PREVENTING ANXIETY DISORDERS IN YOUTH:

UNIVERSAL SCHOOL-BASED INTERVENTION

by

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ABSTRACT

Childhood anxiety disorders are highly prevalent, cause significant distress and functional impairment, are risk factors for depression, suicidal ideation and attempts, substance abuse and smoking, yet often go unrecognized and untreated. As a result, effective prevention and early intervention have become policy and research priorities.

This study evaluated the effectiveness of a universal school-based cognitive behavioural intervention in decreasing anxiety symptoms experienced by early adolescents during the transition from elementary to middle or secondary school. The role of gender, coping style, geographic location, and timing of the intervention were also assessed.

Participants were 722 grade 7 and 8 students (11 – 14 years) from 41 classrooms in 20 randomly selected public schools in British Columbia. Schools were randomly assigned to either the FRIENDS for Youth program provided within regular classrooms, one hour weekly for 10 weeks or to a waitlist control group. Self-reported anxiety, depression and coping, and parent and teacher assessed difficulties were assessed at pre-, post, and six month follow-up. Results were examined universally and for children who scored above the clinical cut-off for anxiety at pre-test.

Results indicate students, including those "at risk", who participated in the FRIENDS for Youth program had lower anxiety than those in the control group at 6-month follow-up. Gender differences in self-reported anxiety as well as in response to the intervention were found, with girls, including those "at risk" reporting higher anxiety scores than boys, and intervention group girls reporting significantly lower anxiety scores at post-intervention and at 6-month follow-up compared to the control group.

Teachers assessed girls as having lower difficulties scores than boys, and intervention group girls reporting significantly lower difficulties scores at post-intervention than the control group. Grade 7 elementary students had significantly lower anxiety scores

than middle school students and grade 7 students in the intervention group had significantly lower anxiety scores at post-intervention than the control group.

Overall, intervention effects on anxiety were small. For "at risk" participants and for girls, however, the intervention was effective. Results demonstrated a prevention effect with significantly fewer "at risk" students at 6-month follow-up in the intervention group than the control group.

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CHAPTER 1. INTRODUCTION

Anxiety disorders are the most common mental disorders affecting children (0 to 18 years), with an estimated prevalence rate of 6.4% (Waddell, Offord, Shepherd, Hua, & McEwan, 2002). That means that in the province of BC approximately 64,000 children are affected by anxiety disorders, and in Canada approximately 503,000 children are affected (Waddell, Shepherd, & Barker, 2007).

Feeling anxious or frightened is common in childhood, but in most cases these feelings do not interfere with day-to-day functioning. However, in a subgroup of children, fear and anxiety take on clinical characteristics in terms of severity and chronicity and ultimately develop into an anxiety disorder. Anxiety disorders interfere significantly with children's adaptive functioning in the areas of interpersonal relations, social competence, peer relations, and school adjustment (Last, Hansen, & Farnco, 1997). Children with anxiety disorders are at increased risk of developing other anxiety disorders and depression (Cole, Peeke, Martin, Truglio, & Seroczynski, 1998; Orvaschel, Lewinsohn, & Seeley, 1995) as well as substance use disorders, and smoking (Le Fauve, Litten, Randall, Moak, Salloum, & Green, 2004). The presence of any anxiety disorder is also a risk factor for suicidal ideation and attempts; if a mood disorder is also present, this risk is increased further (Sareen, Cox, Afifi, de Graaf, Asmundson, & ten Have, 2005).   If left untreated, clinical symptoms of anxiety in childhood frequently follow a chronic course (Orvaschel et al., 1995) and often continue into adulthood (Kessler, Berglund, Demler, Jin, Merikangas, & Walters, 2005).

Anxiety disorders in children are one of the most common reasons for referral to mental health care providers (March & Albano, 1998), and the leading reason people of all ages visit their family physician (Wittchen, Nelson, & Lachner, 1998). However, anxiety in children and adolescents often goes unrecognized and untreated. Children with

internalizing disorders such as anxiety disorders tend to be well behaved and quiet, and thus their symptoms are not noticed by busy parents and teachers.

Randomized controlled trials have demonstrated the effectiveness of clinical interventions, most notably cognitive-behavioural therapy (CBT), for treating child and adolescent anxiety disorders (Barrett, Duffy, Dadds, & Rapee, 2001; Kendall, Flannery-Schroeder, Panichelli-Mindel, Southam-Gerow, Henin, & Warman, 1997; Kendall & Gosch, 1994; Kendall & Southam-Gerow, 1996). However, the prevalence of these disorders far exceeds treatment capacity in most jurisdictions; as many as 75% of children with disorders fail to receive needed specialized treatment services (Waddell, McEwan, Shepherd, Offord, & Hua, 2005).

The fiscal and social costs associated with anxiety disorders are significant due to both the high prevalence and the untreated prevalence. Anxiety disorders account for a large portion of the burden of disease in Western countries (Greenberg, Sisitsky, Kessler, Finkelstein, Berndt, Davidson, 1999). It is calculated (for adult populations) that just two anxiety disorders, panic disorder and obsessive-compulsive disorder, account for 10.9% of the total disability adjusted life years in developed countries, more than that accounted for by breast cancer, HIV, or diabetes (Murray & Lopez, 1996).

There are no published studies of the direct and indirect costs of anxiety in Canada. A 1999 USA study (Greenberg et al., 1999) estimated the annual cost of anxiety disorders, including the direct costs of treatment and the indirect costs of impaired social functioning, at $42 billion USD and reported that anxiety disorders accounted for nearly one third of the total costs imposed by mental disorders and represents the most costly of all disorders (Rice & Miller, 1998). Given the high prevalence rate, the potentially serious consequences, and the high costs of anxiety disorders, effective prevention and early intervention strategies have become research and policy priorities (Donovan & Spence, 2000; World Health Organization, 2004a).

To date, published research studies on the universal prevention of anxiety disorders in children in school settings that meet the rigorous requirements to establish efficacy and effectiveness are sparse. Two studies examining a universal school-based cognitive-behavioural intervention, the FRIENDS program, delivered in the classroom by either trained teachers or psychologists, meet these standards for establishing effectiveness. In both of these studies children in the intervention groups showed significant reductions in anxiety symptoms from pre to post-assessment compared to children from the control groups, providing support for the effectiveness of this type of program in preventing childhood anxiety. Limitations of these studies include the use of sample populations from urban non-secular schools, and lack of information from multiple informants. Only one of these studies included data about the FRIENDS for Youth program.

Historically, Canadian public policy for children's mental health has primarily emphasized treatment services (Waddell et al., 2005). More recently, due in part to recognition that treatment services alone will never be able to address the high untreated prevalence of mental disorders in children (Offord, Kraemer, Kazdin, Jensen, & Harrington, 1998), interest has shifted to preventive interventions, including those that target anxiety in young people. By intervening before disorders emerge, prevention programs have the potential to reduce the number of children who develop anxiety disorders, as well as to reduce morbidity. Yet prevention remains a low priority in Canadian public policy and few such programs exist (Waddell, McEwan, Peters, Hua, & Garland, 2007). In part, this stems from limited research literature on preventive interventions for anxiety as a basis to inform needed policy direction. Though the emerging research is encouraging, policy makers are in the position of having to make difficult decisions about program investments based on insufficient knowledge. The broad dissemination of new preventive interventions is costly and such an investment clearly cannot be justified unless there is convincing evidence of both efficacy and effectiveness. Many studies produce evidence of the efficacy of

interventions, demonstrating an intervention works in ideal laboratory conditions. There are far fewer studies of effectiveness, which establish benefit in "real world" settings. The primary goal of this study was, therefore, to investigate empirically the effectiveness of a universal school-based anxiety prevention program in a typical Canadian classroom.

1.1   Study Description

Study participants were grade 7 and 8 students from 41 classrooms in 20 randomly selected public schools in British Columbia (BC). Out of a possible 1,039 students, parental consents to participate were received from 722 children (70%), 339(47%) males and 383 (53%) females. Schools were randomly assigned to either a school-based cognitive behavioural (CBT) intervention or to a control group resulting in 411 participants in the intervention group and 311 in the control group.

Participants completed three self-report questionnaires at pre-intervention, post-intervention and 6-month follow-up. Changes in anxiety symptoms were measured using the Multidimensional Anxiety Scale for Children (MASC: March, 1997). Because of the observed relationship between anxiety and depression, changes in self-reported depression were also measured, using the Center for Epidemiologic Studies-Depression Scale for Children (CES-DC) (Radloff, 1977). Anxiety disorders in late childhood and early adolescence are a known risk factor for depression in later adolescence and early adulthood. Changes in coping style, thought to be a risk factor for anxiety, were measured using the Coping Scale for Children and Youth (CSCY) (Brodzinsky, Elias, Steiger, Simon, Gill, & Clarke Hitt, 1992). Parents and teachers of the participants also completed the Strengths and Difficulties Questionnaire (SDQ) (Goodman, 1997), a general measure of children's well-being with an anxiety sub-scale, at the same time points.

The intervention used in this study was the FRIENDS for Youth program (Barrett, Lowry-Webster & Turner, 2004a, 2004b). In this 10 week program, delivered in weekly one

hour sessions by trained classroom teachers as part of the regular curriculum, children learn about the links between thoughts and feelings, and about skills and techniques to cope with and manage anxiety. The program also helps children learn appropriate ways to handle conflict, set goals, and problem-solve in social situations. Children work through a workbook; teachers use a group leaders' manual that describes the activities that need to be implemented in each session. Prior to delivering the program teachers attended a one day training session where they learned about childhood anxiety and about the FRIENDS for Youth program.

In addition to examining the effect of the intervention on self-reported levels of anxiety, depression, and coping style, the role of gender, geographic location (rural, small urban, or urban), and the timing of the intervention (before or after transition between elementary and middle or high school) were assessed. For the purposes of this study rural communities are those with a population of less than 10,000; small-urban communities are those with a population between 10,000 and 150,000; and urban communities are those with populations greater than 150,000.

1.2   Study Significance

Prevention research is in its early stages and seems to show promise. To date two empirical studies have demonstrated the effects of universal school-based cognitive behavioural intervention for child anxiety disorders (Barrett, Farrell, Ollendick, & Dadds, 2006; Barrett, Lock, & Farrell, 2005; Lock & Barrett, 2003; Lowry-Webster, Barrett, & Dadds, 2001; Lowry-Webster, Barrett, & Lock, 2003). The current study sought to advance the current research on preventive intervention for child anxiety by addressing methodological shortcomings of previous studies such as the inclusion of multiple informants, covarying pre-intervention scores, and analysis to account for the cluster effect found in groups such as classrooms.

Previous studies have reported mixed results regarding the effect of universal school-based anxiety preventive intervention on depression. Mixed results have also been reported about the effects of gender on anxiety level and response to preventive intervention. This study adds to the growing understanding of these issues.

Unlike previous research, this study focuses on 12 to 14 year old children as they transition from elementary school to middle or secondary school, an adjustment that is recognized as particularly stressful (Felner, 1993). Information about the anxiety levels experienced by children by grade and school type, as well as their response to the intervention, is important in timing the delivery of anxiety prevention programs for maximum benefit.

This is also the first anxiety prevention study that includes participants attending public schools located in rural and small urban locations as well as urban locations. Participants in previous studies have attended Catholic or non-secular schools in urban locations. Knowledge about the effects of geographic location on anxiety level as well as response to the intervention improves the generalizability of study results.

Results of this study can inform policy and program decisions within the BC Ministry of Children and Family Development, and will also be of interest to the Ministries of Health and Education, and school districts. Study results may be of interest to similar ministries in other Canadian provinces, and to policy makers in other countries considering school-based anxiety prevention strategies.

The next section of the dissertation, Chapter 2, provides an in depth critical review of the prevalence of anxiety disorders in children, as well as an overview of the concepts of anxiety and the factors involved in the development from normal to abnormal anxiety in children. As well, information about research on effective treatment and prevention of childhood anxiety is critically appraised. In Chapter 3 the study hypotheses are presented and methods are discussed including the participants, procedures, measures used, a

description of the intervention, and approaches to analysis. In Chapter 4 the results of the statistical analysis are presented including descriptive statistics, preliminary analysis, and detailed analysis of the effects of the intervention. Chapter 5 provides a discussion of the implications of the study results, the strengths and limitations of the study, and suggestions for future research.

CHAPTER 2. LITERATURE REVIEW

2.1   Prevalence of Anxiety Disorders in Children and Youth

Understanding the number of children affected by anxiety disorders provides the impetus for developing effective approaches to prevention. The purpose of this section is to critically appraise the best currently available research on the prevalence and incidence of anxiety disorders in children (aged 0-18 or 19 years) with particular attention to research design, measurement methodologies, possible biases and confounders and analysis. Prevalence (the total number of people affected in a population at any given time) estimates of childhood anxiety disorders presented in the literature vary in relation to a number of methodological factors. These include the age of children, the nature of the population studied (e.g., clinical or community population), the assessment used (e.g. questionnaires or diagnostic interviews), the informants (e.g., child, teacher or parent), the diagnostic criteria used for determining an anxiety disorder (Silverman & Treffers, 2001), and cultural factors (Fonesca, Yule, & Erol, 1994). In addition, some studies examine lifetime prevalence of anxiety disorders, while other studies examine the incidence, or current prevalence, of anxiety disorders. The best prevalence estimates come from studies that assess the general (not clinical) population, collect information from multiple informants, and employ rigorous diagnostic assessments.

2.1.1   Review of Epidemiological Studies

In selecting studies for this review, original articles published in English over the past 20 years were identified using Medline, PubMed, and PsychInfo. Search terms included *child* (0 – 18 years), *epidemiology, prevalence, mental disorders* and *anxiety*. As the current research was conducted in Canada, particular attention was paid to studies of populations similar to Canada. Inclusion criteria used are similar to those used by Waddell

et al. (2002) and included studies that assessed representative community samples of at least 900 individuals, included children and/or adolescents and both boys and girls, employed standardized assessment protocols for evaluating clinically important symptoms based on the DSM (III or later), specifically assessed impairment, included reports from multiple informants, reported overall prevalence rates for mental disorders and prevalence rates for anxiety disorders (Waddell et al., 2002).

The following seven studies met criteria for inclusion in this review: the Quebec Child Mental Health Survey (QCMHS) (Bergeron, Valla, Breton, Gaudet, Berthiaume, & Lambert, 2000; Breton, Bergeron, Valla, Berthiaume, Gaudet, & Lambert, 1999), the Great Smoky Mountain Study (GSMS) (Burns, Costello, Angold, Tweed, Stangl, & Farmer, 1995; Costello, Angold, Burns, Stangl, 1996; Ezpeleta, Keeler, Erkanli, Costello, & Angold, 2001), the National Institute of Mental Health (NIMH) Methods for the Epidemiology of Child and Adolescent Mental Disorders (MECA) Study (Lahey, Flagg, Bird, Schwab-Stone, Canino, & Dulcan, 1996; Leaf, Alegria, Cohen, Goodman, Horwitz, & Hoven, 1996; Shaffer, Fisher, Dulcan, Davies, Piacentini, & Schwab-Stone, 1996), the British Child Mental Health Survey (BCMHS) (Goodman, Ford, & Meltzer, 2002; Goodman, Ford, Richards, Gatward, & Meltzer, 2000; Meltzer, Gatward, Goodman, & Ford, 2000), the Dunedin Birth Cohort Study (Dunedin) (Anderson, Williams, McGee, & Silva, 1987; Feehan, McGee, Raja, & Williams, 1994; McGee, Feehan, Williams, Partridge, Silva, & Kelly, 1990), the Dutch National Adolescent Survey (DNAS) (Verhulst, Van der Ende, Ferdinand, & Kasius, 1997), and the Child Psychiatry Epidemiologic Study in Puerto Rico (PRCPES) (Bird, Gould, & Staghezza, 1993; Canino, Shrout, Rubio-Stipec, Bird, Bravo, & Ramirez, 2004). The Ontario Child Health Study (Offord, Boyle, Fleming, Blum, & Grant, 1989; Offord, Boyle, Racine, Fleming, Cadman, & Blum, 1992; Offord, Boyle, Szatmari, Rae-Grant, Links, Cadman, 1987), a very important Canadian epidemiological study, was not included in this review as it did not include specific prevalence rates for anxiety disorders.

Table 2.1, which summarizes study characteristics, methodology, overall and anxiety prevalence rates for all seven studies, is based on the format used by Waddell et al. (2002). It shows some similarity among studies regarding sample size, age, and basic methodology, however, studies differed considerably in assessment procedures and the ways they coped with discrepant information from multiple informants such as teachers, parents and youth (self-report), a critical design issue. The studies also differed in their choice and application of impairment criteria. Prevalence for any mental disorder ranged from 9.5% to 22%. Anxiety prevalence ranged from 3.8% in the BCMHS (Goodman et al., 2002) to 10.7% in the Dunedin (McGee et al., 1990).

Many children and youth who meet criteria for one anxiety disorder also exhibit other psychiatric disorders, termed comorbidity (the co-existence of more than one disorder at the same time). Comorbidity rates vary according to sample and differences in methodology. Both clinical and community studies show that comorbidity is most common among the anxiety disorders and between anxiety and depression (Caron & Rutter, 1991). Two studies in this review included comorbidity rates between anxiety and depression. For example the GSMS found that 25.17% of children with anxiety disorders also met criteria for depression (Ezpeleta et al., 2001). The BCMHS found very similar results with 27% of children with anxiety disorders meeting the criteria for depression (Goodman et al., 2002).

In the four studies that reported on gender, the prevalence of anxiety disorders in girls was higher than in boys (Bergeron et al., 2000; Canino et al., 2004; Costello et al., 1996; McGee et al., 1990). Age is also a factor, with rates of anxiety disorders generally increasing with age (Costello et al., 1996; McGee et al., 1990). Interestingly the QCMHS found the rates of anxiety disorders in girls increased with age, but not in boys (Bergeron et al., 2000). Anxiety prevalence rates were not significantly different between urban and rural populations in the three studies that measured this variable (Bergeron et al., 2000; Costello et al., 1996; Goodman et al., 2002).

Table 2.1. Epidemiological Study Characteristics

	Studies Reviewed						
Characteristics	**QCMHS[1]**	**GSMS[2]**	**MECA[3]**	**BCMHS[4]**	**DNAS[5]**	**PRCPES[6]**	**Dunedin**
Location	Quebec	North Carolina, USA	Connecticut, Georgia, New York, Puerto Rico, US	England, Scotland, Wales	Holland	Puerto Rico, US	Dunedin, New Zealand
Sampled Population	All children living in a household	All children attending public school in 11 rural counties	All children living in household in 8 urban counties	All children living in a household	Dutch adolescents living in Holland in 1996	All children living in households on the island of Puerto Rico	Children born between April '72 and March '73 in Dunedin
Excluded from sample	Mental or sensory disabilities; residence on First Nations Reserve	First Nations children	Primary language other than English or Spanish	No postal code for household address	Severe physical or mental handicap, language other than Dutch	none	severe intellectual handicap
Sample size	2004	1015	1285	10438	2709	1886	930
Age of subjects	6-14 years	9,11,13 years	9-17 years	5-15 years	13-18	4 – 17 years	15, 18 years
Follow-up	N/A	Longitudinal cohort study	N/A	After 18 months	N/A	One year	Longitudinal cohort study
Diagnostic criteria	DSM-III-R	DSM-III-R	DSM-III-R	DSM-IV, ICD-10	DSM-III-R	DSM-IV	DSM-III-R
Assessment of symptoms	DISC[a]; Dominic	CAPA[b]	DISC[a]	DAWBA[c], SDQ[d]	DISC[a]	DISC[a]	18 yrs -DSM (III-R); 15 yrs – abbreviated DISC-C[h]
Assessment of impairment	DISCa; Dominic	CAPA[b], CGAS[e], CAFAS[f], SIS[g]	DISC[a], CGAS[e]	DAWBA[c], SDQ[d]	DISC[a], CGAS[e]	DISC[a], CGAS[e]	18 yrs -DIS (III-R); 15 yrs – abbreviated DISC[a]

Table 2.1, continued

	Studies Reviewed						
Characteristics	**QCMHS[1]**	**GSMS[2]**	**MECA[3]**	**BCMHS[4]**	**DNAS[5]**	**PRCPES[6]**	**Dunedin**
Informants	Children, parents, teachers	Children, parents	Children, parents	Children (11-16 yrs), parents, teachers	Adolescents, teachers, parents	Children, teachers, parents	15 yrs – adolescent & parent; 18 yrs - adolescent
Definition of caseness	Prevalence rates reported separately by informant	Computer algorithms, child or parent report	Computer algorithms, child or parent report	Computer assisted clinician ratings	Computer algorithms, child or parent report	Computer algorithms, child or parent report	15 yrs – child and parent report; 18 yrs – adolescent report
Overall prevalence of mental disorders	12.70%	20.30%	12.80%	9.50%	21.50%	16.40%	22%
Prevalence of Anxiety disorders	7.00%	5.70%	9.60%	3.80%	10.50%	6.90%	10.70%

Notes:
1. Quebec Child Mental Health Survey;
2. Great Smoky Mountains Study;
3. National Institute of Mental Health Methods for the Epidemiology of Child and Adolescent Mental Disorders Study;
4. British Child Mental Health Survey;
5. Dutch National Adolescent Survey;
6. Child Psychiatric Epidemiological Study of Puerto Rico

a. Diagnostic Interview Schedule for Children;
b. Child and Adolescent Psychiatric Assessment;
c. Development and Well-Being Assessment;
d. Strengths and Difficulties Questionnaire;
e. Children's Global Assessment Scale;
f. Child and Adolescent Functional Assessment Scale;
g. Social Interactions Survey

Three of the studies reviewed estimated the prevalence of anxiety disorders in ethnic minority groups and no differences were found.   This finding is consistent with a number of other studies. Last and Perrin (1993) compared the prevalence of anxiety disorders in a clinical sample of African-American children with Caucasian children and found that, based on parent and child self-report and clinical interview, African-American and Caucasian children showed similar rates of anxiety symptoms and diagnosis. The 1996 study by Casper, Belanoff, & Offer (1996) reported consistent results in their study, which compared psychiatric symptoms in Caucasian, Asian, African-American and Hispanic adolescents aged 16 to 18 years. All adolescents, regardless of race, reported similar psychiatric symptoms, suggesting ethnicity is not a vulnerability factor.

Two studies, the Early Developmental Stages of Psychopathology (EDSP) (Wittchen et al., 1998) and the Christchurch Health and Development Study (CHDS) (Fergusson, Horwood, & Lynskey 1993), came very close to meeting inclusion criteria. The EDSP study was not included because the upper age range was above 19 years and data were gathered from only one informant. Given that the reliability of self-report information increases as adolescents get older and the accuracy of parent information decreases, that approach seemed reasonable in this study. The CHDS was not included because it did not include a measure of impairment. In other respects these studies are very similar to the studies presented in Table 2.3.

It is interesting to note the similarities in the overall prevalence of mental disorders and the prevalence of anxiety disorders between the EDSP study, the MECA study, the Dunedin study and the CHDS. The participants in all of these studies are adolescents. The prevalence rates in these studies are higher compared to the overall prevalence rates and anxiety prevalence rates in the studies that included younger children, which is consistent with previous reports.

Both the CHDS and the Dunedin study were conducted in New Zealand. Although the CHDS did not include a measure of impairment, when prevalence rates were calculated using information from mothers only, the overall prevalence rate of 25.7% and the anxiety prevalence rate of 10.7% (Fergusson et al., 1993) are very close to the overall prevalence rate of 22% and anxiety prevalence rate of 10.7% reported in the Dunedin study (McGee et al., 1990). The Dunedin Study did not include substance use disorders in their prevalence rate, which may explain the slightly higher overall prevalence rate in the CHDS (McGee et al., 1990). This review of epidemiological/prevalence studies from the last two decades confirms that anxiety disorders are the most prevalent mental disorders in childhood. Understanding the large numbers of children affected reinforces the need for effective prevention programs.

2.1.2 Classification

The understanding of childhood anxiety disorders is largely a function of the ability to identify, classify and measure these phenomena. The *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV-TR)* (American Psychiatric Association, 2000) and the *International Classification of Disorders* (10th edition) (*ICD-10*) (World Health Organization, 1992) are the accepted classification systems in use today (Clark, Watson, & Reynolds, 1995). The next section discusses the influence of these approaches to classification on identification and clinical thinking.

The two systems of classification commonly applied in the area of anxiety disorders in children are categorical and dimensional. The *DSM-IV-TR*, a categorical classification system, is the most widely used (Werry, 1994). Diagnostic and statistical manuals evolved from a need to collect uniform data in psychiatric hospitals in the early 1900s. It was not until after World War II that a more detailed and comprehensive diagnostic nomenclature based on a system developed by the Armed Forces and modified by a survey of the American

Psychiatric Association members was developed for general use. As new editions of the *DSM* have been prepared, many definitional decisions have been made on the basis of expert consensus and opinion rather than empirical data.

