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# Relations among children's coping strategies and anxiety: the mediating role of coping efficacy

Thorne, Keoma

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UNIVERSITY OF CALGARY

Relations Among Children's Coping Strategies and Anxiety:

The Mediating Role of Coping Efficacy

by

Keoma J. Thorne

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## Abstract

Studies suggest that 5 to 14 percent of Canadian children (5 to 12 years old) have one or more anxiety disorders (Romano, Tremblay, Vitaro, Zoccolillo, & Pagani, 2001; Willms, 2002), and as such, problems with anxiety are the most prevalent psychological conditions affecting this age group (Malcarne & Hansdottir, 2001; Pollock, Rosenbaum, Marrs, Miller, & Biederman, 1995). Theory and empirical research (e.g., Aldwin, 2007; Sandler, Tein, Mehta, Wolchik, & Ayers, 2000) have recently focused on the role of coping strategies (i.e., the methods children use to manage everyday problems) and coping efficacy (i.e., perception of one's own ability to deal with stressors) as two of the primary factors associated with the development and maintenance of problems with anxiety. Despite their potential importance, we continue to lack clarity regarding the interrelationships among coping strategies, coping efficacy, and anxiety due to empirical inconsistencies (e.g., Weems, Silverman, Rapee, & Pina, 2003), issues surrounding the instruments used to measure these constructs (e.g., Compas, Connor-Smith, Saltzman, Harding Thomsen, & Wadsworth, 2001), neglect of cross-cultural research (e.g., C. A. Essau, Aihara, Petermann, & Al Wiswasi, 2001), and a lack of comprehensive investigations of these constructs (e.g., Saavedra & Silverman, 2001).

Using structural equation modeling, the current study tested a model depicting the relationships among and between active, distraction, avoidance, and support seeking coping strategies and anxiety symptoms, as mediated by coping efficacy. A large sample of Canadian children ( $N = 506$ ) aged 8 to 11 years (boys = 249, girls = 245, unknown sex = 12) participated in the study. Results partially supported hypotheses demonstrating that coping efficacy is a mediator of the relations between active coping strategies and anxiety

symptoms. No support was found for coping efficacy as a mediator between the other coping strategies and anxiety.

This study contributes to the understanding of childhood anxiety by highlighting the importance of the relationship between anxiety and the methods children use to cope with stress and how perceptions of their coping abilities influence this relationship.

Implications for the research, assessment, and treatment of childhood anxiety symptoms and suggestions for future research are discussed.

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## **List of Abbreviations**

<b>Symbol</b>	<b>Definition</b>
CBT	Cognitive Behaviour Therapy
CCSC	Children's Coping Strategies Checklist
CCSC-R1	Children's Coping Strategies Checklist – Revised 1
CCSEQ	Children's Coping Self-Efficacy Questionnaire
CDI	Children's Depression Inventory
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
DSM-IV-TR	Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision
LISREL	LISREL 8.80
NNFI	Non-Normed Fit Index
RCMAS	Revised Children's Manifest Anxiety Scale
RMSEA	Root Mean Squared Error of Approximation
SCAS	Spence Children's Anxiety Scale
SEM	Structural Equation Modeling
SPSS	IBM-SPSS Statistics 19.0
SRMR	Standardized Root Mean Square Residual

## Chapter One: Introduction

Anxiety disorders are one of the most common forms of childhood mental illness (Costello, Egger, & Angold, 2004). Overall prevalence of anxiety disorders in childhood community samples has been reported to be approximately 2.4 percent (Costello, Mustillo, Erkanli, Keeler, & Angold, 2003), with rates tending to be higher among girls than boys (Verhulst, 2001). Furthermore, clinical anxiety (i.e., anxiety diagnosed as a disorder) is not transient or static, but rather, it tends to develop early in life and continue across the lifespan (Gregory et al., 2007). Similarly, although specific anxiety disorder subtypes (e.g., separation anxiety, social phobia, generalized anxiety) may change over time, the presence of any clinical anxiety symptoms that interfere with everyday life are more stable occurrences (Cantwell & Baker, 1989). In addition to the troublesome stability of anxiety, children with anxiety tend to experience a range of negative outcomes including comorbid mental health conditions, peer relationship difficulties, and academic issues (G. A. Bernstein, Borchardt, & Perwien, 1996), as well as reduced educational, career, and economic functioning if the anxiety disorder continues on into adulthood (Woodward & Fergusson, 2001). Given the significant consequences of anxiety, theorists, researchers, and clinicians have emphasized the need to gain a better understanding of the factors associated with the development and maintenance of childhood anxiety as well as with respect to how children and youth cope with their anxiety symptoms in order to further inform identification, assessment, intervention, and prevention efforts (Chorpita & Moffitt, 2001; Weems & Silverman, 2008; Weems & Stickle, 2005). To this end, the current study explores the relationships among anxiety

symptoms, coping strategies, and coping efficacy in a sample of Canadian children selected from the community.

### **1.1 Childhood Anxiety Symptoms, Coping Strategies, and Coping Efficacy**

How children mitigate or cope with the harmful effects of stress and everyday problems is thought to play a central role in the development and maintenance of anxiety symptoms in children (Eisenberg et al., 1997; Eisenberg & Zhou, 2000). More specifically, it has been hypothesized that the precise strategies that children use to cope with everyday problems (coping strategies) are particularly important factors involved in the development and maintenance of anxiety problems in children (e.g., Prins, 2001; Weems & Silverman, 2008; Woody & Nosen, 2009). For instance, coping strategies such as active problem solving (active coping) and seeking of support from others (support seeking coping), are believed to be crucial for short and long term psychological well-being (Compas et al., 2001), whereas other strategies, including avoidance of problems (avoidant coping) and distracting oneself from addressing difficulties (distraction coping), are thought to relate to higher maladjustment (Skinner, Edge, Altman, & Sherwood, 2003), and to promote the development of anxiety problems in children (Spence, 2001). But despite the above claims, there are inconsistencies in the empirical research and the specific nature of the relationship between anxiety and coping strategies is currently unclear (e.g., Larsson, Melin, & Morris, 2000; Muris, van Brakel, & Meesters, 1998).

For example, while theories generally suggest that active coping is associated with fewer psychological difficulties (Aldwin, 2007), empirical research has found evidence of active coping strategies being both positively (e.g., Muris et al., 1998; Smith

et al., 2006; Vulic-Prtoric & Macuka, 2006) and negatively (e.g., Eisenberg et al., 1995; Sandler, Tein, & West, 1994) related to mental health difficulties, such as anxiety in children. Positive relationships have generally been found with support seeking coping strategies and childhood anxiety symptoms (Larsson et al., 2000; Muris et al., 1998; Smith et al., 2006; Vierhaus & Lohaus, 2009; Vulic-Prtoric & Macuka, 2006), despite theories suggesting the opposite. The studies that have investigated the relationships between avoidance and distraction coping and childhood anxiety symptoms have discovered positive relationships (e.g., Larsson et al., 2000; Sheffield Morris & Ricard Age, 2009). It is important to note that in general, most research has examined active and avoidance strategies; whereas distraction and support seeking coping strategies have been largely neglected (Sandler, Tein, et al., 2000).

Inconsistencies between what theories predict and what the empirical literature presents may be attributed to a variety of factors, including the use of variant samples of children, the use of variant measurement instruments (which might not have adequate psychometric properties), and the paucity of research in general. Given these issues within the current literature, there is insufficient evidence to form solid conclusions with respect to the relationships among coping strategies and anxiety symptoms in children (e.g., Sandler, Tein, et al., 2000). As such, although it has been hypothesized that particular coping strategies are related to anxiety symptoms in specific ways, many questions remain regarding the role of coping strategies in the development and maintenance of anxiety symptoms in children.

An additional variable that theorists and researchers speculate may play a role in childhood coping strategies and anxiety symptoms is coping efficacy. Coping efficacy is

the subjective evaluation of one's own ability to successfully deal with stressors (Aldwin, 2007) and a belief in one's ability to cope successfully with everyday problems and actualize positive outcomes (Sandler, Tein, et al., 2000). According to Aldwin and Revenseon (1987), the effectiveness of a coping strategy may depend more on its perceived efficacy, than on the actual strategy itself. In other words, the stress-buffering effect of coping strategies may be contingent on children's beliefs that their coping efforts are successful in handling the anxiety situations. Efficacy beliefs may influence children's feelings about their own capacity to withstand stress, their perseverance in the face of stress, and ultimately, the trajectory of their coping (Gignac & Gottlieb, 1997). Stated another way, coping efficacy is thought to influence children's use of various coping strategies and each are believed to be reciprocally related (Smith et al., 2006). In this regard, coping efficacy may account for why some children experience and show symptoms of anxiety while others are able to successfully adjust and mitigate stressors, challenges, and adversity and not show anxiety symptomatology.

Although relatively few researchers have examined the relationship between coping efficacy and anxiety symptoms in children, available research suggests that higher levels of coping efficacy are predictive of fewer psychological symptoms of anxiety (Sandler, Tein, et al., 2000; Smith et al., 2006; Zhou et al., 2008). Furthermore, coping efficacy appears to be inversely associated with anxiety symptoms in children (e.g., Sandler, Tein, et al., 2000; Weems, Costa, Watts, Taylor, & Cannon, 2007). Gaining more knowledge of coping efficacy may ultimately aid in better understanding the relationship between coping and anxiety (Sandler, Tein, et al., 2000). However, to date,

there are no published findings that clearly show the interrelationship of coping strategies, coping efficacy, and anxiety symptoms in children.

## **1.2 Statement of the Problem**

Recent reviews have emphasized the need for the exploration of the variables associated with anxiety (e.g., Chorpita & Moffitt, 2001; Saavedra & Silverman, 2001; Weems & Stickle, 2005) and in particular, how they impact anxiety in children (Chorpita & Moffitt, 2001; Weems & Stickle, 2005). Researchers have also emphasized the importance of investigating how typically developing children deal with fearful and stressful situations (Graziano, De Giovanni, & Garcia, 1979; Gullone, 2000; Weems & Silverman, 2008), in order to better inform prevention and intervention strategies (Folkman, 2011). And despite the suspected importance of research on childhood coping, both theory construction and empirical research in the field have been limited (Compas, Connor, Saltzman, Harding Thomsen, & Wadsworth, 1999). For example, there is a lack of clarity regarding the definitions and conceptualizations of the coping process (Compas et al., 2001), inconsistency with respect to sampling, and limitations in the measurement of coping, which have impeded the field's growth (Compas et al., 2001; Prins, 2001). Additionally, there is little consensus on which types of coping strategies are most effective in relieving emotional distress and which are least effective (Compas et al., 2001) and there has been few studies that have included samples of children from the community (particularly from Canada). It is also important to note that past studies of anxiety and related variables have employed simple correlations or regression equations, where structural equation models may be more explanatory (Aldwin, 2007). In this regard, it has been suggested that future research would greatly benefit from an

investigation of the relationships among coping strategies and anxiety within the context of a conceptual model that considers other potentially relevant variables such as self-efficacy (Compas et al., 2001; Smith et al., 2006).

### **1.3 Purpose of the Current Research**

The current study was designed to contribute to the empirical literature by examining the relationships between and among coping strategies, coping efficacy, and anxiety symptoms in Canadian children and to examine how children's perceived efficacy in dealing with stressors affects their use of coping strategies as well as their level of anxiety. As such, the primary objective of this study is to determine if coping efficacy mediates the relations between coping strategies (i.e., active, avoidance, distraction, and support seeking coping) and anxiety symptoms in children.

Research of this nature will potentially provide a more comprehensive explanation of the interrelationship among anxiety variables and may ultimately better inform diagnostic, assessment, and intervention efforts with children with anxiety (Weems & Stickle, 2005). The results are also expected to aid in the identification of children who are most at-risk to develop difficulties in response to stressful experiences, and in our understanding of factors associated with anxiety. Additionally, a more thorough understanding of childhood anxiety might significantly impact prevention and treatment efforts. Finally, the knowledge gained through research on childhood coping may lead to the identification of skills and competencies that can be targeted to facilitate adaptation in young people at risk for anxiety (Compas, 1998).

## **1.4 Overview of Dissertation**

Chapter two presents a review of the relevant background literature, including a detailed discussion of childhood anxiety, coping strategies and coping efficacy. It concludes with an overview of the current study and outlines the research questions and hypotheses. The methods for this study are subsequently presented in chapter three. Chapter four provides the results of the study in two sections: preliminary analyses and primary analyses. The fifth and final chapter provides a discussion of the results and the research and practical implications of this research, as well as directions for future research.

## Chapter Two: Literature Review

### **2.1 Introduction**

The following chapter begins with an overview of childhood anxiety (i.e., anxiety is defined, historical and theoretical perspectives are provided, current empirical evidence is reviewed, anxiety symptoms are described, and measurement of anxiety is reviewed). In the next section, the major variables associated with childhood anxiety, coping strategies (i.e., active, avoidance, distraction, and support seeking strategies) and coping efficacy will be presented and discussed. Additionally, the primary instruments used to measure these variables will be reviewed. The third section focuses on the interrelationships among coping strategies, coping efficacy, and anxiety. Issues with respect to the current conceptualization, understanding, and measurement of anxiety, coping strategies, and coping efficacy will be presented, stating the purpose of the current study. In this regard, a testable model will be presented with respect to the interrelationships among coping strategies, coping efficacy, and anxiety in children that forms the analytical approach for this study. The chapter concludes with the major questions and hypotheses to be addressed in the study.

### **2.2 Childhood Anxiety**

Anxiety is a normative, future-oriented emotion consisting of perceptions of uncontrollability, worry, and unpredictability over a real or imagined threat (Barlow, 2002). It involves intense fear-like states that can motivate behaviour related to survival (Ohman, Flykt, & Lundqvist, 2000) and provide a warning of impending danger that is preparatory for “fight-or-flight” responses (Gray & McNaughton, 2000). Gullone (2000)

points out that normative fears and anxieties follow developmental patterns. For example, infants and toddlers tend to fear stimuli in their immediate environment such as loud noises and strangers; preschool-aged children tend to be fearful of being alone and of particular animals; young children are typically fearful of supernatural phenomenon, failure, criticism, and bodily injury; and adolescents generally fear particular economic, political, and global events. Thus, it is expected that all children and youth will have some fears and experience anxiety at times; however, for a number of children, anxiety symptoms become excessive and begin to interfere with everyday life.

### ***2.2.1 Historical, conceptual, theoretical, and empirical overview of anxiety in children***

Because of the normative basis of anxiety and the commonality of childhood fears (Ollendick, Grills, & Alexander, 2001), relatively little attention had been paid to anxiety in children prior to the 1980s (Treffers & Silverman, 2001). Originally, theoretical explanations of childhood anxiety espoused the role of individual factors such as upbringing, learning at school, and life events, in causing anxiety (Treffers & Silverman, 2001). Early theories of childhood anxiety were often based on case studies of individual children. For example, Freud's (1909/1955) study of "Little Hans," a five-year-old boy with a phobia of horses, and Watson and Rayner's (1920; as cited in Harris, 1979) study of "Young Albert," a baby who was conditioned to be afraid of furry objects, formed the beginning psychoanalytic and behavioural conceptualizations of anxiety in children. Later, cognitive models of anxiety focused on the way that children processed information (e.g., attention given to stimuli, recall of past experiences, interpretation of situations and stimuli, and judgment of coping abilities; Beck, 1976; Weems & Watts, 2005). In recent years, cognitive and behavioural theories have been further developed to

explain how a child interprets neutral or ambiguous stimuli as threatening and then associates that object or event as fearful or worrisome (Steinberg & Avenevoli, 2000). Taken together, cognitive-behavioural theory has evolved overtime and contributed to our understanding of how psychological mechanisms influence the emergence and development of anxiety (Steinberg & Avenevoli, 2000),

Currently, anxiety is conceptualized with respect to a broad framework of influences, including cognitive, behavioural, genetic, biological, and environmental factors (Antony, Federici, & Stein, 2009). Experts tend to agree that anxiety is best understood within the broad framework of the developmental psychopathology model of anxiety (Hinshaw, 2008; Vasey & Dadds, 2001; Weems & Stickle, 2005). Developmental psychopathology is defined as “the study of the origins and the course of individual patterns of behavioural maladaptation” (Sroufe & Rutter, 1984, p. 18). Following this perspective, psychopathologies may have multiple causes that interact with each other over time (Sameroff, 2000). According to Weems and Silverman (2008), the developmental psychopathology model views anxiety as resulting from a complex interaction of many factors, including biological (e.g., temperament, genetics), environmental (e.g., interpersonal relationships, learning processes), and psychological (e.g., cognitive biases, self-esteem). Despite this assertion, there are gaps in current knowledge relative to the relationships among biological, environmental, and psychological factors and anxiety, especially for children (Dozois & Dobson, 2004).

