involve cognitive distortions that cause maladaptive interpretations of events. If children with internalizing pathology engage in treatment with a focus on facilitating the modification of maladaptive thoughts and teaching emotion regulation, the future consequences of chronic internalizing may be prevented. There are two specific internalizing constructs that were of particular interest in this investigation: intolerance of uncertainty and anxiety sensitivity.

**Intolerance of uncertainty.** Intolerance of uncertainty involves experiencing severe discomfort with the notion that negative events may occur in the future and there is no absolute way to predict such events (Carleton, 2012; Carleton, Norton, & Asmundson, 2007). Individuals who experience intolerance of uncertainty often worry about the implications of unknown future events; worry is considered the key means by which people often cope with intolerance of uncertainty (Fergus & Valentiner, 2011). People who find such uncertainty aversive are more likely to interpret ambiguous situations as threatening as they are overly vigilant for negative events; they may also attempt to control the future by modifying their own actions (i.e., usually through restriction of activity; Carleton et al., 2007). Individuals who experience events as catastrophic are more likely to develop disorders; for example, individuals who appraise their health catastrophically are especially likely to develop health anxiety (Fergus & Valentiner, 2011). Thus, intolerance of uncertainty appears to be an internalizing

construct subject to change with early intervention designed to improve tolerance of uncertainty and decrease attempted over-control of the environment.

There is a paucity of research regarding intolerance of uncertainty in young children compared with research in adults; however, several researchers have examined the construct in adolescents. A study of 528 adolescents (ages 14 to 18 years) showed that intolerance of uncertainty accounted for a significant proportion of variance in worry, over and above the variance accounted for by gender, somatic anxiety symptoms, positive beliefs about worry, negative problem orientation, and thought suppression (Laugesen, Dugas, & Bukowski, 2003). A more recent study of 191 adolescents (ages 14 to 18 years) also linked intolerance of uncertainty to worry, as well as to social anxiety. Intolerance of uncertainty predicted worry and social anxiety over the influence of negative affect, age, and gender (Boelen, Vrinssen, & van Tulder, 2010). A neuroimaging study found that adolescents with high intolerance of uncertainty have different brain activation patterns than adolescents with low intolerance of uncertainty (Krain et al., 2008). Sixteen adolescents diagnosed with anxiety disorders and 13 non-anxious control adolescents (ages 13 to 17) completed a decision-making task during functional magnetic resonance imaging. Adolescents with high intolerance of uncertainty activated the bilateral amygdala of the limbic region during the decision-making task (Krain et al., 2008). This suggests that greater intolerance of uncertainty may be associated with an elevated affective response to uncertainty, which was further supported by the positive correlation between intolerance of uncertainty scores and ratings of anxiety during the task (Krain et al., 2008).

Two recent studies have examined the construct of intolerance of uncertainty in young children. In a self-report study of 197 children and adolescents, younger children (age 7 and 8 years) experienced greater difficulty tolerating uncertainty than older children (age 17 years; Comer et al., 2009). Young children's self-report of intolerance of uncertainty was related to anxiety, worry, and reassurance-seeking behaviour. Parent-report also evidenced associations between intolerance of uncertainty and worry, but not anxiety or reassurance-seeking behaviour (Comer et al., 2009). Intolerance of uncertainty was not related to harm avoidance, suggesting that intolerance of uncertainty is distinct from an aversion to harm (Comer et al., 2009). Finally, in a study of 128 children and adolescents (ages 11 to 17 years), intolerance of uncertainty was related to a number of other internalizing pathologies, such as anxiety disorders, health anxiety, and anxiety sensitivity (Adams Lebell & Wright, manuscript in progress).

**Anxiety sensitivity.** Anxiety sensitivity, originally conceptualized by Reiss, Peterson, Gursky, and McNally (1986), refers to the fear of anxiety symptoms based on the belief that these symptoms have harmful physical, psychological, or social consequences (Reiss, 1991). The origins of anxiety sensitivity may lie in learning to catastrophize about the meaning of somatic symptoms in general (Stewart et al., 2001). For example, an individual might believe that he or she will have a heart attack after noticing his or her heart rate increase following a walk up a flight of stairs. By increasing the aversiveness of anxiety experiences and causing one to worry about anxiety symptoms, anxiety sensitivity creates a vicious cycle of fear of fear. Related to this, cognitive theorists propose that individuals develop anxiety sensitivity due to their fear of

the consequences of anxiety which may be learned from personal past experience or learned socially (Reiss, 1987).

Anxiety sensitivity has been examined in relation to several constructs in children and adolescents. First, anxiety sensitivity was found to predict variance in panic symptoms over and above the variance accounted for by depression and somatic distress in 114 children and adolescents ages 11 to 18 years (Calamari et al., 2001). Anxiety sensitivity was also found to predict unique variance in panic symptoms in a younger sample of 52 children ages 7 to 11 years (Calamari et al., 2001). In both studies, anxiety sensitivity predicted panic symptoms over and above the variance accounted for by trait anxiety (Calamari et al., 2001). Anxiety sensitivity was found to be a vulnerability factor in the development of anxiety symptoms among a community sample of 277 early adolescents (ages 9 to 13 years; Schmidt et al., 2010). After controlling for baseline anxiety symptoms as well as depression, anxiety sensitivity significantly predicted the development of anxiety symptoms over 12 months, though the percentage of variance accounted for was small (less than 10%; Schmidt et al., 2010). Consistent with the adult literature and expectancy theory (Taylor, 1999), anxiety sensitivity appears to act as a risk factor for anxiety symptoms in youth.

Anxiety sensitivity has been found to be an underlying factor of social phobia (Anderson & Hope, 2009). Of 392 adolescents (ages 13 to 17 years), those with social phobia were more subjectively aware of increases in their emotional arousal during an anxiety-provoking task and were more afraid of the social implications of their arousal as compared to the adolescents without social phobia. In line with theory behind anxiety sensitivity, this awareness may serve to maintain anxiety in social situations as the

adolescents perceive their physiological arousal as indicative of severe anxiety (Anderson & Hope, 2009). In a sample of 2246 adolescents ages 14 to 19 years, anxiety sensitivity predicted change in self-report of behavioural avoidance, beyond the impact of gender, trait anxiety, and panic attacks (Wilson & Hayward, 2006).

*Underlying factors.* Stressful life events were identified as a factor related to the development of elevated anxiety sensitivity among 1065 adolescents (ages 11 to 13 years; McLaughlin & Hatzenbuehler, 2009). Stressful life events increase attention to bodily cues of anxiety and anxiety-related cognitions. This increased attention, paired with greater focus on the causes and consequences of anxiety symptoms, may lead to the development of negative beliefs about the consequence of anxiety symptoms (McLaughlin & Hatzenbuehler, 2009). Specific types of stressors were found to differentially predict increases in specific facets of anxiety sensitivity; health-related stressors predicted increases in disease-related concerns and fear of mental incapacitation, whereas stressors related to family discord predicted increases in fear of feeling unsteady, fear of mental incapacitation, and fear of having publicly observable symptoms of anxiety (McLaughlin & Hatzenbuehler, 2009). Moreover, stress associated with dysfunctional family relationships can disrupt the normative development of social competence, which may render some adolescents more vulnerable to developing fears of the social consequences of anxiety (McLaughlin & Hatzenbuehler, 2009). These results suggest that preventive interventions that focus on attenuating anxiety sensitivity may help to reduce stress-related psychological problems in adolescents.

As previously mentioned, a major theme of each of these internalizing pathologies is cognitive distortions. The cognitive distortions, or biased thoughts about the degree of

threat that the future, bodily sensations, or other factors may hold, vary depending on the internalizing disorder. Intervention that targets cognitive distortions, such as CBT, combined with improved self-control and emotion regulatory capacity in children may ameliorate many of these conditions before they become chronic.

**Efficacy and effectiveness of CBT for internalizing symptoms.** Several studies have been published in the last decade regarding the efficacy and effectiveness of CBT for internalizing symptoms. A review paper of 10 randomized controlled trials of CBT for children suffering from internalizing disorders found large treatment effects (Riosa, McArthur, & Preyde, 2011). CBT for children with anxiety and comorbid aggression yielded effect sizes in the small to medium range (Riosa et al., 2011). In a school-based study, CBT strengthened prosocial behaviour and improved peer relations in 165 children ages 9 and 10 years (Daunic et al., 2006). Another large-scale school-based CBT program for 1139 children ages 8 to 11 years found a significant decline in anxiety over time in the treatment and active control groups with no difference between the groups post-treatment (Manassis et al., 2010). Thus, there was no evidence that CBT had an advantage over supervised activity. Clearly not every investigation will find a significant effect, but a review of the CBT literature with children shows that CBT is often effective for many internalizing disorders.

**FRIENDS.** The FRIENDS for Life (FRIENDS) program (Barrett, 2004, 2005) is an evidence-based, anxiety-reduction program for children and youth similar to the SNAP® program. The program incorporates a number of cognitive behavioural components including: psycho-education regarding emotions, anxiety, and how to use relaxation skills; cognitive restructuring and positive self-talk; problem solving skills;

graded exposure for achieving goals and facing fears; the importance of trying hard, and self-rewards; and relapse prevention (learning how to maintain skills for life; Barrett & Pahl, 2006).

Implemented universally in a school setting, the FRIENDS program has been shown to be efficacious for lowering anxiety and depression in 669 children ages 10 to 11 years as compared to a control group and compared to children ages 13 to 14 years (Barrett et al., 2006). At 12-month follow up, children in the older age group did not sustain benefits from participating in FRIENDS (measured against a control group); accordingly, intervening with prevention in younger children, rather than in older children, may be optimal for reducing risk of anxiety and depression (Barrett et al., 2006). A second investigation of FRIENDS for 594 children ages 10 to 13 years also found greater reductions in anxiety and depression over time for children who participated in FRIENDS than for children in the control group (Farrell & Barrett, 2007). At 12-month follow up, 85% of children in the FRIENDS group who had scored above the clinical cut-off for anxiety and depression were diagnosis-free, compared to only 31% of children in the control group (Farrell & Barrett, 2007). Finally, FRIENDS has led to significant improvements in self-esteem, panic, separation anxiety, and obsessive compulsive symptoms in 106 children ages 9 and 10 years (Stallard, Simpson, Anderson, & Goddard, 2008). The improvements were sustained at 3 and 12-month follow ups (Stallard et al., 2008), suggesting that interventions such as FRIENDS and SNAP® can have a significant effect upon long-term emotional health, including internalizing pathology when delivered in schools as universal interventions.