The DSM categorical approach is descriptive, emphasizing observed or reported clinical features rather than underlying causal mechanisms. DSM disorders are not grouped on aetiological or theoretical grounds, but are placed into major classes on the basis of shared symptoms. The categorical approach to classification assumes that emotional, behavioural, cognitive, and physiological symptoms of psychopathology cluster together to form discrete disorders that are clearly identifiable and distinct from each other. Most *DSM* diagnoses are based on meeting a certain number of equally weighted criteria. Table 2.2 presents a summary of anxiety disorders as listed in the *DSM-IV-TR*.

A much broader classification system, the *ICD-10*, is the reporting system used by all member nations of the United Nations in reporting national data. Similar to the *DSM-IV*, the *ICD-10* aggregates all anxiety disorders into a single category, with a number of subcategories, which differ somewhat from the *DSM-IV-TR*. In recent years, a considerable effort has been made to integrate the categories and descriptions of the *DSM-IV-TR* and the *ICD-10*.

Application of a categorical classification system to the area of mental disorders has resulted in some challenges, including identifying the distinction between "normal" and "abnormal". Measurement of many disorders in child psychiatry relies on the distribution of symptoms with strong dimensional characteristics (e.g., many children have a few symptoms and as the symptom count increases the number of affected children decreases). The issue then becomes where to set the threshold that separates children into those who are and are not "disordered", as the threshold point will significantly affect measured prevalence (Offord, 1995). Whenever a diagnosis is to be used to make a clinical decision, a categorical diagnosis is necessary. Clinicians must decide whether or not to treat a patient,

Table 2.2. *DSM IV-TR* Classification of Anxiety Disorders

Anxiety Disorder	Essential Features
Generalized anxiety disorder	Enduring and excessive anxiety and worry (apprehensive expectation) about a number of events and activities
Separation anxiety disorder	Excessive anxiety concerning separation from the home or from those to whom the person is attached.
Specific phobia	Marked and persistent fear of clearly discernible, circumscribed objects or situations. Five types: animal, situational, blood-injection-injury, natural environment, and other.
Panic disorder	The presence of recurrent, unexpected panic attacks, i.e., discrete periods of intense fear that are accompanied by somatic and cognitive symptoms. There is also persistent concern about having another panic attack, worry about the implications or consequences of the panic attacks, or a significant behavioural change related to the attacks.
Agoraphobia	Anxiety about being in places or situations from which escape might be difficult or in which help may not be available in the event of having a panic attack or panic-like symptoms.
Social phobia	Marked and persistent fear of social or performance situations in which embarrassment may occur.
Obsessive-compulsive disorder	Recurrent obsessions and/or compulsions. Obsessions are persistent ideas, thoughts, impulses, or images that are experienced as intrusive and inappropriate and that cause marked anxiety or distress. Compulsions are repetitive behaviors or mental acts, the goal of which is to prevent or reduce anxiety or distress.
Post-traumatic or acute stress disorder	Following exposure to an extreme traumatic stressor, which elicited intense fear, helplessness, or horror, the person develops a characteristic pattern of symptoms including re-experiencing the traumatic event, persistent avoidance of stimuli associated with the trauma, and increased arousal.

 (Source: Adapted from the Diagnostic and Statistical Manual of Mental Disorders: DSMIV-TR (4th ed.))

to recommend hospitalization or not, or whether to use a particular therapy (Kraemer,

Noda, & O'Hara, 2004). In research the use of categorical diagnosis provides a standardized

way to define, measure and organize results, which then become the basis upon which

clinicians make decisions about which treatments to select.

In a study by Angold and colleagues (1999), the extent to which the prevalence of

psychiatric disorder is underestimated was assessed by considering the characteristics of

children with psychosocial impairment who do not meet DSM-IV criteria for any psychiatric

diagnoses. Results indicated that 52% of service users in the Great Smoky Mountain Study did not meet criteria for diagnosis, but did have significant functional impairment (Angold, Costello, Farmer, Burns, & Erkanli, 1999), suggesting that the current distinction between normal and abnormal for some disorders may not be appropriate. Such findings have resulted in the recognition that there must be research on the validity of diagnostic criteria in relation to functional impairment. Unfortunately, there is little evidence that current thresholds set for child psychiatric disorders do correspond to the degree of functional impairment (Offord, 1995).

The distinction between disorders is another area of controversy resulting from use of the DSM classification system. The high degree of comorbidity evident in large-scale community surveys raises questions regarding the extent to which these disorders are actually separate entities. There is little evidence that within the externalizing and internalizing domains, the disorders have unique patterns or syndromes of associated features (Werry, Reeves, & Elkind, 1987). The combination of a high degree of comorbidity and the lack of a distinct matrix of associated features for many of the disorders, has led to speculation that the categories within existing classification symptoms may be overly refined (Offord, 1995). The underlying assumption of the categorical approach is that each anxiety disorder can be recognized as qualitatively distinctly different from the others by the primary focus of the child's anxiety. However, there is considerable overlap in the defining symptoms between some of these diagnostic categories.

A further criticism of the categorical approach in relation to identification is the largely arbitrary and dichotomous nature of diagnoses, which specifies that a certain number of symptoms must be present before diagnoses can be made. Therefore if a child reports a range of symptoms across different anxiety categories but does not meet the minimum number of symptoms for a discrete diagnostic category, the child fails to meet "threshold" for a disorder. Interestingly, Spence (Spence, 1997) used factor analysis to

examine the degree to which children's symptoms of anxiety clustered together in a manner consistent with the *DSM-IV-TR* system of classification of anxiety disorders. Study results supported the factor structure proposed to underlie child anxiety problems according to DSM-IV diagnostic categories. Results also indicated an over-arching anxiety factor consistent with having one main anxiety category (Spence, 1997).

Despite these challenges, the *DSM-IV-TR* categorical classification system continues to be widely used by clinicians, researchers, and educators of many different orientations (biological, psychodynamic, cognitive, behavioural, family/systems). It is used in a variety of settings by psychiatrists, other physicians, psychologists, nurses, social workers, occupational and rehabilitation therapists, counselors and many others. At the very least the *DSM* provides a common language and facilitates accurate communication. The practicality of the *DSM* for selecting participants in treatment research contributes to its widespread use. The categories of disorders can be defined consistently across research studies which increases the likelihood of generalizability of treatments used on children with comparable problems (Eyberg, Schuhmann, & Rey, 1998).

Dimensional models of classification differ from categorical models by postulating the existence of dimensions, or continua, on which all individuals have a score. A dimensional approach recognizes the distribution of emotions and behaviours across the whole population, assuming a normal distribution for the more common symptoms and expressing pathology as an excess or abnormally high burden of symptoms, in either number or severity (Walker, 1990). In this model, anxiety is viewed as existing on a continuum; people experience varying amounts of anxiety.

In the dimensional model, the symptoms constituting the anxiety disorder, as well as the threshold between normal and abnormal anxiety are statistically derived from large samples and are permitted to vary according to the individual's sex and age. As opposed to a committee of experts defining disorders, the dimensional approach consists of asking

parents, teachers and children to complete a large number of questions about the child's behaviour, and then analyzing the responses to derive severity levels and symptom clusters. Assessment in a dimensional model relies on rating scales (Fonesca & Perrin, 2001).

Compared to categorical diagnosis, the dimensional approach has some advantages. It is empirically based, more readily accounts for developmental changes, relies on less costly and easier to administer measures, and provides normative data differentiated by gender and age level (Fonesca & Perrin, 2001). These qualities make the dimensional approach to classification of anxiety very useful as a screening procedure and for community surveys. It is less advantageous in detecting specific or uncommon symptoms in the general population.

2.1.3 Measurement

The accurate assessment of anxiety in children is essential for clinical diagnosis, intervention, formulation, evaluation, and research. Assessment based on a categorical approach to the understanding of anxiety is for the purpose of diagnosis, and is typically undertaken through the use of clinical interviews. Assessment based on a dimensional approach to the understanding of anxiety is undertaken through the use of scaled item questionnaires, where the severity and pattern of a child's symptoms are statistically compared to the normal levels of anxiety reported by children of the same age and gender. The early focus on adult anxiety is also reflected in the area of assessment. Up to the mid 1990s many scales and measures used for children were age-downward extensions of adult measures (Stallings & March, 1995). Consistent with a multi-dimensional concept of anxiety, measures have been developed for psychological, physiological and behavioural symptoms.

Many symptoms of anxiety are internal to the child and may pass undetected by other people. As such, information provided by the child about his or her feelings,

perceptions, or thoughts is important and is typically assessed through self-report measures (Fonesca & Perrin, 2001). Self-report measures are widely used in both clinical and research settings. Developmental considerations such as gender and age-related changes in normal fears, cognition and language, and social desirability influence the veracity of children's self-reported symptoms. There are many self-report measures of anxiety for children and adolescents. They are quick and easy to administer and are cost-efficient, making them particularly useful for screening (Fonesca & Perrin, 2001). Research suggests that self-report measures are generally able to distinguish between anxious children and normal controls and are sensitive to change with treatment. Limitations include their inability to discriminate between anxious children and other psychiatrically disturbed children, to distinguish between the anxiety disorders, and their lack of sensitivity to developmental issues (Schniering, Hudson, & Rapee, 2000). A number of new recently developed self-report measures are better able to assess the different child anxiety disorders (Campbell & Rapee, 1996).

Questionnaires and checklists completed by parents, teachers and other significant adults are another important source of information used to measure child behaviour and anxiety symptoms. Parents and teachers have had the opportunity to observe the child over time, across numerous settings and stages of development. Unfortunately there are no specific parent or teacher measures of childhood anxiety. There are however, several parent/teacher behaviour inventories that include anxiety subscales (Goodman, 1999). Data on interrater reliability, particularly for internalizing scales, indicates substantial discrepancy between parent, child, and teacher ratings (Fonesca & Perrin, 2001).

2.1.4 Summary

Based on this review of large-scale epidemiological surveys it is concluded that anxiety disorders in children and adolescents are a significant public health problem.

Prevalence for any mental disorder ranged from 9.5% to 22%. Anxiety prevalence ranged from 3.8% in the BCMHS (Goodman et al., 2002) to 10.7% in the Dunedin study (McGee et al., 1990). Girls are at greater risk for anxiety disorders than boys, and there was a general increase in prevalence with age. High comorbidity with other anxiety disorders and with depression exists; no differences were found in prevalence across different ethnic groups.

Current identification and measurement of anxiety disorders in children and adolescents occurs predominantly through the *DSM-IV-TR* and *ICD-10* categorical approaches to diagnoses. Primary areas of concern are the boundaries between normal and abnormal, and between different disorders. The ability to identify and measure anxiety disorders in children is a prerequisite for understanding the aetiology and scope of childhood anxiety, which in turn has provided the impetus to establish effective preventive approaches.

2.2   Concepts of Anxiety

The concept of anxiety, a "normal" response to adversity or threat of adversity, is not new. Fearfulness was recorded in the Bible under the term *pachadh*, which was differentiated from the reverential "fear of the Lord" of the true believer (Berrios, 1999). It was during the Classical Greek period that the concept of anxiety originated. Later, Cicero distinguished between *anxietas* (an abiding predisposition) and angor (a transitory emotional outburst or response)(Endler, 2001). While anxiety had previously been recognized in terms of a general state of uneasiness or troubled mind, in the 17th century anxiety became a descriptive category for feelings of fearfulness accompanied by physical symptoms such as tightness in the chest (Bound, 2004). Although it was recognized that certain types of people were more likely to experience anxiety than others, the term did not define the emotionally distressed individual that it does today. For the first half of the 18th century, most cases of anxiety would have been labelled as "hysteria", from the Greek word

for uterus, since the condition was thought to affect mainly women (Bound, 2004). In the 1850's the term "anxiety attack" was first used, redefining anxiety as a pathological mental state. Sigmund Freud's description of "anxiety neurosis" in 1895 was a wider concept that covered anxiety symptoms as well as anxiety attacks (Endler, 2001).

Anxiety has been defined as a trait, a state, a stimulus, a response, a drive, and as a motive (Endler, 2001). Several theoretical positions and models have been advanced to explain the presence of anxiety. In the early 20th century psychoanalytic theory, developed by Sigmund Freud, postulated that anxieties in children aged six years and beyond were almost invariably symbolic expressions of early infantile fears of loss (Westenberg, Siebelink, & Treffers, 2001). Behaviour therapy evolved within the theoretical framework of classical and operant conditioning forming on interventions that work to change behaviour and thereby reduce distressing thoughts and feelings regardless of their origins (Kendall, 1993). With the increasing recognition that person-environment interactions are mediated by cognitive processes, cognitive interventions have assumed a more prominent role, with interventions working to change thoughts as well as feelings, with improvements in functional behaviour following (Kendall, 1993). Cognitive-behavioural therapy (CBT) is a combination of both behavioural and cognitive approaches.

2.2.1 A Developmental Perspective of Child Anxiety

Anxiety is considered a normal emotional response experienced throughout the lifespan representing a reaction of strong feeling arising from the anticipation of a real or imagined threat (King, Hamilton, & Ollendick, 1988). "Normal" anxiety, in children and adults, is considered adaptive in that it activates the "fight or flight" response and serves to motivate the mind and body for performance in new, unfamiliar and challenging situations (Heimberg, 1991).

Anxiety is a multidimensional construct that incorporates physiological, behavioural, and cognitive components (Lang, 1968). At the physiological level, increased heart rate and perspiration are a result of heightened autonomic arousal. At the behavioural level (usually in the presence of the feared stimulus) anxiety is often characterized in children by avoidance or escape, restlessness (pacing), clinging to caregivers, or stuttering (Lang, 1968). At the cognitive level anxiety is characterized by fearful thoughts and worries or distorted ideas about one's performance or safety. Dysfunctional anxiety is considered a self-perpetuating cycle of elevated biological response to stress, debilitated cognition, and avoidance of stressful circumstances (Albano, 1996).

Both adults and children are considered to experience anxiety, but children often express anxiety symptoms differently from adults. The literature indicates that children's experience of anxiety is influenced by changes in cognition and social-cognition, emotional awareness and self-concept that occur throughout the normal course of child development (Schniering, 2000). A recent study examined developmental differences in the expression of childhood anxiety symptoms with three groups of children (6 to 9 years; 10 to 13 years; 14 to 17 years) (Weems, 2005). Results confirmed earlier research indicating that there were systematic age differences in the expression of childhood anxiety symptoms across different age groups. Separation anxiety was predominant in the 6 to 9 year-olds, but steadily decreased as children got older. The opposite pattern was observed for symptoms of generalized anxiety and social phobia, which were relatively infrequent among the youngest group but prevalent during adolescence. This developmental progression in the expression of anxiety symptoms is thought to be significantly influenced by evolving cognitive capacities (Muris, 2007). As Vasey (1993) points out, this is not surprising given that anxiety and worry originate from threat, which must be conceptualized, and conceptualization is dependent on cognitive abilities.

Adolescence has been recognized as a critical period in childhood development – a transitional period characterized by major biological, physical, social role, and psychological changes (Kendall, 2004). During such a period, maladaptive behaviour may be more easily altered in an adaptive direction with intervention (Holmbeck & Kendall, 2002). In fact some have argued that "the transitional nature and disequilibrium of adolescence represents an opportune period for intervention" (Cicchetti & Toth, 1996, p. xiii). The FRIENDS for Youth program is an effort to capitalize on this period of transition in preventing and mitigating early anxiety symptoms.

2.2.2 Cognitive Perspectives

The cognitive view of childhood anxiety disorders assumes that anxiety is mediated by distorted and maladaptive thoughts when no real danger exists (Kendall, 2006; Prins, 2001). Anxious children are thought to judge threats as more serious than they actually are and to underestimate their own coping ability (Kendall & Gosch, 1994). A variety of anxious children's thoughts have been described, including thoughts of being scared or hurt, self-critical thoughts, and thoughts of danger (Barrios & Hartman, 1988). It is important to note that there are many situations where children face very real threats, such as abuse, where anxiety can be both adaptational and protective.

Cognitive-behavioural theories distinguish between four elements of cognition for the purpose of understanding the development of childhood anxiety disorders (Kendall & Gosch, 1994). First, cognitive structures or schemas are considered to guide the processing of information. A schema is an individual's information processing network that has been created and moulded by personal and social experiences. These schemas are then used to view and interpret the current situations. Dysfunctional schemas that focus on themes of threat and danger are seen as the basis for biased interpretations of information. The second element is the content of the cognitive schemas. The third element is the cognitive

operations that impute meaning to environmental input. And the fourth element of cognition is the products, such as thoughts and images, which are thought to result from the interaction of the other three elements.

The cognitive-behavioural theory of childhood anxiety proposes that anxiety disorders result from chronic overactivity or fixation of schemas organized around themes of threat or danger. These overactive schemas are presumed to focus processing resources on threat relevant information in a chronic and exaggerated manner (Prins, 2001). The difference between cognitive deficits and cognitive distortions is particularly important in the cognitive-behavioural theory of child anxiety. Cognitive deficits refer to the lack or insufficient use of an adaptive cognitive skill or activity, for example, a lack of planning (Kendall, 1993). Cognitive distortions refers to thought processes that are biased or erroneous and therefore yield maladaptive thoughts or images, for example, interpreting ambiguous events as threatening (Kendall, 2006).

2.2.3 State versus Trait Anxiety

This concept, first discussed in the 1950's, distinguishes anxiety that is an enduring personality dimension with high stability (trait anxiety), from anxiety that is a response elicited by and fluctuating with particular aversive stimuli and/or aversive situations (state anxiety)(Spielberger, 1985). Severe trait anxiety may qualify as a disorder in itself (e.g., avoidant disorder) and trait anxiety is viewed as a risk factor or vulnerability for state anxiety. Individuals who experience high levels of trait fearfulness, in conjunction with other risk factors, are considered more vulnerable to developing anxiety disorders (Endler, 2001).

Since the mid sixties the state-trait distinction has received wide recognition in the psychological literature (Endler, 2001; Spielberger, 1985). The state-trait distinction has contributed to the development of the multidimensional interaction model of anxiety.

Research continues to expand facets of the state-trait concept as a construct underlying the development and maintenance of anxiety disorders (Endler, 2001).

2.2.4 Normal Anxiety in Children and Adolescents

Children typically express anxiety periodically during their development to adulthood. As such, anxiety has long been considered as a normal developmental phenomenon which is useful in warning children of potential danger. Children's expression of anxiety is influenced by predictable changes in cognition and social-cognition, emotional awareness, and self-concept that occur throughout development (Schniering et al., 2000), which result in clear differences between anxious adults, children, and adolescents in the way they conceptualize, interpret and report anxiety experiences (Campbell & Rapee, 1996).

Research reveals a consistent and predictable pattern of anxiety development from birth through to adulthood, which is similar across cultures (Ollendick, Yang, King, Dong, & Akande, 1996). Normal anxiety in children typically changes at different stages in the developmental continuum (Gullone, 2000). As early as 1976 this concept was studied by Bauer. More recently, Weems and Costa (2005) carried out a study to examine developmental differences in the expression of childhood anxiety. Symptoms of separation anxiety disorder, generalized anxiety disorder, and social phobia were assessed using child and parent report questionnaires, comparing three age groups (6 – 9 years; 10 – 13 years; 14 – 17 years). The results indicated that there were systematic age differences in the expression of childhood anxiety symptoms (Weems, 2005). Other researchers found similar results when they looked at fears across different age groups (Muris, 2000; Westenberg, 2004).

Children's cognitive capacities are an important determinant of the expression of anxiety. Anxiety originates from threat, and threat must be conceptualized. Conceptualization in turn depends on development of cognitive abilities (Vasey, 1993). Thus

at very young ages, anxieties are primarily related to immediate, concrete things (loud noises, loss of physical support). As cognitive abilities reach a certain maturational stage, anxieties become more sophisticated. For example, at 9 months children learn to differentiate between familiar and unfamiliar faces and consequently, separation anxiety and fear of strangers become manifest. Following this, fears of imaginary creatures occur and it is believed that these are closely linked to the magical thinking of toddlers (Bauer, 1976). The normal childhood developmental continuum and related normal anxiety in children is presented in Table 2.3.

The term "normal" anxiety and worry pertains to symptoms that are age appropriate, transitory, and natural aspects of development and that typically decrease as children mature. On the contrary, an anxiety disorder can be differentiated from "normal" anxiety by the severity and duration of physiological, cognitive and behavioural symptoms, and by the level of distress and impairment caused by the symptoms (Muris, 2007).

2.2.5 Anxiety Disorders in Children and Adolescents

The understanding that the experience of fear and anxiety is common and most often short-lived in childhood, led many to the conclusion that children's reports of these experiences should not be taken seriously. As recently as 25 years ago, research regarding the nature and treatment of childhood anxiety consisted of only a handful of case studies examining specific fears (Dadds, Spence, Holland, Barrett, & Laurens, 1997). This has changed as researchers have increasingly demonstrated that a substantial minority of children do suffer from high anxiety levels and that a diagnosis of an anxiety disorder is clearly warranted. Today, anxiety disorders are recognized as the most prevalent class of

Table 2.3. Developmental Stage and Related Anxiety

Age	Developmental Issues	Fear and Anxiety
0 – 6 months	Biological regulation	Fear of loud noises
		Fear of loss of support
6 – 18 months	Object permanence	Fear of strangers
	Formation of attachment relationship	Separation anxiety
2 – 3 years	Exploration of the world	Fear of animals
	Magical thinking	Fear of imaginary creatures
3 – 6 years	Autonomy	Fear of the dark
	Self-control	Fear of storms
		Fear of loss of caregivers
6 – 10 years	School adjustment	Fear of school
	Concrete operations: inference of cause-effect relations and anticipation of dangerous events	Worry
		Concerns about bodily injury and physical danger
10 – 12 years	Social understanding	Social concerns
	Friendship	
13 – 18 years	Identity	Social anxiety
	Formal operations: catastrophizing about physical symptoms	panic
	Sexual relationships	
	Physical changes	

(Source: Based on Warren & Stroufe, as cited in Ollendick & March, 2004, pp. 92-115)

emotional disorders affecting children and adolescents (Waddell et al., 2002). Anxiety symptoms and disorders significantly interfere with children's interpersonal and academic functioning (Last et al., 1997); they appear to signal increased risk for other anxiety disorders and most importantly depression (Orvaschel et al., 1995); and untreated anxiety can have a chronic and debilitating course (Keller et al., 1992).

The factors involved in the change from normal to abnormal anxiety in children are not entirely understood. The majority of early theoretical and empirical research into childhood anxiety was based on biological, genetic, and behavioural theories. Empirical studies typically focused on single causal factors in the aetiology of childhood anxiety

disorders, often without considering developmental factors (Barrett, 2000). Current research now recognizes a complex interplay of multiple risk and protective factors that occur throughout development as causal in the emergence of child psychopathology (Kraemer, Stice, Kazdin, Offord, & Kupfer, 2001; Rutter, Moffitt, & Caspi, 2006). Recent advances have focused on understanding the multiple and often complex developmental pathways through which child anxiety symptoms emerge, continue and remit, as well as the factors that increase the risk of anxiety disorders in childhood (Donovan & Spence, 2000).

2.2.6 Summary

The concept of anxiety has evolved over many centuries and it has been described as a trait, a state, a stimulus, a response, and as a motive. Several theoretical positions and models have been advanced to explain the presence of anxiety, including psychoanalytic theory, behavioural theory, and cognitive theory. The cognitive-behavioural theory of childhood anxiety has emerged as dominant.

Anxiety is a multi-dimensional construct that includes physiological, behavioural, and cognitive components. Both adults and children experience anxiety but the expression of symptoms in children is influenced by changes that occur throughout the normal course of child development. It is normal for children to experience anxiety periodically during their development, and as such anxiety can be useful in alerting children to potential danger. For some children, however, anxiety symptoms become severe and limiting.

The factors involved in the change from normal to abnormal anxiety in children are not entirely understood. However, it is now recognized that a complex interplay of multiple risk and protective factors that occur throughout development is causal in the emergence of child psychotherapy, including anxiety disorders.

2.3   Causation

The factors involved in the change from normal to abnormal anxiety in children are not entirely understood. The majority of early theoretical and empirical research into childhood anxiety was based on biological, genetic, and behavioural theories. Empirical studies typically focused on single causal factors in the aetiology of childhood anxiety disorders, often without considering developmental factors (Barrett, 2000). Current research now recognizes a complex interplay of multiple risk and protective factors that occur throughout development as causal in the emergence of child psychopathology (Kraemer et al., 2001; Rutter et al., 2006). Recent advances have focused on understanding the multiple and often complex developmental pathways through which child anxiety symptoms emerge, continue and remit, as well as the factors that increase the risk of anxiety disorders in childhood (Donovan & Spence, 2000).

The nature-nurture dichotomy that once formed the basis of our thinking about causation is no longer possible. Research has indicated that the effects of genes and of environments are not as separate as we once thought. In the not too distant past, it was thought that the development of mental disorders happened when an individual with a particular genetic predisposition was exposed to a particular environmental stress or impact. Recent research into the complex area of gene-environment interplay has elaborated our understanding about the influence of environmental factors in gene expression over time in the causation of mental disorders (Boyce & Ellis, 2005; Rutter et al., 2006). Although a critical review of this literature is beyond the scope of this paper, it is important to recognize the transforming impact this emerging research is having on our understanding of the aetiology of mental disorders such as anxiety disorders.