### ***2.2.2 Anxiety symptoms***

When the anxiety that is experienced in response to a stimulus is disproportionate to the level and duration of distress experienced, and to the outside developmental

expectations, it is considered problematic or excessive (Furr, Tiwari, Suveg, & Kendall, 2009). In this way, excessive anxiety represents a dysregulation in the typical fear response system (Gray & McNaughton, 2000). Consistent with this conceptualization, Beck (1976) describes anxiety as “an overactive alarm system” (p. 155).

In North America, symptoms of childhood anxiety are classified and diagnosed using the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision* (DSM-IV-TR; American Psychiatric Association, 2000). There are seven anxiety disorders as identified in the DSM-IV-TR (a) separation anxiety – extreme and developmentally inappropriate fear concerning separation from home or loved ones; (b) social anxiety – significant and persistent fear of social or performance situations where embarrassment may occur; (c) generalized anxiety – intense, persistent, and excessive worry about a number of events or activities in a child’s life; (d) obsessive compulsive problems – recurrent compulsions or obsessions that are time consuming, distressing, and impairing; (e) panic attacks – sudden, recurrent periods of intense fear or discomfort in the absence of danger, accompanied by a variety of somatic or cognitive symptoms such as sweating, shaking, and nausea followed by concern about having additional attacks (panic attacks may or may not occur with agoraphobia); (f) agoraphobia – a fear of situations where escape may be difficult or in which help is unavailable if a panic attack or panic-like symptoms occur; and (g) specific phobias – excessive and unreasonable fear of a specific object or situation, such as animals, natural environments (e.g., storms, water), blood-injection-injury, situations (e.g., flying, elevators), and other (e.g., choking, vomiting).

These anxiety symptoms manifest in motor, physiological, and/or subjective or cognitive responses, which influence each other reciprocally (e.g., Beidel & Turner, 2005; Grills-Taquechel & Ollendick, 2007; Lang, 1968; Treffers & Silverman, 2001). Motor responses involve overt behaviours, usually characterized by escape or avoidance, that are directed at the feared stimuli (Barlow, 2002). The physiological aspect of anxiety encompasses any bodily response, including increased heart rate, headaches, and stomach aches (Beidel & Turner, 2005). At the subjective or cognitive level, responses may consist of worry, fearful apprehensions, or distorted and maladaptive cognitions (Craske et al., 2009; Fonseca & Perrin, 2001).

Cantwell and Baker (1989) conducted a longitudinal study of a large sample of children with anxiety disorders. After four years, approximately 70 percent of these children continued to meet the criteria for the originally diagnosed anxiety disorder, whereas 25 percent presented with a different subtype. Stated another way, the primary pathological features of anxiety (e.g., somatic arousal, avoidance, and cognitive biases) appear to be relatively stable, as opposed to the secondary features (i.e., the symptoms that distinguish among anxiety disorders).

### ***2.2.3 Measurement of anxiety***

Accurate measurement is a crucial component of empirical research (Harrington & Antony, 2009). The primary approaches and instruments used by clinicians and researchers to measure anxiety, each with their own set of strengths and weaknesses, are (a) clinical interviews: unstructured, structured, or semi-structured to obtain in depth information from the child and/or guardian, (b) observation: unstructured and structured behavioural observation of the child, (c) cognitive measures: tools used to directly assess

child's cognitive and neuropsychological functioning, and (d) questionnaires: rating scales or self-reports used to obtain quick information about symptomatology (American Academy of Child and Adolescent Psychiatry, 2007; Harrington & Antony, 2009; Silverman & Ollendick, 2005). The approach/instrument selected by clinicians and researchers depends on a variety of factors, including time and financial constraints and the setting, context, and goal of the assessment (Harrington & Antony, 2009; Silverman & Ollendick, 2005). Antony and Rowa (2005) summarized the possible purposes of anxiety assessment as: establishing a diagnosis, ruling out alternative diagnoses, planning treatment, selecting participants, evaluating treatment outcomes, and measuring symptom severity.

The primary focus of this study is to measure and quantify children's levels of anxiety symptoms – not to diagnose children with clinical anxiety – and self-report scales are designed to accomplish this goal by capturing information about a wide range of anxiety symptoms (Banerjee, 2008; Harrington & Antony, 2009). This is accomplished by administering the self-report questionnaire and obtaining a score which quantifies the child's standing in terms of amount, degree, or magnitude of anxiety symptoms (Silverman & Ollendick, 2005). Self-reports include a variety of questionnaires that allow capable children to provide information about their own behaviour, thoughts, feelings, and skills by responding to a series of questions. In addition, they are time efficient, cost efficient, and easy to administer (Spence, 1998). They are particularly useful as screening measures at the beginning of the assessment process and for research purposes when time and finances may be a concern (Fonseca & Perrin, 2001).

Currently, there are two self-report questionnaires that measure overall anxiety symptoms and anxiety subtypes based on DSM-IV-TR taxonomy: revised version of the Screen for Child Anxiety Related Emotional Disorders (SCARED-R; Muris, Merckelbach, Schmidt, & Mayer, 1999) and the Spence Children's Anxiety Scale (SCAS; Spence, 1997, 1998). The SCARED-R was developed with clinically anxious children from the Netherlands and is beginning to receive some empirical attention in this population (e.g., Muris, Merckelbach, Ollendick, King, & Bogie, 2002). In contrast, the SCAS was developed for use with community samples of children (aged 8 to 12 years) and original normative data, psychometric properties, and factor structure were based on Australian school-age children (Spence, 1997, 1998). Additionally, the SCAS has recently received further empirical support for its utility, particularly for research studies (Muris, Schmidt, & Merckelbach, 2000), and normative data have also been provided for the Netherlands (Muris et al., 2000), Belgium (Muris, Merckelbach, et al., 2002), Germany (C. A. Essau, Sakano, Ishikawa, & Sasagawa, 2004), and Japan (C. A. Essau et al., 2004). Given that the SCAS measures anxiety symptoms based on DSM-IV-TR taxonomy and its suspected applicability to community samples of Canadian children, the SCAS was chosen as the instrument to measure anxiety symptoms in this study. It is further reviewed in the methods section.

### **2.3 Children's Coping**

Coping was originally discussed in psychodynamic theory as the unconscious means with which the ego warded off the anxiety caused by conflicts with the id and the superego (A. Freud, 1966). The extent to which coping involves conscious or unconscious means is still debated today (Compas et al., 2001) and many people are not

aware of the methods they are using to manage stress (Compas, 1998). Currently, the childhood coping literature continues to lack an overall accepted definition and conceptualization of coping. One frequently used definition, describes coping as both cognitions and behaviours that individuals use to manage stressors and negative emotions (Folkman & Lazarus, 1980). Weisz, McCabe, and Dennig (1994) add that coping efforts are directed at maintaining, augmenting, or altering control over situations. And Compas and colleagues (Compas et al., 1999; 2001) define coping as the conscious efforts used to regulate emotion, cognition, behaviour, and the environment in response to stressful situations and events. Although a broad conceptualization of coping is helpful to understand the coping process, given the apparent heterogeneity of children's coping skills, it is important to distinguish among dimensions of coping strategies as well (Compas et al., 2001). Researchers have suggested that what strategies children use to cope with stress and everyday obstacles, as well as how they perceive the efficacy of their coping abilities are important factors involved with psychological well-being (e.g., Compas, 2009).

### ***2.3.1 Coping strategies***

The strategies that children use to cope with stressors are important and may help to clarify the relationship between stress and the development of anxiety (de Boo & Wicherts, 2009). Unfortunately, there is no clear consensus in the field of coping research regarding how best to conceptualize and distinguish among children's coping strategies and there are a multitude of definitions and models of coping strategies (Compas, 1998). Skinner and Zimmer-Gembeck (2011) report that it has proven impossible to integrate studies of coping because of the disparate categories used across studies. Similarly,

Aldwin (2007) agrees that assessment of coping (i.e., what instruments to use) is the most controversial issue in the field today.

One of the most prominent definitions has been put forth by Lazarus and Folkman (1984) who distinguish between problem-focused coping strategies (e.g., taking actions to change circumstances, seeking information, and generating solutions) and emotion-focused coping strategies (e.g., seeking support from others, expressing emotions, and trying to avoid the stressor.) Another model, developed by Moos and colleagues (Billings & Moos, 1981; Ebata & Moos, 1991), separates strategies into engagement (i.e., approach or active) coping (responses directed toward the source of stress, such as problem solving) and disengagement (i.e., avoidance or passive) coping (responses orientated away from the stressor, such as denial). While some evidence is available to support these broad classifications in children (e.g., Compas, Malcarne, & Fondacaro, 1988), many researchers have suggested that coping processes are too complex for two general categories to adequately reflect children's coping efforts (Compas et al., 2001; Skinner et al., 2003). And as such, Compas et al. (2001) and Skinner et al. (2003) have suggested the use of empirically constructed, theory-based, confirmatory factor-analytic methods for categorizing children's coping strategies.

Following these recommendations, Ayers and colleagues (Ayers, 1992; Ayers, Sandler, West, & Roosa, 1996) proposed an empirically supported model of children's coping, separating coping efforts into four conceptually distinct coping strategies based on the focus of the strategy (a) active coping: problem-focused, approach strategies where children attempt to directly alter the problem or their response to the problem; (b) avoidance coping: cognitive strategies with behavioural components that involve

avoiding thinking about or exposure to the stressor; (c) distraction coping: behavioural strategies involving the use of an activity to take the child's mind off the stressor physical release of emotions and distracting actions strategies; and (d) support seeking coping: actively seeking support from family, peers, or other adults in times of stress. Using confirmatory factor analysis, Ayers and colleagues found that the four-factor model accounted for the structure of children's coping significantly better than the two-factor models previously mentioned. Age and sex were not found to impact the model. Though these results are promising, research was conducted exclusively with children of divorced parents and there is no information regarding the applicability of these four dimensions in different childhood populations. The current study employs the four factor model, and the thus the remainder of this review focuses on the areas of active, avoidance, distraction, and support seeking coping strategies.

### *2.3.1.1 Measurement of coping strategies*

Children's coping strategies have been measured in a variety of ways: self-report, questionnaires, semi-structured interviews, observations, and reports from significant others. As such, there are numerous instruments available that assess coping strategies, which differ in the specific coping responses and dimensions represented. One of the primary issues in the measurement of coping strategies is the lack of empirical research on instruments being regularly used by researchers (Compas, 1998). An additional issue is that the majority of instruments have been created for adults and adolescents. However, one exception is the Children's Coping Strategies Checklist – Revised1 (CCSC-R1; Program for Prevention Research, 1999), which was used in this study. It is the only self-report instrument that assesses children's (aged 8 to 12 years) coping strategies across the

active, avoidance, distraction, and support seeking coping dimensions. Psychometric properties of the CCSC-R1 have not been directly assessed, but the CCSC-R1 was developed from the Children's Coping Strategies Checklist (CCSC; Ayers et al., 1996), which demonstrated adequate reliability and validity in a large sample of American children from divorced families. Revisions made to the CCSC-R1 included the rewording several items and the addition of nine new items. The CCSC-R1 and its psychometric properties will be further discussed in the methods chapter.

### ***2.3.2 Coping efficacy***

Coping efficacy is another important construct within the coping literature, and it is a major trend in coping research currently (Aldwin, 2007). Researchers have referred to coping efficacy in a variety of ways. Bandura (1988) described coping self-efficacy as people's "judgments of their coping capabilities" (pg. 78), as well as people's beliefs about their abilities to control events in their lives (1997). Lazarus and colleagues (Lazarus, 1966; Lazarus & Folkman, 1984) suggest that coping efficacy is people's appraisals of their ability to cope with stressors successfully. Essentially, coping efficacy refers to the perception of whether a stressor is manageable or unmanageable. It represents the notion that how well people feel that they have executed a coping strategy may be as important as the actual choice of strategy (Aldwin, 2007).

#### ***2.3.2.1 Measurement of coping efficacy***

The Children's Coping Self-Efficacy Questionnaire (CCSEQ; Sandler, Tein, et al., 2000) is the only available questionnaire that assesses the coping efficacy of children or their "satisfaction with handling problems in the past and their anticipated

effectiveness in handling future problems” (pg. 1104). Psychometric properties of the CCSEQ will be reviewed in the methods section.

### ***2.3.3 Relationships between coping strategies and coping efficacy***

Recently, researchers have suggested that there are relationships between particular coping strategies and coping efficacy (e.g., Aldwin, 2011; Sandler, Tein, et al., 2000). For example, in Lazarus and colleagues’ (Lazarus, 1966; Lazarus & Folkman, 1984) model, it is believed that perceived efficacy should increase the use of coping strategies that are expected to be effective. Lazarus and colleagues suggest that people who report having high perceptions of efficacy are more likely to use strategies such as active problem solving to address stressful situations. Conversely, if children’s coping efforts are met with negative outcomes, they will be less likely to use those strategies in the future (Smith et al., 2006). Similarly, if they believe they have little ability to manage a stressor, they tend to do so less competently (Miller, Green, & Bales, 1999).

There are several studies that have investigated the relationships among coping efficacy and specific coping strategies. One study found that problem-focused coping predicted higher self-efficacy, whereas distraction coping predicted lower self-efficacy in young adolescents (Wills, 1986). Skinner and Zimmer-Gembeck (2011) report that patterns of coping efficacy and particular coping strategies are evident in children and can be powerful predictors of adaptive outcomes. Their results suggest that an optimal profile incorporates high confidence in one’s own abilities combined with low dependence on uncontrollable strategies. In contrast, a maladaptive profile includes low self-confidence in combination with high reliance on uncontrollable strategies. These

profiles have also been found to be predictive of engagement and achievement in the academic domain (Skinner, Zimmer-Gembeck, & Connell, 1998).

## **2.4 Coping and Anxiety Symptoms**

While researchers have been exploring how coping processes can mitigate the harmful effects of stress for many years, the field has seen remarkable growth since the 1990s with the interest in resilience and the association of coping with mental health outcomes (Aldwin, 2011). Currently, many questions remain regarding the biological, social, and psychological pathways through which everyday stressors and problems take their toll on mental, social, and physical functioning (Folkman, 2011).