**Internalizing and externalizing symptom comorbidity.** Internalizing and externalizing symptoms often co-occur in children, with common risk factors including: child medical conditions; maternal depression; less positive and enriched home environments; and a difficult temperament (Fanti & Henrich, 2010). A common example includes children who exhibit depression, aggression, and social withdrawal (Eisenberg et al., 1996). Researchers have hypothesized that the same mechanisms are involved in both internalizing and externalizing pathology, primarily effortful control and emotion regulation capacity (Eisenberg et al., 2010). Children with both disorders have difficulty controlling their attention and thoughts [e.g., not being cognitively present in attention deficit hyperactivity disorder (ADHD), and rumination in anxiety and depression (Eisenberg et al., 2010)]. This lack of affective and attentional control can cause bias toward negative or threatening stimuli (e.g., misattributions of others' actions) leading to withdrawal, aggression, or both (Eisenberg et al., 2010; Patrick, 1997). Regulation of affect seems to play an important role in both types of disorders, with children with internalizing disorders experiencing negative affect or irritability (e.g., depression) and children with externalizing disorders experiencing frustration and behaving aggressively toward others (Eisenberg et al., 2010). Intense and labile anger and sadness, indicative of emotion dysregulation, are common correlates of both internalizing and externalizing disorders among young adolescents (Silk, Steinberg, & Morris, 2003).

Unfortunately, the social isolation that accompanies internalizing and externalizing disorders may lead to a lack of social competence. Researchers have found that rejected children tend to engage in behaviours that escalate conflict to a greater degree than do other children (Patrick, 1997). In a study of 161 children ages 7 to 13

years, children with both internalizing and externalizing pathology were more excluded by peers than children with either internalizing or externalizing symptoms alone (Rudolph, Hammen, & Burge, 1994). This may be because children who are anxious or depressed as well as aggressive might be regarded as less appealing by peers than children who are only depressed or only aggressive (Rudolph et al., 1994). Peer isolation together with anxious or depressive symptoms reduces opportunities for social support and building emotion regulation skills (Perle et al., 2013). Combined isolation, aggression, and lack of ability to regulate emotions can lead children to find deviant peer associations where they are accepted, which is a strong predictor of later risk-taking behaviour (e.g., substance use; Fanti & Henrich, 2010; Perle et al., 2013). Once part of deviant groups and engaged in inappropriate behaviours, the will to voluntarily inhibit behaviour diminishes, leading to sustained impulsivity and risk-taking over time (Fanti & Henrich, 2010; Koegl et al., 2008; Perle et al., 2013). There are many points on this path where intervention could take place, offsetting later consequences. For example, teaching children skills of emotion regulation and problem solving could facilitate peer acceptance, effectively halting the trajectory toward deviancy. Thus, children demonstrating early internalizing and externalizing problems should receive intervention before their symptoms strengthen (Perle et al., 2013).

*Underlying factors.* Internalizing and externalizing disorders have many aspects in common; however, the main difference between the two appears to be the associated cognitive risk factors. Children with internalizing problems reported significantly more cognitive distortions such as catastrophizing, personalizing, overgeneralizing, and selectively attending to the negative than children with externalizing problems (Epkins,

2000). It also appears that negative views of the self, the world, and the future are specifically related to internalizing rather than externalizing problems (Epkins, 2000). Another study of cognitive strategies with adolescents found that more self-blame, rumination, and catastrophizing, and less positive reappraisal were related to internalizing but not externalizing disorders (Garnefski et al., 2005). Internalizing and externalizing disorders may differ in the contributing influence of cognitive distortions; however, their common underlying mechanism of emotion dysregulation and lack of problem solving skills is clear. The latter may be addressed through early intervention, which could prevent chronic and detrimental short and long term consequences in many children's lives.

### **Emotion Regulation and Dysregulation**

A fundamental construct underlying internalizing pathology appears to be emotion dysregulation. Across the literature there are a variety of definitions of emotion regulation, including: the ability to modify emotional experiences (Adrian, Zeman, Erdley, Lisa, & Sim, 2011); processes and strategies to avoid or transform emotions (Brinton & Fujiki, 2011); and controlling, directing, and planning cognitions, emotions, and behaviour (McClelland & Cameron, 2011). The overarching concept is summarized well by Berking and Wupperman (2012) as a goal-driven process, motivated by intrinsic and extrinsic forces, which monitors, evaluates, and subsequently modifies emotional expressions, especially their intensity and timing. When children are developing emotion regulation, they must learn how to express their emotions in socially appropriate ways (Sheffield Morris, Silk, Steinberg, Myers, & Robinson, 2007). Three processes are considered central to emotion regulation: (1) emotional awareness, or the ability to

identify one's internal emotional experiences and those of others; (2) emotion coping, the strategies used to manage emotional experiences in a constructive manner; and (3) expression management, the inhibition of displays of either very negative or very positive emotion (Hammond, Westhues, & Hanbidge, 2009; Herts et al., 2012).

One may wonder how realistic emotion regulation is for young children; for example, the use of emotion regulation strategies to deliberately change one's thoughts or goals to alleviate negative emotions is thought to be a strategy used only by adults. Researchers have found that not only are children aware of cognitive means of emotion regulation that can be used, but that children actively use these strategies themselves (Davis, Levine, Lench, & Quas, 2010). For example, 172 children ages 5 to 7 years reported changing their goals most often to alleviate sadness, and changing their thoughts or mental state most often to alleviate fear (Davis et al., 2010). Thus, researchers should not underestimate young children's awareness of these advanced cognitive means of regulating their emotions. In fact, the notion of emotion regulation was originally conceptualized in developmental research as relating to children; the concept was later applied to adults (Thompson, 1994).

Unfortunately, emotion dysregulation can occur. Emotion dysregulation involves the insufficient control of impulses, inability to regulate affect before expression, and other patterns which are detrimental to a child achieving his or her goals and maintaining social relationships (Neumann, van Lier, Frijns, Meeus, & Koot, 2011). Emotion dysregulation is hypothesized to occur due to an innate vulnerability to high-intensity emotions, and an inadequate learning history for managing intense emotions constructively (Adrian et al., 2011). For example, childhood environments that model

aggression and parental conflict, coupled with lack social support, are suspected to impede emotional development (Adrian et al., 2011). During times of stress, children raised in such environments may have difficulty identifying and appropriately expressing their emotions, leading them to use emotionally avoidant coping strategies (Adrian et al., 2011). Avoidant coping strategies may serve to worsen the present situation, and they do not allow children to develop skills to effectively handle similar situations in the future (Adrian et al., 2011).

Emotion dysregulation has been shown to predict the early onset of a wide range of psychopathological symptoms, including anxiety, depression, externalizing behaviours, delinquency, antisocial behaviour, aggression, and behavioural disorders such as ADHD, conduct disorder, and oppositional defiant disorder (Herts et al., 2012; McCabe & Brooks-Gunn, 2007). For example, one study of 255 children ages 11 to 14 years found that those who experienced greater emotion dysregulation were more likely to be victimized by their peers, and to use internalizing and aggressive coping strategies (Spence, De Young, Toon, & Bond, 2009).

**Underlying factors.** There are several proposed underlying factors of emotion dysregulation; first is vulnerability to risk. Children with emotion dysregulation have shown lower resiliency against common risk factors (e.g., maternal depression, low socioeconomic status) than children who are successful in emotion regulation (Herts et al., 2012). For example, in 1065 children ages 11 to 14 years, emotion dysregulation was found to mediate the relationships between peer victimization and aggression, and between stressful life events and aggression (Herts et al., 2012). In children prone to emotion dysregulation, peer victimization and other life stressors can impede emotional

awareness and the child's ability to control their expressions of sadness and anger, and lead to rumination (Herts et al., 2012). Combined, these factors heighten the risk of subsequent aggression in adolescence (Herts et al., 2012).

A second underlying factor of emotion dysregulation involves difficulty shifting attention. One of the mechanisms by which emotion regulation is achieved is through focusing attention on something other than the emotionally arousing stimulus (Lengua, 2002). This ability regulates the amount of exposure a child has to emotion-provoking stimulus, allowing appropriate cognitive processing of emotions to take place (Lengua, 2002). Related to rumination, when children cannot shift their attention away from emotionally arousing stimuli, they are more likely to react impulsively as they have not had time to moderate their emotional reaction (Lengua, 2002).

Lastly, family factors affect the development of emotion regulation in two important ways. First, specific parenting practices and behaviours related to the socialization of emotion can affect emotion regulation (Sheffield Morris et al., 2007). For example, frequent discussions about emotions between children and parents are shown to facilitate the development of emotion regulation and emotion understanding in young children (Brinton & Fujiki, 2011). Second, emotion regulation is affected by the emotional climate of the family, as reflected in the quality of the attachment relationship, style of parenting, family expressiveness, and the level of interparental conflict (Sheffield Morris et al., 2007). For example, there is evidence that when families expressed high levels of negative emotions and mothers did not show acceptance of their child's emotions, children were poorer emotion regulators (Ramsden & Hubbard, 2002). Contrarily, when mothers and their young children had more secure attachment in the

relationship, children were more able to talk with their mothers about negative emotions (Waters et al., 2010). Teaching parents about accepting their child's emotions may be a simple and effective strategy to foster emotion regulation (Ramsden & Hubbard, 2002). Parents who encourage a child's expression of emotion are more aware of their child's emotions, can explain them, and may assist their children in experiencing and regulating emotions (Ramsden & Hubbard, 2002).

Hence, a child's inherent vulnerability to environmental risk factors, his or her ability to shift attention, and various family factors all play a role in a child's development of emotion regulation. Generally, when families express more positive emotions, parents have a positive relationship with each other, parents encourage their child to discuss his or her emotions, and parents are accepting of their child's emotions, the child is more likely to develop emotion understanding and competence (Sheffield Morris et al., 2007). These are all important areas interventions could target when aiming to improve children's emotion regulation.