The term gene-environment interplay includes several different concepts. To date most research on the effects of environments on gene expression, or epigenetics, has been with animals (Rutter et al., 2006). Although it is too early to know all the implications for

the causation of psychopathology, recent epigenetic research with humans has demonstrated that physiological and biochemical pathways are influenced by environments, for example hormonal effects on stress (Rutter et al., 2006). Another concept that falls within gene-environment interplay is that the degree of genetic influence varies according to environmental circumstances, as reflected by heritability. Heritability refers to population not individual variance, and is an indication of the degree to which genetic factors account for the liability to show a particular trait (Rutter et al., 2006).

The third concept included in gene-environment interplay is that of gene-environment correlations, which refers to genetic influences on individual variations in peoples exposure to environmental risks (Rutter et al., 2006). The genetic influence can come from either the parent or the child. An example where the genetic influence comes from the parent, is that the kind of rearing environment that parents provide will be influenced by their own characteristics, such as personality, the presence or absence of mental disorders, and their intellectual qualities, which in turn are influenced by genetic factors as well as environmental factors (Rutter et al., 2006).

The final concept included in gene environment interplay is that of gene-environment interactions, which are thought to be part of the causal chain for several mental disorders, including conduct disorder (Caspi et al., 2002) and depression (Cicchetti, Rogosch, & Sturge-Apple, 2007). It is thought that genes most likely influence particular physiological pathways that make a psychiatric condition more or less likely, although the genes do not cause the mental disorder directly (Rutter et al., 2006). An example is that individual differences in stress reactivity are thought to underlie the variability in response to early developmental trauma such as abuse, and to reflect constitutional variation (Boyce & Ellis, 2005). Research also indicates that high protective environments as well as high stress environments can produce a disproportionate number of highly reactive children (Boyce & Ellis, 2005).

2.3.1 Developmental Psychopathology Model of Anxiety

Over the last two decades a developmental psychopathology model has emerged as an interdisciplinary framework for conceptualizing normal and maladaptive development (Cicchetti & Cohen, 1995) . The model, used as the organizing framework in this dissertation, assumes that complex dynamic interactions occurring between multiple individual and environmental factors are associated with the development and maintenance of childhood anxiety disorders and that most forms of psychopathology result from multiple causal influences, rather than from single factors operating in isolation (Vasey & Dadds, 2001). The developmental psychopathology perspective views anxiety as a continuum, with normal fear and anxiety on the one end and pathological manifestations on the other end (Muris, 2007). It also provides a framework for understanding the age and gender related variations in the prevalence and manifestation of anxiety symptoms.

These multiple influences on childhood anxiety are defined as risk and protective factors which operate together through dynamic pathways across child development (Vasey & Dadds, 2001). When confronted with potentially threatening stimuli or situations, a child's level of anxiety is determined by a constellation of genetic and environmental risk and protective factors. Risk factors increase or maintain anxiety, whereas protective factors reduce or mitigate anxiety. When risk is high and protection is low, the child displays anxiety levels in the pathological range; when this occurs repeatedly within a certain timeframe, s/he may exhibit an anxiety disorder. Figure 2.1 presents the developmental psychopathology model as conceptualized by Vasey and Dadds (2001).

Understanding the role of risk and protective factors in the multiple pathways to the development of child anxiety has important implications for the design of effective treatment and prevention intervention protocols, and will be discussed in the next section.
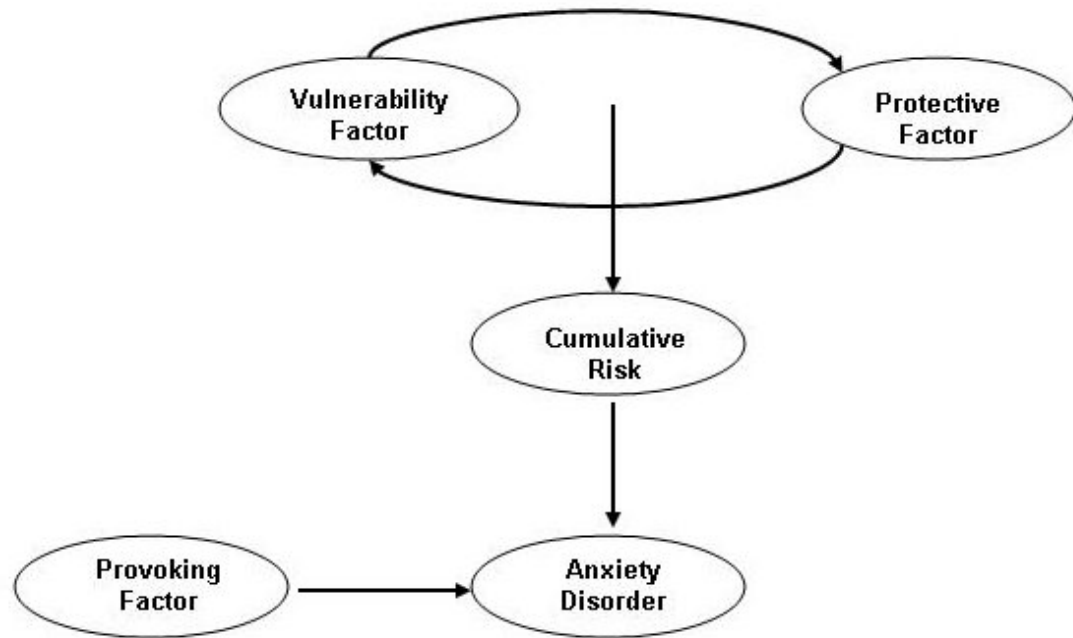
Figure 2.1. Adapted from Vasey and Dadds (2001) Developmental Psychopathology Model

2.3.2 Risk and Protective Factors

Risk and protective factors may be genetic, biological, environmental or social in nature (Kraemer et al., 2001). Prediction of normality, disturbance or resilience requires the simultaneous consideration of multiple risk and protective factors and their interplay (Cicchetti et al., 2007). Each risk factor in a causal chain can only be understood in relation to all the other factors in that chain. Risk and protective factors are characteristics, events or processes that are present prior to the onset of disorder and which predict the onset, severity and/or duration of psychopathology. Kraemer and colleagues (2001) have identified five main ways that risk factors can work together to cause an outcome, including acting in a proxy, overlapping, independent, mediating, or moderating way.

Empirical research investigating the aetiology of anxiety disorders in children has identified a number of risk factors associated with childhood anxiety disorders, which may be non-specific and applicable to several mental health problems, contribute to anxiety disorders in general, or relate to one particular anxiety disorder (Donovan & Spence, 2000). Risk factors may or may not be causal, which refers to a risk factor that when changed, is shown to change the outcome (Kraemer et al., 2001); they may have a cumulative effect or a dosage effect so that the stronger the risk factor the more severe the disorder (Vasey & Dadds, 2001). They may also appear and disappear over time, emerge differently at different times and may vary in importance at different developmental stages in a child's life (Cicchetti & Rogosch, 2002; Coie et al., 1993; Mrazek & Haggerty, 1994). In applying knowledge about risk factors to the development of prevention programs it is important to distinguish between risk factors that are causal and those that are correlated. Correlated risk factors merely mark or identify the potential for a disorder, rather than cause a disorder (Mrazek & Haggerty, 1994).

Not all children exposed to known risk factors proceed to develop anxiety disorders. Researchers continue to try and understand why some children are more resilient than others when exposed to risk (Muris, 2007). Protective factors involved in resilience precede the occurrence of disorder, assist in maintaining normal developmental pathways and protect against the emergence of anxiety disorders (Vasey & Dadds, 2001). In comparison to risk factors, relatively little research has been conducted examining protective factors (Donovan & Spence, 2000).

From a developmental psychopathology perspective, childhood anxiety disorders are the outcome of an imbalance between risk and protective factors. Some of these factors are likely to be the result of gene environment interplay. The next section discusses research related to risk factors associated with the individual child, including genetic factors. It then goes on to discuss research on risk factors in the child's environment including family, and

community risk factors associated with the development of anxiety. Individual and environmental protective factors are also discussed.

2.3.3 Individual Genetically Based Vulnerability

Clear individual differences in anxiety levels in children can be observed from birth, and there is also substantial evidence that anxiety disorders tend to cluster within families (Kovacs, 1998). The premise of a biological/genetic vulnerability to anxiety disorders is based on family studies of parents and siblings of children with anxiety disorders ("bottom-up" studies), studies of the children of adults with anxiety disorders ("top-down" studies), and both genetic and behavioural inhibition research (Muris, 2007). In fact, behavioural-genetic research has demonstrated that a substantial proportion of the variance in childhood fear and anxiety can be attributed to genetic influences (Rutter, Silberg, O'Conner, & Siminoff, 1999). Research examining individual genetic risk factors in the development of child anxiety is presented below.

Genetic Studies

The notion of an inheritable transmission of vulnerability to anxiety disorders is based on research examining psychopathology in families ((Biedel & Turner, 1997; Last, Hersen, Kazdin, Orvaschel, & Perrin, 1991; Weissman, Leckman, Merikangas, Gammon, & Prusoff, 1984). Top-down and bottom-up studies provided early evidence of a possible genetic involvement in the development of childhood anxiety.

In a bottom-up study conducted by Last and colleagues (1991), parents of anxiety-disordered children were found to have significantly higher rates of anxiety compared to parents of non-anxious children. A sample of 239 children and their parents was assessed using diagnostic interviews. Results indicated that 34% of the first-degree relatives of children diagnosed with anxiety had an anxiety disorder, compared to 16% of first-degree relatives of non-anxious children. High rates of anxiety disorders in parents of anxious

children were also found in a 1999 study which investigated the incidence of anxiety and depressive disorders in mothers and fathers of anxious children with school refusal (Martin, 1999). Findings indicated 78% of mothers and 50% of fathers reported having an anxiety disorder. A longitudinal study that supported these findings examined prevalence rates of anxiety disorders in siblings of children with anxiety disorders who lived in high-risk and low-risk families over a 10 year period (Rende, Warner, Wickramaratne, & Weissman, 1999). Results showed that in the high risk group, a sibling of a child with an anxiety disorder was five times more likely to be diagnosed with an anxiety disorder than the sibling of a non-diagnosed child.

Top-down studies have also provided evidence of a genetic factor in the development of anxiety disorders in children Biederman, Rosenbaum, Bolduc, Faraone, and Hirshfel, (1991) studied children of parents with no psychiatric problems, with panic disorder and with depression. Results indicated that separation anxiety disorder and multiple anxiety disorders were more frequent among children of parents with panic disorder and/or depression compared to children of parents with no psychiatric diagnosis.

Findings of these and other family studies have highlighted higher familial rates of anxiety disorders. However, it is not clear whether this resulted from environmental influences shared by families or from shared genes. Studies of twins that have been raised apart have helped disentangle these two factors in understanding the development of childhood anxiety disorders.

Twin Studies

Studies comparing monozygotic and dyzygotic twins have added to our understanding of genetic influences on the development of anxiety in children. In one of the first studies examining this issue, rates of self-reported fears in monozygotic and dyzogotic same-sex twin pairs between the ages of 10 to 34 years were compared (Rose & Ditto, 1983). Results indicated that a twin's level of fearfulness could be predicted from the co-twin's

score, and the frequency of fears was significantly more similar in monozygotic twins than in dyzogotic twins. Similar results were obtained in a later study that collected fear scores for monozygotic and dyzogotic twins (Stevenson, Batten, & Cherner, 1992). Results indicated that heritability was significant for the total fear score.

Twin studies have also examined genetic and environmental influences on anxiety symptoms in children. Individual variation in general anxiety symptoms was assessed in a large sample of twins, who had been raised apart, in three age groups (8 – 10 years; 11-13 years; 14-16 years) (Topolski et al., 1997). Results showed a clear genetic contribution to anxiety symptoms, but this effect was mainly observed in girls. With boys, environmental contributions were more apparent. Further, genetic and environmental influences were found to be highly comparable across age groups. In a similar study the anxiety level of 316 pairs of twins (8 to 16 years) was assessed (Thapar & McGuffin, 1997). Results showed a discrepancy between child and parent ratings of anxiety. Parental ratings indicated that genes accounted for 59% of the variance, which suggests that anxiety symptoms are highly heritable. However, the children's ratings of anxiety showed that environmental influences played a more prominent role in the development of anxiety. The researchers suggested that this result may have occurred because parents were rating more enduring traits, whereas the children may have been rating more acute symptoms which may be more related to environmental factors.

Findings of the Virginia Twin Study of Adolescents Behavioural Development showed a greater genetic influence on anxiety symptoms and disorders in females compared to males in a sample of 1,412 same-sex twins (Eaves, Silberg, Meyer, Maes, Siminoff, & Pickles, 1997; Topolski, Hewitt, Eaves, Silberg, Meyer, & Rutter, 1997). A higher genetic influence was also found for females with separation anxiety disorder in a sample of 2,043 same-sex twin pairs (13 to 18 years) (Feigon, Waldman, Levy, & Hay, 1997), and in a retrospective study of 200 same-sex adult twins (Silove, Manicavasagar, O'Connell, &

Morris-Yates, 1995). A higher genetic influence in females with self-reported mixed anxiety/depressive symptoms has also been found in a sample of 2,570 young adult same-sex twin pairs In terms of developmental differences, there is evidence indicating that older adolescents show higher inheritability of anxiety symptoms than younger children (Ely & Stevenson, 1999; Thapar & McGuffin, 1995).

In summary, research suggests that genetic influence is a moderate risk factor for anxiety disorders and that age and gender differences in inheritability may exist. It appears that individuals may inherit a general vulnerability towards anxiety. This finding is consistent with the developmental psychopathology model, which assumes that an interaction between a combination of individual and environmental factors increases the risk of developing an anxiety disorder for some children. Behavioural inhibition, or the tendency of some children to interrupt ongoing behaviour and react with vocal restraint and withdrawal when confronted with unfamiliar people or settings (Kagan, 1994) has been identified as one genetic vulnerability.

Genetically Based Individual Risk Factor: Behavioural Inhibition

Individual differences in stress reactivity (the fight/flight response) have been related to differences in the rate of children exposed to developmental stressors who become physically or mentally ill (Boyce & Ellis, 2005). Boyce and Ellis (2005) have theorized that highly reactive children exposed to environmental stressors are more vulnerable to becoming ill; however, highly reactive children exposed to highly protective environments do exceptionally well. In other words, a single genotype supports a range of environmentally contingent phenotypic expressions.   Highly reactive children sustain disproportionate rates of impairment when raised in adverse environments but unusually low rates when raised in highly supportive settings. As such, temperamental risk factors such as high reactivity are thought to be risk factors for some children and to serve as protective factors for others in terms of future psychopathology (Vasey & Dadds, 2001).

The most widely studied temperamental factor considered to predispose children to the development of anxiety disorders is behavioural inhibition, which is seen as an enduring temperament style, considered to be genetically transmitted (Kagan, Reznick, & Gibbons, 1989; Kagan & Snidman, 1991; Muris, 2007). Behavioural inhibition, defined as a set of characteristic features including shyness, timidity, physiological arousal, and emotional restraint when exposed to unfamiliar people, places, or contexts (Spence & Dadds, 1996), has been extensively studied by Kagan (Kagan et al., 1989; Kagan, Reznick, & Snidman, 1988; Kagan & Snidman, 1991) in a series of longitudinal studies, which indicated that 10 to 20% of Caucasian children exhibited signs of this temperamental characteristic.

A 1992 study demonstrated that behavioural inhibition has a genetic basis by examining a sample of 178 monozygotic and dyzygotic same-sex twin pairs who were assessed at 14, 20, and 24 months (Robinson, Kagan, Reznick, & Corley, 1992). It was found that heritability estimates for behavioural inhibition ranged from .51 to .64. Studies have noted that behavioural inhibition shows considerable stability over time, particularly children who display high levels of the temperamental characteristic (Rubin & Burgess, 2001). Kagan (1988) demonstrated that 75% of children who had been identified as either inhibited or uninhibited retained their status at 6 year follow-up. In a more recent study Van Brakel, Muris, Bogels, and Thomassen (2006) obtained parent reports of behavioural inhibition in 7 to 12 year olds and found that behavioural inhibition scores of inhibited children significantly increased over a 2 year period, whereas those of uninhibited children significantly decreased. On the basis of these studies it can be concluded that behavioural inhibition is an inherited and stable response present in a minority of children.

There is strong empirical evidence that behavioural inhibition acts as a general vulnerability factor for the development of anxiety disorders in children. One of the first studies that supported this notion was conducted by Biederman, Rosenbaum, Hirshfeld, Faraone, Bolduc, & Gersten (1990), who conducted structured interviews to assess

psychiatric disorders in two samples of children. In both samples inhibited children showed significantly more anxiety disorders than uninhibited children. At three year follow-up inhibited children displayed a significant increase of anxiety problems but not uninhibited children (Biederman, Rosenbaum, Bolduc, Faraone, Chaloff, & Hirshfeld, 1993). Results from another study involving 164 children followed from infancy to 7 years, also indicated support for the link between behavioural inhibition and development of anxiety disorders in childhood (Kagan, Snidman, Zentner, & Peterson, 1999). Results indicated that children identified as inhibited at 4 months had higher levels of fear and anxiety symptoms at age 7 years. Muris and colleagues also conducted a series of studies (Muris, Meesters, & Spinder, 2003; Muris, Merckelbach, Schmidt, Gadet, & Bogie, 2001; Muris, Merckelbach, Wessel, & Van de Ven, 1999) examining the link between behavioural inhibition and anxiety disorders in older children. Their results consistently demonstrated that self and parent rated behavioural inhibition in children is associated with a wide range of anxiety disorders.

In summary, research indicates behavioural inhibition is a risk factor for the development of anxiety disorders, particularly for children who show stable behavioural inhibition from infancy through middle childhood (Turner, Beidel, & Wolff, 1996). Behavioural inhibition may be an example of a highly reactive biological profile resulting in a unique sensitivity to the influence of environmental conditions (Boyce & Ellis, 2005). Consistent with this perspective, many children who show a temperamental style of behavioural inhibition do not proceed to develop anxiety disorders or symptoms (Biederman et al., 1993; Kagan et al., 1999; Rosenbaum, Biederman, & Hirshfeld, 1991) suggesting additional factors also play important roles in the development of anxiety disorders.

Genetically Based Individual Risk Factor: Emotionality

Emotionality, defined as psychological instability and proneness to experience negative emotions, is similar to behaviour inhibition (Manassis, 2004). This characteristic

is also known as "neuroticism" and "negative affectivity". Most research on emotionality has not specifically focused on the relation between emotionality and anxiety, but rather investigated the link between this temperamental factor and child psychopathology in general (Calkins & Fox, 2002; Lonigan & Phillips, 2001; Muris & Ollendick, 2005; Nigg, 2006). One study demonstrated that emotionality was associated with high levels of psycho-pathological symptoms, and this appeared especially true for internalizing problems such as anxiety (Caspi, Henry, McGee, Moffitt, & Silva, 1995). Similar findings were obtained in another study assessing personality factors in 116 clinic referred youth (Huey & Weisz, 1997). Results demonstrated that emotionality was positively related to internalizing but not to externalizing symptoms.

Clear links between emotionality and psychopathology have been demonstrated through prospective studies. For example, in children assessed at 3 and 5 years of age, the temperament dimension of withdrawal, which is associated with emotionality, predicted parent and teacher rated internalizing symptoms when children reached middle school and early adolescence (Caspi et al., 1995). A longitudinal twin study examined the significance of genetic and common environmental influences on temperament and behavioural and emotional problems in a sample of 758 twin pairs (7 to 17 years) who were followed for a two year period (Gjone & Stevenson, 1997). Results supported a partial genetic basis for emotionality and indicated that emotionality was the strongest predictor of emotional and behavioural problems.

A number of studies investigating the link between emotionality and psychopathology have used self-report questionnaires. Muris, Winands, and Horselenber (2003) showed that emotionality was significantly associated with various types of psychopathology symptoms in adolescents, most strongly with symptoms of anxiety disorders. Another recent study (Muris, Meesters, & Diederen, 2005) found that

emotionality was not only associated with internalizing but also with externalizing symptoms and this appeared true for various age groups of non clinical children.

The studies investigating the link between emotionality and child psychopathology reviewed above suggest that this temperament factor is associated with a broad range of symptoms. The relationship of emotionality with anxiety and depression is stronger than with other forms of psychopathology. Similar to behavioural inhibition, emotionality may be another example of a highly reactive biological profile resulting in a unique sensitivity to the influence of environmental conditions (Boyce & Ellis, 2005)

Genetically Based Individual Risk Factor: Anxiety Sensitivity

Anxiety sensitivity is another temperament factor thought to be related to increased risk of developing anxiety disorders. Anxiety sensitivity refers to the fear of anxiety-related sensations that are interpreted as having potentially harmful physical, psychological, or social consequences and so give rise to significant anxiety (Muris, 2007). Anxiety sensitivity has been shown to run in families (Tsao, Myers, Craske, Bursch, Kim, & Zeltzer, 2005; Van Beek & Griez, 2003) and to be genetically based. In a study involving 179 monozygotic and 158 dyzogotic adult twin pairs, it was found that anxiety sensitivity has a strong heritable component, accounting for nearly half of the variation in anxiety sensitivity levels (Stein, Jang, & Livesley, 1999).

Although most of the research into anxiety sensitivity has been focused on its relation to the development of panic disorder in children, there are also several studies that have demonstrated anxiety sensitivity is not specifically associated with panic disorder symptoms, but with anxiety disorders in general (Joiner, Schmidt, Schmidt, Laurent, Catanzaro, & Perez, 2002; Pollock, Carter, Avenevoli, Dierker, Chazan-Cohen, & Merikangas, 2002; Vasey, Daleiden, Willians, & Brown, 1995; Weems, Hammond-Laurence, Silverman, & Ginsburg, 1998). Weems, Hammond-Laurence, Silverman and Ferguson (1997) investigated the relationship between anxiety sensitivity and depression in a clinical

study of 234 children (6 to 17 years) who completed a variety of assessment tools. Results

showed a significant correlation between anxiety sensitivity and anxiety symptoms. Similar

findings were also reported in the Muris et al. (2001) study, which found that anxiety

sensitivity in adolescents was significantly correlated to symptoms of anxiety, with the

strongest correlation being between anxiety sensitivity and panic disorder and agoraphobia.

Individual Risk Factor: Cognitive Biases

Information processing and cognitive biases and distortions have been identified as

risk factors that may predispose, precipitate and/or maintain anxiety symptoms in children

and adults (Vasey & Dadds, 2001). Several studies using self-report measures have

examined the cognitive processes of anxious children in anxiety-provoking situations, and

demonstrate that anxious and anxiety disordered children have been found to show

characteristic patterns of cognition. In studies of high test-anxious children, they exhibited

higher rates of cognitive distortions such as personalizing, over generalizing,

catastrophizing, and selective abstractions (Leitenberg, Yost, & Carroll-Wilson, 1986).

These children also reported greater proportions of negative self-evaluative thoughts (e.g.,

"I am too stupid for this") and more off-task thoughts than low test-anxious children (King,

Meitz, Tinney, & Ollendick, 1995; Prinz, Groot, & Hanewald, 1994; Zats & Chassin, 1985).

Higher rates of negative cognitions have been demonstrated in studies of dental-

anxious children. A study by Prinz (1985) showed that prior to a dental procedure, dental-

anxious children reported higher levels of negative self-talk related to the threat of pain and

desire to escape the situation than the levels reported by children low on dental anxiety.

Similar patterns of negative cognitions have also been found in studies of socially phobic

children (Beidel, 1991), children with an anxiety disorder diagnosis (Kendall, 1994), and

children with high trait anxiety (Houston, Fox, & Forbes, 1984). Overall these studies

indicate that prior to and during anxiety-provoking situations, high-anxious children report

more negative self-cognitions compared to low-anxious children, suggesting that reducing negative cognitions may prevent or reduce anxiety in children.

Individual Risk Factor: Attentional Processing

A common component of the cognitive theories of anxiety is the prediction that anxious individuals will endorse an attentional bias towards emotionally threatening information. Attentional bias toward threat is considered to function as an anxiety regulatory mechanism by fostering the early avoidance of anxiety-provoking situations (Vasey, El-Hag, & Daleiden, 1996). Several studies have examined attentional processing in anxious children. Martin (1990) compared children (6 to 13 years) who reported fear of spiders to children who reported no fear, in a task where participants are instructed to name the colour that a word is written in while ignoring the content of the word. Variation in the speed children name the colour, independent of word content, is taken as an indication of the degree to which a word meaning has been selectively processed (Martin, 1990). Results indicated that the non-fearful children showed no impairment, while children fearful of spiders were significantly slower to colour-name neutral words versus spider-related words.