The use of maladaptive coping strategies are considered risk factors for the development of psychopathology, such as problems with anxiety in children (Spence & Dadds, 1996). Likewise, poor perceptions of coping efficacy are also thought to relate to anxiety symptoms (Aldwin, 2007; Sandler, Tein, et al., 2000). However, empirical evidence for this notion is still scant and coping relates to anxiety differently depending on the coping dimension. In general, though not across all studies, some coping strategies have been associated with more positive mental health outcomes for children, whereas others have not (Compas et al., 2001; Kliwer, Fearnow, & Miller, 1996; Sandler, Tein, et al., 2000).

Overall, research that has examined the relationship between active coping strategies and anxiety has produced contradictory results. For example, some studies involving American children of divorce found a significant negative relationship between active coping strategies and anxiety (Sandler, Kim-Bae, & MacKinnon, 2000; Sandler et al., 1994), whereas another study with a similar sample did not find a direct relationship

(Sandler, Tein, et al., 2000). Other evidence suggests that active coping strategies are negatively related to mental health problems such as depression and anxiety (Eisenberg et al., 1995; Losoya, Eisenberg, & Fabes, 1998). Conversely, some findings also suggest positive relationships between the active coping methods and anxiety in school-age in Croatian children (Vulic-Prtoric & Macuka, 2006) and Dutch children (Muris et al., 1998). A predictive relationship was found between active coping and lower anxiety in school-age Swedish children (Larsson et al., 2000), whereas other studies have not found any significant associations (Lengua & Long, 2002; Sandler, Tein, et al., 2000; Sheffield Morris & Ricard Age, 2009).

In general, research with children across various countries and backgrounds has found avoidance coping strategies to be correlated positively with anxiety (Larsson et al., 2000; Lengua & Long, 2002; Muris et al., 1998; Sandler, Tein, et al., 2000; Sandler et al., 1994; Sheffield Morris & Ricard Age, 2009; Vierhaus & Lohaus, 2009) and predictive of childhood anxiety disorders (Vierhaus & Lohaus, 2009). Moreover, avoidance coping has been found to mediate the relations between negative events and anxiety in children of divorce (Sandler et al., 1994).

Given that distraction coping was rarely identified as a separate coping strategy in the past, there are limited findings regarding its relationship to anxiety in children. The available research indicates that distraction coping strategies tend to be positively related to anxiety in European children (Larsson et al., 2000; Muris et al., 1998; Vierhaus & Lohaus, 2009; Vulic-Prtoric & Macuka, 2006).

Similarly, support seeking coping has also been neglected in the literature, but the little evidence suggests a fairly consistent positive relationship between use of support

seeking strategies and higher levels of anxiety symptoms in children from various countries (Larsson et al., 2000; Muris et al., 1998; Smith et al., 2006; Vierhaus & Lohaus, 2009; Vulic-Prtoric & Macuka, 2006). Support seeking coping has also been found to be associated with higher levels of emotional difficulties in American children from military families (Sheffield Morris & Ricard Age, 2009).

Preliminary evidence suggests a similar relationship between coping efficacy and anxiety symptoms. Not surprisingly, children who perceive that they possess the ability to achieve a certain outcome also tend to have lower levels of anxiety than those children who do not believe in their abilities (Lopez & Little, 1996). It is suspected that children become anxious when they perceive themselves as ill-equipped or unable to handle potentially threatening events (Bandura, Pastorelli, Barbaranelli, & Vittorio Capara, 1999). Bandura (1982) suggests that high coping efficacy encourages people to engage in effective actions and reduces negative emotions. When individuals have high efficacy in their abilities to manage problems, they are more likely to expect to be effective in stressful situations and to appraise negative events as challenges, rather than as threats (Skinner & Zimmer-Gembeck, 2011). One study found that coping efficacy is negatively related to anxiety in school-age children (Muris et al., 1998). Negative correlations were also found between coping efficacy and internalizing symptoms, in general, in children of divorce (Sandler, Tein, et al., 2000). Smith et al. (2006) found that child and parent report of coping efficacy were both negatively associated with teacher report of internalizing difficulties. While there is little research available examining the relationships between coping efficacy and anxiety, the available evidence indicates that coping efficacy may help to better understand the relationships between children's coping and anxiety

symptoms. More research is needed to further investigate these relationships and a comprehensive study of coping strategies, coping efficacy, and anxiety symptoms together may shed light on the field.

## **2.5 The Interrelationship of Coping Strategies, Coping Efficacy, and Anxiety**

Although there is some empirical support for the individual association of coping strategies and coping efficacy with anxiety symptoms, there is a lack of research directed at the investigation of the interrelationships of these variables. But despite the limited research in the area, researchers have speculated the presence of the interrelationship among coping strategies, coping efficacy, and anxiety in children (Aldwin, 2011; Compas, 1998; Sandler, Tein, et al., 2000; Smith et al., 2006). For example, Smith et al. (2006) suggests that if children's coping strategies are effective, their sense of efficacy will increase leading to more positive mental health outcomes. In contrast, if children's coping strategies are associated with negative outcomes, they will be less likely to use those strategies in the future (Smith et al., 2006) and they may experience negative emotions such as helplessness and hopelessness, which can ultimately lead to internalizing problems (Harter, 1999).

It appears from a review of the empirical literature that the interrelationships among coping strategies, coping efficacy, and anxiety symptoms in children have not been investigated in the research; however, a closely related study informs the current study's main purpose. Sandler, Tein, et al. (2000) investigated the relations among coping efficacy, two coping strategies (i.e., active and avoidance coping), and internalizing difficulties (a construct reflecting symptoms of both anxiety and depression) in children of divorce (aged 9 to 12 years). In this study, coping efficacy and coping strategies were

measured by child self-report, whereas internalizing symptoms were measured by rating scales completed by the child's mother. They found that coping efficacy partially accounted for the associations between coping strategies and psychological problems. More specifically, it mediated the association between quality of children's coping and their adjustment. Stated another way, children who use poor coping techniques and who have a lower sense of efficacy in regard to their ability to cope with stress are more likely to experience negative emotions and anxiety symptoms. In this mediation model, active coping led to increased perceptions of coping efficacy and coping efficacy led to a decrease in internalizing problems. Higher levels of avoiding coping had a significant path to lower perceived efficacy of coping, which in turn partially mediated the positive relations between avoiding coping and internalizing problems. Avoiding coping strategies do not change the actual situation or how children feel about the situation which can lead to perceptions of a lack of efficacy of coping which can lead to increased psychological symptoms. While these results are promising, they are preliminary and more research on these potentially important factors is necessary.

## **2.6 Delineation of the Research Problem**

One of the limitations within the research in this area is that there does not appear to be consensus about how to best conceptualize children's coping efforts, although there does appear to be consensus that coping efforts are multidimensional in nature (Compas et al., 2001; Skinner et al., 2003). Another empirical problem is that coping strategies have been measured with a number of different instruments, which vary relative to psychometric properties and empirical investigations that have been conducted (Compas et al., 2001). Additionally, there are sample issues with respect to the studies of childhood

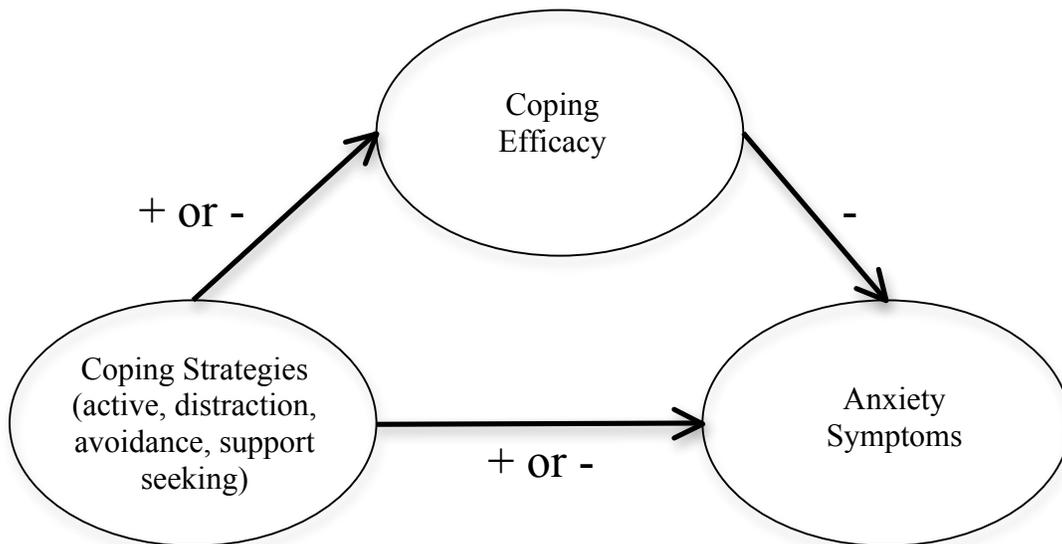
anxiety (e.g., clinic-based samples, at risk populations). Few studies have utilized community-based samples, which is crucial given the prevalence of anxiety symptoms among non-referred children and the fact that very few children are actually seen at clinics (Bryant & Cheng, 2005). Further, the field is also fraught with studies using small sample sizes. Finally, and perhaps most importantly, most research has used correlational and regression designs, that examine only direct relationships between one type of coping strategy and anxiety (Aldwin, 2007). The overall problem with the research to date relative to childhood anxiety and coping is that it is too limited by way of research design (i.e., there is a lack of comprehensive research examining interrelationships between children's coping skills and anxiety symptoms).

## **2.7 Present Study**

Based on the results from previous research (i.e., Sandler, Tein, et al., 2000) and theoretical perspectives (e.g., Aldwin, 2007), it appears that coping efficacy may mediate the relationship between coping strategies and anxiety symptoms (Muris et al., 1998). For example, coping researchers expect that children who lack appropriate coping skills and judgment of their skills in dealing with difficult situations may be at risk for displaying internalizing difficulties because they lack strategies for dealing with stress (Compas et al., 2001). Moreover, when individuals have confidence in their own abilities, they are more likely to appraise stressful events as challenges rather than threats and to experience positive outcomes (Skinner & Zimmer-Gembeck, 2011). Skinner and Zimmer-Gembeck (2011) suggest that children who have high confidence in their own abilities combined with low dependence on poor coping strategies will have positive psychological outcomes.

The present study uses Sandler, Tein, et al.'s (2000) empirical model as a foundation for exploring relationships among coping strategies, coping efficacy, and anxiety symptoms in community-based children. More specifically, it builds on their research, which found that coping efficacy was a mediator of the relationship between active and avoidant coping and internalizing difficulties in children of divorced parents. In the current study, Sandler's model is extended by investigating the relation between coping strategies and anxiety symptoms in a sample of Canadian children selected from the community. In this study, structural equation modeling (SEM) is used to test a model that depicts the relationship among and between the four childhood coping strategies (i.e., active, distraction, avoidance, and support seeking) and anxiety symptoms, as partially mediated by children's perception of coping efficacy. Figure 2.1 illustrates this model.

Figure 2.1 Hypothesized model of the relationship between children's coping strategies and anxiety symptoms as partially mediated by their perception of coping efficacy.



## **2.7.1 Research questions and hypotheses**

### *2.7.1.1 Question and hypothesis one*

*What are the psychometric properties (factor structure, reliability, and descriptive statistics) of instruments measuring anxiety symptoms, coping strategies, and coping efficacy in a sample of school-age children?* It is anticipated that the factor structure, reliability, and descriptive statistics (e.g., means, standard deviations) found in previous studies will be maintained in this study's sample of Canadian school-age children. In this regard, several cross-national and normative studies have indicated that the SCAS is an effective measure of overall anxiety, separation anxiety, social phobia, obsessive compulsive problems, generalized anxiety, panic-agoraphobia, and specific phobia or physical injury, according to DSM-IV-TR criteria, in school-age children (C. A. Essau et al., 2004; Muris, Merckelbach, et al., 2002; Muris et al., 2000). Though no published studies have used the SCAS in Canadian children, it is anticipated that factor structure, psychometric properties, and descriptive statistics will be similar to those found in the standardization studies with Australian children (Spence, 1997, 1998). Further, it is hypothesized that girls will report higher levels of anxiety than boys. It is anticipated that the CCSC-R1 will also have four factors in this study, like the initial standardization study of the CCSC (Ayers et al., 1996). Estimates of the CCSC's internal consistency with American children of divorce were generally adequate (i.e., Coefficient alphas above .70). As was the case in their findings, it is believed that Coefficient alphas for the CCSC-R1 will be acceptable. It is expected that the seven-item CCSEQ will have one factor, as indicated by Sandler, Tein, et al. (2000), that Coefficient alpha will be adequate, and that the mean score will be similar to that previously reported.

#### *2.7.1.2 Question and hypothesis two*

*Are there relationships between coping strategies and coping efficacy?* Given previous research by Sandler, Tein, et al. (2000), it is hypothesized that active coping will have a significant positive relationship with coping efficacy, whereas avoidant coping will have a significant negative relationship. It is also predicted that distraction coping and coping efficacy will have a negative relationship based on research by Wills (1986). Though research on the relationship between coping efficacy and support seeking coping has not been conducted to date, given the relationships found between avoidant and distraction coping and anxiety in previous studies, significant negative associations are also anticipated between support seeking coping and coping efficacy.

#### *2.7.1.3 Question and hypothesis three*

*Are there relationships between coping efficacy and anxiety?* Coping efficacy is expected to have a negative relation with anxiety. This hypothesis stems from similar findings from other studies with children (Muris et al., 1998; Sandler, Tein, et al., 2000; Smith et al., 2006).

#### *2.7.1.4 Question and hypothesis four*

*Are there relationships between coping strategies and anxiety?* Though previous research exploring the relationships between active coping efforts and anxiety symptoms has been mixed, a significant negative relationship is expected between active coping and anxiety in this sample of school-age Canadian children given the similarity between this sample and other studies (Eisenberg et al., 1995; Losoya et al., 1998; Sandler, Kim-Bae, et al., 2000; Sandler et al., 1994). Prior work has found that in general, avoidance, distraction, and support seeking coping are all positively associated with anxiety (e.g.,

Muris et al., 1998; Sandler et al., 1994; Vierhaus & Lohaus, 2009) and these relationships are also anticipated in this study.

#### *2.7.1.5 Question and hypothesis five*

*Does coping efficacy mediate the relationships between coping strategies and anxiety?* Theories suggest that children who use active coping strategies are likely to obtain positive outcomes in dealing with problems. Previous research with children of divorce indicates that coping efficacy mediates the relationship between both active and avoidance coping and internalizing difficulties (Sandler, Tein, et al., 2000). A similar finding is expected in this study, with coping efficacy mediating the relationship between active and avoidance coping and anxiety symptoms in school-age children selected from the community. Because this model has not been studied with distraction or support seeking coping, hypotheses for those paths are not provided.

## Chapter Three: Methods

### 3.1 Introduction

The following chapter outlines the methods used in this study to address the specific research questions and hypotheses stated in chapter two. To this end, the data source and participants are first described. Then, the measures employed in this study are reviewed in detail. Following this, the data collection procedures and research design of the study are presented. Finally, the chapter will end with a discussion of the preliminary and primary data analysis procedures used to address the study's research questions.

### 3.2 Participants

Participants for this study were part of a larger project evaluating a school-based intervention and prevention program. This program was developed to address anxiety difficulties of school aged children by teaching the children skills to assist them in coping with stressors, fears, and worries in their daily lives. Children participated by completing questionnaires prior to the intervention (pre-test), taking part in the intervention, and completing questionnaires after the intervention (post-test). Data for this study were obtained from the pre-test administration, before children had participated in the intervention and prevention program.