**Why effective emotion regulation is important.** Children who can effectively regulate their emotions experience a variety of positive outcomes. First, when children understand their emotions and the emotions of others, they are more able to act appropriately across various situations; this ability is important for reducing personal frustration and increasing social acceptance (Bidgood et al., 2010; Wyman et al., 2010). When children can control their emotional expression, it becomes easier for them to develop prosocial behaviours, and thus succeed interpersonally (Bidgood et al., 2010). As well, children who are good emotion-regulators are more academically competent than children who are poor regulators (McCabe & Brooks-Gunn, 2007). This may be because

children who can regulate their emotions can be more active participants in their learning. When children do not rely on others (e.g., teachers) to help them self-regulate, this allows them to take in information more successfully (Zito, Adkins, Gavins, Harris, & Graham, 2007). Another positive outcome is that children who can regulate their emotions can cope with stress more effectively (Buckner, Mezzacappa, & Beardslee, 2009). Through proactive coping, which involves anticipating potential stressors, analyzing how to prevent them or reduce their impact, and planning a course of action, children can reduce the stress they experience, leading to better psychosocial adjustment (Buckner et al., 2009).

### **Summary**

In sum, SNAP® is an empirically supported cognitive behavioural program for children identified as at-risk who present with externalizing problems. Due to the adaptation of SNAP® for the school setting, the following investigation aimed to explore the utility of this program for school-aged children who were not identified as at-risk, as well as the effectiveness of the program for reducing internalizing symptoms (i.e., emotion dysregulation, intolerance of uncertainty, anxiety sensitivity, and anxiety disorder symptoms). The SNAP® program was expected to be effective in reducing self-reported internalizing symptoms because CBT (which SNAP® is based on) has been demonstrated to be effective for treating internalizing disorders in children. Emotion dysregulation and internalizing disorders begin early in a child's life and have a chronic course. Struggling with emotional dysregulation, anxiety, intolerance of uncertainty, and other internalizing symptoms can create barriers to children achieving their future goals and therefore early intervention is crucial.

## **Purpose**

The current investigation was designed to examine the utility of the SNAP® School-based program as a universal prevention program for non-identified, school-aged children. Specifically examined was the program's effectiveness in reducing children's emotion dysregulation, intolerance of uncertainty, anxiety sensitivity, and other anxiety disorder symptoms as defined in the Diagnostic and Statistical Manual of Mental Disorders- Fourth Edition (DSM-IV; American Psychiatric Association, 2000). Internalizing, as measured by the parent-completed CBCL, has been previously examined and children participating in SNAP® have demonstrated reductions in internalizing symptoms (Walsh & Hong, 2010); however, the specific constructs examined in this investigation have not been examined, nor have they been examined in this context in a self-reported manner. If the SNAP® program demonstrated effectiveness for most non-identified children, this would support the notion that employing SNAP® in schools is beneficial and should be continued, and it would provide further support for the value of SNAP® generally.

## **Hypotheses**

The investigation included three primary hypotheses:

(1) It was hypothesized that children's scores on the measures of emotion dysregulation and internalizing pathology would be moderately correlated with each other. (2) It was hypothesized that emotion dysregulation would decrease as a function of participation in the SNAP® School-based program. (3) It was hypothesized that internalizing constructs such as intolerance of uncertainty, anxiety sensitivity, and anxiety disorder symptoms would decrease as a function of participation in the SNAP® School-

based program. Though decreases in these constructs were expected, most children will not fall in the clinical range on these measures before participating in SNAP® and thus it was hypothesized that their scores may not decrease as much as those children whose scores were in the upper range.

## Method

### Participants

The participants consisted of children in grade 3 ( $n = 50$ ) and grade 4 ( $n = 15$ ) attending one of three elementary schools in Regina, SK ( $Mean_{age} = 8.05$ ,  $SD = .57$ ). The numbers of children at School A ( $n = 25$ ), School B ( $n = 21$ ), and School C ( $n = 19$ ) were similar. There was a fairly even split of males (46.2%;  $n = 30$ ) and females (53.8%;  $n = 35$ ). The majority of participants were Aboriginal (40.0%;  $n = 26$ ). Other ethnicities included Caucasian (26.2%;  $n = 17$ ), mixed ethnicity and Asian (each 12.3%,  $n = 8$ ), Middle Eastern (7.7%;  $n = 5$ ), and Black/African (1.5%,  $n = 1$ ).

According to a power analysis using G\*Power software (Faul, Erdfelder, Lang, & Buchner, 2007), with a medium effect expected, a sample size of 34 children was necessary to conduct the analyses of interest (repeated measures ANOVAs). Because SNAP® was implemented in three classrooms, the resulting sample size pre-SNAP® included 65 children. Due to participant illness, moving away, or lack of interest in participation, 57 children completed the measures post-SNAP® which is a completion rate of 88%. For the purposes of this investigation, the focus was only on non-identified children [i.e., those who had not been previously identified by participating agencies and organizations (e.g., Regina Public and Regina Catholic school systems, Child and Youth Services-Regina Qu'Appelle Health Region, Regina Police Services, Ministry of Social

Services) as at-risk of behavioural difficulties and/or delinquent behaviour as a part of a larger multi-agency initiative]. Children who had been identified as at-risk as a part of a larger multi-agency initiative did not participate in the present study.

## Measures

**Demographics form (see Appendix A).** Children were asked basic demographic information including sex, age and birth date, ethnicity, and grade.

**Children's Emotion Management Scale (CEMS; Zeman, Shipman, & Penza-Clyve, 2001; see Appendix B).** The CEMS is a self-report measure of anger and sadness management in school-aged children. The measure is comprised of 23 items, which are rated on 3-point Likert scales (*hardly ever, sometimes, often*). Recently, an additional measure of childhood worry has been included in the CEMS: a 10-item measure utilizing the same structure as the aforementioned anger and sadness scales. The CEMS contains three subscales: inhibition (suppression of emotional expression); dysregulated expression; and coping (adaptive methods of emotion management) for each of the three emotions measured. Total scores range from 33 to 99; higher scores on the inhibition and dysregulation scales indicate greater anger, sadness, or worry while higher scores on the coping scales indicate a greater ability to cope with anger, sadness, or worry. The CEMS has demonstrated acceptable psychometric properties and preliminary findings support the reliability and validity of the scale (Zeman et al., 2001; Zeman, Cassano, Suveg, & Shipman, 2010). Cronbach's alphas for the current study were lower than expected at .74, 95% CI [.61 - .84] for inhibition, .53, 95% CI [.30 - .71] for dysregulation, and .70, 95% CI [.55 - .81] for coping.

**Childhood Illness Attitude Scales (CIAS; Wright & Asmundson, 2003; see Appendix C).** The CIAS is a self-report measure that was designed for children based on the Illness Attitudes Scale (Kellner, 1987). The 35 items measure fears, beliefs, and attitudes associated with health anxiety and abnormal illness behaviour in childhood on 3-point Likert scales (*none of the time, sometimes, a lot of the time*). Total scores range from 29 to 87 (after items 8, 11, 15, and 25 have been excluded; Wright & Asmundson, 2005) and higher scores indicate greater health anxiety. The CIAS has four subscales: fears (of illness, death, disease, pain); help seeking; treatment experience; and symptom effects on functioning (Wright & Asmundson, 2005). The reliability of the subscales (Cronbach's  $\alpha = .70 - .86$ ) and the total score (Cronbach's  $\alpha = .88$ ) were good to excellent in previous research (Wright & Asmundson, 2005). Previous research found two week test-retest reliability supported the stability of the measure ( $r = 0.86$ ) and concurrent validity was supported through statistically significant correlations between the CIAS and anxiety sensitivity and fear, while discriminant validity was supported by a low correlation with depression (Wright & Asmundson, 2003). Cronbach's alphas for the current sample were lower than expected at .58 (symptom effect) to .85 (fear) for the subscales; however overall reliability was good at  $\alpha = .88$ , 95% CI [.83 - .92] for the full scale.

**Childhood Anxiety Sensitivity Index (CASI; Silverman, Fleisig, Rabian, & Peterson, 1991; see Appendix D).** The CASI, designed to measure anxiety sensitivity in children, was developed based on the Anxiety Sensitivity Index for adults (Reiss, Peterson, Gursky, & McNally, 1986). The 18 items are rated on 3-point Likert scales (*none, some, a lot*). Total scores range from 18 to 54 and higher scores are indicative of

greater anxiety sensitivity. The CASI has three subscales: physical concerns (the fear of anxiety-related physical sensations, such as nausea, due to beliefs these sensations will lead to physical illness), social concerns (the fear of publicly observable anxiety-related sensations, such as shaking, due to beliefs that demonstrating anxiety will lead to social censure), and psychological concerns (the fear of anxiety-related mental sensations, such as difficulty concentrating, due to beliefs these sensations will lead to mental illness; Walsh, Stewart, McLaughlin, & Comeau, 2004). The measure's factor structure was later confirmed in children ages 7 to 15 years (McLaughlin, Stewart, & Taylor, 2007). Gender differences have emerged with girls scoring higher than boys on the physical and social subscales of the CASI as well as the total score (Walsh et al., 2004). The reliability of the CASI for non-clinical children as well as children with ADHD, dysthymia, and anxiety was high (Cronbach's  $\alpha = .87$ ; Silverman et al., 1991). Both one week and two week test-retest reliability were adequate ( $r = .76 - .79$ ; Silverman et al., 1991). Concurrent validity was supported though high correlations with fear types and severity, trait anxiety, and DSM-IV anxiety disorders (McLaughlin et al., 2007; Silverman et al., 1991). Cronbach's alphas for the current study were .82, 95% CI [.75 - .88] for physical concerns, .51, 95% CI [.29 - .67] for social concerns, .53, 95% CI [.29 - .70] for psychological concerns, and .86, 95% CI [.80 - .90] for the total score.