In another study attentional biases in anxious children (9 to 14 years) were compared to those in non-anxious children (Vasey et al., 1995). Findings showed that anxious children exhibited an attentional bias toward threatening words in comparison to non-anxious children. In a similar study of 24 children (14 years) diagnosed with generalized anxiety disorder, results indicated that clinically anxious children selectively allocated processing resources towards threat stimuli compared to non-anxious children (Taghavi, Neshat-Boost, Moradi, Yule, & Dalgleish, 1999). These studies provide support for the proposition that anxious children think differently about things than non-anxious children.

Cognitive biases were also examined in a clinical sample of 15 children (8 to 17 years) with an anxiety disorder diagnosis, by exposing participants to stories in which ambiguous situations were described (Bogels & Zigterman, 2000). Participants were asked to report

their interpretations. Results showed that anxiety disordered children reported more

negative cognitions compared to children in the control group. Anxious children also had

lower estimations of their own competency to cope with danger than control children.

Further evidence that anxious children tend to interpret ambiguity as threatening is

provided in a study of 90 anxious and non-anxious children (8 to 13 years) who were asked

to interpret ambiguous situations (Bell-Dolan, 1995). Anxious children tended to

misinterpret ambiguous situations as threatening and were more likely to propose

maladaptive strategies toward solving the problem.

In summary, empirical research has begun to enhance our understanding of the

potential importance of cognitive factors in relation to the development of anxiety in

children (Kendall, 1991; Vasey, 1993; Vasey, El-Hag, & Daleiden, 1996). Support for

information processing and cognitive biases as risk factors in the development of child

anxiety is provided by studies showing that children with high anxiety or an anxiety disorder

demonstrate more cognitive distortions and utilize more negative self-talk compared to

non-anxious children.

2.3.4 Environmental Risk Factors

Individual genetic factors such as behavioural inhibition and anxiety sensitivity are

thought to create vulnerability towards development of anxiety disorders in some children;

however, they do not account for the entire variance observed in studies of anxiety risk.

Rather, development of psychopathology such as anxiety disorders is thought to result from

a complex interplay between genetic and environmental factors (Rutter et al., 2006). This

section reviews research related to risk factors in the child's environment. The environment

that has the most influence on a child is that of their family. Risk factors associated with the

family such as parenting style and traumatic experiences that may predispose and

precipitate anxiety in some children are discussed. As well, risk factors associated with the

child's broader community, such as earthquakes are then discussed.

Family Environmental Risk Factor: Parenting

An environmental risk factor thought to be related to the development of anxiety

disorders in children is the role of family influences. Early parent-child interactions and

parental rearing behaviours are thought to be related to the development of childhood

anxiety disorders.

Attachment theory proposes that a child's level of anxiety is affected by the way in

which they are attached to their caregivers (Bowlby, 1973). Many studies have connected

insecure attachment with Separation Anxiety (see Thompson, 2001 for a complete review),

however, research has also demonstrated that early attachment problems are predictive of a

broad range of anxiety disorders in later childhood. For example, Warren, Huston, Egeland,

and Stroufe (1997) examined whether insecurely attached infants develop more anxiety

disorders during childhood than securely attached infants. At 12 months of age infants were

classified as either securely, avoidantly, or ambivalently attached. When children reached

17.5 years of age, current and past anxiety disorders were assessed through structured

interviews. Results showed that 15% of the youths had developed at least one past or

present anxiety disorder, with insecurely attached children more frequently displaying

anxiety disorders than children who were securely attached (Warren et al, 1997).

Several studies have examined the link between attachment and the development of

anxiety disorders by using questionnaires developed to identify early types of attachment in

older youth (Amsden, McCauley, Greenberg, P.M., & Mitchell, 1990; Buist, Dekovic, Meeus,

& Van Aken, 2004; Hale, Engels, & Meeus, 2006). In general this research has

demonstrated that low levels of trust and communication, but high levels of alienation, are

associated with higher levels of anxiety symptoms in youths. Taken together, these studies

support the role of insecure attachment as a vulnerability factor for the development of anxiety problems in youth.

In the context of childhood anxiety problems, three types of parental rearing behaviours have been identified as problematic. The first type of anxious rearing is related to the fact that parents of anxious children are often anxious themselves (Last et al,, 1991) suggesting a rearing style that models fear and anxiety, warning their children against possible dangers and encouraging them to engage in avoidant behaviours. In a study by Barrett, Rapee, Dadds, and Ryan (1996) anxious, oppositional-defiant, and nonclinical children (7 to 14 years) and their parents were presented with ambiguous scenarios and asked to provide plans of action for these hypothetical situations. Solutions were categorized into avoidant and aggressive solutions. As hypothesized, children with anxiety disorders and their parents most frequently chose avoidant solutions, whereas children with oppositional-defiant disorder and their parents clearly preferred aggressive solutions. Interestingly, anxious children's avoidant plans significantly increased following family discussion during which children and parents deliberated about possible solutions. This phenomenon, termed family enhancement of avoidant responses or FEAR, was supported by a subsequent study by this group (Dadds, Barrett, Rapee, & Ryan, 1996) which found that parents of anxious children show a tendency to encourage the fearful avoidant behaviour of their children. A further study demonstrated that maternal distress further promoted the FEAR effect in anxious children (Shortt, Barrett, Dadds, & Fox, 2001).

The second parental rearing behaviour that has been identified as problematic is related to the connection between fearfulness in children and fearfulness in mothers and the role of expression of their own fears in the presence of the child was investigated in 40 children (9 to 12 years) (Muris, Steermeman, Merckelbach, & Meesters, 1996). Results indicated that fearfulness in children was significantly related to fearfulness in mothers, and that mothers' expression of fears played a role in this relationship. Children of mothers who

never expressed fears had the lowest fear scores and children of mothers who often

expressed their fears had the highest fear scores. This finding has been replicated in other

studies (Hock, Hart, Kang, & Lutz, 2004).

Several studies have investigated the role of parental control, the third type of

parental rearing practice associated with the development of anxiety disorders in children

(Bogels & Brechman-Toussaint, 2006; Rapee, 1997; Wood, McLeod, Sigman, Hwang, &

Chu, 2003). In this parental rearing style, parents are excessively intrusive and controlling,

thereby strongly regulating their child's daily activities and routine, and hindering the

development of independent problem-solving skills. Such a controlling rearing style is

thought to limit the development of the child's autonomy and results in perceptions of the

environment as uncontrollable, and a limited sense of personal competence (Siqueland,

Kendall, & Steinberg, 1996). These negative perceptions are thought to contribute to the

development of anxiety in children (Chorpita, Brown, & Barlow, 1998).

A study that supports the role of parental control in the development of anxiety in

children looked at children with oppositional-defiant disorder, children with anxiety

disorders, and children with no psychiatric disorder (Hudson & Rapee, 2001). Participants

were asked to complete two difficult cognitive tasks in the presence of their mothers who

had been told they were allowed to help their children if needed. Mothers of anxious

children and children with oppositional-defiant disorder displayed higher levels of

involvement than mothers of children with no disorders. Mothers of anxious children also

displayed higher levels of negativity during the interaction. These researchers conducted a

further study in which the interactions of parents of children with anxiety disorders and non

clinical controls, as well as their siblings, were observed while completing a complex puzzle

task (Hudson & Rapee, 2002). Like the previous study, mothers of anxious children were

more involved and intrusive during the task compared to mothers of non clinical control

children. Interestingly, mothers and fathers were equally involved with the anxious child

and the sibling of the anxious child, suggesting that these parents have an over-involved and controlling parenting style in general. These results were based on observation. However, when asked, to rate their levels of involvement towards their anxious child and siblings, mothers frequently reported that they were more overprotective of the anxious child (Hudson & Rapee, 2005).

Other observational studies have confirmed the finding that anxious children's parents are more controlling than parents of children with no psychiatric disorder (Barrett, Fox, & Farrell, 2005; Greco & Morris, 2002; Mills & Rubin, 1998; Moore, Whaley, & Sigman, 2004; Whaley, Pinto, & Sigman, 1999). Several questionnaire-based studies have also demonstrated positive correlations between parental control scores and anxiety symptoms in children (Bogels & Van Melick, 2004; Lindhout, Markus, Hoogendjik, Borst, Maingay, & Spinhoven, 2006).

Not all studies have found a correlation between parental control and childhood anxiety (Bogels, Van Oosten, Muris, & Smulders, 2001), suggesting there may be various types of control differentially connected to childhood anxiety. For example, Dumas, LaFreniere, and Serketich (1995) distinguished between positive and negative control behaviours and noted that mothers of socially anxious children displayed lower levels of positive control but higher levels of negative control as compared to mothers of aggressive and socially competent children.

Family Environmental Risk Factor: Traumatic and Stressful Events

Child maltreatment, including sexual and physical abuse and neglect, is a category of traumas that have clear detrimental effects on children affected by these events. In these cases, the traumatic event can be chronic and caused by a predictable repeated stressor. While studies have related sexual and physical abuse with Post Traumatic Stress Disorder (PTSD) (Famularo, Fenton, Kinscherff, & Augustyn, 1996; Famularo, Kinscherff, & Fenton, 1990), it has also been noted that these traumatic experiences are associated with increases

in a broad range of emotional problems including anxiety disorders (Kendall-Tackett, Meyer Williams, & Finkelhor, 1993; Kinzl & Biebl, 1992). In a prospective investigation by Goodwin, Fergusson, and Horwood (2005) the links between exposure to traumatic events during childhood and the subsequent development of anxiety disorders was examined. Results demonstrated that those who had been traumatized before the age of 16 years were at higher risk for developing anxiety disorders.

More common stressful events such as parental separation, divorce, death of a family member, family conflict and repeated changes in home and school are also considered to increase a child's risk of anxiety problems (Donovan & Spence, 2000). Support for the role of stressful events as a risk factor is provided in findings of a twin study conducted which examined specific life events in children with symptoms of anxiety and depression (Ely & Stevenson, 2000). The study involved comparing the number of stressful events within the last 12 months experienced by each of 61 child twin pairs in which at least one twin had very high self-reported anxiety or depression. Results indicated that, compared to non-anxious children, anxious children reported more recent events characterized by threat, such as the risk of losing a loved one, witnessing something traumatic, being in physical jeopardy, or facing a life threatening disease. The findings of this study indicate that children who face threatening events may be at risk of anxiety problems.

In another study, children with and without anxiety disorders completed a life event checklist that catalogued negative events that occurred during the lifetime and the past year (Gothelf, Aharonovsky, Horesh, Carty, & Apter, 2004). Results showed that those with anxiety disorders also reported higher levels of negative events during lifetime and the past year compared to non-anxious participants. Results from a recent longitudinal study (Grover, Ginsburg, & Ialongo, 2005) that examined the link between a number of adverse life events and child and parent ratings of anxiety symptoms at six year follow-up, found

that a negative family environment, academic difficulties, and the total number of negative life events were predictive of anxiety symptoms, even when controlling for initial anxiety symptom levels.

Community Environmental Risk Factor: Traumatic and Stressful Events

There is evidence suggesting that children who experience traumatic or stressful events such as earthquakes, lightening strikes, or floods, are at greater risk of anxiety problems (Dollinger, O'Donnell, & Stanley, 1984). Post Traumatic Stress Disorder (PTSD) is the anxiety disorder most often associated with traumatic events. Many studies have confirmed an increase in the incidence of PTSD following traumatic events (Green, Korol, Grace, Vary, Leonard, & Gleser, 1991; March, Amaya-Jackson, Terry, & Constanza, 1997; Morgan, Scourfield, Williams, Jasper, & Lewis, 2003; Pynoos, Frederick, Nader, Arroyo, Steinberg, & Eth, 1987; Pynoos & Nader, 1989; Shannon, Lonigan, Finch, & Taylor, 1994; Yule, 1992). One of the earliest was a study examining the effects of a sniper attack on a school playground in which one child was killed and 14 others were injured (Pynoos et al., 1987; Pynoos & Nader, 1989). The researchers noted that symptoms of PTSD were common among the children, and that these symptoms were more prominent and persistent when children were more fully exposed to the traumatic incident. Further support for increased PTSD following a traumatic incident was demonstrated in a study of a large sample of children who were surveyed about their experiences and reactions in relation to a hurricane. It was found that more than 5% of the sample reported sufficient symptoms to meet diagnostic criteria for PTSD (Shannon et al., 1994). A final study followed the children who survived the disaster in Aberfan, where in 1966 a coal slag heap collapsed into a primary school. A 33 year follow-up assessment of the survivors demonstrated that 46% of them still met criteria for PTSD (Morgan et al., 2003).

It is clear that both family and community environmental factors such as parenting practices, traumatic incidents, stressful life events, and aversive conditioning experiences

contribute to the development of anxiety disorders in children. The next section presents research related to factors that may mitigate or prevent the development of anxiety disorders in children.

2.3.5 Protective Factors

The previous section may have given the impression that anxiety disorders in children arise when a vulnerable child is exposed to negative environmental influences. However, there are many children who, despite the clear presence of vulnerability and risk factors, do not develop anxiety problems. This ability to positively adapt within a context of significant adversity is referred to as resilience (Luthar, Cicchett, & Becker, 2000; Werner & Smith, 1992). Research in the area of resilience has focused on identification of protective factors and processes for children at risk. The developmental psychopathology model of anxiety outlines the importance of protective factors and processes in the developmental pathways that lead to psychopathology (Cicchetti & Rogosch, 2002; Vasey & Dadds, 2001). The impact of specific risk factors can be mediated and/or moderated by protective factors, which are considered to operate by building resilience to the development of a psychological disorder (Coie et al., 1993). Individual protective factors including effortful control, perceived control, and coping, and family related protective factors including family support, have been identified as important in preventing or mitigating the development of anxiety disorders in children (Muris, 2007).

Individual Protective Factors: Effortful Control

Effortful control, considered a regulative temperament factor, refers to self-regulation processes related to controlling behaviour and governing attention under certain circumstances (Muris, 2007). It is thought that effortful control pertains to both behavioural control and attentional control. Available evidence indicates that effortful

control is fairly stable from infancy through preschool and into early school years

(Kochanska & Knaack, 2003).

A small number of studies have examined the link between effortful control and

internalizing symptoms. In a study of 4 to 8 year old children with either internalizing,

externalizing or no symptoms, results showed that children with both internalizing and

externalizing symptoms scored high on emotionality and low on effortful control compared

to children with no symptoms (Eisenberg, Cumberland, Spinrad, Fabes, Shepard, & Reiser,

2001). Comparable results were found in a subsequent study (Eisenberg, Sadovsky, Fabes,

Losoya, Valiente, & Reiser, 2005).

A large sample of non-clinical children (10 to 12 years) were assessed for

internalizing and externalizing problems as well as for temperament factors (Oldehinkel,

Hartman, De Winter, Veenstra, & Ormel, 2004). Compared to control children, those with

internalizing and externalizing problems scored high on emotionality and low on effortful

control. Muris, De Jong, and Engelen (2004) also examined the relationship between

attention control and anxiety symptoms in 313 non-clinical children (8 to 13 years). Results

revealed a clear negative correlation between attention control and anxiety symptoms, with

low levels of attention control being associated with high levels of anxiety symptoms.

These studies indicate that effortful control is a regulative temperament factor that is

thought to enhance children's adjustment to stressful situations, and thus may protect

against the development of psychopathological symptoms in children (Muris & Ollendick,

2005).

Individual Protective Factors: Perceived Control

Perceived control is another control-related variable that is considered important for

the development of childhood anxiety. This concept refers to the idea that when an

individual experiences uncertainty about the ability to control internal and external events,

the resulting affective state will be anxiety (Muris, 2007).

Several studies have examined the relationship between anxiety symptoms and disorders and locus of control, which refers to children's belief about the source of their control over outcomes. Those with an internal locus of control believe that their own actions determine the rewards they may obtain, while children with an external locus of control believe that their own behaviour doesn't matter much and that the rewards in life are generally outside of their control (Rotter, 1975). Research has generally indicated that anxiety symptoms in children are associated with an external locus of control (Bell-Dolan & Wessler, 1994; Capps, Sigman, Sena, Henker, & Whalen, 1996; Gomez, 1998; Nunn, 1988).

In a more recent study with 117 children (9 to 17 years), the role of control beliefs in relation to the development of child anxiety was examined (Weems, Silverman, Rapee, & Pina, 2003). The findings indicated that perceived control over anxiety-related events was negatively related to reported anxiety scores. Children with anxiety disorders clearly displayed lower levels of perceived control over internal and external anxiety-related events than non-anxious children.

Individual Protective Factors: Coping

The developmental challenges of growing up can be stressful and anxiety provoking for many children. Throughout childhood, individuals are confronted with biological, cognitive, psychological, and social tasks inherent in development (Parker, Rubin, Price, & DeRosier, 1995). These psycho-social demands can be either individual or chronically repeating events, and can have a cumulative effect which leads to stress and anxiety symptoms (Compas, Malcarne, & Fondacoro, 1988). Such stressors are commonly associated with school or family, and may include family conflict, parental divorce, sibling and peer conflict, peer rejection, and schoolwork (Compas, Connor-Smith, Saltzman, Harding Thomsen, & Wadsworth, 2001; Compas et al., 1988).

The way individuals cope with daily stressors, as well as more aversive situations, has an impact on mental health. Children who do not cope well with the stress they experience

are considered to be at greater risk of current and future psychopathology (Compas et al.,

2001; Compas et al., 1988). The type of responses children use to cope with unpleasant

experiences greatly influences the degree of fear, anxiety and distress they experience

(Spence, 2001). Coping skills are thought to be acquired during the course of development

as children increase their competence in areas of affective, cognitive and social functioning

(Cicchetti & Rogosch, 2002).

The body of research examining the relationship between coping and the

development of anxiety symptoms and disorders in children is limited, and much of our

current knowledge of coping is based on research with adults (Compas et al., 2001) and on

studies examining the relation between coping and interalizing symptoms (Compas et al.,

2001; Compas et al., 1988). Initial evidence that children use coping methods was

demonstrated in a study using a community sample of 73 children (6 to 12 years) who were

interviewed about their coping across various stressful situations, such as being separated

from a friend, receiving a needle, being hurt in an accident, and getting in trouble with a

parent or teacher (Band & Weisz, 1988). Findings showed that 96% of children reported

making efforts to cope. The approaches to coping used by children were found to be

dependent on the situation as well as on the age of the child. Younger children tended to

use behaviour methods to cope while older children tended to use more cognitive coping

methods, providing evidence that children's coping skills may change over the course of

development.

Brodzinsky et al. (1992) examined the types of stressful events commonly

experienced by children and the coping styles employed in the face of such events. The most

common problems described by children were school-related problems including academic

and peer-related problems and family-related problems including difficulties with and

between parents and siblings. Findings of this study showed that children used assistance

seeking and cognitive behavioural problem solving more often in response to peer problems

than to school and family problems. Cognitive avoidance was used more in response to family problems than to either school or peer problems. Age and gender differences were also found, with younger children and females reporting using coping strategies more than older children and males. Consistent with the findings of Band and Weisz (1988), children were more likely to attempt to cope with problems such as peer and school problems that they perceived they had some control over. In contrast, children were more likely to use avoidant strategies as ways of minimizing the distress of events when they thought they had little or no control over the outcome.

Most studies of coping that focus on children have examined the relationship of coping with internalizing symptoms rather than with anxiety specifically (Causey & Dubow, 1992; Compas et al., 1988; Connor-Smith, Compas, Wadsworth, Thomsen, & Saltzman, 2000). Lopez and Little (1996) did investigate the relation between coping and anxiety in a study of 314 children (6 to 10 years). In comparison to avoidant coping approaches, proactive coping was found to predict better psychosocial and behavioural adjustment, better social cooperation and emotional support, and lower anxiety.

Another study investigated coping strategies in 258 children (7 to 13 years) whose parents had divorced (Sandler, Tein, & West, 1994). Results indicated that proactive coping, including problem solving, was positively correlated with better adjustment and fewer depressive symptoms, while avoidant coping correlated with more anxiety and depressive symptoms. A second study by Sheets, Sandler, and West (1996) with 202 children (8 to 12 years) confirmed these results. Coping responses and anxiety were investigated with another sample of 152 children (9 to 12 years) who were confronted with parental negativity (Herman & McHale, 1993). Results showed that children's employment of an engaging strategy like problem solving was related to lower levels of anxiety symptoms. The use of a disengaging strategy was associated with higher levels of anxiety

symptoms. Similar findings were obtained in other studies as well (Compas, Worsham, Ey, & Howell, 1996; Smith & Brodzinsky, 2002).

In a thorough review of the links between coping and psychopathological symptoms by Compas (2001), it was concluded that problem-focused and engagement coping are generally found to be associated with better psychological adjustment, whereas emotion-focused and disengagement coping are usually reported to be linked to poorer psychological health.

Environmental Protective Factors: Social Support

Social support has been identified as a protective factor that plays a role in children's adjustment and well-being by serving as a buffer to a number of behavioural and emotional problems for vulnerable children (Beardslee & Podorefsky, 1988; Garmezy, 1985; Werner & Smith, 2000). Social support can come from family members or from individuals outside the family such as teachers, school counsellors, coaches, peers, and others. Social support can also come from things such as youth groups and sporting activities, all of which build competence and provide children with role models and support (Werner & Smith, 1992; Werner & Smith, 2000). The two most accessible methods of social support commonly used by children are family and peers. Various studies have shown that support from parents and peers can protect children against the development of high levels of internalizing and externalizing symptoms after being confronted with adverse circumstances and negative life events such as divorce (Grant, Compas, Thurn, McMahon, Gipson, & Campbell, 2006).

The moderating effects of family and social support on the relation between stressful events and children's adjustment was investigated in a study with 322 children (Quamma & Greenberg, 1994). Results indicated that children who perceived their family as less supportive displayed higher levels of internalizing symptoms. It was also found that the negative effect of stressful life events on children's internalizing symptoms was significantly

reduced by high levels of perceived family support. Comparable findings have been obtained in other studies as well (Barrera, 2006; Holt & Espelage, 2005).

In summary, a variety of protective factors including effortful control, coping strategies, and social support have been demonstrated to be involved with children's experience of fear and anxiety.

2.3.6 Summary

Overall, research reviewed in this section supports the developmental psychopathology premise that child anxiety disorders result from the complex interplay of multiple risk and protective factors, including the influence of environmental factors on gene expression over time, as opposed to single factors operating in isolation. Vasey and Dadds (2001) suggest that although no single predisposing factor is likely to account for the development of an anxiety disorder, the presence of one or more of these risk factors is likely to increase the probability of others occurring, thereby setting a developmental pathway to anxiety disorder.

Knowing which risk and protective factors are causal in the development of child anxiety, as well as which factors are modifiable is essential for the development of effective anxiety prevention programs. Factors identified by research as causal include those related to gene-environment interplay and resultant genetic expression such as the temperamental factors of behavioural inhibition, emotionality, and anxiety sensitivity. However, the ability to manipulate genetic factors as part of prevention programming is not yet readily available. On the other hand, causal risk factors related to parent interactions and rearing style are thought to be modifiable. Although in their review of research on parenting programs Schwartz and colleagues did not find any programs specifically designed to promote resilience, they did identity four programs that were targeted toward families with at least one risk factor for negative child outcomes (Schwartz, Waddell, Harrison, Garland,

Nightingale, & Dixon, 2008). Some of the challenges associated with prevention programs to modify parent interactions and rearing styles include being able to convince potential parents of the importance of such programs. Parents are often not motivated to attend until after problems develop. Also, most often the parents who could benefit most from the program are not the ones most likely to attend. Other causal risk factors reviewed that are potentially modifiable include exposure to traumatic and stressful events. Certainly not all such events are preventable; however, at least in theory, exposure to child maltreatment is preventable although to date society has had limited success on this front.

A number of risk factors reviewed that are correlational rather than causal, such as cognitive biases and attentional processing are thought to be modifiable. The protective factors reviewed including perceived control, coping, and family and social support, are also correlational rather than causal. Given the limited ability at this time to influence causal risk factors, correlational factors are often included in programs developed to support resiliency (Schwartz et al., 2008) as well as those targeted specifically towards prevention of anxiety disorders (Barrett, 1998). Results of studies on programs that attempt to influence correlational risk factors can infer causation if the program is found to work.

Another approach to the development of prevention programs has been the extension of effective treatment approaches. In the prevention of anxiety disorders in children these efforts have focused on cognitive-behavioural therapy interventions, and are reviewed in the next section.

2.4 Psychotherapy of Childhood Anxiety Disorders

Interventions for childhood anxiety occur along a continuum from intense one to one treatment approaches through to prevention approaches that involve whole populations. The purpose of this section is to provide a review of research on the treatment of childhood

anxiety. Establishing the efficacy and effectiveness of treatment approaches for childhood anxiety is having considerable influence on the development of prevention programs.

The conceptualization of anxiety disorders in children and adolescents has influenced approaches to intervention. Initial approaches to the treatment of childhood anxiety used elements and processes from adult treatment modes, derived from adult-based theories, with terminology adapted for a younger population (Barrett, 2000). For example, at the beginning of the 20th century, as a result of the work of Sigmund Freud, treatments for children with anxiety problems were based on traditional psychodynamic frameworks. More recently, the multi-dimensional concept of anxiety has resulted in the development of standardized clinical interventions for childhood anxiety. Initially this approach to intervention was developed mainly from cognitive-behavioural models pertaining to adult anxiety (Ollendick & King, 1998).