In total, 522 grade four and five students from 30 urban elementary schools within two public school divisions in Winnipeg, Manitoba participated in the pre-test. Sixteen participants did not complete one or more of the measures so their data were excluded from the study. In the end, the data from 506 children (249 boys, 245 girls, 12 unknown sex) ranging in age from 8 to 11 years ( $M = 9.31$ ,  $SD = .49$ ) were used in this study. The majority of participants were 9 and 10 years of age ( $n = 351$  and  $n = 147$ , respectively).

### **3.3 Measures**

#### ***3.3.1 Spence Children's Anxiety Scale***

Currently, the Spence Children's Anxiety Scale (SCAS; Spence, 1997, 1998) is the only self-report questionnaire designed to assess multiple symptoms of DSM-IV-TR anxiety problems in community-based, school-age children.

The psychometric properties of the SCAS were established by Spence (1998) with the original validation sample of over 2000 children, aged 8 to 12 years, from Australia. Construct validity was explored using confirmatory factor analysis (CFA) by comparing several models (i.e., single factor, six correlated factors, and six factors loading onto a single higher-order factor). Results suggested that a six-factor hierarchical model composed of one higher-order factor of overall anxiety and six first-order factors representing DSM-IV-TR anxiety disorder symptoms (i.e., generalized anxiety, physical injury fears, separation anxiety, social anxiety, panic attack and agoraphobia, and obsessive compulsive problems), provided the best fit. Convergent validity was supported through significant correlations between the SCAS scales and scales on the Revised Children's Manifest Anxiety Scale (RCMAS; Reynolds & Richmond, 1978). Lower correlations among scales on the Children's Depression Inventory (CDI; Kovacs, 1992) and the SCAS provided evidence of discriminant validity. Coefficient alphas were: total anxiety = .92, generalized anxiety = .73, physical injury fears = .60, separation anxiety = .70, social anxiety = .70, panic attack and agoraphobia = .82 and obsessive compulsive problems = .73.

The SCAS contains 44 items: 38 anxiety-related items and 6 positive filler items that were included in the scale in order to reduce negative response bias. Only those items

relating to anxiety symptoms were of interest for this study; the six positive filler items were omitted from all analyses. Children are asked to rate the frequency with which they experience each symptom on a four-point scale (i.e., never, sometimes, often, or always). The ratings across the 38 items are summed to create a total anxiety score and items corresponding to subscales are summed to create subscale scores. A description of the scales, their abbreviations, and number of items included in subscales are provided in Table 3.1 (see Appendix A for the items from the SCAS). Higher scores reflect higher levels of anxiety symptoms. The mean total score reported from the validation study (Spence, 1998) for the total sample of children was 31.28 (SD = 17.35). Analyses of variance revealed a significant difference for sex with girls tending to report significantly more anxiety symptoms than boys. The overall anxiety score (total anxiety) is the factor of primary interest in the present research project.

Table 3.1 SCAS's total and subscale scores, descriptions, abbreviations, and number of items.

Scale (Abbreviation)	Description	Number of Items
Overall Anxiety (Total)	Total score of overall anxiety symptoms.	38
Generalized Anxiety (GA)	Excessive worry about a number of events or activities causing symptoms like stomach aches and restlessness.	6
Physical Injury Fears (PI)	Fear of particular circumscribed objects or situations where injury could occur.	5
Separation Anxiety (SEP)	Excessive anxiety concerning the separation from home or loved ones.	6
Social Anxiety (SOC)	Marked fear of social or performance situations where embarrassment could occur.	6

Panic Attack and Agoraphobia (PAN)	Fear of being in a place where escape may be difficult and/or sudden period of intense panic-like symptoms.	9
Obsessive Compulsive Problems (OC)	Difficulties with obsessions and compulsions causing marked distress and impairment.	6

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*Note.* Source: Spence (1998)

The SCAS has been translated into several different languages and its psychometric properties have been studied in multiple countries and diverse cultural contexts: Belgium (Muris, Merckelbach, et al., 2002), Germany (Essau, Sakano, Ishikawa, & Sasagawa, 2004), Greece (Essau, Anastassiou-Hadjicharalambous, & Munoz, 2011; Mellon & Moutavelis, 2007), Hong Kong (Li, Lau, & Au, 2011), Japan (Essau, et al., 2004; Ishikawa, Sato, & Sasagawa, 2009), Spain (Tortella-Feliu, Balle, Servera, & de la Banda, 2005, as cited in Essau, et al., 2011), South-Africa (Muris, Schmidt, Engelbrecht, & Perold, 2002), The Netherlands (Muris et al., 2000), and United States (Whiteside & Brown, 2008). The results of these studies indicate high internal consistency reliability for the total and subscale scores, and the factor structure has generally been maintained (e.g., C. A. Essau et al., 2011; Ishikawa et al., 2009; Li et al., 2011; Muris et al., 2000). The SCAS has not been used with Canadian children and its factor structure has not been examined in North America. Thus, it is important to explore psychometric properties to determine whether the SCAS may be a suitable measure for use with Canadian school-age children.

### ***3.3.2 Children's Coping Self-Efficacy Questionnaire***

Related to children's reports of the ways they cope with everyday problems, the construct of coping efficacy was recently operationalized to provide more insight into

children's perceptions of their own coping effectiveness. The Children's Coping Self-Efficacy Questionnaire (CCSEQ; Sandler, Tein, et al., 2000) is the only available questionnaire that assesses children's "satisfaction with handling problems in the past and their anticipated effectiveness in handling future problems" (pg. 1104, Sandler, Tein, et al., 2000). It contains seven-items that children respond to using a four-point scale (i.e., not at all, a little, pretty good, or very good). The items are summed and averaged to create a total coping efficacy score. The mean score was reported as 2.87 (SD = .48) and sex differences in mean scores were not examined. A higher score denotes higher perceived coping efficacy. (See Appendix B for the items from the CCSEQ).

Presently, there is little evidence of the CCSEQ's psychometric properties and utility in community-based samples of school-age children. The CCSEQ was originally developed and tested by Sandler, Tein, et al. (2000) with 356 American children whose parents were divorced (aged 9 to 12 years). CFA showed that the seven items were best represented as a one-factor model, and the Coefficient alpha for this total score at .74 was adequate according to the authors. However, given the scale's limited use thus far, especially with community-based children, additional research on its structure and utility is warranted.

### ***3.3.3 Children's Coping Strategies Checklist – Revised1***

The Children's Coping Strategies Checklist – Revised1 (CCSC-R1; Program for Prevention Research, 1999) is based on the Children's Coping Strategies Checklist (CCSC; Ayers et al., 1996), which was designed to measure children's self-perceived coping styles and efforts in response to general problems. The items for the CCSC were

derived from an extensive literature review of childhood coping research and a content analysis of children's responses to a semi-structured interview.

Psychometric properties of the CCSC were tested by Ayers et al. (1996) with 217 American children ranging in age from 9 to 13 years. All participants were part of a larger project evaluating a prevention program to reduce psychological risks for children who perceive their parents to be problem drinkers. Using 11 subscale scores, CFAs were conducted to test the structure of children's coping and thus provide evidence of construct validity. Results indicated that a four-factor model distinguishing active, distraction, avoidance, and support-seeking coping strategies was most fitting. This model had a significantly better fit than several other models, suggesting that these four factors accounted for the inter-correlation among test items. The four-factor model was then cross-validated on a new sample of 247 children. Internal consistency estimates (Coefficient alpha) for the four scales were: active = .89, avoidance = .73, distraction = .80, and support seeking = .78. The factor structure was the same across ages and between sexes. Means for the four scales were not provided and sex differences between mean scores were not examined.

The CCSC-R1 is the revision to the CCSC and changes made include the addition of nine new items, hypothesized to fall under two new subscales. The CCSC-R1 contains 54 items in which children choose between one of four responses that best describes their reactions to everyday problems (i.e., never, sometimes, often, or always). Responses for each item are averaged to form subscale scores, which are then averaged again to form scale scores, with higher scores indicating more frequent use of the particular coping strategy. Descriptions of the CCSC-R1's scales, names of subscales, abbreviations, and

number of items in subscales are provided in Table 3.2 (see Appendix C for all CCSC-R1 items). For this study, all four scale scores are of primary interest. Several studies have used the CCSC-R1 and specifically the four scales, finding adequate internal consistency estimates (e.g., Sheffield Morris & Ricard Age, 2009; Wolchik et al., 2000). However, factor structure has not yet been examined. Thus, examination of the CCSC-R1's psychometric properties, especially with community-based children, is necessary.

Table 3.2 CCSC-R1's scales, descriptions, example items, subscales, and abbreviations.

Scales (Abbreviation)	Description	Subscales (Abbreviation)	Number of Items
Active	Actively seeking solutions to improve the problem.	Cognitive Decision Making (CDM), Direct Problem Solving (DPS), Seeking Understanding (SU), Positivity (POS), Control (CON), Optimism (OPT)	24
Distraction (Distract)	Using activities to distract from the problem.	Distracting Actions (DA), Physical Release of Emotions (PRE)	9
Avoidance (Avoid)	Efforts to avoid addressing the stressor.	Avoidant Actions (AVA), Repression (REP), Wishful Thinking (WIS)	12
Support Seeking (Support)	Obtaining support from other people.	Support for Actions (SUA), Support for Feelings (SUF)	9

*Note.* Source: Program for Prevention Research (1999)

### 3.4 Procedure

This is a cross-sectional, correlational study, whereby data on all variables were collected at one time point and under the same conditions for all participants. Data for this study were obtained from Dr. Steven Feldgaier and Dr. John Walker, professors in

Clinical Health Psychology at the University of Manitoba. Drs. Feldgaier and Walker devised and conducted a large repeated measures study investigating the efficacy of an anxiety-based intervention. As primary investigators, Drs. Feldgaier and Walker planned and organized the study and collected data with the help of research assistants. Through a mutual colleague, it was discovered that Drs. Feldgaier and Walker were interested in working with a student to examine the pre-test data. As such, they gave permission for these data to be used for this study and they were available to assist with data analysis and interpretation whenever needed. Ethics approval for the original study was obtained from the University of Manitoba and informed consent was obtained from the guardians of participants and child assent was obtained from participants. Additionally, ethical approval was obtained from the University of Calgary for secondary use of anonymous, pre-test data for this project.

Data collection for the pre-test portion involved obtaining self-report information from participating children. Children participated in the research in their own classrooms, during regularly scheduled class time, and under the direction of a research assistant. They were provided with their own paper booklet (each with a unique identifying participant number) containing all questionnaires and a brief demographic survey. The following demographic information was requested from participants: date of birth, age, sex, school name, and grade. Research assistants read questionnaire instructions and all items aloud to the students. Participants completed questionnaire items by filling in bubbles corresponding to their preferred response using a pen or pencil. Research assistants were available to answer any questions should they arise. Upon completion, students placed their booklets in individual envelopes and sealed them to maintain

anonymity. Booklets were then scanned into an IBM-SPSS Statistics 19.0 (SPSS; IBM-SPSS, 2010) file by research assistants and students were identified in the file by their participant number. Problematic data were checked for coding and errors against raw data by research assistants and participant numbers with no responses were deleted.

### **3.5 Data Analysis**

Anonymous, pre-test data were provided to the principal investigator at the University of Calgary by the primary investigators at the University of Manitoba in an SPSS file. The procedures used to analyze the data in this study will be described below in two sections: preliminary analyses and primary analyses.

#### ***3.5.1 Preliminary analyses***

Preliminary analyses consisted of data inspection, missing value analyses, psychometric analyses of questionnaires, and bivariate correlations.

##### ***3.5.1.1 Data inspection***

Data were first analyzed to examine assumptions using SPSS and visual examination of all items. Minimum and maximum values, means, and standard deviations of each item were calculated and each item inspected for data entry errors, missing data, and outliers. Normality was assessed by examining skewness and kurtosis values and frequency histograms. Scatterplots were created to examine linearity.

##### ***3.5.1.2 Missing value analyses***

Missing value analyses were conducted to highlight percentages of missing data. Missing values were then estimated using multiple imputation in LISREL 8.80 (LISREL; Jöreskog & Sörbom, 2006). Multiple imputation is presently considered the best method of dealing with missing values (Tabachnik & Fidell, 2007) because it makes no

assumptions about whether data are randomly missing (Schafer, 1999). Thus, multiple imputation is the choice when data analysis is conducted outside the agency that collected the data (Tabachnik & Fidell, 2007), as in this study. According to Brown (2006), other imputation methods such as regression imputation, are not recommended because they tend to produce underestimates of variances and overestimates of correlations among variables. The multiple imputation procedure corrects for these problems by introducing random variation into the data estimated from observed values for other cases. All subsequent data analyses were based on this imputed data.

### *3.5.1.3 Psychometric properties*

The psychometric properties of the questionnaires were examined by conducting CFAs, reliability analyses, descriptive statistics, and t-tests.

In this study, CFAs were performed with LISREL using SIMPLIS syntax to determine if the hypothesized factor structure proposed by the questionnaires' authors was maintained in this sample. Four steps were followed: model specification, model identification, model estimation, and model testing.

CFA models were specified for each questionnaire separately according to factor structures suggested in previous research. Models were specified using item-indicators for the SCAS and the CCSEQ, and with subscale-indicators for the CCSC-R1 according to the authors' guidelines (e.g., Ayers et al., 1996).

The model identification stage involved determining if it is theoretically possible to calculate a unique estimate for every piece of unknown information in the model (Kline, 1998). As outlined by Byrne (2001), there are three levels of model identification. An under-identified model is one that cannot be trusted because the number of estimated

parameters exceeds the number of variances and covariances (data points). A just-identified model is one where there is a one-to-one correspondence between the data and the structural parameters, where the number of parameters equals the number of data points. An over-identified model is one where the number of parameters to be estimated is less than the number of data points. In this situation, the model has positive degrees of freedom, which allows the model to be falsified, and thus, scientifically useful. Consequently, over-identified models are desirable. Each CFA model tested in this study was over-identified.

After model identification, model estimation was performed. Model parameters are the aspects of the model that are unknown to the researcher (e.g., factor loadings and error terms) and which are estimated through sample data (Raykov & Marcoulides, 2006). Parameters were estimated using maximum likelihood estimation because it maximizes the variance shared by two or more variables, allows all model parameters to be estimated simultaneously, and performs well when normality assumptions are reasonable, all within large sample sizes (T. A. Brown, 2006). A value is generated by the above process, indicating the difference between the sample covariance matrix and the estimated covariance matrix. The closer the matrices are, the better the estimate.

Finally, the models were tested to examine their goodness-of-fit with the sample data. In addition to evaluating the meaningfulness and interpretability of models based on theoretical and empirical relevance, model fit was also examined through several goodness-of-fit indices: measures of how well the pattern of correlations in a sample corresponds to the correlations in the hypothesized model (Aron, Aron, & Coups, 2009).

It is recommended that model fit be evaluated by a range of goodness-of-fit indices to reduce the chances of making Type I and Type II errors (Hu & Bentler, 1999). Thus, the hypothesized models were evaluated on the basis of four indices chosen due to their common usage and documented satisfactory performance with large sample sizes and questionnaire data (e.g., T. A. Brown, 2006; Hu & Bentler, 1999): the comparative fit index (CFI), the non-normed fit index (NNFI), standardized root mean square residual (SRMR), and the root mean squared error of approximation (RMSEA). The CFI provides a measure of fit by comparing the user specified model to a restricted baseline model hypothesizing no relationships among variables (T. A. Brown, 2006). Similar to the CFI, the NNFI (also known as the Tucker-Lewis index; TLI), evaluates the fit of the user specified model to a baseline model, and compensates for model complexity (Schreiber, Stage, King, Nora, & Barlow, 2006). The SRMR reflects the average discrepancy between the correlations observed in the input matrix and the correlations predicted by the model (T. A. Brown, 2006). The RMSEA indicates the amount of discrepancy per degree of freedom, and as such, it incorporates a penalty for poor model parsimony (T. A. Brown, 2006). A 90% confidence interval can also be formed around the RMSEA to enable precision of the estimate (Kaplan, 2009).