**Intolerance of Uncertainty Scale–Revised (IUS–R; Walker, Birrell, Rogers, Leekam, & Freeston, 2010; see Appendix E).** The IUS–R assesses the central themes of intolerance of uncertainty in children (uncertainty, emotional and behavioural reactions to ambiguous situations, implications of being uncertain, and attempts to control the future). The 12-item measure is based upon a revision of the original Intolerance of Uncertainty

Scale (Carleton et al., 2007; Freeston, Rheaume, Letarte, Dugas, & Ladouceur, 1994). Items are rated on 5-point Likert scales (*not at all like me* to *entirely like me*), with total scores ranging from 12 to 60; higher scores indicate greater intolerance of uncertainty. A recent study found inter-item correlations ranging from .19 to .63, and Cronbach's alpha was excellent at .87 (Adams Lebell & Wright, manuscript in progress). In terms of validity, the IUS-R was significantly correlated with health anxiety, anxiety sensitivity, and other anxiety disorders (Adams Lebell & Wright, manuscript in progress). Cronbach's alpha for the current study was good at .84, 95% CI [.77 - .89].

**Spence Children's Anxiety Scale (SCAS; Spence, 1998; see Appendix F).** The SCAS is a 44-item self-report measure designed to assess the presence of anxiety symptoms. Items are rated on 4-point Likert scales (*never* to *always*). The total score ranges from 0 to 114 with higher scores indicating greater anxiety as the positive filler items (6 items) are not used in scoring (Spence, 1998). Unlike other existing questionnaires, the SCAS can be specifically linked to DSM-IV anxiety disorders (Spence, 1998). The SCAS is comprised of the following subscales: (1) panic/agoraphobia; (2) social phobia; (3) separation anxiety; (4) obsessive-compulsive disorder; (5) generalized anxiety; and (6) physical injury fears. The SCAS possesses high internal consistency (total score Cronbach's  $\alpha = .92 - .94$ ; Essau, Muris, & Ederer, 2002; Whiteside & Brown, 2008). The internal consistency of the various subscales is also acceptable (Cronbach's  $\alpha = .70 - .82$ , with the exception of .57 for physical injury fears; Essau et al., 2002; Muris, Schmidt, & Merckelbach, 2000). A 6-month test-retest reliability was fair ( $r = .60$ ; Spence, 1998). The validity of the SCAS was demonstrated in that clinically anxious and control children had significantly different SCAS scores,

with subscale scores accurately reflecting the presenting anxiety disorder in the clinical sample (Spence, 1998). The scale demonstrated acceptable concurrent validity as demonstrated by statistically significant correlations with the Revised Children's Manifest Anxiety Scale (Spence, 1998) and the Screen for Child Anxiety Related Emotional Disorders (Essau et al., 2002; Muris et al., 2000). Discriminant validity was supported by a low correlation with depression (Spence, 1998). Cronbach's alphas for the current sample slightly were lower than what was reported in the literature, from .60, 95% CI [.42 - .74] for physical injury fears to .78, 95% CI [.68 - .85] for panic/agoraphobia. In contrast, Cronbach's alpha for the full scale was consistent with the literature ( $\alpha = .91$ , 95% CI [.87 - .94]).

### **Procedure**

After approval by the University of Regina Research Ethics Board (see Appendix G), parental/guardian consent was obtained from potential participants. One week prior to the implementation of the SNAP® School-based program, the principal investigator and several research assistants administered the aforementioned measures to the children in their classrooms. Participants completed the measures in small groups with the assistance of the researcher or research assistants. Next, the 13 week SNAP® program was delivered by a trained SNAP® facilitator in conjunction with other school personnel (e.g., teacher, social worker, guidance counselor). SNAP® fidelity/integrity of service delivery practices conducted by the Child Development Institute were carried out, including file audits, and consultations and monitoring of the SNAP® groups and other SNAP® treatment components utilizing adherence and competency ratings (Child Development Institute, 2012). One week after the termination of the SNAP® program,

the principal investigator again administered the measures to all children in the classroom to obtain post-intervention data.

### **Analyses**

Statistical analyses were performed using the Software Package for the Social Sciences (SPSS: version 19; IBM Corporation, 2010). Descriptive statistics were computed for demographic information; the means and standard deviations from the current study were compared with means and standard deviations from previous samples. The latter was examined because these measures were designed for research purposes and do not have clinical cut off scores to determine clinical levels of anxiety. Therefore, by comparing this sample to previous samples through *t*-tests it could be determined whether this sample significantly differed from prior research (either as having greater or less anxiety). This technique has been employed in prior research (e.g., Whiteside & Brown, 2008).

The following analyses were then completed, consistent with the investigation's hypotheses: (1) a series of univariate ANOVAs to examine potential differences in measures of emotional regulation and internalizing pathology across school, sex, and ethnicity; Bonferroni post-hoc tests with statistical corrections accounted for the number of tests performed; (2) bivariate correlations between the measures of emotion regulation and internalizing pathology; and (3) a series of repeated measures ANOVAs to assess changes in emotion regulation and internalizing pathology over time with the full sample, and subsequently with children who scored in the top 10% on the measures. When significant group differences emerged in the aforementioned univariate ANOVAs, the specific variable was used as a covariate in a repeated measures ANCOVA.

## Results

### Descriptive Statistics

Descriptive statistics were computed for questionnaire subscales and total scores (see Table 1). Where the samples contained participants of the same age and sex, the measure means and standard deviations of the current sample were compared to those from prior research through *t*-tests (see Table 2). The current sample had one statistically significantly higher score on the SCAS than was reported in previous research; otherwise, this sample did not differ significantly in emotion dysregulation or on any of the measures from what was reported in prior literature.

Table 1

*Range, Means, and Standard Deviations Pre- and Post- SNAP® for Participants' Scores*

Measure	Range	Pre-SNAP®		Post-SNAP®	
		<i>N</i>	<i>M(SD)</i>	<i>N</i>	<i>M(SD)</i>
CEMS Anger					
Inhibition	4 – 12	60	8.25(2.09)	56	7.95(2.06)
Dysregulation	3 – 9	60	4.57(1.53)	56	4.29(1.37)
Coping	4 – 12	60	8.67(1.79)	56	8.71(1.63)
CEMS Sadness					
Inhibition	4 – 12	57	7.96(2.15)	57	8.35(2.03)
Dysregulation	3 – 9	57	5.15(1.45)	57	5.14(1.47)
Coping	5 – 15	57	10.77(2.32)	57	10.81(1.91)
CEMS Worry					
Inhibition	4 – 12	51	8.46(2.20)	55	8.56(2.04)
Dysregulation	3 – 9	51	5.03(1.22)	55	4.76(1.63)
Coping	3 – 9	51	6.35(1.44)	55	6.13(1.50)
CIAS					
Fear	13 – 39	64	24.70(5.89)	57	22.81(5.21)
Help seeking	9 – 27	64	19.85(3.28)	57	20.07(3.50)
Symptom effect	4 – 12	64	6.96(1.79)	57	7.07(1.91)
Treatment experience	3 – 9	64	5.70(2.01)	57	5.93(1.59)
Total	29 – 87	64	57.22(9.99)	57	55.88(9.12)

## CASI

Physical concerns	10 – 30	65	17.17(4.45)	57	16.42(3.99)
Social concerns	5 – 15	65	9.25(2.15)	57	9.25(1.80)
Psychological concerns	3 – 9	65	4.65(1.57)	57	4.42(1.48)
Total	18 – 54	65	31.07(7.04)	57	30.09(6.02)
IUS–R Total	12 – 60	62	26.08(8.91)	57	26.18(8.76)

## SCAS

Total	0 – 114	60	31.56(17.61)	57	32.72(15.89)
Panic/agoraphobia	0 – 27	60	4.99(4.58)	57	4.63(4.39)
Separation anxiety	0 – 18	61	5.62(3.59)	57	6.01(3.70)
Social phobia	0 – 18	61	4.77(3.70)	57	5.72(3.10)
PIF	0 – 15	61	4.80(3.33)	57	4.54(3.24)
OCD	0 – 18	61	5.65(3.91)	57	5.72(4.00)
Generalized anxiety	0 – 18	61	5.67(3.49)	57	6.11(3.35)

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*Note.* CEMS = Children’s Emotion Management Scale; CIAS = Childhood Illness Attitude Scales; CASI = Childhood Anxiety Sensitivity Index; IUS–R = Intolerance of Uncertainty Scale–Revised; SCAS = Spence Children’s Anxiety Scale; PIF = physical injury fears subscale; OCD = obsessive compulsive disorder subscale.

Table 2

*Comparison of Means and Standard Deviations of the Measures from Current and Previous Samples*

Measure	Current Study Pre-SNAP® <i>M(SD)</i>	Zeman et al. (2010) <i>M(SD)</i>	Wright & Asmundson, (2003) <i>M(SD)</i>	McLaughlin et al., (2007) <i>M(SD)</i>	Adams Lebell & Wright <i>M(SD)</i>	Whiteside & Brown (2008) <i>M(SD)</i>	<i>t</i>	Cohen's <i>d</i>
<b>CEMS Anger</b>								
inhibition	8.25(2.09)	6.97(1.94)					.70	.60
dysregulation	4.57(1.53)	5.02(1.67)					.71	.20
coping	8.67(1.79)	8.38(2.17)					.71	.10
<b>CEMS Sadness</b>								
inhibition	7.96(2.15)	7.70(2.13)					.73	.10
dysregulation	5.15(1.45)	5.21(1.63)					.72	.10
coping	10.77(2.32)	10.84(2.23)					.73	.10
<b>CEMS Worry</b>								

inhibition	8.46(2.20)	8.28(2.19)		.76	.11
dysregulation	5.03(1.22)	4.73(1.65)		.75	.11
coping	6.35(1.44)	6.47(1.55)		.76	.11
CIAS	57.22(9.99)	58.56(9.41)		.77	.11
CASI	31.07(7.04)	30.40(7.10)		.85	.11
IUS–R	26.08(8.91)	27.23(8.59)		.53	.08
SCAS	31.56(17.61)	17.68(11.90)	5.29	<.001	

*Note.* Children’s Emotion Management Scale  $N = 65$  for the current study,  $N = 214$  for the Zemen et al. (2010) study. Childhood Illness Attitude Scales  $N = 64$  for the current study,  $N = 201$  for the Wright and Asmundson (2003) study. Child Anxiety Sensitivity Index  $N = 65$  for the current study,  $N = 349$  for the McLaughlin et al. (2007) study. Intolerance of Uncertainty Scale–Revised  $N = 64$  for the current study,  $N = 128$  for the Adams Lebell and Wright study. Spence Children’s Anxiety Scale  $N = 60$  for the current study,  $N = 82$  for the Whiteside and Brown (2008) study.