Cognitive behavioural therapy has emerged as the current treatment of choice for childhood anxiety disorders (In-Albon & Schneider, 2007). There is a considerable body of empirical research evidence supporting the efficacy and effectiveness of cognitive behavioural therapy (CBT) in treating anxiety disorders that affect children and adolescents, both in individual (Barrett, Dadds, & Rapee, 1996; Kendall, 1994; Kendall & Southam-Gerow, 1996) and group formats (Barrett, 1998; Silverman, Kurtines, Ginsburg, Weems, Lumpkin, & Carmichael, 1999). This research has lent credence to cognitive theories of anxiety with conceptualization of dysfunctional thoughts and resulting behaviours as critical in the development and maintenance of anxiety symptoms. As knowledge has increased, CBT interventions have incorporated developmentally sensitive language and concepts. CBT is designed to teach children to recognize physiological and psychological indicators of emotional distress and to reappraise the way this information is processed. Thinking patterns are examined and modified in order to facilitate changes in behaviour and affect.

In anxious children, catastrophic, fearful thoughts are replaced with more realistic ones (Kendall, 1988).

Three systematic reviews of CBT in clinical trials for the treatment of childhood anxiety (6 – 19 year) in comparison to waitlist controls have been published recently (Cartwright-Hatton, Roberts, Chitsabesan, Fothergill, & Harrington, 2004; Compton, March, Brent, Albano, Weersing, & Curry, 2004; James, Soler, & Weatherall, 2005). In the first review Cartwright-Hatton and colleagues (2004) identified 10 studies for inclusion. Meta-analysis indicated the remission rate of diagnosed anxiety disorders was 56.5% in the CBT group compared to 34.8% in the controls, suggesting a significant benefit for CBT. The review did not examine continuous measures. The authors noted that in some trials reporting of the details was weak, and many of the trials were efficacy trials, therefore of limited generalizability.

Compton and colleagues (2004) conducted a second review of the efficacy of CBT for the treatment of children diagnosed with anxiety disorders, in which they identified 21 randomized controlled trials with waiting list or non CBT treatment controls. Inclusion criteria for this review were those used in Evidence Based Medicine (Sackett, Rosenberg, Gray, Haynes, & Richardson, 1996), and included RCT's for individuals with a specific disorder. A meta-analysis was not undertaken. However, standardized effect size estimates for a variety of anxiety symptom measures showed a medium to large (0.50 – 0.79) effect for CBT in reducing symptoms compared to waiting list control conditions. The authors concluded that there is a substantial evidence base supporting the efficacy of CBT for a variety of childhood anxiety disorders (Compton et al., 2004)

James and colleagues (2005) conducted a third systematic review for the Cochrane Collaboration to determine whether CBT is an effective treatment for childhood (6 to 19 years) anxiety disorders in comparison to waiting list or attention controls. This review identified 13 studies that met inclusion criteria. Inclusion criteria for this review differed

from that used by Compton and colleagues (2004) as in this review RCTs including children with simple phobia, obsessive-compulsive disorder, and post-traumatic stress disorder were not included, and the intervention protocol had to include a minimum of 8 sessions. Meta-analysis showed a remission rate of 56% for CBT compared to 28.2% for controls. The authors conclude that CBT appears to be an effective treatment for childhood anxiety disorders in comparison to waiting list or attention controls. There was no evidence for a difference between individual, group or parental/family format. The authors noted that although CBT could be recommended for the treatment of childhood anxiety, only slightly more than half of the recipients improved, so there continues to be a need for the development of additional treatment approaches.

A more recent meta-analysis by In-Albon and Schneider (2007) of psychotherapy of childhood anxiety disorders indicated that group and individual treatments were equally effective in reducing children's symptoms. The mean overall treatment versus control pre/post-treatment effect sizes were 0.52 (95% CI = 0.04-0.99) for individual therapy and 0.61 for group therapy (95% CI = 0.44-0.79). The t-test with independent samples revealed no significant difference.

Group CBT

Initial research establishing the efficacy of CBT as a treatment for anxiety disorders in children focused on intervening with individuals, then moved to intervening with groups. As researchers continue to refine the efficacy of CBT as a treatment intervention among children with specific anxiety disorders, studies of targeted treatment programs delivered in school settings have been undertaken. Bernstein and colleagues (2005) conducted a school-based randomized trial with 61 children (7 to 11 years) diagnosed with separation anxiety disorder, social phobia, or generalized anxiety disorder. Children were assigned to either a no-treatment control group or one of two intervention groups: CBT group or CBT group plus parent training. Children in both intervention groups showed significantly lower

anxiety symptoms at post-intervention compared to those in the control group (Bernstein, Layne, Egan, & Tennison, 2005).

Masia-Warner and colleagues (2005) conducted a randomized trial with 37 children (13 – 17 years) diagnosed with social anxiety disorder who were assigned to an intervention or a wait-list control condition. Intervention was a 14 session group CBT program provided in the school setting. Participants in the intervention group demonstrated significantly greater reductions than those in the control group in social anxiety and avoidance as well as significantly improved overall functioning. In addition, 67% of those in the intervention group no longer met diagnostic criteria at post-intervention compared to 6% of those in the control group (Masia-Warner, Klein, Dent, Fisher, Alvir, & Albano, 2005).

It is worth noting that empirical support for the efficacy of individual cognitive-behavioural therapy was first provided in a study by Philip Kendall (1994). In this study 47 children (9 to 13 years), who presented at a university-based clinic, were randomly assigned to either individual CBT or to a waitlist control. A battery of measures was administered prior to and again following the intervention. The CBT condition was 16 weeks long and involved cognitive (i.e., recognizing and clarifying distorted thoughts, devising coping plans) and behavioural (i.e., relaxation training, in vivo exposures) components. The waitlist condition involved participants waiting 8 weeks for individual CBT intervention. The findings indicated that children who received the CBT displayed significantly greater reductions in anxiety symptoms compared to children assigned to a waitlist condition at post-treatment, 1 year follow-up (Kendall, 1994) and at 2 to 5 years follow-up (Kendall & Southam-Gerow, 1996).

CBT programs typically consist of a variety of educational and practical components designed to enhance resilience by teaching children how to cope with anxiety-provoking, stressful or difficult situations. These strategies teach children to identify physiological cues to anxiety, relaxation techniques, identify and challenge negative self-statements, and to

engage in positive thinking. Strategies to teach children include problem-solving skills and

ways to self-reward for doing things well (Barrett, 1998; Flannery-Schroeder, Henin, &

Kendall, 1996).

2.4.1 Summary

Review of three recently published systematic reviews of CBT for the treatment of

childhood anxiety (6 – 19 year) in comparison to waitlist controls in clinical settings

(Cartwright-Hatton et al., 2004; Compton et al., 2004; James et al., 2005) indicates that

CBT is efficacious, resulting in substantial symptom improvement for both individuals and

groups. Studies examining the effectiveness of CBT in treating children with anxiety in

community and school settings are currently being undertaken. Given the success of CBT in

treating childhood anxiety disorders, practitioners and researchers are working to apply the

principles of CBT to the development of preventive interventions.

2.5　Prevention

The purpose of this section is to discuss the best currently available research

literature and thinking on preventive interventions for childhood anxiety from a critical

appraisal and policy perspective, including populations studied, quality of the studies,

strength of association, consistency across studies, clinical plausibility, comparative effect

size of different interventions, and cost-effectiveness.

2.5.1　Concepts of Prevention

Randomized controlled trials have demonstrated the effectiveness of clinical

interventions, most notably cognitive-behavioural therapy (CBT), for treating childhood

anxiety disorders (Cartwright-Hatton et al., 2004; Compton et al., 2004; James et al.,

2005). However, the prevalence of these disorders far exceeds specialized treatment

capacity in most jurisdictions; as many as 75% of children with disorders fail to receive

needed treatment services (Waddell et al., 2005). Given the high prevalence rate, the potentially debilitating effects, and the high costs of child and adolescent anxiety disorders, effective prevention strategies have become vital research and policy development priorities (Donovan & Spence, 2000; World Health Organization, 2004b).

Prevention programs begin early, before disorders develop and/or early in the life of a child. The task in preventive interventions is to decrease causal risk and/or increase protection in the individual, the family environment, and/or the wider environment with which the individual comes into contact, in order to reduce incidence and prevalence. Prevention programs may be either universal or targeted. Universal programs are directed at entire populations (Mrazek & Haggerty, 1994). Targeted programs can be either selective or indicated. Selective interventions involve children and youth identified as at risk of psychological problems, and indicated interventions target individuals identified with mild to moderate symptoms of a disorder (Mrazek & Haggerty, 1994).

Universal and targeted programs have both advantages and disadvantages (Offord et al., 1998). Universal prevention interventions delivered in schools have many advantages including reducing recruitment, screening and attrition difficulties associated with targeted approaches (Barrett, 2001). Universal approaches catch children who may otherwise "slip through the net" in terms of risk identification (Donovan & Spence, 2000) and reduce stigmatization, enhance peer support and reduce psychosocial difficulties in the classroom, thus promoting learning and healthy development (Evans, 1999; Kubiszyn, 1999). In addition, comorbidity between mental disorders is high and protective factors are common to many disorders. The teaching of generic child and parent skills may therefore be useful in the prevention of many disorders. Acquisition of skills is useful even for children and parents who are not at risk, as they may be employed successfully in a number of everyday occurrences (Donovan & Spence, 2000). On the opposite end of the spectrum, universal programs can be very expensive to implement, may have their greatest effect on those at

lowest risk, and provide intervention to many children and families who are not at risk (Offord & Bennet, 2002b). Though the cost per child is usually quite low in universal prevention initiatives, overall program costs are often quite substantial given that these programs are provided to whole populations of children. As a result, substantial evidence of positive outcome is necessary to convince policy makers to invest is universal preventive interventions.

Targeted programs have the advantage of being potentially efficient if the targeting can be done accurately. Children at risk of anxiety due to the experiences of negative life events are relatively easy to identify. However, tools to identify children at risk due to biological, or other psycho-social risk factors have yet to be developed (Donovan & Spence, 2000). Targeted approaches are also often more time, cost and labour efficient than are universal approaches, and have the potential for greater effect sizes than universal programs (Offord & Bennet, 2002b). There are several disadvantages to targeted programs however, including the possibility of labelling and stigmatization, the cost of ongoing screening, and the difficulty of accurate targeting (Bennett, Lipman, Brown, Racine, Boyle, & Offord, 1999; Offord & Bennet, 2002b). It is generally agreed that a mix of universal and targeted prevention programs are needed to address the significant challenge of mental disorders (Offord & Bennet, 2002a); however, the precise nature of the best "mix" is yet to be identified.

2.5.2 Prevention Research

To date, research examining the prevention of anxiety problems in children and adolescents is in the early stages. A search process and inclusion criteria (see Table 2.4) adapted from Waddell (2004) was used to identify studies. These criteria meet rigorous accepted standards such as Cochrane, but have been adapted for policy/practical purposes.

Table 2.4. Inclusion Criteria

- Clear descriptions of participant characteristics and interventions
- Interventions implemented before diagnosable mental disorders emerged
- Random allocation of participants (or clusters) to intervention and comparison groups
- Minimum post-test follow-up of four months
- Study includes males and females
- Valid/reliable measures of children's early mental health symptoms and/or subsequent diagnoses of disorder
- Reports of statistical significance on symptom or diagnostic measures

(Source: Adapted from Waddell et al., 2004)

Medline, PsycINFO, and the Cochrane Database of Systematic Reviews, were searched for the fifteen year period from 1993 to 2007 using the terms *anxiety disorder, early childhood development, school-based* and *prevention* to identify original RCTs published in English, and meeting all inclusion criteria. Eighteen articles were retrieved. Of these, 9 articles reporting on 5 RCTs met inclusion criteria. All of the included studies were conducted in Australia or the United States. Table 2.5 provides a summary of studies examining anxiety preventive interventions for children and adolescents that met inclusion criteria.

Studies examining both efficacy and effectiveness were included in this review. Efficacy studies examine the effects of an intervention in an ideal setting, where confounding factors can be controlled. Effectiveness studies examine the effects of an intervention in a "real world" setting. For example, in an efficacy study delivery of an intervention would likely be by a specially trained researcher, whereas in an effectiveness study the intervention may be delivered by a busy classroom teacher with many competing demands on his/her time. This is an important distinction as effectiveness trials are not only challenging to conduct, they also often show less dramatic results because of the

**Table 2.5. Randomized Control Trials of
Anxiety Prevention Programs 1993-2007**

Research Trial	Intervention Format/ Duration	N	Age Group/ focus	Post-Intervention Results and Effects
(Dadds, Spence, Holland, Barrett, & Laurens, 1997; Dadds et al., 1999;)	Targeted/Indicated 10 week child & family program	128	Children 7 to 14 years with elevated anxiety	Statistically sig. improvements in anxiety symptoms in intervention compared to control group at 6/12 follow-up 20% of intervention group met diagnostic criteria vs 40% in the control at 2 year follow-up
(Roberts, Kane, Thomson, Bishop, & Hart, 2003)	Targeted school-based program weekly for 12 weeks		Children 11 to 13 years with elevated depression	Statistically sig. improvements in anxiety symptoms for treatment children Effects maintained at 6 month follow-up
(Misfud, C., Rapee, R. M., 2005)	Targeted group; 8 weekly 1 hour sessions plus 2 parent sessions	91	Children 9 & 10 years with elevated anxiety	Statistically sig. improvement in anxiety symptoms for children in intervention compared to control at post-int. Effects maintained at 4-months follow-up
(Lowry-Webster, Barrett, & Dadds, 2001; Lowry-Webster, Barrett, & Lock, 2003)	Universal school-based CBT intervention (FRIENDS) over 10 weeks	594	Children 10 to 13 years in urban schools	Statistically sig. improvements in anxiety symptoms of intervention group compared to control at post 85% of those in the intervention group above clinical cut-off were diagnosis free vs 31% in the control group
(Lock & Barrett, 2003; Barrett, Lock, & Farrell, 2005; Barrett, Farrell, Ollendick & Dadds, 2006)	Universal school-based CBT intervention (FRIENDS) over 10 weeks	692	Children 9 to 16 years in urban schools	Statistically sig. improvement in anxiety of intervention compared to control at post Effects were maintained at 1, 2, and 3 year follow-up for grade 6 participants

complexity of conducting research in settings where you cannot control many confounding factors. Efficacy studies are an important first step in examining the effects of an intervention; however, only interventions that have demonstrated effectiveness are recommended for dissemination (Flay, Biglan, Boruch, Castro, Gottfredson, Kellam, Moscicki, Schinke, Vanentive, & Ji, 2005).

Studies of Targeted Preventive Interventions

Three studies of targeted or indicated prevention programs conducted in schools in Australia and the United States met inclusion criteria (Dadds, Holland, Laurens, Millins, Barrett, & Spence, 1999; Dadds et al., 1997; Misfud & Rappee, 2005; Roberts, Kane, Bishop, Matthews, & Thomson, 2004; Roberts, Kane, Thomson, Bishop, & Hart, 2003)

Targeted Prevention Study One

The Queensland Early intervention and Prevention of Anxiety Project was the first cognitive behavioural trial for the prevention of childhood anxiety. This combined indicated/targeted prevention trial included a range of children from those who were disorder free but showing mild anxiousness to those who met criteria for an anxiety disorder but were in the less severe range (Dadds et al., 1999; Dadds et al., 1997). Selection of participants was based on self-reported levels of anxiety, teacher nominations, and diagnostic status based on parents' response on the ADIS (Silverman & Nelles, 1998). From an initial sample of 1,786 school children, 128 (7 - 14 years) were selected to participate and were randomly allocated to either an intervention or control group. Exclusion criteria included children with disruptive behaviour problems, learning problems, disability, developmental delays, and children from non-English speaking families. The intervention consisted of ten 2-hour sessions of cognitive behavioural intervention after school hours, as well as 3 parent sessions.

Prior to intervention, 75% of participants met criteria for an anxiety disorder (mild to moderate severity). Post-intervention results indicated both groups had improved, with no

differences in rates of diagnosis between the intervention and control groups; however, at 6 month follow-up, a significant difference was found χ (1, N = 118) = 10.67, p < .001, with 16% of the intervention group diagnosed with an anxiety disorder compared to 54% of the control group. Group differences disappeared at 12 month follow-up but emerged again at 2 year follow-up, χ (1, N = 100) = 4.64, p < .05, with 20% of those in the intervention group meeting diagnostic criteria for an anxiety disorder compared to 40% in the control group (Dadds et al., 1999). The findings of this study support the efficacy of school-based cognitive-behavioural prevention programs targeted towards children at risk with mild to moderate levels of anxiety (Dadds et al., 1999; Dadds et al., 1997). The intervention in this study was provided by clinical psychologists who had been specially trained and employed by the research team, thus limiting the generalizability of the findings. An interesting outcome was the delay in intervention effects, which is consistent with the results of a similar prevention trial for adolescents with depression ((Jaycox, Reivich, Gillham, & Seligman, 1994). Consistent with previous research (Last, Perin, Hersen, & Kazdin, 1996), participants in this study also showed a general improvement across time regardless of their intervention status. Another limitation of this study is that information from parents and clinicians, not self-report information from the participants, was used for the analysis at 2 year follow-up.

Targeted Prevention Study Two

Roberts, Kane, Thomson, Bishop, and Hart (2003) investigated the effectiveness of a targeted depression prevention program in a random clinical trial conducted in 18 rural schools in Western Australia. One hundred and eighty-nine children with elevated depression scores were selected to participate in the study, which compared the intervention program (conducted during regular class time over a 12 week period by school staff) and a control condition (the regular health curriculum). Anxiety was measured because it often precedes and is comorbid with child depression (Cole, Peeke, Martin, Truglio, &

Seroczynski, 1998). Although no intervention effects were found for depression, there were significant differences in anxiety scores at post-treatment $F(1, 15) = 8.72$, $p < .01$ and at 6-month follow-up $F(1, 15) = 3.86$, $p < .05$, with children in the intervention group having lower scores than those in the control group.

Targeted Prevention Study Three

Misfud and Rapee (2003) conducted a targeted school-based prevention control trial with 91 children (9 and 10 years) who had elevated anxiety scores, specifically aimed at a low socioeconomic status population. A CBT intervention based on the Cool Kids Program: School Version was delivered in eight one hour sessions during school time. Despite the disadvantaged sample, the children in the intervention group reported a trend towards a significant reduction in symptoms of anxiety compared to those in the control group at post-intervention $t(n = 89) = 1.69$, $p < .094$, which became significant at 4-month follow-up $t(n = 89) = 2.73$, $p < .01$. The results were supported by teacher and parent reports, although the return rate by parents was low.

Studies of Universal Preventive Interventions

Research on universal preventive interventions for childhood anxiety is relatively limited. Two studies of universal anxiety prevention programs conducted in schools in Australia and the United States met inclusion criteria (Barrett et al., 2006; Barrett et al., 2005; Lock & Barrett, 2003; Lowry-Webster et al., 2001; Lowry-Webster et al., 2003).

Universal Prevention Study One

The first published report of a school-based universal prevention program specifically aimed at anxiety disorders, focused on the potential effects of a train-the-trainer model in the prevention of child anxiety and depression, and on the efficacy of a CBT based preventive intervention in reducing anxiety and depression was conducted in Australia (Lowry-Webster et al., 2001; Lowry-Webster et al., 2003). Five hundred and ninety-four children (10 to 13 years) from seven Catholic schools in Brisbane, Australia, were randomly

allocated to either an intervention or control condition on the basis of their schools.

Participants were divided into high risk and healthy groups based on self-report levels of

anxiety on the Spence Child Anxiety Scale (SCAS) (Spence, 1998). The intervention was the

FRIENDS for Children Program (Barrett, 1998), which is a CBT based program shown to be

effective within the clinical context (Barrett, 1998). The FRIENDS program teaches

children strategies for coping with anxiety within a group format in 10 one hour weekly

sessions. In this study, teachers and school counselors were trained by clinical

psychologists on implementation of the FRIENDS program prior to conducting the

intervention as part of the regular school curriculum. Three 1 hour psycho-educational

parent sessions were also provided as part of the intervention.

Results of the study were examined universally (all children) and for high risk

children who scored above the clinical cut-off for anxiety at pre-test. Analysis at post-

intervention indicated that children in the intervention group reported significantly fewer

anxiety symptoms from pre-intervention to post-intervention $t(545) = 6.59$, $p < .05$.

Participants in the control group showed no significant differences in anxiety scores from

pre- to post-intervention. This difference was maintained at 12 month follow-up $F(1, 468) =$

50.05, $p < .05$. In terms of reported levels of depression, no significant difference between

the intervention and control groups was reported.

Analysis also indicated a significant difference in self-reported anxiety between high

risk participants in the intervention and control groups at post-intervention. Analysis at

post-intervention indicated that children in the intervention group reported significantly

fewer anxiety symptoms from pre-intervention to post-intervention $F(1, 90) = 13.84$, $p <$

$.05$. In terms of depression scores of high risk participants, analysis indicated the scores of

those in the control group did not change significantly from pre-test to post-test or follow-

up. However, depression scores of high risk participants in the intervention group did

decrease significantly t (30) = 13.18, p < .001. This difference was maintained at 12 month follow-up F (1, 82) = 4.31, p < .05.

A major concern surrounding universal prevention models is that participants with symptoms may not receive sufficient exposure to the intervention to impact their symptoms (Greenberg, Domitrovich, & Bumbarger, 2001). Although diagnostic interviews were not conducted at pre- or post-intervention in this study, they were conducted with a sample of participating children at one year follow-up. Assessments at one year follow-up indicated 85% of children above the clinical cut-off for anxiety were diagnosis free in the intervention group compared to 31% of children in the control group. This suggests that children with symptoms of anxiety can experience reduced symptoms through a universal intervention (Lowry-Webster et al., 2003). Evidence of a prevention effect was also demonstrated with 91.4% of children in the intervention group not at risk compared with 60% of children in the control group (Lowry-Webster et al., 2003).

No significant effects were found on the parent rated Child Behaviour Checklist – Revised (CBCL) (Achenbach, 1991) at either post-intervention or one year follow-up. The return rate of parent questionnaires at post-intervention was 62% in the intervention group and 20% in the control group; return rate at one year follow-up was 58% in the intervention group and 19% in the control group.

No differences were found between males and females in treatment outcomes. Interestingly, results from this study were comparable to those from research studies utilizing trained psychologists to deliver the intervention (Barrett & Turner, 2001; Dadds et al., 1997). Findings outlined in the Lowry-Webster studies (2001; 2003) provide evidence of the potential effects of the FRIENDS program as a universal preventive intervention for child anxiety, when implemented by trained teachers or school counsellors.

Limitations of this study included the low rate of return of parent questionnaires, which raises questions about the representativeness of the responding sample. Study

participants were students at Catholic schools in an urban setting, which limits generalizability. Although diagnostic interviews were conducted with children who had scored above a clinical cut-off, they were only conducted on a sample of participants and only at one year follow-up. Results indicated fewer children in the intervention group met diagnostic criteria for anxiety disorders than in the control group at that time. There is no way of knowing how many children had met diagnostic status at pre-intervention, so no conclusions can be made about change in diagnostic status as a result of the intervention.

Universal Prevention Study Two

Lock and Barrett (2003) conducted a study evaluating the effects of a universal school-based intervention for child anxiety at two different developmental stages. Participants were 737 children (336 aged 9 to 10 years; 401 aged 14 to 16 years) from seven pre-selected non-secular schools in Brisbane Australia. Schools were randomly assigned to either the FRIENDS intervention group (12 forty-five minute sessions delivered by psychologists in the classroom) or to a control group. Participants in both groups completed standardized measures of anxiety, depression, and coping style, and were stratified into low, moderate, and high risk groups based on their pre-intervention self-reported anxiety scores. Young people identified as "at risk" of an anxiety disorder were assessed for a clinical diagnosis with a structured diagnostic interview.

The effects of the preventive intervention were assessed at post-intervention, 12 month follow-up (Barrett et al., 2005), 24 and 36 month follow-up (Barrett et al., 2006). Findings showed universal intervention as potentially successful in reducing symptoms of anxiety and increasing coping skills in children. Participants in the study showed general reductions in anxiety across time regardless of intervention status. There were no significant differences in anxiety or depression scores between the intervention and control groups at post-intervention. However, at 12-month follow-up univariate analysis indicated a significant difference in SCAS (Spence, 1998) anxiety scores $F(1, 543) = 7.29$, $p < .05$, $n =$

13.58 between participants in the intervention group compared to those in the control group. Similar delays in intervention effects were found in the Queensland Early Intervention project (Dadds et al., 1997) and are consistent with the results of a depression prevention trial (Jaycox et al., 1994). No analysis was reported for overall changes in anxiety scores at 24 or 36 month follow-up; however, a significant time x group interaction was reported for girls $F(2, 186) = 4.07$, $p < .04$. Pairwise comparisons indicated that girls in the intervention group had significantly lower anxiety scores than those in the control group at 12 month follow-up, $p < .001$, at 24 month follow-up, $p < .05$, but not at 36 month follow-up. This finding suggests that gender may be an important factor in predicting both risk for anxiety and intervention outcome. Girls across age groups tended to be at higher risk for anxiety than boys but also tended to be most responsive to an intervention.