According to Hu and Bentler (1999), good model fit is obtained when (a) CFI and NNFI values are .95 or above, (b) SRMR values are close to .08 or below, and (c) RMSEA values are close to .06 or below. RMSEA values between .08 and .10 are indicative of adequate fit (Browne & Cudeck, 1993). Though the chi-square analysis is reported in the results chapter for the interest of readers, it is not considered an appropriate index to consider for this study given the large sample size. Chi-square has a

tendency to become inflated with large sample sizes (T. A. Brown, 2006). Based on the CFA results, the best fitting model was selected and used for the remaining analyses.

Analyses of internal consistency were conducted with SPSS using Coefficient alpha and item-total correlations to determine the internal consistency of each of the measures and scales. In psychological measurement, Coefficient alpha values above 0.8 are typically considered reliable (Salkind, 2006). Moreover, Nunnally and Bernstein (1994) state that coefficients of 0.7 are sufficient in early test development and that values of 0.8 or higher should be expected in later research.

Descriptive statistics were calculated using SPSS. To start, total scores were computed by summing the items corresponding to each scale score (for the SCAS) and summing scores on each item within each scale and then dividing item totals by the number of items in that scale (for the CCSEQ and the CCSC-R1), as per the authors' guidelines. Descriptive analyses, including frequencies, means, standard deviations, skewness, kurtosis, range, and minimum and maximum values, were conducted on the computed scores. Histograms and scatterplots were also created to examine assumptions.

To investigate if total scores varied as a function of sex, two tailed, independent samples t-tests were performed using SPSS.

#### *3.5.1.4 Bivariate correlations*

Once questionnaire psychometric properties were established and found to be acceptable, correlational analyses were conducted with SPSS to determine the strength and direction of bivariate relationships among self-reported anxiety, coping efficacy, and coping strategies. Correlations were then conducted separately for boys and girls to investigate if relationships between variables differed between sexes.

### ***3.5.2 Primary analyses***

The following section describes the SEM method used to test the study's main hypotheses. SEM was chosen to test the hypothesized model because it takes into account measurement error in the observed variables (by creating latent variables), allows the complex relationships among the constructs to be tested, permits the inclusion of multiple independent and dependent variables, provides model fit indices to evaluate the viability of the hypothesized model, and demonstrates the direct and indirect effects of variables in a single model (Tabachnik & Fidell, 2007).

SEM is a multivariate technique that encompasses several statistical methods. It is composed of a measurement model that links observed variables to latent variables using CFA and a structural model that links latent variables to each other using regression equations and path diagrams. Following the recommendations by Anderson and Gerbing (1988), a two-step modeling procedure was employed using LISREL, whereby the model is first specified as a CFA measurement model and then, as a structural model. These steps are outlined separately below.

#### ***3.5.2.1 Measurement model***

The measurement model defines associations between the observed and unobserved variables by specifying the pattern by which each measure loads on a particular factor using CFA (Byrne, 2001). In this study, the measurement model was specified to contain the latent factors (and corresponding observed variables) identified for each questionnaire through the CFAs previously conducted. The data analysis procedures used to examine the measurement model through CFA are the same as previously followed in the CFA section, so do not require further explanation here.

### 3.5.2.2 *Structural model*

The structural model defines the relations among the unobserved variables by depicting how specific latent variables directly or indirectly influence changes in the values of other variables (Byrne, 2001). SEM was used to test the hypothesized interrelationships among coping strategies, coping efficacy, and anxiety symptoms. Sex was not considered in the model on the basis of results from the correlations and t-tests. The methods used to conduct SEM are similar to those used in CFA: model specification, model identification, model estimation, and model testing.

The structural model was specified by developing hypotheses regarding the relationships among the variables based on previous research and theory. Specifically, a partially mediated model was specified in which the use of coping strategies were predicted to influence anxiety symptoms directly and also indirectly through the mediating or intervening variable, coping efficacy.

The hypothesized model had fewer parameters than data points so it was statistically over-identified. Parameters were estimated using maximum likelihood estimation. The majority of parameters were specified to be free (unknown and estimated), with the exception of one loading per endogenous factor (dependent variable) that was fixed to 1.0, as determined by LISREL default.

Model fit was evaluated on the basis of the same goodness of fit indices previously described in the CFA section, as well as by inspecting the direction, magnitude, and significance of parameter estimates. Additionally, it was particularly important to examine and interpret standardized path (regression) coefficients in the structural model. Standardized path coefficients were chosen because they allow you to

compare the intensity of effects across different predictor variables with different scales of measurement (Maruyama, 1998). Two types of effects were examined (a) direct effects – direct relationships between variables and (b) indirect effects – relationships that are mediated through intervening variables (Raykov & Marcoulides, 2006).

The statistical significance of the intervening variable in this study was evaluated using tests of indirect effects through LISREL (Sobel, 1982, 1987). This method of examining mediating variables has more power than the Baron and Kenny approach (Baron & Kenny, 1986; MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002) and it is recommended for samples of 200 or larger (Preacher & Leonardelli, 2001). This test calculates the product of the paths leading from the independent variable to the intervening variables and the intervening variable to the dependent variable and then divides this product by its standard error (Holbert & Stephenson, 2003). The resulting value is then treated as a *Z* test (i.e., larger than 1.96 in absolute value is significant at the .05 level; Sobel, 1987). As such, it is used to estimate the total indirect effect of an independent variable on the dependent variable in the structural model.

## Chapter Four: Results

### **4.1 Introduction**

Chapter four presents the results in the order in which data analyses were conducted. Prior to outlining primary findings from modeling, results from preliminary analyses are outlined. Preliminary analyses included data inspection, missing value analyses, psychometric analyses (i.e., CFAs, reliability analyses, descriptive statistics, and t-tests), and bivariate correlations. Primary analyses are then presented, which outline the findings from SEM.

### **4.2 Preliminary Analyses**

#### ***4.2.1 Data inspection***

Data were inspected to examine assumptions of normality and linearity and to identify outliers. Items appeared to be normally distributed according to their skewness and kurtosis values and frequency histograms. Scatterplots showed that all observed variables appeared to be linearly related. No outliers were identified.

#### ***4.2.2 Missing value analyses***

Missing value analyses showed that percentages of missing values were minimal, occurring sporadically: SCAS = 0.62 %, CCSC-R1 = 1.98 % and CCSEQ = .74 %. This study employed the multiple imputation estimation method using LISREL for the small number of cases where missing data occurred. All subsequent analyses were based on the imputed data.

### 4.2.3 Psychometric properties

Psychometric analyses were conducted to determine if questionnaires were performing as expected. To this end, factor structure, reliability, descriptive statistics, and t-tests were examined.

#### 4.2.3.1 Confirmatory factor analyses

CFAs were conducted using LISREL to confirm whether each of the questionnaires' factor structures found in previously published research were maintained in this sample. Item-level indicators were used for the CFAs conducted on the SCAS and CCSEQ, whereas subscale-indicators were used for the CCSC-R1, as per the authors guidelines (Ayers et al., 1996). In all analyses reported, maximum likelihood estimation was used, models were statistically over-identified, and the iterative estimation procedure converged. Additionally, all parameters were significant at the  $p < .01$  level. Table 4.1 provides the fit indices for each CFA conducted.

Table 4.1 Fit indices for each CFA model tested.

Model	$\chi^2$	<i>df</i>	<i>p</i>	NNFI	CFI	SRMR	RMSEA (90% CI)
<i>SCAS</i>							
Model 1: 1 factor	2188.15	665	<.00	.94	.94	.06	.07 (.06-.07)
Model 2: 6 factors	1808.33	650	<.00	.95	.95	.05	.06 (.06-.06)
Model 3: 6 1 <sup>st</sup> -order factors, 1 2 <sup>nd</sup> -order factor	1852.37	659	<.00	.95	.95	.05	.06 (.06-.06)
<i>CCSEQ</i>							
Model 1: 1 factor	79.47	14	<.00	.96	.97	.05	.09 (.07-.12)
<i>CCSC-R1</i>							
Model 1: 1 factor	688.60	65	<.00	.92	.93	.07	.14 (.13-.15)
Model 2: 4 factors	304.41	59	<.00	.97	.98	.04	.09 (.08-.10)

*Note.*  $\chi^2$ =chi square, NNFI = non-normed fit index, CFI = comparative fit index, SRMR – standardized root mean square residual, RMSEA = root mean squared error of approximation, 90% CI = 90% confidence interval.

Following previous research with the SCAS, three models were evaluated. The first, single factor model, examined the degree to which all symptoms can be viewed as reflecting a single, homogeneous dimension of anxiety. Table 4.1 shows that a single factor model does not adequately fit the data in terms of the NNFI and CFI indices. For model two, items were fixed on one of six latent factors that represented the dimension of anxiety that the item was hypothesized to measure (see Table 3.1). Factors were allowed to intercorrelate. Fit indices, displayed in Table 4.1, show that the six-factor model represents a good fit to the data: NNFI and CFI are at .95 and SRMR and RMSEA are below .08. Despite the good fit according to fit indices, a high degree of correlation between the factors was found, as shown in Table 4.2, suggesting that the six factors were highly related, commensurate with past studies (e.g., Spence, 1998).

Table 4.2 Standardized correlations among SCAS latent factors on the six-factor model.

SCAS	GA	PI	SEP	SOC	PAN	OC
GA	1					
PI	.67	1				
SEP	.88	.81	1			
SOC	.78	.70	.78	1		
PAN	.88	.71	.86	.76	1	
OC	.84	.58	.80	.76	.80	1

*Note.* All correlations are significant at the  $p < .01$  level.

Given these results, as well as theory, model three was examined. Model three is a higher-order model, that evaluated the degree to which the correlation between the six factors from model two could be explained by a single, second-order factor representing a general dimension of anxiety problems. As Table 4.1 indicates, values for NNFI, CFI, SRMR, and RMSEA for model three were all good indicating that the higher order model explained the data well. The factor loadings of each subscale on the higher-order factor

were quite high (GA = .94, PI = .77, SEP = .95, SOC = .84, PAN = .92, OC = .87), indicating that the hypothesized first-order factors fit well with the second-order factor. As a result of its empirical strength and theoretical relevance, this higher-order model was accepted for further analyses.

Consistent with previous literature (Sandler, Tein, et al., 2000), one single-factor model was tested for the CCSEQ. Table 4.1 shows that a one-factor model where the seven items loaded onto a single factor (representing overall perceived coping efficacy) explained the data reasonably well. NNFI and CFI values are above .95 and the SRMR is well below .08 suggesting excellent fit. Unfortunately, the value of the RMSEA at .09 indicated only an adequate fit. Despite the higher-than-desired RMSEA value, this one-factor model was accepted, given the theoretical relevance and the other good fit indices.

CFA was used to test two models for the CCSC-R1 using the 13 subscale scores for indicators (see Table 3.2), as per the authors' guidelines (Ayers et al., 1996). The first model tested was a one-factor model where all variables loaded on a single latent factor. As indicated in Table 4.1, this was a poor fitting model. The next model replicated the four-factor structure of the CCSC-R1 found in previous research (e.g., Ayers, et al., 1996). Table 4.1 shows that the results revealed an overall good fit to the data (NNFI and CFI above .95 and SRMR below .08) with the exception of the RMSEA (.09), which indicated only an adequate fit. Given the excellent fit according to the NNFI, CFI, and SRMR, this four-factor model was selected for further analyses.

#### 4.2.3.2 Reliability analyses

Scale scores were created based on the results from the CFAs. Internal consistency reliability was evaluated with Coefficient alpha and by examining item-total correlations. Table 4.3 depicts the Coefficient alphas for each scale score.

Table 4.3 Coefficient alphas for total scores on all questionnaires.

Questionnaire	Scale	Coefficient alpha
SCAS	Total	.92
CCSEQ	Total	.84
CCSC-R1	Active	.93
	Distraction	.82
	Avoidance	.77
	Support Seeking	.86

The SCAS total score demonstrated excellent internal consistency, suggesting that items correlated with the total score in an acceptable manner. As shown in Table 4.4, item correlations with the total score were generally above .40 with the exception of items 18 ( $r = .23$ ) and 14 ( $r = .35$ ). Coefficient alphas are highly comparable between the present study and those from the original Australian sample (Spence, 1998), a German sample (C. A. Essau, Muris, & Ederer, 2002), and South African sample (Muris, Schmidt, et al., 2002).

Table 4.4 Corrected item-total correlations (Pearson's  $r$ ) for the total score on the SCAS.

Item	Total Scale	Item	Total Scale	Item	Total Scale
Item1	.45	Item14	.35	Item29	.58
Item2	.45	Item15	.42	Item30	.47
Item3	.43	Item16	.47	Item32	.57
Item4	.52	Item18	.23	Item33	.42
Item5	.41	Item19	.43	Item34	.46
Item6	.45	Item20	.46	Item35	.46
Item7	.41	Item21	.52	Item36	.50
Item8	.49	Item22	.60	Item37	.59
Item9	.51	Item23	.40	Item39	.40

Item10	.49	Item24	.55	Item40	.40
Item12	.53	Item25	.44	Item41	.56
Item13	.48	Item27	.53	Item42	.43
		Item28	.52	Item44	.47

*Note.* Items 11, 17, 16, 31, 38, and 43 were positive filler items and were excluded from analyses.

Both the CCSEQ Coefficient alpha and the item-total correlations (all above  $r = .52$ ) suggested good internal consistency. The Coefficient alpha was much higher than the estimate of .74 found in the original validation study (Sandler, Tein, et al., 2000).

Coefficient alphas for the scales on the CCSC-R1 were generally very good, and considerably higher than those reported in its original development study (Ayers et al., 1996). The Coefficient alpha for the avoidance scale was slightly lower than desired and as depicted in Table 4.5, items in the avoidance scale demonstrated lower item-total correlations. Item-total correlations for active, distraction, and support seeking scales were all above .45.

Table 4.5 Item-total correlations (Pearson's  $r$ ) for the scales on the CCSC-R1.

Item	Active Scale	Distraction Scale	Avoidance Scale	Support Seeking Scale
Item1	.48			
Item2	.47			
Item6	.54			
Item8	.54			
Item10	.52			
Item16	.53			
Item17	.58			
Item19	.63			
Item23	.62			
Item24	.62			
Item26	.57			
Item29	.63			
Item31	.61			
Item34	.71			
Item35	.64			
Item37	.56			

Item41	.60		
Item43	.55		
Item44	.59		
Item45	.63		
Item47	.66		
Item49	.66		
Item50	.58		
Item54	.53		
Item9		.48	
Item12		.56	
Item20		.51	
Item25		.54	
Item32		.45	
Item39		.54	
Item42		.53	
Item52		.47	
Item53		.56	
Item3			.42
Item5			.47
Item11			.40
Item15			.53
Item21			.50
Item27			.21
Item33			.43
Item36			.30
Item40			.38
Item46			.45
Item48			.36
Item51			.45
Item4			.52
Item7			.54
Item13			.63
Item14			.47
Item18			.61
Item22			.56
Item28			.68
Item30			.59
Item38			.66

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#### 4.2.3.3 Descriptive statistics

Table 4.6 shows the means, standard deviations, skewness, and kurtosis values for the scale scores on the SCAS, CCSEQ, and CCSC-R1 for the total sample. Mean scores were consistent with the means reported in previously published research. For example, Spence (1998) found a mean of 31.28 (SD = 17.35) for the total anxiety score. Means for the CCSC-R1 have been reported as 2.63 (active), 2.36 (distract), 2.61 (avoid), and 2.44 (support) among children of alcoholic parents (Smith et al., 2006) and the CCSEQ mean of 2.87 in the original study (Sandler, Tein, et al., 2000) is almost exactly the same as the one found here. Histograms were also created to visually inspect for normality of scale scores. Visual inspection and skewness and kurtosis values demonstrated that all scales were normally distributed. Scatterplots, depicting the relationships between scale scores showed that variables were linearly related.