CEMS = Children’s Emotion Management Scale; CIAS = Childhood Illness Attitude Scales; CASI = Child Anxiety Sensitivity Index; IUS–R = Intolerance of Uncertainty Scale–Revised.

\* $p < .05$

In an examination of pre-SNAP® differences in scores on the measures across schools, univariate ANOVAs were employed with Bonferroni post-hoc tests. Three separate sets of differences on the pre-SNAP® measures were observed. First, a statistically significant difference was found for the pre-SNAP® CIAS fear subscale,  $F(2, 61) = 4.40, p = .014, \eta^2 = .13$ , help seeking subscale,  $F(2, 61) = 5.75, p = .005, \eta^2 = .16$ , and total score,  $F(2, 61) = 6.62, p = .003, \eta^2 = .18$ . See Table 3 for means, standard deviations, and Bonferroni-corrected significance values.

Table 3

*Statistically Significant Differences Pre-SNAP® on Childhood Illness Attitude Scales by School*

CIAS Scale	School		Mean Difference
Fear	School A	School B	1.61
		School C	5.05*
Help seeking	School A	School B	-.60
		School C	2.51*
	School B	School C	3.11**
Total	School A	School B	1.41
		School C	9.73**
	School B	School C	8.32*

*Note.* CIAS = Childhood Illness Attitude Scales.

\* $p < .05$ . \*\* $p < .01$ .

A second statistically significant difference was found for the pre-SNAP® CASI psychological concerns subscale,  $F(2, 62) = 6.14, p = .004, \eta^2 = .17$ . In this case, children from School A scored significantly higher than children from School B ( $M_{\text{difference}} = 1.20, p = .021$ ) and School C ( $M_{\text{difference}} = 1.39, p = .008$ ). The third statistically significant pre-SNAP® difference between schools was on the SCAS. The SCAS total score,  $F(2, 57) = 4.74, p = .012, \eta^2 = .14$ , panic/agoraphobia subscale,  $F(2, 57) = 3.58, p = .034, \eta^2 = .11$ , social phobia subscale,  $F(2, 58) = 3.24, p = .047, \eta^2 = .10$ , obsessive compulsive disorder subscale,  $F(2, 58) = 4.39, p = .017, \eta^2 = .13$ , and generalized anxiety subscale,  $F(2, 58) = 5.27, p = .008, \eta^2 = .15$ , all significantly differed across schools. See Table 4 for means, standard deviations, and Bonferroni-corrected significance values.

Table 4

*Statistically Significant Differences Pre-SNAP® on Spence Children's Anxiety Scale by School*

SCAS Scale	School		Mean Difference
Total	School A	School B	12.06
		School C	15.48*
Panic/agoraphobia	School A	School B	2.51
		School C	3.66*
Social Phobia	School A	School B	2.80*
		School C	1.44
OCD	School A	School B	1.55
		School C	3.48*
Generalized anxiety	School A	School B	1.95
		School C	3.33**

*Note.* SCAS = Spence Children's Anxiety Scale; OCD = obsessive compulsive disorder subscale.

\* $p < .05$ . \*\* $p < .01$ .

Across sex, a statistically significant difference was found for CEMS anger coping,  $F(1, 58) = 5.75, p = .020, \eta^2 = .09$ . Girls scored significantly higher than boys on anger coping ( $M_{\text{girls}} = 9.20, SD = 1.69; M_{\text{boys}} = 8.13, SD = 1.76$ ). A statistically significant difference was also found for the pre-SNAP® SCAS physical injury fears subscale,  $F(1, 59) = 4.80, p = .032, \eta^2 = .08$ . Girls scored significantly higher than boys on physical injury fears ( $M_{\text{girls}} = 5.64, SD = 3.26; M_{\text{boys}} = 3.82, SD = 3.19$ ). After separating children into one of three ethnic groups (Aboriginal, Caucasian, and Other), a statistically significant difference found for ethnicity was on the CIAS symptom effect subscale,  $F(2, 63) = 4.10, p = .021, \eta^2 = .12$ . Caucasian children scored significantly higher than children categorized as Other (non-Caucasian and non-Aboriginal;  $M_{\text{Caucasian}} = 7.59, SD = 1.94; M_{\text{Other}} = 6.14, SD = 1.39$ ).

### **Associations Between Measures of Emotional Regulation and Internalizing Symptoms**

Bivariate correlations were computed between the measures of emotional regulation and internalizing pathology to examine potential associations, for both pre-SNAP® and post-SNAP® measures (see Tables 5 and 6). The correlations were examined separately for each school as children's scores tended to differ significantly depending on their school. For the most part this hypothesis was not supported. For the pre-SNAP® measures, one statistically significant correlation was found between the measures of emotion regulation and internalizing pathology for children at School A (between emotion regulation coping and anxiety sensitivity;  $r = .53, p = .03, R^2 = .28$ ). For children at School C, one statistically significant correlation emerged between the pre-SNAP® measures of emotion regulation dysregulation and anxiety symptoms ( $r =$

.50,  $p = .04$ ,  $R^2 = .25$ ). No statistically significant correlations between emotion regulation and internalizing were found for children at School B. For children at School A, one moderate correlation was also found among the emotion regulation measures (between inhibition and coping;  $r = .58$ ,  $p = .02$ ,  $R^2 = .34$ ). Several moderate to large statistically significant correlations were found between the measures of internalizing symptoms for children at Schools A, B and C.

Similar results were observed for the post-SNAP® measures, minimally supporting hypothesis one. One statistically significant—though negative—correlation was found between the measures of emotion regulation and internalizing pathology for children at School A (between emotion regulation inhibition and intolerance of uncertainty;  $r = -.49$ ,  $p = .03$ ,  $R^2 = .24$ ). Another statistically significant correlation emerged between the measures of emotion regulation and internalizing pathology for children at School B (between emotion dysregulation and anxiety symptoms;  $r = .53$ ,  $p = .03$ ,  $R^2 = .28$ ). Again, statistically significant large correlations appeared among the measures of internalizing pathology across all schools.

Table 5

*Correlations among Measures of Emotion Regulation and Internalizing Pre-SNAP®*

Variable	Measure	1	2	3	4	5	6	7
School A	1. Inhibition Total	–	-.48	.58*	.34	.39	-.22	.42
	2. Dysregulation Total		–	-.48	-.38	-.22	.23	-.09
	3. Coping Total			–	.38	.53*	.01	.08
	4. CIAS Total				–	.62**	.38	.36
	5. CASI Total					–	.50*	.64**
	6. IUS–R Total						–	.63**
	7. SCAS Total							–
School B	1. Inhibition Total	–	-.44	-.14	.12	.16	-.04	-.02
	2. Dysregulation Total		–	.25	-.13	-.29	-.24	.07
	3. Coping Total			–	-.41	-.56	-.06	-.25
	4. CIAS Total				–	.64**	.33	.55*
	5. CASI Total					–	.54*	.64**
	6. IUS–R Total						–	.70***

	7. SCAS Total							–
School C	1. Inhibition Total	–	.27	.42	.31	.17	.25	.41
	2. Dysregulation Total		–	-.28	.27	.23	.35	.50*
	3. Coping Total			–	.28	-.13	-.33	.05
	4. CIAS Total				–	.72***	.36	.64**
	5. CASI Total					–	.60**	.66**
	6. IUS–R Total						–	.60**
	7. SCAS Total							–

*Note.* Inhibition Total = Children’s Emotion Management Scale anger inhibition, sadness inhibition, and worry inhibition subscales; Dysregulation Total = Children’s Emotion Management Scale anger dysregulation, sadness dysregulation, and worry dysregulation subscales; Coping Total = Children’s Emotion Management Scale anger coping, sadness coping, and worry coping subscales; CIAS Total = Childhood Illness Attitude Scales total score; CASI Total = Child Anxiety Sensitivity Index total score; IUS–R Total = Intolerance of Uncertainty Scale–Revised total score; SCAS Total = Spence Children’s Anxiety Scale total score.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

Table 6

*Correlations among Measures of Emotion Regulation and Internalizing Post-SNAP®*

Variable	Measure	1	2	3	4	5	6	7
School A	1. Inhibition Total	–	-.31	.31	-.35	-.43	-.49*	-.10
	2. Dysregulation Total		–	-.28	.05	-.05	.34	.11
	3. Coping Total			–	-.10	-.14	-.13	-.33
	4. CIAS Total				–	.53*	.48*	.30
	5. CASI Total					–	.48*	.43*
	6. IUS–R Total						–	.55**
	7. SCAS Total							–
School B	1. Inhibition Total	–	-.03	.03	-.01	.15	-.18	-.20
	2. Dysregulation Total		–	-.35	.23	.34	.33	.53*
	3. Coping Total			–	.38	.26	.34	.14
	4. CIAS Total				–	.42	.27	.50*
	5. CASI Total					–	.75****	.77****
	6. IUS–R Total						–	.73**

	7. SCAS Total							–
School C	1. Inhibition Total	–	.31	-.21	-.07	.11	.10	.04
	2. Dysregulation Total		–	-.10	.35	.07	.19	-.02
	3. Coping Total			–	-.13	.07	-.01	-.08
	4. CIAS Total				–	.61**	.65**	.70**
	5. CASI Total					–	.85***	.84***
	6. IUS–R Total						–	.81***
	7. SCAS Total							–

*Note.* Inhibition Total = Children’s Emotion Management Scale anger inhibition, sadness inhibition, and worry inhibition subscales; Dysregulation Total = Children’s Emotion Management Scale anger dysregulation, sadness dysregulation, and worry dysregulation subscales; Coping Total = Children’s Emotion Management Scale anger coping, sadness coping, and worry coping subscales; CIAS Total = Childhood Illness Attitude Scales total score; CASI Total = Child Anxiety Sensitivity Index total score; IUS–R Total = Intolerance of Uncertainty Scale total score; SCAS Total = Spence Children’s Anxiety Scale total score.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

## **Changes in Emotion Regulation and Internalizing Pathology as a Function of Participating in SNAP®**

In accordance with hypotheses two and three, a first series of repeated measures ANOVAs was conducted to assess changes in emotion regulation and internalizing pathology for the full sample over time (i.e., before and after participating in SNAP®). See Table 7. Each of the statistically significant differences between school, sex, or ethnicity found through the ANOVAs was accounted for by adding that variable as a covariate (i.e., repeated measures ANCOVA). There were only two statistically significant changes observed: children scored significantly lower on the CIAS symptom effect subscale after participating in SNAP®,  $F(1, 55) = 4.23, p = .044, \eta_p^2 = .07$ , and on the SCAS obsessive compulsive disorder subscale,  $F(1, 52) = 6.07, p = .017, \eta_p^2 = .11$ . These effect sizes are considered very small (Cohen, 1988).