It is difficult to assess changes in depression scores in this study. In the initial report, a significant difference in depression scores between the intervention and control groups was reported at 12 month follow-up $\hat{F}(1, 735) = 8.21$, $p < .016$ (Lock & Barrett, 2003). However, the long-term follow-up reports of this study indicated there no significant group differences were found in depression scores at any time (Barrett et al., 2006; Barrett et al., 2005).

Significant differences were found in anxiety scores between grade 6 and grade 9 students at post-intervention $F(2, 193) = 13.06$, $p < .001$. The report of this study indicated differences between grades remained at 12 month follow-up, but did not report the results of statistical analysis. Simple effects analysis of the SCAS anxiety scores for grade 6 students at 24 and 36 month follow-up indicated a significant difference between scores of those in the intervention group compared to those in the control group across time $F(1, 96) = 7.48$, $p < .01$. No significant differences in anxiety scores were found for grade 9 students at 24 or 36 month follow-up.

No significant group differences in anxiety scores of high or moderate at risk participants at post-intervention or one year follow-up were reported. The anxiety levels of all at risk participants improved over time regardless of group. It was also reported that there were proportionately more participants at high risk in the control condition at each time point compared to those in the intervention condition. Chi-square analysis revealed significant differences between at risk participants across groups at 36 month follow-up, χ $(1, 261) = 13.57$, $p < .001$, with significantly more participants in the control group at risk. The frequency of students at risk in the intervention group remained relatively stable across all time points, where as the frequency of at risk students in the control condition substantially increased over time.

The initial report of this study indicated significant differences in coping scores between participants in the intervention group compared to those in the control group. Significant differences were found for behavioural avoidance at post-intervention stepdown $F(1, 735) = 11.21$, $p < .0125$ and at 12 month follow-up $F(1, 735) = 8.24$, $p < .0125$, with those in the intervention group having lower scores than those in the control group. No information about assessment of coping is provided in subsequent reports of this study (Barrett et al., 2006; Barrett et al., 2005)

A limitation of this study, and a possible explanation for the non-significant differences of at risk participants across groups at post assessment, is the significantly larger number of participants in the control groups that were absent at the time of post-assessment (28%), compared to the intervention group (15%). Over twice the number of absent participants within the control condition were those with high levels of anxiety at pre-assessment. Given the large percentage of high-risk children absent at post and 12-month follow-up intervals, missing data limit the validity of the study results.

Like the Lowry-Webster study (2001; 2003), participants in this study were from non secular schools in an urban setting, which also limits the generalizability of the results.

Another limitation was that data were only collected from participants. It is generally recognized that data from multiple sources is preferable.

Like the study conducted by Lowry-Webster et al., (2001, 2003) analysis conducted at post-intervention and 12 month follow-up did not take into account the potential intra-cluster correlation that occurs within clusters. When random assignment is based on clusters (schools or classrooms) rather than individuals, this effect must be taken into account in the analysis otherwise there may be an over-estimation of intervention effects (Raudenbush, Spybrook, Liu, & Congdon, 2006). However, at 24 and 36 months multilevel analysis was conducted across the dependent variables to examine for a clustering effect of schools (Barrett et al., 2006). It was concluded that there was no clustering effect. Analysis of data at post-intervention and one year follow-up also did not include using pre-intervention assessment scores as a covariate, which can again result in an overestimation of intervention effects. However, analysis at 24 and 36 month follow-up was conducted using univariate analysis of variance with pre-intervention scores as the covariate on all dependent measures.

2.5.3 Summary

The studies reviewed offer support for the emerging role of prevention programs in reducing the impact of anxiety disorders on children. The three targeted preventive studies reviewed all found statistically significant reductions in anxiety between participants in the intervention group as compared to those in the control group at post-intervention. This difference continued to be significant at follow-up (at 4 or 6 months). However, the challenges associated with accurately identifying those who would benefit from a targeted program as well as the stigma associated with targeted programs makes them less attractive than universal programs.

Two universal prevention studies met inclusion criteria. Both studies used a school-based cognitive-behavioural intervention, the FRIENDS program, delivered in the classroom by either trained teachers or psychologists. Children in the intervention groups showed significant reductions in anxiety symptoms from pre to post-assessment. In comparison, children from the control condition showed no significant change. Results for children identified as "at risk" were mixed with one study reporting significant improvements in anxiety levels for students who received the intervention compared with those who didn't, and one reporting no significant differences. Both studies reported reductions in the frequency of at risk participants in the intervention group compared to the control group over time. Similarly, reports of changes in self-reported depression were mixed.

Results regarding gender have also been mixed in the studies reviewed. One targeted study (Dadds et al., 1999; Dadds et al., 1997) and one universal study (Barrett et al., 2006; Barrett et al., 2005; Lock & Barrett, 2003) found that girls reported higher self-reported anxiety than boys as well as greater reductions in anxiety following exposure to the intervention.

2.6   Purpose of the Dissertation

To date, research studies on the prevention of anxiety disorders in children that meet the rigorous requirements necessary to establish efficacy and effectiveness are sparse. Yet, given the high prevalence rates and the societal and personal costs associated with anxiety disorders, the need for this information is critical. No only are there few universal studies, but those conducted to date had sample populations from urban non-secular schools, did not include information from multiple informants, did not always take into account differences in pre-intervention scores, and only one study to date has included data about the FRIENDS for Youth program.

In 2004, the government of British Columbia introduced the FRIENDS for Life program in grade 4 and 5 classrooms (9 and 10 year olds) throughout the province, as part of a broader commitment to improve child mental health outcomes. The program, delivered in partnership with BC school districts, has received enthusiastic support from teachers and students. Since implementation of the FRIENDS program, many school principals and individual teachers have requested access to the FRIENDS for Youth program for grade 7 and 8 students (12 and 13 year olds) to help them mitigate the stressors students face as they transition from elementary to middle and secondary school. School transitions are associated with a range of emotional and behavioural difficulties, including peer relationship problems, school refusal, somatic complaints, academic failure, increased substance abuse, delinquency, and school drop-out (Felner, Brand, Adan, Mulhall, Flowers, & Sartain, 1993).

The sample population in the only published study specifically reporting data on the FRIENDS for Youth Program (Lock & Barrett, 2003) were children 14 to 16 year of age. When the FRIENDS for Youth program was reviewed by a small group of BC teachers and students (15 and 16) years of age, feedback was that the program was too "young" for 15 and 16 year olds in BC schools and would be more suitable for younger adolescents. Results from Barrett and Lock (2003) also indicated that younger students seemed to benefit more from the FRIENDS program than did older students. For these reasons, the sample population in the current study included grade 7 and 8 students who were predominantly 12 and 13 years of age. Grade 7 and 8 also marks the transition from elementary to middle or secondary school for BC students. Early adolescence has been identified as a critical period in childhood development (Kendall & Ollendick, 2004) that may be a particularly opportune time for providing skills to alter maladaptive behaviour to be more adaptive (Cicchetti & Toth, 1996).

The purpose of this study was to examine the effectiveness of the FRIENDS for Youth Program in decreasing the anxiety symptoms and disorders experienced by early adolescents in grades 7 and 8 (11 – 14 years of age) during a particularly stressful juncture – the transition from elementary to middle or secondary school. The study also examined the role of gender, coping style, geographic location (rural, small urban, or urban), grade, and school type.

The current study of the effectiveness of the FRIENDS for Youth program in BC public schools addressed limitations identified in previous universal anxiety prevention research.   The study sample included participants from rural, small urban and urban schools, where all previous studies had been conducted with urban populations.   The study employed self-report questionnaires completed by students as well as questionnaires completed by both parents and teachers, again strengthening study findings.   Although the protocol for the FRIENDS for Youth program includes 3 parent sessions and it may be ideal to involve parents, these sessions were not incorporated as part of this effectiveness study. Teachers in BC have been reluctant to deliver parent sessions with the basic FRIENDS program and attendance by parents of adolescents to any school sessions are typically quite poor.   The purpose of this study was to see if the program would be effective in the real world setting, which in BC means delivering the program with no parent sessions.

Results of this study will inform policy and program decisions within the BC Ministry of Children and Family Development, Ministry of Education and Ministry of Health, and potentially result in province wide school-based prevention programming for adolescents that will be delivered in parallel with the FRIENDS for Life program now in place in BC elementary schools. This research will also be of interest to other Canadian provinces.

CHAPTER 3. METHODS

This chapter provides an overview of the study hypothesis as well as a detailed description of the procedures employed in this study, including the characteristics and recruitment of participants, the measures used, and the intervention. The University of British Columbia's Biomedical Research Ethics Board approved this research study on September 14, 2006 (see Appendix 1).

3.1   Dissertation Hypothesis

The first objective of this study was to examine the effects of a universal preventive intervention by comparing self-reported anxiety levels of 11 to 14 year olds exposed to the FRIENDS for Youth intervention program with those who did not receive the program (control group), at pre- and post-intervention and at 6 month follow-up. Based on the results from previous studies indicating the effectiveness of the FRIENDS program with younger children (Barrett et al., 2006; Barrett et al., 2005; Lock & Barrett, 2003; Lowry-Webster et al., 2003), it was hypothesized that the intervention group would demonstrate greater reductions in self-reported anxiety than the control group.

As research suggests anxiety is a risk factor for depression (Cole et al., 1998), the second objective was to examine the effects of the FRIENDS for Youth intervention on self-reported symptoms of depression at pre- and post intervention and at 6 month follow-up. It was hypothesized that the intervention group would demonstrate greater reductions in self-reported depression than the control group.

The third objective was to examine the effectiveness of a universal preventive intervention in reducing self-reported anxiety and depression in students identified as "at risk" (students who have MASC *T*-Scores of 50 or more) of developing an anxiety disorder. Results from previous research was mixed, with some studies reporting greater reductions

for 'at risk" participants in the intervention group than those in the control group (Dadds et al., 1999; Lowry-Webster, Barrett, & Dadds, 2001; Lowry-Webster, Barrett, & Lock, 2003) and others reporting no significant differences (Barrett et al., 2006; Barrett, Lock, & Farrell, 2005; Lock & Barrett, 2003). For the current study it was hypothesized that students "at risk" in the intervention group would evidence greater reductions in anxiety and depression at post intervention and 6 month follow-up in comparison to students "at risk" in the control group.

A fourth objective was to compare the effects of the universal intervention on student's coping style (proactive versus avoidant strategies) at pre- and post-intervention and 6 month follow-up. It was hypothesized that changes in the coping style of students in the intervention group would become more proactive as compared students in the control group.

The fifth objective was to examine gender differences in the effects of the universal intervention on anxiety, depression, and coping strategies. Previous anxiety prevention studies have reported mixed results in terms of the effect of gender, with some studies reporting higher anxiety levels in girls and more response to the intervention by girls and other studies finding no gender differences at all. In this study it was hypothesized that there would be no difference in response by girls in comparison to boys.

The final objective was to examine the effects of geographic location (urban, small urban, or rural), grade, and school type on student's level of self-reported anxiety, depression, and coping strategies, and their response to the intervention. Transition has been recognized as a time of increased stress for students (Felner, Ginter, & Primavera, 1982). This study takes place over one school year, therefore there is no opportunity to study the effects of intervention on anxiety levels through the transition process from elementary to middle or secondary school. However, exploring differences in anxiety by grade and school type is a first attempt to look at the issue of transition. No hypotheses

were made regarding the effects of geographic location, grade or school type on anxiety, depression, or the impact of these independent variables on intervention effects. Exploratory analysis was undertaken to better understand the effects of these variables.

3.2   Participants

Participants included students from 41 randomly selected grade 7 and 8 classrooms in 20 public schools in British Columbia (BC). All BC public school principals with grade 7 or 8 classes were sent a written invitation to participate in an anxiety prevention research program, which included a brief description of the study. Ninety-three schools volunteered to participate in the study. Exclusion criteria for schools included students in classes with fewer than 18 students.   To help ensure comparability of the intervention, schools were maximally paired based on socio-economic neighbourhood index, type of school (elementary, middle, or high school), geographic location (urban, small urban, or rural) and size of student body. One school dropped out of the study. The number of classes (clusters) needed to achieve a power of 0.80 was calculated using Optimal Design Software (Raudenbush et al., 2006), which takes into account the intracluster correlation coefficient (P = 0.10), cluster size (25), and anticipated effect size (0.4) (see Appendix 2). Results indicated 38 classes should be in the study.

Of the 93 schools that volunteered to be part of the study 10 matched pairs (20 schools) were randomly selected to participate through a draw by a person independent of the study. Figure 3.1 shows the location of communities with schools participating in this study. It is important to note that 75% of the BC population live in the lower half of the province, and 90% live in the lower mainland and Vancouver Island areas (BC Stats, 2007). From each school pair, one school was randomly assigned to the intervention condition and one to the control condition by a person independent of the study. Groups were randomized

British Columbia
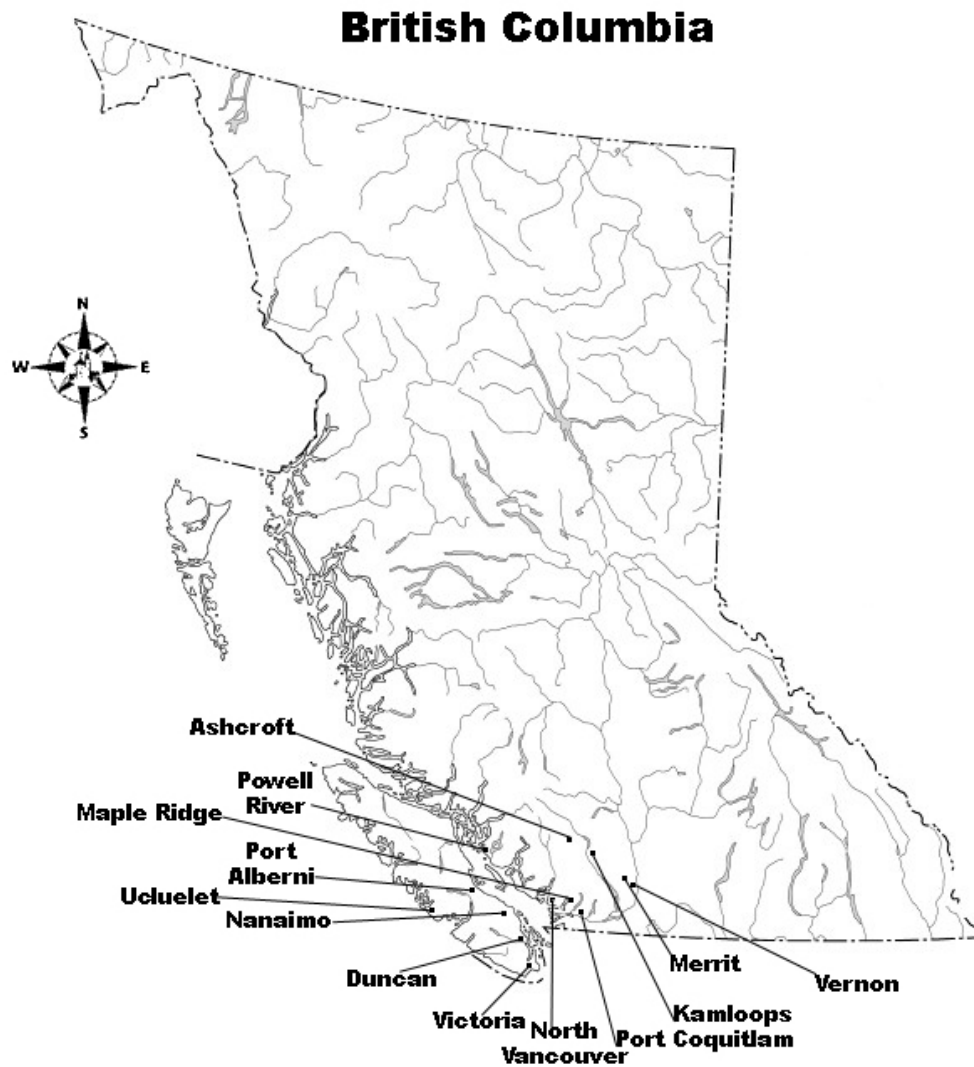
Figure 3.1. Location of Communities With Study Schools in BC

by school rather than classrooms to ensure that there would be no confounding effect where students from the intervention group would interact with students from the control group. Two classrooms from each school, for a total of 1,039 students, participated in the study. Data from students who were not fluent in English or with any condition which could prevent them from participating in 10 consecutive weeks of involvement in the program or with mental retardation were not included in the analysis.

Demographic descriptions of the sample according to group assignment (intervention vs control) are presented in table 3.1. Information and parent consent

Table 3.1. Participant Demographics

		Group Intervention	%	Control	%	Total
Gender	Male	195	57%	144	43%	339
	Female	217	57%	166	43%	383
Geographic Location	Urban	152	82%	34[*]	18%	186
	Small Urban	162	44%	209	56%	371
	Rural	98	60%	67	40%	165
Age	11 Years	58	51%	55	49%	113
	12 Years	231	63%	134	37%	365
	13 Years	121	50%	119	50%	240
	14 Years	1	33%	2	67%	3
Grade	7	270	61%	169	39%	439
	8	142	50%	141	50%	283
Language Spoken At Home	English	321	54%	275	46%	596
	Other	86	72%	40	28%	126
School Type	Elementary	124	55%	101	45%	225
	Middle	146	63%	84	37%	230
	Secondary	142	53%	125	47%	267

* Indicates the only statistically significant difference between intervention and control groups.

packages (see Appendix 3) were sent home with students from all participating classrooms. Parental consents to participate were received from 722 children (70%), 339(47%) males and 383 (53%) females. Of these, 411 were in the treatment group and 311 in the control group. The consent rate for elementary schools was n = 239 (84%); for middle schools, n = 252 (78%); and from secondary schools n = 270 (62%). Of students with consent, 596 (83%) speak English as their primary language, 320 (54%) in the treatment group and 276 (46%) in the control group.

Eighty-two percent of participants from urban locations were in the treatment group and only 18% in the control group. This was due in part to one class of 34 students from the urban control group dropping out of the study due to teacher illness, and in part to one of

the two remaining classes that were in the urban control group only having eight students with consent to participate.

3.3   Procedure

In June of 2006 principals of all BC public schools with grade 7 or 8 classrooms were invited to participate in the FRIENDS for Youth research project by e-mail from the researcher.   Permission to participate in the project was then sought from the School Board of each randomly selected school (Appendix 4). Forty teachers from classrooms (treatment and control) participating in the study were released from classroom duties for one full day (7 hours) to complete an intensive workshop in Vancouver. A certified FRIENDS trainer provided information about childhood anxiety, and the principles and practices of prevention and early intervention in the morning. During the afternoon, the trainer provided a step-by step guide to the intervention program, including demonstrations of lessons and active participation of teachers. As well, each teacher received a detailed leader's manual. Following the training teachers were sent information and consent packages to send home with each student. As part of the consent process, participating students were also asked to sign the consent form.

The FRIENDS for Youth program was subsequently delivered by the trained teachers as part of the regular classroom curriculum in intact participating classrooms. Students, whose parents did not consent to be part of the study, received the FRIENDS for Youth program as part of the regular classroom curriculum; however, no data were used from those students. The program was available for schools in the control condition following completion of the study.

Assessment of all children followed the same procedure. Immediately before the beginning of the FRIENDS for Youth program, all children completed three self-report measures in their classroom within regular school hours. All students were asked to sit at

their own desk and to listen carefully to the instructions that were provided. A research

assistant supervised children in this task, assisting any children having difficulty with the

instruments. Students were informed that all questionnaire responses were confidential

and that they could withdraw from the research at any time. Questionnaires to be completed

by parents were sent home with each student and returned to the classroom in a sealed

envelop. Two weeks after sending the questionnaires home, teachers sent those that had

been returned to the researcher. Teachers also completed questionnaires about each

student in their classroom and returned these to the researcher within two weeks of

receiving them. Data from students without parental consent were not included in the

analysis. Upon completion of the program and 6 months later, all children again completed

the same measures using the same standarized instructions and procedures. Parent

questionnaires were sent home at program completion and 6-month follow-up, and

teachers also completed questionnaires on each student at these times.   If a student scored

at a high level (clinical) on either the anxiety or depression self-report measure, the parent

was contacted by the research team and assisted with finding additional resources in the

community for youth with anxiety problems.

Although it was not possible to blind teachers to the intervention, a certain amount

of concealment was achieved. Teachers did not have access to student or parent data at any

time. Because all students completed all assessment forms regardless of consent (although

only data from those with consent was entered into the data set), teachers were also not

aware of which students had consent to participate in the study and which did not.

Confidentiality of the data was maintained by assigning each school a (coded)

number which was known only to the research team. Students were identified only by a

randomly assigned number (coded). All confidential information was then kept in a locked

filing cabinet in a locked office at the University of British Columbia. All information kept

on a computerized database required a confidential password to access. Access to the data

was restricted to the research team, including the project lead in each school who collected the completed self-report measures from students and the data entry person.

Following the pre-intervention screening and the teacher training workshop, the preventive intervention was commenced in those schools assigned to the treatment group. The one hour weekly intervention was typically conducted during health and guidance classes. For those schools within the control group, the students completed the standard classroom curriculum. For teachers in the intervention group the agenda for each session was clearly outlined in the Group Leaders Manual, and all teachers were asked to adhere to this protocol. Teachers were also asked to rate the intervention integrity at the conclusion of each session. Participating children were given their own workbook outlining the activities for each session.

3.3.1 Intervention Integrity

To ensure all topics and sessions were delivered as designed, each teacher was asked to complete a program integrity checklist at the conclusion of each weekly session, which lists session by session content areas and asks teachers to rate the overall effectiveness of their implementation. See Appendix 8 for the Intervention Integrity check-lists from sessions 6 and 8. Integrity check-lists were handed in for 61% of the FRIENDS Youth classroom sessions. Self-report integrity ratings showed 81% concordance between session and manual content for each session, with a range of 69% to 86%.

3.4   Measures

3.4.1 Center for Epidemiologic Studies-Depression Scale for Children (CES-DC)

The CES-DC (Radloff, 1977) is a 20-item self-report measure designed to assess depressed mood, feelings of worthlessness or guilt, sense of helplessness and hopelessness, psychomotor retardation, loss of appetite, and sleep disturbance (Radloff, 1977). Using a

four point scale, respondents rate the frequency of each symptom that occurred during the past week from "rarely or none of the time" to "most or all of the time". Four items are reversed scored. A composite score is calculated by adding item responses. The CES-DC has demonstrated utility as a screening instrument for adults (Roberts, 1983), is substantially correlated with other self-report measures of depression (Radloff, 1977), is shorter and easier to read, and has been successfully employed with large adolescent school samples (Schoenbach, 1984). The CES-DC has shown psychometric properties in adolescents similar to those shown in adults, including the ability to identify children with depressive disorders and to discriminate depressive disorders from other forms of psychopathology (Faulstich, Carey, & Ruggiero, 1986). Test-retest reliability for the CES-DC at 4 weeks was r = .67 (Radloff, 1991). Data for internal consistency were not reported.

3.4.2 Multidimensional Anxiety Scale for Children (MASC)

The MASC (March, 1997) is a 39-item child self-report checklist designed to assess a variety of anxiety dimensions in children from 9 to 19 years. Respondents are asked to rate the frequency with which they experience particular anxiety symptoms on a four-point Likert-style scale. The MASC response options range from "never true about me" (scored 0) to "often true about me" (scored 3). The MASC has undergone extensive psychometric evaluation (March et al., 1999). The scale has demonstrated acceptable levels of both convergent and divergent validity, very difficult to do in school-aged populations; and test-retest reliability at 3 weeks (r = .646) and 3-months (r = .874) (March & Sullivan, 1999), good internal consistency (α = .518 to .885), and has been shown to discriminate within and between categorically defined diagnostic groups (Dierker, Albano, Clarke, Heimberg, Kendall, & Merikangas, 2001).

3.4.3 The Coping Scale for Children and Youth (CSCY)

The CSCY (Brodzinsky et al., 1992) is a 29 item self-report measure of coping behaviour for children from 10 to 15 years. The CSCY was designed to assess four specific coping responses to situations perceived as stressful (assistance seeking, cognitive-behavioural problem solving, cognitive avoidance, and behavioural avoidance). Each item on the scale represents a method of coping, and respondents are asked to indicate the frequency with which they have applied that coping strategy during the past few months using a four point scale ranging from "never" (scored 1) to "very often" (scored 4). Each subscale is computed separately to provide a measure of coping: assistance seeking, cognitive-behavioural problem solving, cognitive avoidance, and behavioural avoidance. The Coping Scale has demonstrated good test retest reliability at 1 week ($r = .78$ - $.81$) and construct validity (Brodzinsky et al., 1992). Internal consistency results indicated an acceptable ? to good level of reliability for each category ranging from $r = .72$ to $r = .81$.