Table 4.6 Means (standard deviations) and skewness (kurtosis) values for the SCAS, CCSEQ, and CCSC-R1.

Questionnaire	Scale	M (SD)	Skewness (Kurtosis)
SCAS	Total	30.47(16.40)	.71(.39)
CCSEQ	Total	2.86(.60)	-.41(.02)
CCSC-R1	Active	2.40(.59)	.38(.02)
	Distraction	2.32(.70)	.32(-.51)
	Avoidance	2.57(.53)	.23(.08)
	Support Seeking	2.23(.68)	.36(-.32)

#### 4.2.3.4 T-tests

As illustrated in Table 4.7, two-tailed, independent sample t-tests showed few sex differences in mean scores. Two exceptions were that girls reported significantly higher

levels of overall anxiety than boys and boys reported using significantly more distraction coping strategies than girls.

Table 4.7 T-test results comparing boys and girls on the SCAS, CCSEQ, and CCSC-R1 scales.

Instrument	Scale	Mean (Standard Deviation)		T-test		Cohen's <i>d</i>
		Boys ( <i>n</i> =249)	Girls ( <i>n</i> =245)	<i>t</i> (492)	<i>p</i>	
SCAS	Total	27.40(16.45)	33.76(15.90)	-4.37	<.00	.39
CCSEQ	Total	2.88(.60)	2.88(.57)	-.06	.95	.00
CCSC-R1	Active	2.44(.62)	2.36(.56)	1.42	.16	.14
	Distract	2.44(.70)	2.20(.70)	3.82	<.00	.34
	Avoid	2.57(.57)	2.57(.48)	.15	.88	.00
	Support	2.21(.72)	2.27(.65)	-.99	.32	.09

Psychometric analyses revealed that the questionnaires were performing very well in this sample: CFAs and reliability analyses indicated that psychometric properties were all good and descriptive statistics and results from t-tests were similar to those found in previous research and validation studies.

#### 4.2.4 Bivariate correlations

Correlations were used to briefly examine the bivariate relations among the variables under study and the results are presented in Table 4.8. These bivariate correlations showed a negative association between anxiety and coping efficacy and positive associations between anxiety and avoidance and support seeking coping. Coping efficacy was positively correlated with each coping strategy and all of the CCSC-R1 scales were highly positively correlated with each other. There were no other significant bivariate correlations.

Table 4.8 Bivariate correlations (Pearson's *r*) between all variables.

Scales	SCAS	CCSEQ	Active	Distract	Avoid	Support
SCAS	-					

CCSEQ	-.20**	-				
Active	-.02	.55**	-			
Distract	.03	.23**	.46**	-		
Avoid	.09*	.36**	.67**	.44**	-	
Support	.14**	.36**	.62**	.30**	.48**	-

*Note.* SCAS = SCAS total score, CCSEQ = CCSEQ total score, \*  $p < .05$ . \*\*  $p < .01$

Correlations were then preformed separately for boys and girls. Table 4.9 shows that there were generally no differences in the associations between the variables for boys and girls.

Table 4.9 Bivariate correlations (Pearson's  $r$ ) between all variables separately for boys (located below the diagonal) and girls (located above the diagonal).

Scales	SCAS	CCSEQ	Active	Distract	Avoid	Support
SCAS	-	-.18**	-.02	.08	.11	.09
CCSEQ	-.23**	-	.59**	.21**	.33**	.36**
Active	-.02	.54**	-	.36**	.57**	.58**
Distract	.04	.28**	.55**	-	.40**	.20**
Avoid	.05	.42**	.74**	.48**	-	.33**
Support	.16*	.38**	.66**	.41**	.58**	-

*Note.* SCAS = SCAS total score, CCSEQ = CCSEQ total score, \*  $p < .05$ . \*\*  $p < .01$

Given that few sex differences were found through the t-tests and that sex did not affect the bivariate correlations between the variables under study, sex was not considered in further analyses and the SEM was tested with the data from boys and girls combined.

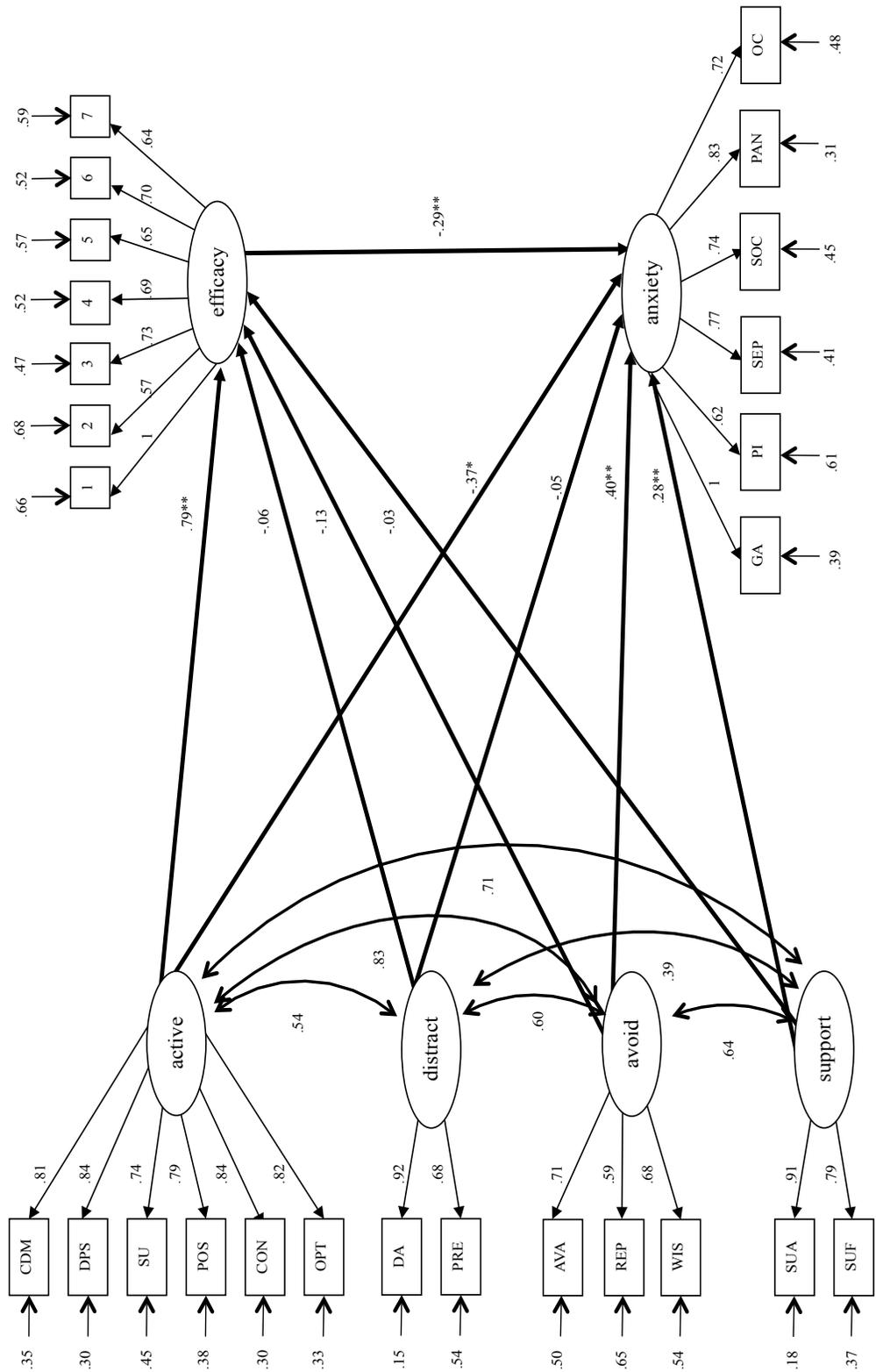
### 4.3 Primary Analyses

Primary analyses were conducted with SEM to examine the hypothesized latent factor model depicting the interrelationships among coping strategies, coping efficacy,

and anxiety symptoms. This model is presented graphically in Figure 4.1, which includes the standardized estimates of parameters in the measurement and structural models. The measurement component is depicted with thin lines and the structural component with bolded lines. This figure includes several components: (a) circles represent unobserved (latent) variables, (b) squares represent observed (measured) variables, (c) single-headed arrows represent the impact of one variable on another, and (d) double-headed arrows represent correlations between two variables. The paths from the factors to the measured variables are factor loadings. Arrows pointing to measured variables represent residual error. The number 1 indicates that a parameter has been fixed to the value of one.

Figure 4.1 Model of interrelationships among coping strategies, coping efficacy, and anxiety symptoms

(Illustrated on the following page)



Note. Correlations, factor loadings, error terms significant at  $p < .05$ , \* significant at  $p < .05$ , \*\* significant at  $p < .01$

### 4.3.1 Measurement model

As indicated in Table 4.10, the measurement model was hypothesized to consist of six-factors: active coping, distraction coping, avoidance coping, support seeking coping, coping efficacy, and anxiety symptoms. Latent factors and observed variables were chosen based on the results of the preliminary analyses. For the measurement model, factors were allowed to correlate.

Table 4.10 The latent factors and their indicators, as specified in the measurement model.

Latent Factors (Abbreviations)	Observed Indicators (Abbreviations)
Active Coping (active)	CCSC-R1 subscales - Cognitive Decision Making (CDM), Direct Problem Solving (DPS), Seeking Understanding (SU), Positivity (POS), Control (CON), Optimism (OPT)
Distraction Coping (distract)	CCSC-R1 subscales - Distracting Actions (DA), Physical Release of Emotions (PRE)
Avoidance Coping (avoid)	CCSC-R1 subscales - Avoidant Actions (AVA), Repression (REP), Wishful Thinking (WIS)
Support Seeking Coping (support)	CCSC-R1 subscales - Support for Actions (SUA), Support for Feelings (SUF)
Coping Efficacy (efficacy)	CCSEQ items - 1 to 7
Anxiety Symptoms (anxiety)	SCAS subscales - Generalized Anxiety (GA), Physical Injury Fears (PI), Separation Anxiety (SEP), Social Anxiety (SOC), Panic Attack and Agoraphobia (PAN), and Obsessive Compulsive Problems (OC)

As expected, the measurement model provided an excellent fit to the data:  $\chi^2(284) = 750.39$ ,  $p < .05$ , NNFI = .97, CFI = .98, SRMR = .05, RMSEA = .06 (RMSEA confidence interval = .05 - .06). All factor loadings and error variances are significant at  $p < .05$ , suggesting that the constructs are all reasonably well measured. Correlations between factors are presented in Table 4.11. Results indicate that the coping efficacy is strongly positively related to all coping strategies constructs and is negatively related to anxiety symptoms. Anxiety symptoms are positively related to avoidance and support seeking coping strategies. Correlations among the coping factors were significant, ranging from .39 to .83. Given the good fit, no modifications were made to the measurement model.

Table 4.11 Intercorrelations among latent factors.

Factors	Anxiety	Efficacy	Active	Distract	Avoid	Support
Anxiety	-					
Efficacy	-.22**	-				
Active	-.04	.63**	-			
Distract	.03	.27**	.54**	-		
Avoid	.11*	.47**	.83**	.60**	-	
Support	.14**	.42**	.71**	.39**	.64**	-

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

### 4.3.2 Structural model

Using the measurement model, a structural model was constructed by adding hypothesized paths between factors. Specifically, it was predicted that coping efficacy would act as a mediator of the relationship between coping strategies and anxiety symptoms. SEM was used to examine the fit of this hypothesized model and to test the indirect effects for the mediational pathways. The four coping strategies (i.e., active,

distraction, avoidance, and support seeking) were specified as exogenous predictor variables, anxiety symptoms as an endogenous criterion variable, and coping efficacy was both an exogenous and endogenous variable. The coping strategies were allowed to correlate. As previously mentioned, this model is depicted in Figure 4.1.

This structural model provides an excellent fit to the data:  $\chi^2(284) = 750.39$ ,  $p < .05$ , NNFI = .97, CFI = .98, SRMR = .05, RMSEA = .06 (RMSEA confidence interval = .05 - .06). In fact, the fit is equivalent to the fit of the measurement model, which is expected given that the measurement model was retained and the specifications were the same (Kline, 1998). As previously described, correlations among the coping factors were all significant ranging from .39 to .83. All parameter estimates were also significant, though not all expected relationships were statistically significant. Together, active, distraction, avoidance, and support seeking coping strategies accounted for 40% of the variance in coping efficacy. Coping efficacy and active, distraction, avoidance, and support seeking coping strategies accounted for 16% of the variance in anxiety symptoms. Post-hoc modifications of the model were not conducted because of the good fit demonstrated.

As can be seen in Figure 4.1, there are several significant path coefficients. Active coping had a significant positive path to coping efficacy ( $\beta = .79$ ,  $p < .01$ ), whereas none of the other coping strategies were significantly related to coping efficacy. Active coping also had a significant direct negative path to anxiety symptoms ( $\beta = -.37$ ,  $p < .05$ ). Both avoidance and support seeking coping strategies had significant positive direct paths to anxiety symptoms ( $\beta = .40$ ,  $p < .01$  and  $\beta = .28$ ,  $p < .01$  respectively). There was not a significant path from distraction coping to anxiety symptoms. Finally, there was a

significant negative path from coping efficacy to children’s anxiety symptoms ( $\beta = -.29$ ,  $p < .01$ ).

While the direct path effects suggest some links between coping strategies and anxiety, a formal test of mediation can be conducted to examine the indirect effects of coping strategies via coping efficacy, on anxiety symptoms. The standardized indirect effects are illustrated in Table 4.12. Tests of indirect effects indicated that coping efficacy is a significant mediator of the relations between active coping and anxiety symptoms ( $z = -3.76$ ,  $p < .01$ ), as expected. However, contrary to predictions, tests of indirect effects did not reveal significance among the indirect path from avoidance coping to anxiety symptoms through coping efficacy. Similarly, there were no significant indirect paths from distraction or support seeking coping to anxiety symptoms through coping efficacy.

Table 4.12 Indirect effects for the structural model.

Endogenous Latent Variable	Exogenous Latent Variables			
	Active	Distract	Avoid	Support
Anxiety	-.22 <sup>a**</sup>	.02	.04	.01
	(.06) <sup>b</sup>	(.02)	(.04)	(.02)
	-3.76 <sup>c</sup>	.88	1.02	.44

Note. <sup>a</sup>Standardized coefficient. <sup>b</sup>Estimated standard error. <sup>c</sup>LISREL  $z$  value. \*\*  $p < .01$

In summary, the SEM results only partially supported the hypotheses. Findings suggest that coping efficacy is only an important partial mediator in the linkage between active coping strategies and anxiety symptoms, whereby active coping leads to decreases in anxiety symptoms through increases in coping efficacy. Contrary to what was expected, neither avoidance coping, nor distraction or support seeking coping were significantly associated with coping efficacy. However, the results supported hypotheses

that active, avoidance, and support seeking coping strategies were significantly related to anxiety symptoms, but there was no relationship between distraction coping and anxiety.