A second series of repeated measures ANOVAs was conducted only for children who scored in the top 10% on each of the measures of emotion regulation and internalizing before participating in SNAP®. This method is consistent with previous research examining the utility of universal prevention programs (i.e., Barrett et al., 2006; Stallard et al., 2008; see Table 8). This was to specifically examine children falling on the upper end of the emotion dysregulation and internalizing spectrums (who are considered “high risk”), as it was noted that not all children in a given classroom will experience clinically significant problems, as well as to address the additional hypothesis that children scoring higher on the measures would show great improvement over time. Again, each of the statistically significant differences between school, sex, or ethnicity found through the ANOVAs was accounted for by adding that variable as a covariate

(i.e., repeated measures ANCOVA). Several statistically significant differences were found pre- to post-SNAP® when examining the group scoring in the top 10% only, including on both emotion regulation (anger inhibition and dysregulation, sadness inhibition, dysregulation and coping, worry dysregulation and coping) and internalizing measures (CIAS treatment experience, CASI physical concerns, social concerns, and total score, and SCAS separation anxiety). The effect sizes found for this group ranged from small (.44) to large (.94).

Table 7

*Repeated Measures Analyses of Variance (or Covariance) Pre- and Post-SNAP® for the Full Sample*

Measure	<i>F</i>	<i>df</i>	<i>p</i>	$\eta_p^2$
CEMS Anger inhibition	2.59	1, 50	.114	.05
CEMS Anger dysregulation	2.21	1, 50	.144	.05
*CEMS Anger coping	1.54	1, 49	.220	.02
CEMS Sadness inhibition	.706	1, 48	.405	.01
CEMS Sadness dysregulation	.097	1, 48	.757	< .01
CEMS Sadness coping	.359	1, 48	.552	< .01
CEMS Worry inhibition	.338	1, 40	.564	< .01
CEMS Worry dysregulation	2.00	1, 40	.165	.05
CEMS Worry coping	2.48	1, 40	.123	.06
*CIAS Fear	.023	1, 55	.879	.02
*CIAS Help seeking	1.54	1, 55	.219	.03
*CIAS Symptom effect	4.23	1, 55	.044	.07
CIAS Treatment experience	.886	1, 56	.350	.02
*CIAS Total score	.027	1, 55	.869	< .01
CASI Physical concerns	2.67	1, 56	.108	.05
CASI Social concerns	.058	1, 56	.810	< .01
*CASI Psychological concerns	.744	1, 55	.392	.01
CASI Total score	1.73	1, 56	.193	.03
IUS-R Total score	.178	1, 54	.675	< .01
*SCAS Panic/ag	1.44	1, 52	.236	.03

SCAS Separation anxiety	.486	1, 53	.489	< .01
*SCAS Social phobia	.109	1, 52	.743	< .01
*SCAS Physical injury fears	.225	1, 52	.637	< .01
*SCAS OCD	6.07	1, 52	.017	.11
*SCAS Generalized anxiety	1.51	1, 52	.224	.03
*SCAS Total score	2.59	1, 52	.113	.04

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*Note.* \*Variables of school, sex, or ethnicity have been added as covariates.  
CEMS = Children's Emotion Management Scale; CIAS = Childhood Illness Attitude;  
CASI = Child Anxiety Sensitivity Index; IUS-R = Intolerance of Uncertainty Scale-  
Revised; SCAS = Spence Children's Anxiety Scale; Panic/ag = panic/agoraphobia  
subscale; OCD = obsessive compulsive disorder subscale.

Table 8

*Repeated Measures Analyses of Variance (or Covariance) Pre- and Post-SNAP® for Participants who Scored in the Top 10% on the Measures*

Measure	Split at	<i>F</i>	<i>df</i>	<i>p</i>	$\eta_p^2$
CEMS Anger inhibition	10.5	26.94	1, 10	<.001	.73
CEMS Anger dysregulation	6.5	10.43	1, 7	.014	.60
*CEMS Anger coping	10.5	.87	1, 6	.387	< .01
CEMS Sadness inhibition	10.5	9.43	1, 5	.028	.66
CEMS Sadness dysregulation	6.5	7.23	1, 9	.025	.45
CEMS Sadness coping	14.5	91.12	1, 6	<.001	.94
CEMS Worry inhibition	11.5	3.57	1, 3	.155	.54
CEMS Worry dysregulation	6.5	14.41	1, 5	.013	.74
CEMS Worry coping	7.5	11.49	1, 10	.007	.54
*CIAS Fear	31.5	3.76	1, 5	.110	.43
*CIAS Help seeking	23.5	.193	1, 4	.683	.05
*CIAS Symptom effect	9.5	.077	1, 3	.799	.03
CIAS Treatment experience	7.5	9.55	1, 12	.009	.44
*CIAS Total score	68.5	1.84	1, 4	.247	.32
CASI Physical concerns	22.5	21.31	1, 9	.001	.70
CASI Social concerns	12.0	22.42	1, 3	.018	.88
*CASI Psychological concerns	6.5	3.34	1, 6	.117	.36

CASI Total score	39.5	17.63	1, 6	.006	.75
IUS–R Total score	38.5	4.90	1, 7	.063	.41
*SCAS Panic/ag	11.5	.019	1, 5	.895	< .01
SCAS Separation anxiety	9.5	7.88	1, 10	.019	.44
*SCAS Social phobia	9.5	.168	1, 5	.699	.03
*SCAS Physical injury fears	9.5	1.26	1, 4	.324	.24
*SCAS OCD	11.0	.149	1, 5	.716	.03
*SCAS GA	10.5	.491	1, 4	.522	.11
*SCAS Total score	58.5	.008	1, 4	.934	< .01

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*Note.* \*Variables of school, sex, or ethnicity have been added as covariates. The benchmarks for eta-squared are as follows: .20 is a small effect size; .50 is a medium effect size, and .80 is a large effect size (Cohen, 1988). CEMS = Children’s Emotion Management Scale; CIAS = Childhood Illness Attitude; CASI = Child Anxiety Sensitivity Index; IUS–R = Intolerance of Uncertainty Scale– Revised; SCAS = Spence Children’s Anxiety Scale; Panic/ag = panic/agoraphobia subscale; OCD = obsessive compulsive disorder subscale; GA = generalized anxiety subscale.

## **Discussion**

The current investigation was designed to analyze the utility of the SNAP® School-based program as a universal prevention program for non-identified, school-aged children. Specifically examined was the effectiveness of the program for reducing children's emotion dysregulation, intolerance of uncertainty, anxiety sensitivity, and other anxiety disorder symptoms. The primary objectives of the research were threefold: (1) to explore the relationship between emotion dysregulation and internalizing pathology; (2) to examine decreases in emotion dysregulation as function of participation in the SNAP® School-based program; and (3) to investigate whether internalizing constructs such as intolerance of uncertainty, anxiety sensitivity, and anxiety disorder symptoms would decrease as a function of participation in the SNAP® School-based program (keeping in mind that children whose scores were in the top 10% may decrease to a greater extent).

To address the aforementioned objectives, an assessment battery comprised of self-report measures of childhood emotion regulation, intolerance of uncertainty, anxiety sensitivity, and other internalizing symptoms was administered to a sample of 65 children. The results and how they relate to the utility of the SNAP® program are discussed. Following is an examination of the investigation's strengths and limitations, with recommendations for future research in this area. To conclude, the scientific and clinical implications of this research are considered.

### **Relationships Between Constructs of Interest**

Based on the comparison of the current sample to previous samples, this sample's pre-SNAP® mean scores on the measures did not differ significantly from those of prior

research except on the SCAS, with the current sample scoring significantly higher than in a prior research investigation. The prior research studies were selected based upon their sample's similarities to the present sample characteristics. This finding lent increased confidence to the study's results and conclusions.

The univariate ANOVAs revealed several statistically significant differences in children's responding to the measures across schools. Generally, children from School A scored higher than children from Schools B or C and children from School C always scored the lowest. Each of the three schools were selected to participate in the SNAP® program based upon their demographics; they were all community schools in central Regina and are known to have similar demographics of students (e.g., similar socioeconomic status). Reasons behind why there were several differences across schools are unclear. It was anecdotally noted that students' reading level varied across the three schools and lower reading level may impact the ability to understand and subsequently answer questions from the measures. To address this concern we provided one-on-one assistance for children who needed support to complete the measures. Statistically speaking, the influence of a child's school was accounted for during subsequent analyses. The current investigation also revealed some differences in responding based upon sex, including in emotion regulation and physical injury fears, and one difference due to ethnicity in health anxiety. Current findings are consistent with past research in that girls have scored significantly higher than boys on the CEMS anger coping subscale (Zeman et al., 2001) and the SCAS physical injury fears subscale (Essau et al., 2002; Muris et al., 2000; Spence, 1998). These differences across groups were taken into account and found to impact the subsequent results.

Bivariate correlations pre-SNAP® revealed several significant findings; however, they did not fully support hypothesis one that children's scores on the measures would be moderately correlated with each other. A moderate correlation was found between the emotion regulation measures of inhibition and coping, and several moderate to large statistically significant correlations were found between the measures of internalizing symptoms; however, there were only two statistically significant correlations between measures of emotion regulation and measures of internalizing for children at School A and School C, hence only partially supporting hypothesis one.

Bivariate correlations post-SNAP® evidenced slight changes in that there were no statistically significant correlations between the emotion regulation measures, and one of the two statistically significant correlations between emotion regulation and internalizing pathology was negative, again lending partial support to hypothesis one.