3.4.4 Strengths and Difficulties Questionnaire (SDQ)

The SDQ (Goodman, 1997) is a 25-item measure of child and adolescent well-being with five subscales; Hyperactivity, Emotional Symptoms, Conduct Problems, Peer Problems, and Prosocial Activities. The Prosocial Scale is not included in measuring overall functioning. Low scores on the SDQ indicate better functioning. The SDQ is available in parent, teacher, and youth self-report versions and has been found (Goodman, 1999) to correlate well with more lengthy measures of adolescent well-being and behaviour. The SDQ has demonstrated good test retest reliability ($r = .85$) at 4 weeks (Goodman, 1999). Interrater correlations among parent, teacher and self-report versions have been found to be generally better than for other similar measures (Goodman, 2001) The SDQ has shown good internal consistency ($\alpha = .83$), adequate discriminate validity and adequate

convergent validity (Goodman, Ford, Simmons, Gatward, & Meltzer, 2000). The parent and the teacher versions of the SDQ were used in this study.

Permission was received from the authors to use the MASC and the Coping Scale for Children and Youth (Appendix 6). The other measures are available in the public domain.

3.5   Intervention

The intervention used in this study was the FRIENDS for Youth program (Barrett, Lowry-Webster & Turner, 2004a, 2004b). The FRIENDS programs were developed from the Coping Koala anxiety treatment program, the Australian version of the Coping Cat program (Kendall, 1993). In recognition of the developmental needs of children at different ages (Barrett, 2000; Kendall, 1994), FRIENDS has two parallel forms: one for children (7 to 11 years) and the other for youth (12 to 16 years). See Appendix 9 for content details and learning objectives for the FRIENDS Programs by session. The youth version of the program was used in this study.

The theoretical underpinning of the FRIENDS program is cognitive-behavioural: Children in this 10 week program learn about the links between thoughts and feelings, they learn skills and techniques that help them cope with and manage anxiety including relaxation, cognitive restructuring, attentional training, and family and peer support. The program also helps children consider appropriate ways to handle conflict, set goals, and problem-solve social situations. These skills are taught in 45 to 60 minute weekly sessions as part of the regular classroom curriculum by a trained classroom teacher. Children work through a workbook; teachers use a group leaders' manual that describes the activities that need to be implemented in each session.

The word FRIENDS is an acronym, which assists participants to remember the coping steps to follow in the program: F, for feeling worried? R for learning to relax and feel good; I for inner thoughts; E for explore plans of action; N for nice work reward yourself; D

for don't forget to practice; S for stay cool. In the FRIENDS program, group processes are used to help children learn positive strategies from each other and reinforce individual efforts and change. Group processes include normalization of anxiety experiences, and peer learning through discussion of successes and difficulties.

The FRIENDS program, including the FRIENDS for Youth version, incorporates 3 parent sessions as well as the 10 classroom sessions. These psycho-educational sessions are seen as means of having parents reinforce the skills children learn during the classroom sessions. Published research studies establishing the efficacy of the FRIENDS program have identified parent participation as a challenge, even with children in elementary grades (Barrett et al., 2001; Barrett et al., 2004; Lowry-Webster et al., 2003). Implementing the parent part of the FRIENDS program in BC has also been identified as a challenge, with most teachers indicating they are not comfortable nor are they willing to lead these sessions (K. Angelius, May 2006). For these reasons, and also because of the added challenge of getting parents of middle and secondary students to participate, it was decided not to include the parent sessions as part of this research study. This is an effectiveness study which seeks to examine how the FRIENDS program works in the real world.

3.6   Analysis

The comparability of participants in the intervention and control groups was examined using the Chi-square test. Between group differences for major outcome measures (MASC, CES-DC, CSCY, Teacher/Parent SDQ) at pre-intervention were calculated using Independent *t-tests*. To examine changes over time mixed factorial repeated measures analysis of variance (ANOVA) were conducted on each of the outcome measures by group. Effectiveness of the intervention was assessed by conducting analysis of covariance controlling for pre-intervention scores on all outcome measures by condition at post-intervention and 6-month follow-up for boys and girls.

Exploratory analysis using mixed factorial repeated measures analysis of variance (ANOVA) were conducted to investigate the effects of grade, geographic location, and school type on the main outcome measures. Effectiveness of the intervention was assessed by conducting mixed factorial analysis of covariance controlling for pre-intervention scores on boys and girls. A Bonferroni's correction for Type I error was applied (Tabachnick & Fidell, 2007).

CHAPTER 4. RESULTS

4.1   Preliminary Analysis

The data were screened for normality, linearity, missing cases and outliers using visual analysis of box plots and scatter diagrams. Scores were changed on the 3 outliers present to one unit larger than the largest score (Tabachnick & Fidell, 2007).   A small percentage of students had randomly missing data points throughout the questionnaires. Given the random nature of this missing data, and the small number of students involved, missing data were replaced using mean substitution for questionnaires with less than 30% of missing data.   Questionnaires with more than 30% of the data points missing were removed from subsequent analysis (Tabachnick & Fidell, 2007). By SPSS default, cases with missing scores at either post-assessment or 6-month follow-up were excluded from the statistical analyses. For questionnaire items where participants had marked more than one response, the lowest scoring response was recorded.

All dependent variables were slightly positively skewed (0.145-1.26). As recommended by Tabachnick and Fidell, (2007), square root data transformations were performed on measures with a skew greater than +/-0.8, which included the CES-DC and the Behavioural Avoidance subscale of the CYCS. Although normality and linearity were significantly improved following this transformation, there was minimal difference in the results of subsequent analyses. Assumptions of normality were not met; however, given the large sample size, violations of this assumption were considered acceptable (Tabachnick & Fidell, 2007).   Multicollinearity was assessed by examining the correlation matrix and bivariate correlation analysis. Results showed significant correlations (p<.05) between the anxiety and depression variables, and between the coping subscales ranging from 0.53 to

0.66. As these correlations were lower than 0.90, all dependent measures were included in the analysis (Tabachnick & Fidell, 2007).

Homogeneity of variance-covariance matrices were found to be significant using Box's M, p<.001. These dependent variables were expected to be positively skewed in a community population, and due to the large sample size, violations of this assumption were considered acceptable (Tabachnick & Fidell, 2007). Patterns of missing data were examined to determine drop out and absenteeism rates in order to assess the potential influences of these factors on intervention outcome at post-intervention and 6-month follow-up intervals. One class of 30 students in the control group was withdrawn prior to completion of the study due to teacher illness. At post-intervention 54 children were absent from school, 32 (6.9%) from the intervention group and 22 (5.9%) from the control group. At 6-month follow-up 80 children were absent, 45 (9.8%) from the intervention group and 35 (9.4%) from the control group. Chi square analyses resulted in no significant differences in children who dropped out of the study according to the variables of age, gender, or geographical location.

The Multidimensional Anxiety Scale for Children (MASC) has an Inconsistency Index which is useful in identifying random or careless responding. Index responses from 38 children were identified as inconsistent and subsequently removed from the analyses.

In sum, the data screening resulted in a final sample of 722 participants, 411 (57%) in the intervention group and 311 (43%) in the control group. Results are reported on the untransformed variables (Tabachnick & Fidell, 2007).

4.1.1 Pre-intervention Differences

As seen in Table 4.1 there were no significant differences between the children in the intervention and those in the control group on any of the measures pre-intervention. The assignment of participants into treatment or control groups was evaluated according to age,

gender, type of school, geographic location, and grade. A Chi-square test for independence indicated a significant association between group and the distribution of students across grade, χ^2 (1, 722) = 9.010, p = .002, age χ^2 (4, 722) = 13.85, p = .008, and geographic location, χ^2 (1, 722) = 73.70, p = .001. Specifically, the results showed that, compared to the control group, the treatment group had more grade 7 students (n = 270 compared to n = 169), more 12 year olds (n = 231 compared to n = 134), and more students living in urban locations (n = 152 compared to 34). Regardless of these differences, scores were similar.

Table 4.1. Means and Standard Deviations for Dependent Variables by Group at Pre-intervention[*]

Measure		MASC	CES-DC	CYCS Subscales				TSDQ	PSDQ
Group				Assistance Seeking	Problem Solving	Cog. Avoid.	Behav. Avoid.		
Intervention	M	39.48	14.54	2.34	2.23	2.11	1.68	6.25	7.75
	SD	15.33	10.69	0.72	0.65	0.60	0.60	5.52	6.26
Control	M	38.50	13.06	2.40	2.25	2.06	1.67	5.49	6.89
	SD	14.90	9.57	0.68	0.63	0.56	0.57	5.68	5.21
Total	M	39.06	13.90	2.36	2.24	2.09	1.67	5.89	7.38
	SD	15.14	10.24	0.71	0.64	0.58	0.59	5.6	5.84

* No significant differences were found between intervention and control groups on any measure

4.1.2 Attrition and Missing Data

Patterns of missing data were examined to determine dropout and absenteeism rates to assess potential influences of these factors on intervention outcome at post-intervention and 6-month follow-up. At post-intervention there were no significant differences in the frequency of missing data across gender (11% missing, male; 10% missing, female), group (14% missing, intervention; 11% missing, control) and risk status (11% missing, healthy; 10% missing, at risk).

At 6-month follow-up there were no significant differences in the frequency of missing data across group (19% missing, intervention; 10% missing control), gender (14% missing, female; 17% missing, male), risk group (19% missing, healthy; 15% missing, at risk). Reasons for attrition at each time point were absenteeism from school on the day of assessment, moving, and absenteeism from class due to extra curricular activities that were occurring at the time of the assessment (i.e. sports, music classes, learning assistance). Cases were excluded from analysis only if they were missing data required for the specific analysis.   Please see figure 4.1 for a flowchart of study participants.

4.1.3 Cluster Effect

Prior to evaluating the effects of the intervention across time and condition, a two level (schools and individuals) multilevel analysis was conducted across the MASC and CES-DC dependent variables to examine whether there was a clustering effect of schools. The results indicated that the "school" level of data accounted for less than 4% of total variance across the dependent measures. Based on this it was concluded that no there was no clustering effect of schools (Raudenbush et al., 2006).

4.1.4 Risk Group Status

In order to compare the effects of the intervention across children with different levels of anxiety, participants were stratified into "at risk" and "healthy" groups, based on their pre-intervention scores on the MASC. This was to enable comparative analysis of the intervention effects for children with high anxiety and for healthy children. Healthy children in the intervention with low levels of anxiety at pre-intervention were expected to report marginal or no changes in anxiety at post-intervention and 6-month follow-up intervals. Thus the lack of change in healthy child responses on the dependent variables may potentially mask the overall benefits for children with high anxiety at pre-intervention. Consequently, participants were allocated to the "healthy" group based on scores below a
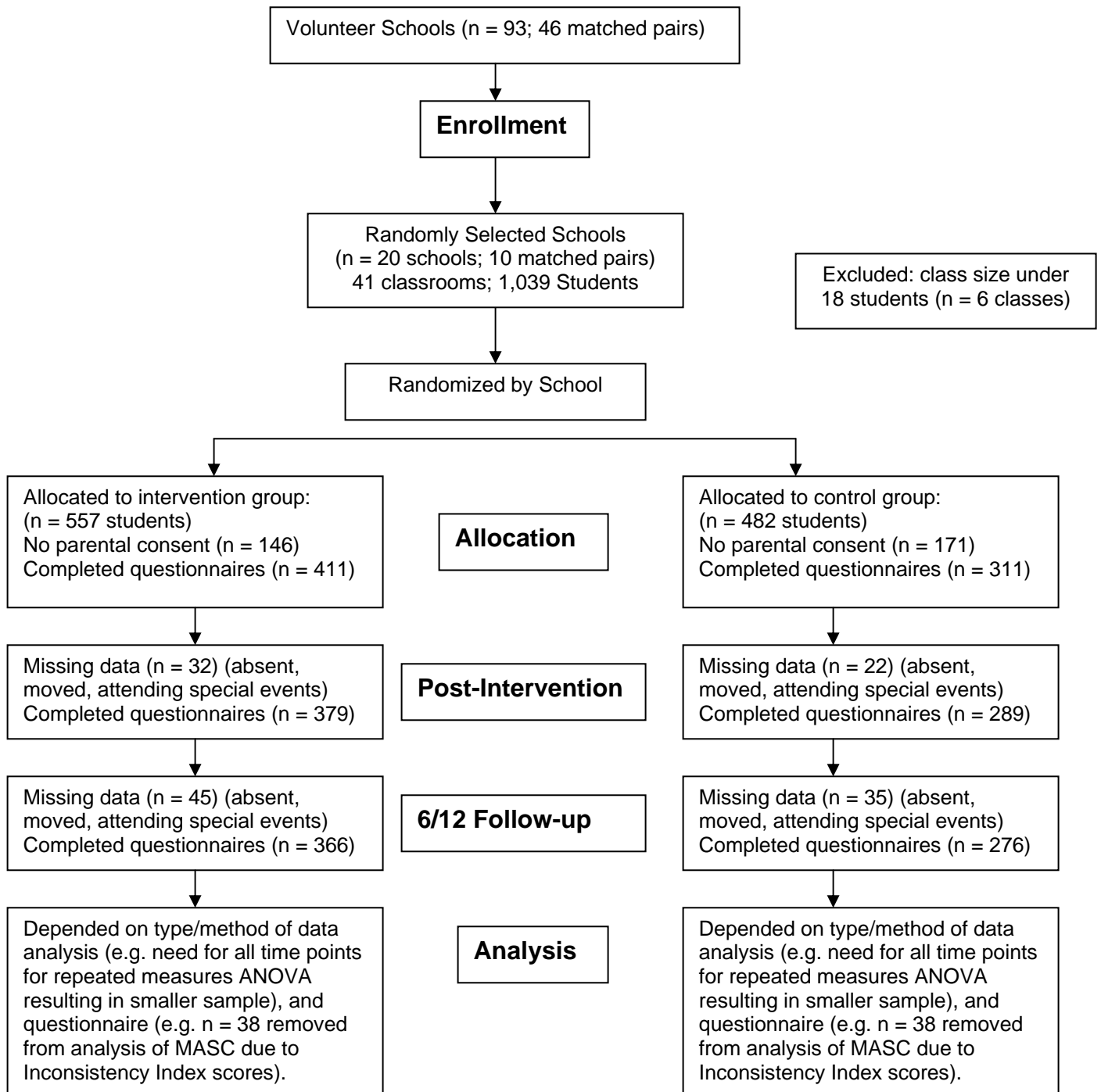
Figure 4.1. FRIENDS Youth Research Participant Flowchart

cut off T-score of 60 at pre-intervention (March, 1997), and participants above the cut off T-score of 60 were designated as "at risk". There were no significant differences between the "At Risk" children in the intervention group and those in the control group on any of the measures at pre-intervention. Chi-square tests for independence at pre-intervention indicated no significant association between group and gender χ^2 (1, n=106) = .25, p = .61, nor between group and grade (χ^2 1, n=106) = .95, p = .33, for "at risk" children.

4.2 Universal Intervention Effects on Anxiety And Depression

Prior to examining the effects of the FRIENDS for Youth program on anxiety and depression, pre-intervention differences were assessed using independent-samples t-tests to compare levels of anxiety across group, gender, type of school and grade at pre-intervention. A significant difference was found in level of anxiety across gender t (647) = -5.03, p = .005 and type of school t (658) = 4.56, p = .011, but not group t (647) = .84, p = .40, or grade t (647) = -.38, p = .70. Females had a mean score of 41.75 (SD = 14.32) and males had a mean score of 35.82 (SD = 15.71). Participants in elementary schools had a mean score of 35.85 (SD = 15.30) whereas participants in middle schools had a mean score of 40.10 (SD = 16.44), and participants in secondary schools had a mean score of 39.29 (SD = 14.04).

Independent-samples t-tests were conducted to compare levels of depression across group, gender, and grade at pre-intervention. A significant difference was found in level of depression across gender t (647) = -3.64, p =.005, but not for group t (642) = 1.88, p = .06, grade t (663) = -.55, p = .58. Females had a mean score of 15.23 (SD = 11.12) and males had a mean score of 12.40 (SD = 8.92).

4.2.1 Group, Gender, and Geographic Location differences in Anxiety

To assess the effect of the intervention on participants' self reported anxiety, a 2 (group: intervention, control) x 2 (time: post, 6-month follow-up) mixed factorial repeated

measures analysis of covariance (ANCOVA) was conducted on the dependent variable MASC. Pre-intervention MASC score was used as the covariate in this analysis. After adjusting for pre-intervention scores, the interaction between group and time was non-significant $F(1, 518) = 1.93$, $p = .166$. There was no significant main effect of time $F(1, 518) = 2.46$, $p = .118$. There was a significant main effect of group $F(1, 518) = 4.83$, $p < .028$, with participants in the intervention group reporting lower anxiety scores than those in the control group. A between groups analysis of covariance was conducted to compare the anxiety scores between participants in the intervention and control groups at post-intervention and 6-month follow-up. Pre-intervention MASC score was used as the covariate in this analysis. After adjusting for pre-intervention scores there were no significant differences in anxiety scores between the treatment and control groups at post-intervention $F(1, 574) = 2.32$, $p = .128$, Cohen's $d = .03$. At 6-month follow-up, however, the difference was significant $F(1, 553) = 5.72$, $p < .017$, Cohen's $d = .12$. See table 4.2 for MASC means and standard deviations by group and gender.

Given pre-intervention differences for gender, analyses were conducted separately on girls and boys anxiety scores. To assess the effect of the intervention on girls' self-reported anxiety a 2 (group: intervention, control) x 2 (time: post, 6-month follow-up) mixed factorial repeated measures ANCOVA was conducted. Pre-intervention MASC scores were used as the covariate in this analysis. After adjusting for pre-intervention scores there was no significant interaction between time and group $F(1, 271) = .01$, $p = .95$. There was no significant main effect of time $F(1, 271) = .13$, $p = .72$. There was a significant between-subject main effect of group $F(1, 271) = 9.42$, $p < .002$ with girls in the intervention group reporting lower anxiety scores over time than those in the control group. Further analyses of group differences amongst girls were conducted using univariate analysis of covariance (ANCOVA). Pre-intervention MASC scores were used as the covariate in this analysis. After adjusting for pre-intervention scores, there was a significant effect of group at

Table 4.2. Means and Standard Deviations for the Multidimensional Anxiety Scale for Children for Gender Pre-Intervention, Post-Intervention and at Six Month Follow-up

		Multidimensional Anxiety Scale for Children (MASC)					
Group	Time	Pre		Post		6-month	
		M	SD	M	SD	M	SD
Intervention (n = 411)	Male	36.62	15.46	37.35	15.72	33.05	17.05
	Female	40.74	14.00	39.15*	13.75	37.98*	15.03
Intervention Total		38.79	14.82	38.30	14.72	35.65**	16.18
Control (n = 311)	Male	33.43	14.55	33.61	15.03	31.53	15.45
	Female	42.24	13.46	43.85	14.78	42.39	14.90
Control Total		38.02	14.64	38.95	15.73	37.19	16.08

Notes:

*Indicates a significant group difference ($p < .005$) between intervention and control groups at post-intervention and again at 6-months follow-up ($p < .003$).

**Indicates a significant group difference ($p < .017$) between intervention and control groups at 6-months follow-up.

post-intervention $F(1, 303) = 8.02$, $p < .005$, Cohen's $d = .31$, and at 6-month follow-up $F(1, 295) = 8.83$, $p < .003$, Cohen's $d = .30$, with girls in the intervention group reporting lower anxiety scores than those in the control group.

To assess the effect of the intervention on boys' self-reported anxiety a 2 (group: intervention, control) x 2 (time: post, 6-month follow-up) mixed factorial repeated measures ANCOVA was conducted. Pre-intervention MASC scores were used as the covariate in this analysis. After adjusting for pre-intervention scores the interaction between group and time was not significant $F(1, 245) = 3.27$, $p = .072$. There was no significant within-subject effect of time, $F(1, 245) = 1.84$, $p = .18$, nor any significant between-subject effects of group $F(1, 252) = .01$, $p = .92$.

Prior to examining the impact of geographic location on self-reported anxiety, pre-intervention differences were assessed using univariate analysis of variance (ANOVA).

Results indicated significant pre-intervention differences. Post-hoc comparisons using the Tukey HSD test indicated that the mean score for participants attending urban schools (M = 42.10, SD = 13.35) was significantly different from the mean scores of those attending small urban (M = 37.32, SD = 14.09) or rural schools (M = 36.83, SD = 16.53). Scores of participants in small urban and rural schools did not differ significantly.

Given this pre-intervention difference, to assess the impact of geographic location on self-reported anxiety scores over time a 3 (location: urban, small urban, rural) x 2 (time: post, 6-month follow-up) x 2 (group: intervention, control) repeated measures mixed factorial ANCOVA was conducted, with pre-intervention anxiety scores as the covariate. An adjusted alpha of .0125 was used to adjust for Type I error (Tabachnick & Fidell, 2007). There was no significant interaction between time and geographic location $F(2, 515) = .45$, $p = .64$, group and geographic location $F(2, 515) = .32$, $p = .73$, nor between time, group and geographic location $F(2, 515) = 1.60$, $p = .20$. There was no significant main effect of time F $(1, 515) = 3.48$, p = .063, of geographic location $F(2, 515) = 1.87$, $p = .16$, nor of group $F(1, 515) = 1.34$, $p = .25$.

To assess the impact of geographic location on boys' self-reported anxiety scores over time a 3 (location: urban, small urban, rural) x 3 (time: pre, post, 6-month follow-up) mixed factorial analysis of variance was conducted. Results indicated there were no significant interactions between time and group $F(2, 484) = .50$, $p = .60$, time and geographic location $F(4, 484) = 1.34$, $p = .25$, geographic location and group $F(2, 242) = .54$, $p = .58$, and between group, geographic location and time $F(4, 484) = .72$, $p = .58$. There was a significant main effect of time $F(2, 484) = 7.54$, $p < .001$ but not of geographic location $F(1, 242) = 3.21$, $p = .042$, with all boys reporting lower anxiety scores across time. There was no significant main effect of group $F(1, 242) = .185$, $p = .67$. The means and standard deviations are presented in Table 4.3.

Table 4.3. Multidimensional Anxiety Scale for Children Means and Standard Deviations for Boys and Girls by Geographic Location and Group

Boys	Measure	Multidimensional Anxiety Scale for Children (MASC)						
Geographic Location	Group*		Pre		Post		6 month	
		N	M	SD	M	SD	M	SD
Urban	Intervention	52	40.06	14.17	39.30	14.39	33.35	13.10
	Control	17	41.20	9.70	40.13	12.76	36.94	11.36
Small Urban	Intervention	41	34.37	13.98	37.78	17.44	31.15	16.96
	Control	73	31.73	13.64	32.05	13.84	30.23	14.79
Rural	Intervention	40	34.70	17.43	35.05	14.42	33.43	15.31
	Control	25	33.39	17.81	34.51	17.65	32.42	18.19

* No significant main effect of group was found

Girls	Measure	Multidimensional Anxiety Scale for Children (MASC)						
Geographic Location	Group*		Pre		Post		6 month	
		N	M	SD	M	SD	M	SD
Urban	Intervention	52	43.74	13.94	40.79	12.78	40.22	16.34
	Control	12	45.11	11.25	40.10	10.70	39.26	12.91
Small Urban	Intervention	61	40.30	12.96	39.04	13.12	38.18	14.05
	Control	88	41.23	13.66	43.27	14.60	43.45	14.53
Rural	Intervention	35	37.21	14.83	36.90	16.07	34.29	14.31
	Control	25	43.16	15.11	46.38	18.04	40.53	15.71

* No significant main effect of group was found

To assess the impact of geographic location on girls' anxiety scores a 3 (location: urban, small urban, rural) x 3 (time: pre, post, 6-month follow-up) mixed factorial ANOVA was conducted. Results indicated there were no significant interactions between time and group $F(2, 534) = .42$, $p = .66$, group and geographic location $F(2, 267) = 1.00$, $p = .37$, time and geographic location $F(4, 534) = 2.67$, $p = .032$, nor between time, group and geographic location $F(5, 534) = .96$, $p = .43$. Results again showed a significant main effect of time $F(2, 534) = 4.71$, p<.009. There was no significant main effect of group $F(1, 267) =$

3.68, p = .056, nor of location $F(2, 267)$ = .29, p = .742, with all participants having lower

anxiety scores over time. The means and standard deviations are presented in Table 4.3.

4.2.2 Group, Gender, and Geographic Location differences in Depression

To assess the effect of the intervention on participants' self reported depression, a 2

(group: intervention, control) x 2 (gender: male, female) x 3 (time: pre, post, 6-month

follow-up) mixed factorial repeated measures analysis of variance (ANOVA) was conducted

on the dependent variable CES-D. The interaction was non-significant between time and

group $F(1, 503)$ = .054, p = .95, between gender and group $F(1, 503)$ = 3.05, p = .08, and

between group, time, and gender $F(2, 1006)$ = .82, p = .44. There was a significant

interaction between time and gender $F(1, 503)$ = 3.18, $p<.042$ with girls reporting higher

depression scores than boys at all assessment points. There was no significant main effect

of time $F(2, 1006)$ = 1.83, p = .16, nor of group $F(1, 505)$ = 1.31, p = .25. The main effect of

gender emerged significant $F(1,503)$ = 16.48, $p<.001$, with girls reporting higher depression

scores than boys at all assessment points. The main effect of group was non-significant $F(1,$

$503)$ = 1.31, p = .25. See Table 4.4 for CES-DC means and standard deviations by group and

gender.