## Chapter Five: Discussion

### **5.1 Introduction**

The following chapter highlights the relevant significant findings obtained from the study and reviews the results relative to the order and type of data analyses conducted. To this end, findings from preliminary analyses (i.e., psychometric properties, bivariate correlations) will first be discussed. Then, focus will be given to a discussion of the findings from the primary SEM analyses. Within this, findings of the interrelationships among anxiety symptoms, coping strategies, and coping efficacy will be discussed. Empirical and practical implications are then examined. Following this, consideration will be given to the strengths and limitations of the study. The chapter concludes with suggested directions for future research.

### **5.2 Overview of Significant Findings**

The current study explored the relationships among coping strategies, coping efficacy, and anxiety symptoms in a large sample of Canadian school-age children. This study was developed to address the lack of published research articles in the area of childhood anxiety, and inconsistencies in the relationships among coping strategies and anxiety that have been found in previous research. The primary aim of the current project was to investigate the relationships among and between coping strategies, coping efficacy, and anxiety symptoms in children by testing a model whereby coping efficacy mediates the relationships between coping strategies and anxiety symptoms. Some additional goals of this research were to explore the psychometric properties of questionnaires used to measure anxiety symptoms, coping strategies, and coping efficacy to determine whether the instruments were performing adequately in this sample and to

investigate the bivariate relationships among the variables of interest. The most significant findings from this study are discussed below.

### ***5.2.1 Discussion of findings relative to preliminary analyses***

Prior to testing the hypothesized model, the psychometric properties of the questionnaires were examined. The factor structures of the SCAS, CCSEQ, and CCSC-R1 found in this study were the same as those found in previous literature. To illustrate, several models were tested for the SCAS and the factor structure found in the original validation study (Spence, 1998) was replicated here. Specifically, the model with one higher order factor representing general anxiety symptoms and six lower order anxiety dimensions (i.e., generalized anxiety, physical injury fears, separation anxiety, social anxiety, panic attack and agoraphobia, and obsessive compulsive problems) fit the data well, and better than the other models tested. Consistent with Sandler, Tein, et al. (2000), CFA indicated that a one-factor model accounted for the CCSEQ data well. As anticipated based on Ayers, et al. (1996) and Program for Prevention Research (1999), a four-factor model (i.e., active, avoidance, distraction, and support seeking coping) fit the data well for the CCSC-R1. Thus, the four dimensional model of coping found in previous research with the CCSC (Sandler et al., 1994) has also been replicated in this study. This was the first time that the factor structure for the revised CCSC (the CCSC-R1) had been empirically investigated, and it is noteworthy that the factor structure was the same as the original CCSC despite the revision and addition of new items.

Estimates of internal consistency (Coefficient alpha) for the scale scores of each questionnaire exceeded the criteria for acceptable internal consistency reliability of .70 (Cronbach, 1951; Nunnally & Bernstein, 1994). Coefficient alpha for the SCAS total

score was almost exactly the same as those reported in previous literature (e.g., C. A. Essau et al., 2011; Ishikawa et al., 2009; Spence, 1998), whereas the Coefficient alphas for the CCSEQ and the CCSC-R1 found in this study were higher than those reported previously (Ayers et al., 1996; Sandler, Tein, et al., 2000).

Descriptive statistics demonstrated that the scale scores for the SCAS, CCSEQ, and the CCSC-R1 were all normally distributed, linearly related, and generally performing as expected. Mean scores and standard deviations were consistent with the means reported in previously published research (Ayers et al., 1996; Sandler, Tein, et al., 2000; Smith et al., 2006; Spence, 1998). In addition, t-tests were conducted to investigate if mean scores varied based on sex. According to the results, sex had little impact on the mean scores of the variables of interest, with two exceptions. As hypothesized, sex differences were found in the report of anxiety symptoms with girls tending to report significantly more anxiety than boys on the SCAS, similar to previous literature (Spence, 1998). There was also a sex difference in the report of distraction coping: boys reported using distraction coping strategies significantly more than girls. Potential mean sex differences with the CCSC were not examined in the original validation study (Ayers et al., 1996); however, research with the CCSC-R1 on children from military families did not find any differences in the report of distraction coping between sexes. Conversely, they found that girls use significantly higher levels of support seeking coping compared to boys (Sheffield Morris & Ricard Age, 2009). Potential sex differences in the use of coping strategies will require additional research.

As predicted, results from the CFAs, reliability analyses, descriptive statistics, and t-tests demonstrated that the psychometric properties of the SCAS, CCSEQ, and CCSC-

R1 were highly comparable with previously published research. These findings indicate the usefulness of these measures with community-based samples of children. The similarities in factor structure, reliability, and descriptive statistics between the original validation samples (i.e., Australian school children, American Children of Problem Drinkers, and American children of divorce) and the current sample, provide some evidence of the stability and reliability of anxiety, coping strategies, and coping efficacy as constructs. Findings also suggest further generalizability of the structure of anxiety, coping strategies, and coping efficacy across populations with different characteristics.

With regard to the SCAS in particular, numerous studies have demonstrated its generalizability across various countries around the world: Belgium (Muris, Merckelbach, et al., 2002), Germany (Essau, Sakano, Ishikawa, & Sasagawa, 2004), Greece (Essau, Anastassiou-Hadjicharalambous, & Munoz, 2011; Mellon & Moutavelis, 2007), Hong Kong (Li et al., 2011), Japan (Essau, et al., 2004; Ishikawa et al., 2009), Spain (Tortella-Feliu, Balle, Servera, & de la Banda, 2005, as cited in Essau, et al., 2011), South-Africa (Muris, Schmidt, et al., 2002), The Netherlands (Muris et al., 2000), and United States (Whiteside & Brown, 2008) but this was the first known investigation of the psychometric properties of the SCAS with Canadian children. The results of this research provide evidence of the applicability of the SCAS for measuring childhood anxiety symptoms in Canadian children.

As part of the preliminary analyses, bivariate correlations were conducted, and as predicted, there were no differences in the correlations between variables for boys and girls; however, some other unexpected findings emerged. These bivariate relationships will only be briefly discussed here as the multivariate relationships found through SEM

(discussed under the primary analyses section) are much more interesting and explanatory.

As expected, findings demonstrated that higher levels of self-reported anxiety symptoms were associated with poorer coping efficacy. Self-reported anxiety was also correlated with higher levels of avoidance and support seeking coping strategies. Contrary to hypotheses, there were no significant correlations between active and distraction coping and anxiety symptoms. It was expected that coping efficacy would be positively associated to active coping and negatively related to avoidance, distraction, and support seeking coping; however, coping efficacy was associated with higher levels of all coping strategies: active, distraction, avoidance, and support seeking. All of the CCSC-R1 scales were highly positively correlated with each other, consistent with prior research.

In a number of cases, findings from bivariate correlations did not support hypotheses. Briefly, there are several potential explanations for this result. The previous research used to develop hypotheses employed very different samples than the current Canadian community sample. For example, prior literature was drawn from studies around the world that assessed these factors in many different cultures and with many different groups of children (e.g., children with anxiety disorders, children of divorce, and children from community samples). It is important to stress that there have not been previous studies of the relationships among anxiety and coping strategies in Canadian children. A variety of measures were also previously used, which may have played a role in the differences found.

But the primary explanation for why the findings from the bivariate correlations did not always match hypotheses is likely related to the use of the statistic itself. While bivariate correlations are valuable to inform additional research, the multivariate SEM results discussed subsequently offer more accurate results than these described above. Multivariate statistics refers to the inquiry into the structure of interrelationships among multiple variables (I. A. Bernstein, 1987). As such, multivariate analyses make it possible to examine richer and more realistic designs than can be assessed with univariate statistics (Harlow, 2005). With multivariate designs, it is possible to analyze a complex array of variables with less error and more validity than if variables are analyzed in isolation (Harlow, 2005). Given these points, the remaining sections will focus on the findings from the primary multivariate analyses.

### ***5.2.2 Discussion of results relative to primary analyses***

Based on theoretical perspectives and empirical studies, the primary aim of this study was to test a mediation model depicting the relationships among and between coping strategies (i.e., active, avoidance, distraction, and support seeking coping), coping efficacy, and overall anxiety symptoms in children. A number of significant relationships between variables were expected and it was anticipated that coping efficacy would mediate the relationships between active and avoidance coping and anxiety. Hypotheses were not provided with respect to whether coping efficacy would mediate relations between distraction and support seeking coping and anxiety symptoms. Results only partially supported hypotheses. Understanding the findings from this model requires consideration of each link in the model.

The first link in the model concerns the relationships among the four coping strategies and coping efficacy. It was hypothesized that active coping would have a significant positive path to coping efficacy, whereas avoidance, distraction, and support seeking coping would have significant negative paths. Findings here supported the first hypothesis of a significant positive path between active coping and coping efficacy. Thus, active coping strategies led to increased perceptions of coping efficacy. Active coping includes strategies that are problem focused, where children directly try to address the distress (Compas et al., 2001) or think about the problem in a way that makes it less threatening (Ayers et al., 1996). Previous research supports the notion that children who use these active, problem solving methods to address stressful situations and difficulties are more likely to obtain positive outcomes in dealing with a wide range of problems (Sandler, Tein, et al., 2000; Sandler et al., 1994).

Surprisingly, none of the other coping strategies had significant relationships with coping efficacy. Despite predictions that avoidance, distraction, and support seeking coping would have negative paths to coping efficacy, there was no evidence of these relationships in this model. This finding is in contrast to Sandler, Tein, et al. (2000) and Wills (1986) who found that avoidance and distraction coping had negative relations with coping efficacy beliefs. The difference in findings may be explained by differences in the samples between this study and others. For example, this study employed a community sample of Canadian children, whereas Sandler, Tein, et al used American children of divorce and Wills used young adolescents with substance abuse problems. It is possible that children from the community who do not have identifiable stressors or clinical

difficulties, would not report as strong associations between coping strategies and coping efficacy as individuals in more acutely stressful situations.

The second link of the model involves the relationship between coping efficacy and anxiety symptoms. Findings from this study demonstrate that coping efficacy had a significant direct negative path to anxiety symptoms, as hypothesized, indicating that higher levels of coping efficacy lead to a decrease in anxiety symptoms. Prior research supports this result (Bandura, 1997; Muris et al., 1998; Sandler, Tein, et al., 2000; Smith et al., 2006). Coping efficacy may relate to fewer symptoms of anxiety by providing a sense of accomplishment or predictability that problems have been solved in the past so they will be solved in the future (Thompson, 1981). In the same way, children without a high sense of efficacy regarding their coping skills are more likely to experience high levels of negative emotions because they lack strategies for appropriately addressing their problems (Smith et al., 2006).

The final link in the model concerns the relations among coping strategies and anxiety. Hypotheses were that active coping and anxiety symptoms would be negatively related and that avoidance, distraction, and support seeking coping and anxiety symptoms would be positively related. Findings supported these predictions with one exception: a significant relationship between distraction coping and anxiety was not found. There was a significant negative path from active coping to anxiety symptoms, suggesting that the use of active coping leads to lower reported anxiety symptoms. Theoretically, use of problem solving methods and directly thinking about ways to address issues, may lead to the discovery of more ways to improve situations. Some evidence supports this finding (Causey & Dubow, 1992; Sandler et al., 1994). According to Smith et al. (2006), active

coping relates to lower internalizing difficulties because it affects both the internal and external experience of emotion.

Additionally, the paths from avoidance coping and from support seeking coping to anxiety symptoms were positive and significant, as expected based on previous literature (Larsson et al., 2000; Muris et al., 1998; Sheffield Morris & Ricard Age, 2009; Vierhaus & Lohaus, 2009). In other words, children who report using more avoidance and support seeking coping, tend to report more anxiety symptoms. The avoidance coping factor includes behavioural strategies used to stay away from the problem, to repress thoughts regarding the issues, and to engage in wishful thinking (Sandler et al., 1994). Consequently, avoidance coping may prevent children from directly addressing their problems and thinking about the issue which can lead to problems with anxiety (Sandler, Tein, et al., 2000). Because avoidance coping results in averting stressful situations, children who use this strategy may not develop effective ways for dealing with stress (Smith et al., 2006), therefore finding difficult situations more overwhelming and anxiety provoking. Use of support seeking coping may be associated with anxiety in the same way as avoidance strategies because if children are continuously relying on others to help with distress, they may not develop their own methods to effectively deal with their own problems. It is also possible that the positive path between support seeking and anxiety reflects children's dissatisfaction with the results of their past support seeking efforts (Sandler et al., 1994).

Contrary to predictions, distraction coping was not significantly related to anxiety symptoms. In previous literature, distraction coping strategies have generally been associated with poorer outcomes, including higher reports of anxiety (Larsson et al.,

2000; Muris et al., 1998; Vierhaus & Lohaus, 2009; Vulic-Prtoric & Macuka, 2006). One reason for the lack of relation between distraction coping and anxiety may relate to the nature of the strategy itself. Since distraction coping involves children's efforts to do something else to keep themselves from thinking about or addressing the problem (Sandler et al., 1994), they may have more difficulty recalling instances when they used these strategies in the past, particularly in contrast to using active and support seeking strategies which involve more overt behaviours. Additionally, distraction coping may cause children to be less aware of the stressor given that they are engaged in other distracting activities, such as exercising, reading, and hanging out with friends. What is also interesting is the lack of significant path between distraction coping and anxiety, when there was a significant positive path between avoidance and anxiety, given the apparent conceptual similarities between these coping styles. However, although both distraction and avoidance coping are used to reduce the stressful situation by not addressing the problem, they certainly comprise different behaviours. Whereas, distraction involves doing a substitute activity to keep one's mind off of the stressor, avoidance involves efforts to repress the stressor or pretend it does not exist (Sandler et al., 1994).

Perhaps the most important finding from this study is the evidence that coping efficacy is a partial mediator of the relations between active coping strategies and anxiety symptoms in Canadian children. Despite active coping having a significant direct path to anxiety, coping efficacy was still a significant mediator of their relationship. Specifically, coping efficacy partially mediated the negative relations between active coping and anxiety symptoms. Stated another way, higher levels of active coping had a significant

path to higher perceived coping efficacy, which in turn partially mediated the negative relations between active coping and anxiety symptoms. Coping efficacy may promote persistence and the use of coping strategies that can directly change the situation, which can lead to lower levels of psychological symptoms (Skinner & Wellborn, 1997).

Given the lack of relations between distraction, avoidance, and support seeking coping strategies and coping efficacy, coping efficacy was not a mediator between these coping methods and anxiety. Most surprising was that despite predictions from prior research (Sandler, Tein, et al., 2000), coping efficacy was not a mediator of the relation between avoidance coping and anxiety symptoms. Possible explanations for the difference in findings from this study to Sandler, Tein, et al.'s may relate to the methodological points previously discussed (e.g., differences in samples) as well as to the dependent or outcome variables selected for study. Sandler, Tein, et al. examined internalizing difficulties in general, a factor that included symptoms of depression and anxiety. As such, it may be that the inclusion of the measurement of depressive symptoms affected the mediation role of coping efficacy. Internalizing symptoms in their study were measured with mother-report, whereas this study exclusively used self-report, which could have also led to the differences.

There are additional findings from the modeling results worth mentioning. To start, consistent with previous work (Sandler, Tein, et al., 2000) there was a very high bivariate correlation between coping efficacy and active coping strategies. This suggests that they are highly related and may indicate the possibility that the significant association may be accounted for by a conceptual overlap. However, Sandler, Tein, et al. (2000) further investigated the association by conducting a CFA on the active coping

dimension and coping efficacy scale together. Their results indicated the presence of two distinct factors, indicating that the two constructs were best treated as two separate but correlated factors, rather than a single construct.