### **Pre-Post SNAP® Differences**

The repeated measures ANOVAs with the full sample revealed two statistically significant differences in children's responding pre-SNAP® to post-SNAP® (CIAS symptom effect subscale and SCAS obsessive compulsive disorder subscale). These effect sizes are considered very small (Cohen, 1988) and are unlikely to be clinically significant. Thus these findings do not support hypotheses two and three that participating in the SNAP® School-based program would reduce emotion dysregulation and internalizing constructs in *all* non-identified, school-aged children. In contrast, when examining children who scored in the top 10% on each measure, several significant differences were found for both emotion regulation (anger inhibition and dysregulation, sadness inhibition, dysregulation and coping, worry dysregulation and coping) and

internalizing measures of health anxiety (CIAS treatment experience), anxiety sensitivity (CASI physical concerns, social concerns, and total score), and more specific anxiety symptoms (i.e., SCAS separation anxiety). The effect sizes were small to large and likely of greater clinical significance, thus lending partial support to hypotheses two and three.

To review, it was believed that SNAP® would be effective for reducing emotion dysregulation and internalizing symptoms because SNAP® is a CBT-based program. Such programs have been effective for treating internalizing symptoms and disorders such as anxiety (Elkins et al., 2011; Powers et al., 2005), depression, and somatic symptoms (Liu et al., 2011). Research has shown that CBT interventions, such as SNAP®, have been successful with children for improving self-regulation, problem solving strategies, emotional awareness, friendship and interpersonal skills, and self-esteem (Bidgood et al., 2010; Herman et al., 2011). Therefore, it followed that SNAP®, which taught many of these skills, would be effective. It is a particularly important finding that, although overall there were no significant reductions in emotion dysregulation and internalizing symptoms, SNAP® appeared to be helpful for children scoring at the higher end of each measure.

Keeping in mind that only a small percentage of children in a given classroom will experience clinical issues, it follows that not all children will receive intervention benefit from such programs as SNAP®, but preventative benefit. For example, the creators of FRIENDS advocate for a universal approach as they counter the supposed disadvantage of providing a “low dose” of treatment to all children. They state that current research supports intervention at the universal level with all children receiving a

sufficient level of skill acquisition in a universal intervention to provide positive impacts on anxiety reduction and prevention (see Barrett & Pahl, 2006 for a review).

The evaluations of FRIENDS generally examine children in a “high risk group” who scored in the upper portion of all children participating (top 10%). Researchers have found that children in these high risk groups tend to decrease in anxiety and depressive symptoms, and children in the lower risk group do not show increases in anxiety or depressive symptoms during the program (Barrett & Pahl, 2006). A similar study without a control group (also with a smaller sample size;  $n = 63$ ) found 67% of the children in the high risk group had moved into the low risk category after participating in FRIENDS and none of the low risk children had become high risk by follow up (Stallard et al., 2008). Thus, existing prevention program literature appears supportive of a universal implementation of SNAP® based upon the current results. While it is not known how many children would have developed significant symptoms without SNAP®, the results are promising as no significant increases in emotion dysregulation or internalizing constructs emerged through participation in SNAP®. While this lends support to the preventative benefits of the program, a longitudinal study to confirm these results is needed.

### **Strengths and Limitations**

Several studies have examined the utility of the other SNAP® programs; however, this is the second major study to examine the School-based model. Further, the current investigation is the first of its kind to examine the utility of the SNAP® School-based model for non-identified children. The previous study of the School-based model focused solely on children previously identified as at-risk (e.g., Walsh & Hong, 2010).

Information on the impact of participation in the SNAP® program for non-identified children adds to the existing literature surrounding the utility of SNAP®. Another unique aspect of this investigation was its focus on self-reported emotion regulation and internalizing pathology (e.g., anxiety sensitivity, intolerance of uncertainty, and anxiety disorder symptoms). Whereas the previous investigation used parent and teacher report of emotion regulation with the CBCL, children did not give a self-report; also, externalizing symptoms were the focus of previous SNAP® evaluations. The novel findings of this investigation, while not fully supporting the utility of the SNAP® School-based model for all non-identified children, provide valuable insight into how and for whom the program may be effective.

Although there are a number of strengths to the current investigation, there are also some potential limitations to consider. It became apparent during data collection that the participants (especially those at Schools A and B) likely had a lower reading level than expected based upon their age (however this may have been consistent with the demographic of their school). Some participants required assistance to read the questions and understand the concept of measuring their general feelings and behaviour on a Likert scale. In terms of the measures chosen, the literature does not steer researchers away from using the measures with children as young as those from the current sample. Research indicates that the measures employed have been used in children as young as 6 or 7 (i.e., McLaughlin et al., 2007; Muris et al., 2000; Wright & Asmundson, 2003; Wright, et al., 2010; Zeman et al., 2001). Only the IUS-R (Adams Lebell & Wright, manuscript in progress) was used with children as young as 11 years in research, however it is used with younger children in clinical practice.

Similarly, though prior research reported good to excellent internal consistency (i.e., Cronbach's alphas) for each of the measures employed, with the current sample Cronbach's alphas were much lower than what were reported in the literature. The latter suggests that for sample-specific reasons the measures may not have been as reliable. This sample's young age, combined with their community school demographic and lower reading level may have made accurate measurement more difficult. However, it must be noted that this study sample represents the demographic SNAP® was developed for and where one would anticipate seeing the greatest effectiveness. As previously mentioned, intervening with younger children may be optimal for reducing risk future mental health problems, rather than in older children (Barrett et al., 2006). Likewise, SNAP® targets children who are at-risk of future behavioural or legal problems (Augimeri, Jiang, et al., 2006), thus the study sample was appropriate.

A second limitation was the use of child self-report measures only. Teacher and parent data were not collected to contribute to and corroborate children's responses. Having additional information would have added richness to the data and provided outside viewpoints on the effectiveness of participation in SNAP®. As mentioned, past investigations have collected parent or teacher data, but only for targeted children (Walsh & Hong, 2010). Collecting data from the teachers and parents of every participant was not feasible in the current investigation.

The possibility of non-independence of children's scores post-SNAP® must be noted as the children were in the same classrooms when participating in SNAP®; their close interaction may have influenced their individual experiences with SNAP® and the researchers recognize this limitation. Multi-level modeling accounting for the nesting of

children in classrooms could not be undertaken due to the small sample size of this investigation.

Although this study examined the relationship between internalizing disorder symptoms and emotion regulation, there may have been extraneous variables (e.g., personality factors, availability of social support, parent-child relationships, other disorders such as attention deficit hyperactivity disorder, access to mental health services) that affected children's responses and were not considered in this investigation due to time restraints. Similarly, when assessing emotion regulation one must consider cultural variables that may play a significant role in emotion regulation; different cultures have varying expectations regarding appropriate and inappropriate emotion expression and regulation (Fredrickson, 1998). While this investigation examined the impact of ethnicity to a minor degree statistically, it would have been best to consider more deeply the potential impact of culture. A focus on the influence of cultural variables was outside of the scope of this investigation.

### **Future Directions**

There are a number of potential future research directions that deserve mention. First, a future direction that would ameliorate the problem of reading level along with the limitation of self-report measures would be to employ parent-rated and teacher-rated measures for young populations. Many measures, including the CBCL and Teacher Report Form (used by the Child Development Institute in their evaluations of SNAP®; Achenbach, 1991) are well-known, commonly-used measures of a child's internalizing symptoms. Future research with fewer time constraints could employ parent-report and/or teacher-report with child self-report measures in their investigation.

As stated, although there is no evidence to suggest that the employed measures were inappropriate for the current population, a second future direction to combat the issue of low reading level would be to use measures with response scales that have images as anchors. Questionnaires with pictures in place of text are used by teachers, psychologists, and researchers in situations where reading ability might create barriers (Reynolds-Keefer & Johnson, 2011). A common example is the “smiley face” scale with expressions ranging from “unhappy” to “happy.” Some evidence suggests pairing visual images in questionnaires facilitates responses in young children; this evidence is refuted, however, by research showing that this type of pairing can create confusion (see Reynolds-Keefer & Johnson, 2011 for a review). The relevance of the type and number of images used, the relationship between those images and the responses, and the “best practice” for creating such questionnaires has not been thoroughly considered (Reynolds-Keefer & Johnson, 2011). Thus, parent and teacher report in future research may be more beneficial than pictorial scales.

Third, with a larger sample size, multi-level modeling should be conducted to account for the nesting of children in classrooms. Also, a larger sample size would increase confidence in the results of the current investigation. Fourth, future studies with a wider scope and inclusion of parent-completed measures and/or interviews could obtain more demographic information about the participants, including diagnoses of mental health disorders and whether or not participants are receiving treatment or services from a mental health agency. Similarly, personality or temperament measures and cultural variables would be pertinent to include in future investigations. Finally, a long term follow up (e.g., several months) would help identify long terms gains of participating in

the SNAP® School-based program. Currently, no long term effects can be gauged from the results of this investigation.

Anecdotally, it became apparent that the use of the FRIENDS program (Barrett, 2004, 2005) is becoming more prominent in schools. As mentioned, FRIENDS is specifically targeted toward reducing anxiety in school-aged children. A number of studies have emphasized the effectiveness of FRIENDS (Barrett et al., 2006), even over a period of several months, for reducing anxiety and depression (Farrell & Barrett, 2007). FRIENDS has also led to significant improvements in other areas such as self-esteem, panic, separation anxiety, and obsessive compulsive symptoms over several months (Stallard et al., 2008). It may be the case that FRIENDS represents a universal prevention program that is better suited for implementation if the objective is to solely target the reduction of internalizing symptoms in typically functioning school-age children as opposed to SNAP®.

### **Scientific and Clinical Implications**

This investigation was the first to examine the utility of the SNAP® School-based program in non-identified school-aged children, and provides empirical evidence of the effectiveness of the program in reducing self-reported emotion dysregulation and internalizing symptoms. These findings were intended to add to the SNAP® literature by examining a new subpopulation of interest (non-identified children) and new outcomes (i.e., self-reported emotion regulation and internalizing symptoms), as well as to further examine connections between emotion regulation and internalizing pathology in general. Overall, the findings suggest that the SNAP® School-based program may be effective for reducing emotion dysregulation and internalizing symptoms in the upper portion of this

population in the short term. These findings require replication in order to make any definitive decisions about the future use of the SNAP® School-based program for typical functioning school-age children in improving emotion dysregulation, internalizing, and related symptoms. Though this investigation had enough power to find medium effects, only two were found for the entire sample (for the CIAS symptom effect subscale and the SCAS obsessive compulsive disorder subscale). Contrarily, a number of significant reductions in emotion dysregulation and internalizing symptoms were found when examining the responses of children who scored in the top 10% on each of the measures (emotion regulation, health anxiety, anxiety sensitivity, and general anxiety). In this population, the effect sizes can be considered clinically significant (Stallard et al., 2008). Although this research suggests the SNAP® School-based model may help children falling on the higher end of the internalizing and emotion dysregulation spectrums in the short term, this research does not fully support its effectiveness for reducing emotion dysregulation and internalizing in all non-identified, school-aged children.