Evidence from this research also demonstrates high positive correlations between the four coping strategies themselves. This is consistent with prior studies, including those using the CCSC and CCSC-R1 (Ayers et al., 1996; Sandler, Tein, et al., 2000; Sandler et al., 1994), as well as those using other coping instruments (e.g., Ebata & Moos, 1991, 1994). These high correlations warrant consideration because they make separation of unique effects of each coping strategy from the overall effect of coping difficult (Sandler et al., 1994). There are several possible reasons for the obtained positive relations between coping strategies. First, these results may reflect the fact that, in general, children use many different strategies to address difficulties. For example, they may try a range of possible strategies when they are young and learn over time which methods are more effective for particular problems (Aldwin, 2011). Another reason may be that the more stressful events that occur, the more coping children do, and thus, the more strategies they try (Sandler et al., 1994). Lazarus and Folkman (1984) also suggest that the use of one coping strategy may facilitate the use of another strategy. As an example, evidence suggests that children may use avoidance strategies to immediately address anxiety, which later lead to the use of active strategies to deal with the stressful event (Horowitz, 1982). A response bias may also be involved with children reporting increased use of all coping strategies in the questionnaires. The relations between response biases and coping strategies in children's reports has not been measured but one

study with adults indicates small and nonsignificant relations (Carver, Scheier, & Weintraub, 1989).

### **5.2.3 Summary**

As the first study of coping styles, coping efficacy, and anxiety symptoms in Canadian children, the results of this research extend previous knowledge of these factors and shed light on anxiety symptoms in Canadian children. The primary finding from this research is the evidence that coping efficacy partially mediates the relations between active coping efforts and anxiety symptoms in community samples of Canadian children. This study expands our understanding of the relationships between coping and childhood anxiety by demonstrating this link among active coping skills, perceptions of coping efficacy, and anxiety symptoms. This research also provides support for the validity and reliability of questionnaires measuring anxiety, coping strategies, and coping efficacy for children selected from the community. As well, findings provide further evidence of the DSM-IV-TR structure of anxiety symptoms, the four-dimensional structure of children's coping, and the one-dimensional structure of perceptions of coping efficacy. The results hold practical, empirical, and clinical implications.

### **5.3 Implications of the Study**

The present study makes important contributions to the research in this area by demonstrating the relationships among and between coping strategies, coping efficacy, and anxiety in children. And specifically that coping efficacy partially mediates the relation between active coping and anxiety symptoms. It also illustrates the complex relations among coping strategies and anxiety. It is one of the few studies to investigate relationships between coping and anxiety in community-based children and the first to

explore these associations in Canadian children. This study also sheds light on the conceptualizations and definitions of coping and anxiety in children. A number of research and practical implications have emerged from this research.

The findings from this study may have a considerable effect on the methods used to analyze data from correlational designs in the future. Currently, many researchers use simplistic statistical techniques, such as bivariate correlations, to explore complex relationships among variables; however, this study highlights the usefulness of multivariate statistics. The results from this study illustrate the substantial differences between bivariate correlational and SEM results. The bivariate correlations were often contrary to hypotheses and suggest the presence of error in their estimates. Since the multivariate statistics accounted for error and were better able to model the complex relationships among these factors, results from these analyses were more consistent with the study predictions. Had the research stopped with these univariate statistics, the conclusions from this study would have been limited. The use of SEM allowed for a much more flexible method to investigate the multiple relations among the variables. The results from this study lend support for the applicability and importance as well as the flexibility and power of SEM with respect to the use of multiple independent variables to explain multiple dependent variables.

The current study indicates the significance of the coping efficacy construct in the exploration of childhood coping. While many researchers have suggested the role of coping efficacy in the coping process theoretically (e.g., Aldwin, 2007), few have examined its role empirically. Findings here suggest that coping efficacy should be measured and researched alongside coping strategies, as it is extremely important for

understanding the coping strategies that children use, and particularly for understanding how coping strategies relate to anxiety. That is, assessing coping efficacy adds information to the understanding of childhood anxiety symptoms not evaluated by measures of coping strategies (Sandler, Tein, et al., 2000).

There is considerable interest in applying what was learned in this study to practical applications such as working with children in schools, community centres, and clinical settings. This research has demonstrated the significant relationships among several coping strategies and anxiety symptoms and has also revealed that active coping affects children's level of anxiety through perceptions of coping efficacy, all of which will inform prevention and intervention methods.

Today many school divisions in western Canada offer school-wide prevention and intervention programs. For example, the FRIENDS for Life program (Barrett, Farrell, Ollendick, & Dadds, 2006) or the Olweus Bullying Prevention Program (Olweus, 2004), which target areas such as, resilience, anxiety, and bullying are being implemented in a number of divisions (e.g., British Columbia Ministry of Children and Family Development, 2012). These programs aim to provide students with life skills to better equip them to address everyday problems, cope with emotions, improve peer relations, and reduce or prevent bullying problems (Barrett et al., 2006; Olweus, 2004). Findings from the current study indicate that these types of programs should also foster active, problem-focused coping skills in children to potentially reduce anxiety symptoms. Results also suggest that avoidance and support seeking coping strategies should not be encouraged. The potential problems with support seeking coping strategies have particularly interesting implications for prevention and intervention programs given that

many programs encourage students to seek support from others to assist in addressing problems (e.g., Barrett et al., 2006). It is possible that children can exhibit a spectrum of support seeking behaviours that range from talking with peers about issues to being dependent on parents for solving problems and it is likely that parts of those strategies may be more adaptive than others (Sheffield Morris & Ricard Age, 2009). While future research should investigate this further, the current implication from this study is that we should teach children to learn ways to directly deal with their own problems and ensure that they are not relying too heavily on others for support.

In addition, a current goal for cognitive behaviour therapy (CBT), one of the primary interventions used to treat anxiety problems (Kendall et al., 1997), is to support self-confidence (Rudolph & Lambert, 2007). Results from this study support the promotion of self-confidence in children and have potential implications for the importance of both self-efficacy and coping efficacy as therapeutic outcome variables. Given the theoretical similarities between coping efficacy and self-efficacy (e.g., Bandura, 1997), these results suggest that both coping efficacy and self-efficacy should be targeted in interventions for anxiety difficulties. CBT also involves teaching children new and more effective coping strategies for dealing with problems in their environment and ways to regulate their emotions (Kendall, 2006). This research supports these current CBT approaches because increases in the perceptions of coping efficacy were associated with decreases in reported anxiety symptoms.

This study also demonstrated the potential usefulness of the SCAS, CCSC-R1, and CCSEQ for use with community-based samples of Canadian children. Specifically, given limited resources for psychological assessments, it is important to develop tools

that can quickly, reliably, validly assess for difficulties with anxiety (Li et al., 2011). The SCAS has previously demonstrated its usefulness in this regard across a variety of samples and cultural groups (e.g., C. A. Essau et al., 2011; Muris et al., 2000; Whiteside & Brown, 2008). Results from this study provide some further support for its utility to measure levels of anxiety symptoms in children selected from community samples in Canada.

#### **5.4 Strengths, Limitations, and Future Directions**

The current study had a number of strengths and limitations. The primary strengths relate to the sample, methods, and statistics used. The sample size was large (over 500 hundred children) and statistically over-identified, which is preferable when estimating population parameters using SEM (R. L. Brown, 1997). Also, data were collected from a community-based sample, which provides unique information about typically developing children, a population that has been neglected in the research literature (Gullone, 2000; Weems & Silverman, 2008). Data collection followed standard practices using methods widely accepted to reduce discomfort with research participation (Sheffield Morris & Ricard Age, 2009). Using SEM was a major statistical strength for the reasons highlighted in the previous section. Additionally, the factor structure and internal consistency were tested for all questionnaires used and findings suggested that the questionnaires were performing well. Finally, information was obtained through self-report, which is arguably the best method of measuring constructs such as anxiety and coping because those constructs are highly subjective (Sheffield Morris & Ricard Age, 2009).

However, despite its strengths and promising results, this investigation had some limitations that stage the directions for future research. To start, although these findings strongly suggest that active coping and coping efficacy are associated with lower levels of anxiety symptoms and that avoidance and support seeking coping are associated with higher levels of anxiety, the lack of knowledge of individual, situational, and contextual factors limits generalization of results. Future research should investigate individual, situational, and contextual variables (e.g., current stress levels, family situation) in concert with coping factors and anxiety to more accurately and thoroughly understand these relationships.

Additionally, the coping measures employed in this study (i.e., CCSC-R1 and CCSEQ) were developed for use with children who had experienced a recent significant stress (e.g., divorce of their parents), and as such, there is some concern about using them in this population. Despite the adequate factor structure and internal consistency estimates found in this research, it is possible that the measures were not perfectly suited to collecting data from community-based children. Related to this, only factor structure and internal consistency were analyzed; other forms of validity and reliability were not considered. Thus, some information is absent regarding the psychometric properties of these measures. Future studies would benefit from investigating additional forms of validity (e.g., convergent and discriminant) and reliability (e.g., test-retest) to better assess psychometric properties.

Another methodological limitation of this study is the exclusive use of self-report. Obtaining data solely from children's self-report may produce biased estimated of these constructs in children (Weems et al., 2007). Moreover, while there is some research to

suggest that children as young as eight are reliable reporters of their own behaviour (e.g., Ialongo, Edelsohn, Werthamer-Larsson, Crockett, & Kellam, 1994, 1995) and that children's self reports are consistent with how their peers (Causey & Dubow, 1992) and mothers (Glyshaw, Cohen, & Towbes, 1989) view their coping efforts, other evidence indicates that children under the age of 11 may have difficulty answering complex questions regarding their behaviour and emotions (Schniering, Hudson, & Rapee, 2000). The use of multiple informants in the future would likely shed more light on the complex relationships among the factors of interest.

The current study is also limited by data collection occurring concurrently. Data collected concurrently cannot provide as strong evidence of meditational processes as longitudinal data (Smith et al., 2006) and cannot provide evidence of cause and effect (Cole & Maxwell, 2003). According to Cole and Maxwell (2003), the optimal research design for testing mediation is to measure the predictor, the mediator, and the outcomes across at least three different time points. That way, cause and effect can be established. Because data for this study was collected at one time point, the meditational findings are less robust than longitudinal data may have been and results cannot provide information about cause and effect. Despite not being able to examine cause and effect, the model tested in this study is justifiable based on logical assumptions as well as theoretical and empirical evidence. In the future, using longitudinal models will be especially important, as it is not yet clear how coping relates to anxiety symptoms over time (Sandler, Tein, et al., 2000). It will also be important to examine other potential mediating and moderating variables. Another avenue for future exploration is to use randomized control studies to

determine how the modification or use of particular coping strategies may reduce or increase symptoms of anxiety and other mental health problems over time.

Finally, there was limited demographic information collected. For example, there is no information about factors such as socioeconomic status, ethnicity, academic achievement, and cognitive functioning, all of which could impact results. In the future, it would be interesting and informative to examine potential differences in the relationships between coping and anxiety based on these factors. Further, children were only sampled from one urban centre in western Canada so results may not generalize to children from other communities in Canada, suggesting that research of this nature should also occur in other areas of Canada. Another potential problem relates to using a school-based (community) sample of children. Given that participants had a low prevalence of clinically significant anxiety, findings from this study do not generalize to clinical populations. The next generation of research may benefit from comparing community and clinical populations.

## **5.5 Conclusion**

Understanding the development and course of anxiety symptoms in children is complicated. The best description of where the field currently stands states that the development of childhood anxiety is multi-determined, interactive, transactional, and nonlinear (Hinshaw, 2008). Despite its limitations, this study provides important evidence of the relationships among and between coping strategies, coping efficacy, and childhood anxiety symptoms and expands our knowledge of childhood anxiety symptoms. The current research sets the path for future research directions, whereby relations among coping strategies, coping efficacy, and anxiety symptoms should be

further explored. A comprehensive understanding of the relations between coping and anxiety symptoms in children, provides guidance for prevention and treatment efforts for typically developing children and those children at risk for developing mental health difficulties, such as anxiety, which is arguably the ultimate research goal.

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## Appendix A – Items from the SCAS

<b>Item No.</b>	<b>Item</b>
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 morning 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 doctor's or dentist's.
24. When I have a problem, I feel shaky.
25. I am scared of being in high places or 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 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 from 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?

## Appendix B – Items from the CCSEQ

<b>Item No.</b>	<b>Item</b>
1.	Sometimes things people do to handle their problems work really well to make the situation better and sometimes they don't work at all to make the situation better. Overall, how well do you think that the things you did during the last month worked to make the situation better?
2.	Sometimes things people do to handle their problems work really well to make them feel better and sometimes they don't work at all to make them feel better. Overall, how well do you think that the things you did during the last month worked to make you feel better?
3.	Overall, how satisfied are you with the way you handled your problems during the last month?
4.	Overall, compared to other kids, how good do you think that you have been at handling your problems during the last month?
5.	In the future, how good do you think that you will usually be at handling your problems?
6.	Overall, how good do you think you will be at making things better when problems come up in the future?
7.	Overall, how good do you think you will be at handling your feelings when problems come up in the future?

## Appendix C – Items from the CCSC-R1

Note: All items begin with: “When you had problems in the past month...”

- | <b>Item No.</b> | <b>Item</b>   |
|-----------------|---|
| 1.              | You thought about what you could do before you did something.           |
| 2.              | You tried to notice or think about only the good things in your life.   |
| 3.              | You tried to ignore it.   |
| 4.              | You told people how you felt about the problem.                         |
| 5.              | You tried to stay away from the problem.                                |
| 6.              | You did something to make things better.                                |
| 7.              | You talked to someone who could help you figure out what to do.         |
| 8.              | You told yourself that things would get better.                         |
| 9.              | You listened to music.  |
| 10.             | You reminded yourself that you are better off than a lot of other kids. |
| 11.             | You daydreamed that everything was okay.                                |
| 12.             | You went bicycle riding.  |
| 13.             | You talked about your feelings to someone who really understood.        |
| 14.             | You told other people what you wanted them to do.                       |
| 15.             | You tried to put it out of your mind.                                   |
| 16.             | You thought about what would happen before you decided what to do.      |
| 17.             | You told yourself that it would be OK.                                  |

18. You told other people what made you feel the way you did.
19. You told yourself that you could handle this problem.
20. You went for a walk.
21. You tried to stay away from things that made you feel upset.
22. You told others how you would like to solve the problem.
23. You tried to make things better by changing what you did.
24. You told yourself you have taken care of things like this before.
25. You played sports.
26. You thought about why it happened.
27. You didn't think about it.
28. You let other people know how you felt.
29. You told yourself you could handle what ever happens.
30. You told other people what you would like to happen.
31. You told yourself that in the long run, things would work out for the best.
32. You read a book or magazine.
33. You imagined how you'd like things to be.
34. You reminded yourself that you knew what to do.
35. You thought about which things are best to do to handle the problem.
36. You just forgot about it.
37. You told yourself that it would work itself out.

38. You talked to someone who could help you solve the problem.
39. You went skateboard riding or roller skating.
40. You avoided the people who made you feel bad.
41. You reminded yourself that overall things are pretty good for you.
42. You did something like video games or a hobby.
43. You did something to solve the problem.
44. You tried to understand it better by thinking more about it.
45. You reminded yourself about all the things you have going for you.
46. You wished that bad things wouldn't happen.
47. You thought about what you needed to know so you could solve the problem.
48. You avoided it by going to your room.
49. You did something in order to get the most you could out of the situation.
50. You thought about what you could learn from the problem.
51. You wished that things were better.
52. You watched TV.
53. You did some exercise.
54. You tried to figure out why things like this happen.