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## Appendix A

## Child Demographic Information

1. Are you male or female? (please circle answer)

Male      Female

2. How old are you?

Age: \_\_\_\_\_

3. What is your date of birth? (Month, Day, Year)

Birthdate:    \_\_\_\_\_    \_\_\_\_\_    \_\_\_\_\_  
                  Month    Day            Year

4. What is your ethnicity? (please circle)

White/Caucasian    Black/African    Hispanic    Asian    Aboriginal/First Nations

Middle Eastern    Mixed Ethnicity    Other: \_\_\_\_\_

5. What grade are you in?

Grade \_\_\_\_

Appendix B  
Children's Emotion Management Scale

**Anger:** Please circle the response that best describes your behavior when you are feeling

**angry.** Scale: *Hardly ever* (1), *Sometimes* (2), *Often* (3).

1. When I am feeling mad, I control my temper.
2. I hold my anger in.
3. I stay calm and keep my cool when I am feeling mad.
4. I do things like slam doors when I am mad.
5. I hide my anger.
6. I attack whatever it is that makes me mad.
7. I get mad inside but don't show it.
8. I can stop myself from losing my temper.
9. I say mean things to others when I am mad.
10. I try to calmly deal with what is making me feel mad.
11. I'm afraid to show my anger.

**Sadness:** Please circle the response that best describes your behavior when you are

feeling **sad.** Scale: *Hardly ever* (1), *Sometimes* (2), *Often* (3).

1. When I'm feeling sad, I can control my crying and carry on.
2. I hold my sad feelings in.
3. I stay calm and don't let sad things get to me.
4. I whine/fuss about what's making me sad.
5. I hide my sadness.
6. When I'm sad, I do something totally different until I calm down.
7. I get sad inside but don't show it.

8. I can stop myself from losing control of my sad feelings.
9. I cry and carry on when I'm sad.
10. I try to calmly deal with what is making me sad.
11. I do things like mope around when I'm sad.
12. I'm afraid to show my sadness.

**Worry:** Please circle the response that best describes your behavior when you are feeling **worried**. Scale: *Hardly ever* (1), *Sometimes* (2), *Often* (3).

1. I keep myself from losing control of my worried feelings.
2. I show my worried feelings.
3. I hold my worried feelings in.
4. I talk to someone until I feel better when I'm worried.
5. I do things like cry and carry on when I'm worried.
6. I hide my worried feelings.
7. I keep whining about how worried I am.
8. I get worried inside but don't show it.
9. I can't stop myself from acting really worried.
10. I try to calmly settle the problem when I feel worried.

## Appendix C

## Childhood Illness Attitude Scales

Directions: Below are a number of questions. Read each question carefully and put an X on the line in front of the words that best answer the question. There are no right or wrong answers. Remember, find the words that answer the question best. Items 1-27 and 33-35 scale: *None of the time* (0), *Sometimes* (1), *A lot of the time* (2); item 28 scale: *yes/no*; items 29-31 scale: *0 times* (0), *1-2 times* (1), *3 or more times* (2); item 32 scale: open-ended.

1. Do you worry about your health?
2. Are you worried that you might get really sick in the future?
3. Does the thought of being sick scare you?
4. If you have pain, do you worry that it may be caused by a bad sickness?
5. If the pain lasts for a week or more, do you tell your mom or dad?
6. If pain lasts for a week or more, do you ask your mom or dad if you can go to the doctor?
7. If the pain lasts for a week or more, do you believe that you have a bad sickness?
8. Do you try not to have habits that may be bad for you, such as smoking, drinking, or drugs?
9. Do you try not to eat foods that may not be good for you (such as junk food)?
10. Do you check your body to find out if there is something wrong?
11. Do you believe that you are really sick, but the doctors do not know why?
12. When you feel sick, do you tell your mom or dad?
13. When you feel sick, do you ask your mom or dad if you can go to the doctor?

14. Do you ask your mom or dad for medicine?
15. When your doctor tells you that you are not sick, do you not believe him/her?
16. If a doctor tells you what he/she found, do you soon begin to believe that you might have another sickness?
17. Are you afraid of news that reminds you of death?
18. Does the thought of dying scare you?
19. Are you afraid that you might die soon?
20. Are you afraid that you might have cancer?
21. Are you afraid that you have something wrong with your heart?
22. Are you afraid that you have another bad sickness? Which sickness?
23. When you read or hear about a sickness, do you think that you might have that sickness?
24. When you have a strange feeling in your body, do you find it hard to think about something else?
25. When you have a strange feeling in your body, do you worry about it?
26. When you have a strange feeling in your body, do you tell your mom and dad?
27. When you have a strange feeling in your body, do you ask your mom or dad if you can go to the doctor?
28. Has your doctor told you that you have a sickness? If yes, what sickness?
29. How many times have you seen your doctor in the last year?
30. How many doctors have you seen in the past year?
31. How often have you been treated (had to take medicine or had surgery) during the past year?

32. If you have had treatments in the last year, what were they?
33. Do strange feelings in your body stop you from going to school?
34. Do strange feelings in your body stop you from enjoying yourself?
35. Do strange feelings in your body stop you from keeping your mind on what you are doing?

## Appendix D

## Childhood Anxiety Sensitivity Index

Directions: A number of statements which boys and girls use to describe themselves are given below. Read each statement carefully and put an X on the line in front of the words that describe you. There are no right or wrong answers. Remember, find the words that best describe you. Scale: *None* (1), *Some* (2), *A lot* (3).

1. I don't want other people to know when I feel afraid.
2. When I cannot keep my mind on my schoolwork I worry that I might be going crazy.
3. It scares me when I feel "shaky".
4. It scares me when I feel like I am going to faint.
5. It is important for me to stay in control of my feelings.
6. It scares me when my heart beats fast.
7. It embarrasses me when my stomach growls (makes noise).
8. It scares me when I feel like I am going to throw up.
9. When I notice that my heart is beating fast, I worry that there might be something wrong with me.
10. It scares me when I have trouble getting my breath.
11. When my stomach hurts, I worry that I might be really sick.
12. It scares me when I can't keep my mind on my schoolwork.
13. Other kids can tell when I feel shaky.
14. Unusual feelings in my body scare me.
15. When I am afraid, I worry that I might be crazy.
16. It scares me when I feel nervous.

17. I don't like to let my feelings show.

18. Funny feelings in my body scare me.

## Appendix E

## Intolerance of Uncertainty Scale–Revised

Below are a series of statements. Please read each statement carefully and circle which box best describes you. Scale: *Not at all like me* (1), *A bit like me* (2), *Moderately like me* (3), *Very like me* (4), *Entirely like me* (5).

1. When things happen suddenly, I get very upset.
2. It bothers me when there are things I don't know.
3. People should always think about what will happen next. This will stop bad things from happening.
4. Even if you plan things really well, one little thing can ruin it.
5. I always want to know what will happen to me in the future.
6. I can't stand it when things happen suddenly.
7. I should always be prepared before things happen.
8. Feeling unsure stops me from doing most things.
9. When I'm not sure what to do I freeze.
10. When I don't know what will happen, I can't do things very well.
11. The smallest concern can stop me from doing things.
12. I must get away from all things I am unsure of.

## Appendix F

## Spence Children's Anxiety Scale

Please put a circle around the word that shows how often each of these things happen to you. There are no right or wrong answers. Scale: *Never* (0), *Sometimes* (1), *Often* (2), *Always* (3).

1. I worry about things.
2. I am scared of the dark.
3. When I have a problem, I get a funny feeling in my stomach.
4. I feel afraid.
5. I would feel afraid of being on my own at home.
6. I feel scared when I have to take a test.
7. I feel afraid if I have to use public toilets or bathrooms.
8. I worry about being away from my parents.
9. I feel afraid that I will make a fool of myself in front of people.
10. I worry that I will do badly at my school work.
11. I am popular amongst other kids my own age.
12. I worry that something awful will happen to someone in my family.
13. I suddenly feel as if I can't breathe when there is no reason for this.
14. I have to keep checking that I have done things right (like the switch is off, or the door is locked).
15. I feel scared if I have to sleep on my own.
16. I have trouble going to school in the mornings because I feel nervous or afraid.
17. I am good at sports.

18. I am scared of dogs.
19. I can't seem to get bad or silly thoughts out of my head.
20. When I have a problem, my heart beats really fast.
21. I suddenly start to tremble or shake when there is no reason for this.
22. I worry that something bad will happen to me.
23. I am scared of going to the doctors or dentists.
24. When I have a problem, I feel shaky.
25. I am scared of being in high places or lifts (elevators).
26. I am a good person.
27. I have to think of special thoughts to stop bad things from happening (like numbers or words).
28. I feel scared if I have to travel in the car, or on a bus or a train.
29. I worry what other people think of me.
30. I am afraid of being in crowded places (like shopping centres, the movies, buses, busy playgrounds).
31. I feel happy.
32. All of a sudden I feel really scared for no reason at all.
33. I am scared of insects or spiders.
34. I suddenly become dizzy or faint when there is no reason for this.
35. I feel afraid if I have to talk in front of my class.
36. My heart suddenly starts to beat too quickly for no reason.
37. I worry that I will suddenly get a scared feeling when there is nothing to be afraid of.
38. I like myself.

39. I am afraid of being in small closed places, like tunnels or small rooms.
40. I have to do some things over and over again (like washing my hands, cleaning, or putting things in a certain order).
41. I get bothered by bad or silly thoughts or pictures in my mind.
42. I have to do some things in just the right way to stop bad things happening.
43. I am proud of my school work.
44. I would feel scared if I had to stay away from home overnight.
45. Is there something else that you are really afraid of? Please write down what it is.
- How often are you afraid of this thing?