Given a significant main effect of gender was found, analysis were conducted

separately for boys and girls depression scores. To assess the effects of the FRIENDS for

Youth program on girl's self-reported depression scores a 2 (group: intervention, control) x

3 (time: pre, post, 6-month follow-up) mixed factorial ANOVA was conducted. The

interaction between time and condition was non-significant $F(2, 544)$ = .45, p = .64. There

was a significant within-subject effect of time $F(2, 471)$ = 4.60, $p < .01$; there was no

significant between-subject effect of group $F(1, 272)$ = .16, p = .68. Depression scores for all

girls increased over time regardless of group.

Table 4.4. Means and Standard Deviations for the Center for Epidemiological Studies Depression Scale for Children for Gender Pre-Intervention, Post-Intervention and at Six Month Follow-up

Center for Epidemiological Studies Depression Scale for Children (CES-DC)							
Group	Time	Pre		Post		6-month	
		M	SD	M	SD	M	SD
Intervention (n = 411)	Male	13.06	10.23	13.83	10.21	12.87	10.41
	Female	14.44*	10.77	14.87*	10.88	15.93*	11.85
Intervention Total		13.80	10.53	14.40	10.57	14.53	11.30
Control (n = 311)	Male	11.20	7.36	10.91	8.91	10.80	8.61
	Female	14.29*	10.78	15.86*	11.82	16.51*	11.67
Control Total		12.86	9.47	13.57	10.84	13.87	10.61

Note.

*Indicates a significant gender effect (p < .001) at all three assessment points (girls higher).

To further assess the effect of the intervention on boy's self-reported depression scores a 2 (group: intervention, control) x 3 (time: pre, post, 6-month follow-up) mixed factorial ANOVA was conducted. The interaction between time and group was non-significant $F(2.462) = .44$, $p = .64$. There was no significant within-subject effect of time $F(2, 462) = .40$, $p = .67$; there was a significant between-subject effect of group $F(1, 231) = 4.96$, $p < .027$, with boys in the intervention group reporting higher levels of depression for all assessment times.

To assess the impact of geographic location on self-reported depression scores over time a 3 (location: urban, small urban, rural) x 3 (time: pre, post, 6-month follow-up) x 2 (group: intervention, control) mixed factorial analysis of variance was conducted. A Bonferroni adjusted alpha of .0125 was used to adjust for Type I error (Tabachnick & Fidell, 2007). There was no significant interaction between time and geographic location $F(4, 1002) = 1.31$, $p = .27$, between time and group $F(2, 1002) = .40$, $p = .67$, between group and geographic location $F(2, 501) = 1.39$, $p = .25$, nor between time, group and geographic location $F(4, 1002) = 1.81$, $p = .13$. There was no significant main effect of time

$F(2, 1002) = .54$, $p = .58$, of geographic location $F(2, 501) = .01$, $p = .99$, nor of group $F(1,$
$501) = 2.22$, $p = .14$. Univariate analysis indicated no significant pre-intervention difference
between locations, $F(2, 662) = .26$, $p = .77$, with depression scores for participants similar
in urban (M = 14.33, SD = 10.27), small urban (M = 13.65, SD = 10.02), and rural (M =
13.95, SD = 10.69) locations.

To assess the impact of geographic location on boy's self-reported depression scores
over time a 3 (location: urban, small urban, rural) x 3 (time: pre, post, 6-month follow-up) x
2 group (intervention, control) mixed factorial analysis of variance was conducted. There
were no significant interactions between time and group $F(2, 454) = .65$, $p = .52$, time and
geographic location $F(4, 454) = .86$, $p = .49$, geographic location and group $F(2, 454) =$
$.08$, $p = .93$, and between time, geographic location and group $F(4, 454) = .51$, $p = .73$.
Results indicate no significant main effect of time $F(2, 454) = .19$, $p = .82$, of location $F(2,$
$227) = 1.06$, $p = .35$, nor of group $F(1, 227) = 2.93$, $p = .09$. The means and standard
deviations are presented in Table 4.5.

To assess the impact of geographic location on girl's depression scores a 3 (location:
urban, small urban, rural) x 3 (time: pre, post, 6-month follow-up) x 2 group (intervention,
control) mixed factorial ANOVA was conducted. There were no significant interactions
between time and group $F(2, 536) = .16$, $p = .85$, time and geographic location $F(4, 536) =$
1.65, $p = .16$, geographic location and group $F(2, 268) = 1.58$, $p = .21$, and between time,
geographic location and group $F(4, 536) = 1.64$, $p = .16$. Results indicate no significant
main within subject effect of time $F(2, 536) = 1.43$, $p = .24$, nor a between subject effect of
location $F(2, 268) = .38$, $p = .68$, nor of group $F(1, 268) = .38$, $p = .54$. The means and
standard deviations are presented in Table 4.5.

Table 4.5. Center of Epidemiological Studies Depression Scale for Children Means and Standard Deviations for Boys and Girls by Geographic Location and Group

Boys	Measure	Center of Epidemiological Studies Depression Scale for Children (CES-DC)						
Geographic Location	Group		Pre		Post		6 month	
		N	M	SD	M	SD	M	SD
Urban	Intervention	44	14.04	10.86	14.47	10.76	14.94	11.13
	Control	17	13.66	8.15	11.24	9.62	11.71	8.46
Small Urban	Intervention	40	12.68	9.15	12.63	9.15	10.83	8.55
	Control	68	10.95	7.39	10.80	8.32	10.26	7.41
Rural	Intervention	40	12.35	10.71	14.33	10.73	12.63	11.08
	Control	24	10.18	6.58	10.98	10.33	11.71	11.66

Girls	Measure	Center of Epidemiological Studies Depression Scale for Children (CES-DC)						
Geographic Location	Group		Pre		Post		6 month	
		N	M	SD	M	SD	M	SD
Urban	Intervention	44	13.62	9.48	14.20	8.94	17.07	13.58
	Control	12	15.25	11.87	10.33	8.39	12.50	9.64
Small Urban	Intervention	61	13.27	11.48	15.07	12.42	14.69	10.12
	Control	90	14.57	10.62	17.07	12.01	17.61	11.75
Rural	Intervention	42	16.99	10.78	15.29	10.51	16.52	12.36
	Control	25	12.80	11.14	14.18	11.92	14.48	10.83

4.2.3 Intervention Effects on Anxiety and Depression for "At Risk" Children

The proportion of "at risk" children in the treatment condition decreased from 66 (10.2%) at pre-intervention to 55 (8.7%) at post-intervention to 42 (6.9%) at 6-month follow-up. Whereas the number of "at risk" children in the control condition was 40 (6.2%) at pre-intervention, 35 (5.5%) at post-intervention, and 37 (6.1%) at 6-month follow-up. Of the 106 participants "At Risk" pre-intervention, 32 (48%) of those in the intervention group versus 11 (30%) of those in the control group were no longer "At Risk" at post-intervention,

and 48 (61%) in the intervention group versus 9 (25%) in the control group were no longer "At Risk" at 6-month follow-up.

A 2 (risk group: at risk, healthy) x 3 (time: pre, post, 6-month follow-up) mixed factorial ANOVA was conducted to assess differences in depression scores by risk group. The interaction between time and risk group was non-significant $F(2, 962) = 1.62$, $p = .20$. There was a significant effect of risk group $F(1, 481) = 73.42$, $p < .001$, but not of time $F(2, 962) = 1.62$, $p = .59$. Post-hoc analyses indicated that children in the "at risk" group reported higher levels of depression compared to children in the "healthy" group at pre-intervention $F(1, 645) = 87.83$, $p < .001$, post-intervention $F(1, 568) = 78.51$, $p < .001$ and 6-month follow-up $F(1, 540) = 38.64$, $p < .001$. Table 4.6 presents means and standard deviations of the CES-DC at pre-intervention, post-intervention, and 6 month follow-up by risk group.

Prior to examining the effects of the intervention on anxiety of at risk participants, pre-intervention differences were assessed using independent-samples t-tests to compare levels of anxiety across group, grade and gender at pre-intervention. There were no significant pre-intervention differences for "at risk" participants across group $t(104) = .95$, $p = .34$, or grade $t(104) = .001$, $p = .99$. There was a significant difference in scores for gender $t(104) = .-4.02$, $p = .001$, with at risk girls having higher pre-intervention MASC scores (M = 64.73, SD = 5.39) than boys (M = 60.02, SD = 6.52).

To assess the effect of the FRIENDS for Youth program on self-reported anxiety for "at risk" participants, a 2 (group: intervention, control) x 2 (gender: male, female) x 2 (time: post, 6-month follow-up) mixed factorial ANCOVA was conducted. Pre-intervention MASC scores were used as the covariate in this analysis. After adjusting for pre-intervention scores there were no significant interactions between time and gender $F(1, 75) = .02$, $p = .90$, gender and group $F(1, 75) = .05$, $p = .82$, time and group $F(1, 75) = .45$, $p = .51$, and time, gender and group $F(1, 75) = .45$, $p = .45$. Analysis revealed no significant main effect of time

Table 4.6. Means and Standard Deviations for Multidimensional Anxiety Scale for Children and Center of Epidemiological Studies Depression Scale for Children Across Risk Group

Measure		Multidimensional Anxiety Scale for Children (MASC)						
Group			Pre		Post		6-month	
Intervention		N	M	SD	M	SD	M	SD
	Healthy	235	34.25	11.46	35.36	13.07	32.79	14.90
	At Risk	46	61.99	5.19	53.34	13.53	50.21	14.66
Intervention Total		281	38.79	14.82	38.30	14.72	35.65	16.18
Control								
	Healthy	206	34.28	11.99	36.01	13.89	34.18	14.60
	At Risk	34	60.67	6.52	56.76	14.56	55.39	12.26
Control Total		240	38.02	14.64	38.95	15.73	37.19	16.08

Measure		Center for Epidemiological Studies Depression Scale for Children (CES-DC)						
Group			Pre		Post		6-month	
Intervention		N	M	SD	M	SD	M	SD
	Healthy	211	11.76*	9.16	12.16*	9.21	12.9*	10.70
	At Risk	45	20.98*	11.51	22.44*	10.49	20.18*	12.19
Intervention Total		256	13.38	10.21	13.97	10.21	14.18	11.30
Control								
	Healthy	193	11.38*	8.27	12.32*	9.81	12.78*	10.05
	At Risk	33	21.10*	11.94	20.37*	14.32	20.68*	11.58
Control Total		226	12.80	9.51	13.49	10.92	13.93	10.63

Note.

*Indicates a significant risk group effect ($p < .001$) at all three time periods (at risk higher than healthy).

$F(1, 75) = .02$, $p = .88$. There was a significant between subject effect of group $F(1, 75) = 2.14$, $p = .021$ but not of gender $F(1, 75) = 2.14$, $p = .15$, with at risk participants in the control group having higher anxiety scores than participants in the intervention group at 6-months follow-up. Post-hoc univariate ANCOVA with pre-intervention MASC scores as the covariate, revealed a trend towards a significant effect of group at post-intervention $F(1, 87) = 3.75$, $p = .056$, Cohen's $d = .24$, with the scores of those in the intervention group lower

than those in the control group. This difference became significant at 6-month follow-up F (1, 86) = 4.46, p < .038, Cohen's d = .39 (see Figure 4.2).
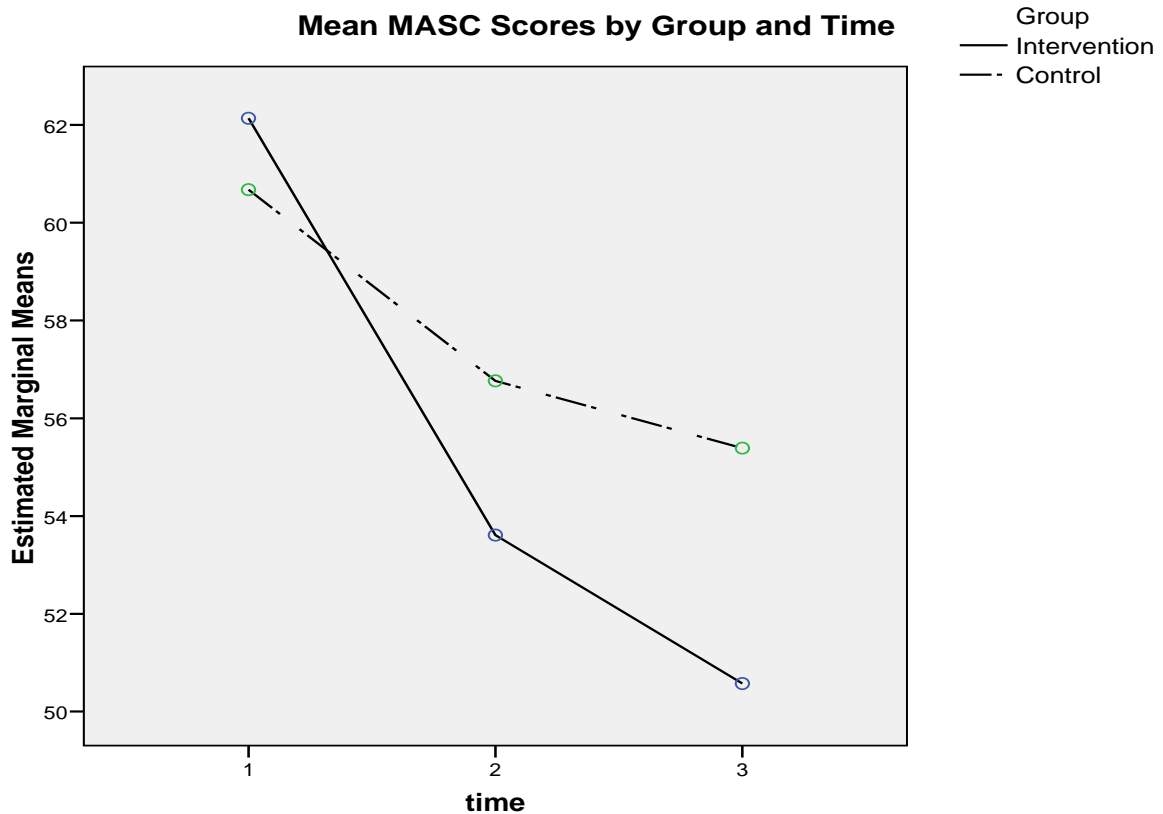
Figure 4.2. Multidimensional Anxiety Scale for Children Mean for "At Risk" Participants by Group at Pre-intervention, Post-intervention and Six Month Follow-up

To assess the effect of the intervention on self reported anxiety of "at risk" boys, a 2 (group: intervention, control) x 3 (time: pre, post, 6-month follow-up) mixed factorial ANOVA was conducted. The interaction between time and group was non-significant F (2, 80) = 1.48, p = .23. There was a significant main effect of time F (2, 80) = 17.90, p < .001, but not of group F (1, 40) = .01, p = .91, with anxiety scores for "at risk" boys improving over time regardless of group.

To assess the effect of the FRIENDS for Youth program on "at risk" girls, a 2 (group: intervention, control) x 3 (time: pre, post, 6-month follow-up) mixed factorial ANOVA was conducted. The interaction between time and group was non-significant $F(2, 72) = 2.06$, $p = .13$. There was a significant main effect of time $F(2, 72) = 6.23$, $p < .003$, but not of group $F(1, 36) = 1.89$, $p = .18$. Post-hoc univariate ANCOVA with pre-intervention MASC scores as the covariate, showed a trend towards a significant effect of group at post-intervention $F(1, 43) = 3.69$, $p < .062$, Cohen's $d = .46$, with anxiety scores for "at risk" girls in the intervention group lower than those in the control group. This trend continued at 6-month follow-up $F(1, 41) = 3.78$, $p < .059$, Cohen's $d = .47$. The power for this sample was calculated and was .60.

To assess the effect of the FRIENDS for Youth program on levels of depression in "at risk" participants a 2 (group: intervention, control) x 2 (gender: male, female) x 3 (time: pre, post, 6-month follow-up) mixed factorial repeated measures ANOVA was conducted. The interaction between group and time $F(2, 148) = .52$, $p = .59$, gender and time $F(2, 148) = .29$, $p = .75$, group and gender $F(1, 74) = .29$, $p = .95$, and between group, time and gender $F(2, 148) = .44$, $p = .64$ were non-significant. Analysis also indicated no significant main effects of time $F(2, 148) = .34$, $p = .71$, or group $F(1, 74) = .22$, $p = .64$. There was a significant between subject effect of gender $F(1, 74) = 3.95$, $p < .05$, with at risk girls reporting higher depression scores than boys at all times.

4.2.4 Impact of Grade and School Type on Anxiety, and Depression

Prior to examining the impact of grade and school type on anxiety and depression, pre-intervention differences were assessed using independent-samples t-tests to compare levels of anxiety across grade and school-type. Self-reported anxiety scores showed significant differences between grade 7 participants in elementary schools and grade 7 participants in middle schools, $t(391) = -3.33$, $p < .001$; grade 7 elementary school

participants had a mean score of 36.22 (SD = 14.94) whereas grade 7 middle school participants had a mean score of 41.47 (SD = 16.23). Although there was also a difference in means between grade 8 middle school participants (M = 36.16; SD = 16.23) and grade 8 secondary school participants (M = 39.46; SD = 14.35), analysis between grade 8 participants in middle school (n = 15) and those in secondary school (n = 248) were not conducted due to the low numbers in middle school.

To understand the impact of grade on self-reported anxiety scores a 2 (type: elementary, middle) x 3 time (pre, post, 6-month follow-up) x 2 (gender: males, females) mixed factorial ANOVA was conducted on MASC scores, for grade 7 participants. A Bonferroni adjusted alpha of .016 was used to adjust for Type I error (Tabachnick & Fidell, 2007). The interaction between time and gender F (2, 608) = 2.57, p = .078, school-type and gender F (1, 304) = .90, p = .34, and time, gender and school-type F (2, 608) = .09, p = .91 were non-significant. There was a significant interaction between time and school-type F (2, 610) = 5.18, p < .006. Analyses also indicated a significant main effect of time F (2, 610) = 7.40, p < .001, and of gender F (1, 304) = 15.40, p < .001, but not of school-type F (1, 304) = 3.95, p = .048. Post hoc univariate ANCOVA with pre-intervention MASC scores as the covariate revealed a significant difference at post-intervention F (1, 338) = 9.21, p < .003, Cohen's d = .26 and at 6-month follow-up F (1, 333) = 5.89, p < .016, Cohen's d = .38, with grade 7 students in elementary schools having lower anxiety scores than those in the middle schools. Table 4.7 presents means and standard deviations for grade 7 participants by school type, time and group.

Due to the low number of grade 8 middle school participants, no analyses looking at the interaction between type of school was done for grade 8 participants. Univariate analysis with pre-intervention MASC scores as the covariate were conducted. No significant differences were found at post-intervention F (1, 237) = .73, p = .39 nor at 6-month

Table 4.7. Multidimensional Anxiety Scale for Children Means and Standard Deviations of Grade 7 Students by School Type by Group

	Measure	Multidimensional Anxiety Scale for Children (MASC)					
		Pre		Post		6-months	
School Type	Group	M	SD	M	SD	M	SD
Elementary School	Intervention	34.30	14.77	36.07*	15.01	32.41	13.99
	Control	36.30	13.92	41.31*	13.50	37.91	14.77
	Total	35.15	14.42	38.28***	14.59	34.74**	14.54
Middle School	Intervention	41.05	14.62	38.58*	15.76	37.04	16.60
	Control	40.78	16.99	41.09*	18.17	39.28	20.30
	Total	40.94	15.54	39.57***	15.55	37.93**	18.21

Notes.

*Indicates a significant group effect *(p < .014)* at post-intervention across grade 7 (intervention: lower)

**Indicates a significant effect of school type (p < .016) at 6/12 follow-up (Middle School higher)

***Indicates a significant effect of school type (p < .003)* at post-intervention (Middle School higher); pre-intervention scores covaried.

follow-up $F(1, 219)$ = .93, p = .34 for grade 8 students in the intervention group compared to those in the control group.

To understand the effect of school type on self-reported anxiety scores a 3 (time: pre, post, 6-months) x 2 (group: intervention, control) mixed factorial repeated measures ANOVA was conducted for each school type. Analysis indicated that in elementary schools there was no significant interaction between time and group $F(2, 342)$ = 2.55, p = .80. There was a significant main effect of time $F(2, 342)$ = 10.72, p < .0001, but not of group $F(1, 171)$ = 4.62, p = .033. Univariate analysis with pre-intervention MASC scores as the covariate revealed a significant difference at post-intervention $F(1, 181)$ = 6.11, p < .014, Cohen's d = .36, with elementary students in the intervention group reporting lower scores than those in the control group. This difference was no longer significant at 6-month follow-up $F(1, 184)$ = 5.85, p = .017.

Similar analysis of data from middle schools revealed no significant interaction between time and group $F(2, 294)$ = 2.26, p = .11. There was a significant main effect of

time $F(2, 294) = 4.64$, $p < .01$, but not of group $F(1, 147) = .11$, $p = .74$. Univariate analysis with pre-intervention scores as the covariate indicated no significant difference in anxiety between middle school students in the intervention and control groups post-intervention $F(1, 165) = 5.61$, $p = .019$, nor at 6-month follow-up $F(1, 157) = 1.31$, $p = .25$.

Similar analysis of data from secondary schools indicated no significant interaction between time and group $F(2, 396) = 3.19$, $p = .042$. Analysis indicated a significant main effect of time $F(2, 396) = 6.90$, p $< .001$, but not of group $F(1, 198) = 3.46$, $p = .064$, with all middle and secondary participants having lower anxiety scores over time regardless of group. Univariate analysis with pre-intervention scores as the covariate indicated no significant differences in anxiety between secondary students in the intervention and control groups post-intervention $F(1, 223) = 2.21$, $p = .14$, nor at 6-month follow-up $F(1, 205) = .79$, $p = .79$.

Prior to examining the effect of grade and school type on anxiety scores in grade 7 students "at risk", pre-intervention differences were assessed using independent-samples t-tests to compare levels of anxiety across school-type. A significant difference was found in levels of anxiety for "at risk" participants across school-type $t(1, 69) = 2.02$, $p = .047$ with grade 7 elementary school students having a mean score of 60.27 ($SD = 7.38$) and grade 7 middle school students a mean of 63.68 ($SD = 7.38$). A 2 (type: elementary, middle) x 3 (time: pre, post, 6-month follow-up) x 2 (gender: male, female) mixed factorial ANOVA for grade 7 "at risk" students was conducted. Analyses indicated interactions between time and school-type, gender, and time, gender and school-type were non-significant. There was a significant main effect of time $F(2, 98) = 16.85$, $p < .001$ and of gender $F(1, 49) = 11.07$, $p < .002$. There were no significant main effects of school-type $F(1, 49) = 2.90$, $p = .13$. Anxiety scores for all grade 7 "at risk" participants improved over time; grade 7 "at risk" students in middle schools had higher anxiety scores than those in elementary schools, and girls had higher scores than boys at all time points. Due to the low numbers of "at risk" grade 8

participants in middle school no analyses by school type was conducted for "at risk" grade 8 students.

To understand the impact of grade on self-reported depression scores a 2 (type: elementary, middle) x 3 time (pre, post, 6-month follow-up) x 2 (gender: male, female) mixed factorial ANOVA was conducted on CES-DC scores, for grade 7 participants. A Bonferroni adjusted alpha of .016 was used to adjust for Type I error (Tabachnick & Fidell, 2007). The interaction between time and gender $F(2, 578) = .71$, $p = .49$, time and school type school-type $F(2, 578) = .77$, $p = .39$, and time, gender and school-type $F(2, 578) = .37$, $p = .69$ were non-significant. The main effects of time $F(2, 578) = .94$, $p = .39$ and school type $F(1, 289) = 2.16$, $p = .14$ were also non-significant. There was a significant effect of gender $F(1, 289) = 8.52$, $p < .004$, with grade 7 girls reporting higher depression scores than boys. Post-hoc ANCOVA with pre-intervention scores as the covariate was conducted for grade 7 students by type of school. There was no significant difference in depression scores by school type $F(1, 338) = 3.36$, $p = .068$ at post-intervention, nor at 6-month follow-up $F(1, 315) = 1.49$, $p = .22$.

To understand the effect of school type on self-reported depression scores a 3 (time: pre, post, 6-months) x 2 (group: intervention, control) mixed factorial repeated measures ANOVA was conducted for each school type. For elementary students analysis indicated no significant interaction between time and group $F(2, 336) = .143$, $p = .87$. Analyses indicated no significant effect of time $F(2, 336) = 2.53$, p = .08, nor of group $F(1, 168) = .30$, $p = .59$. For middle school students analysis indicated no significant interaction between time and group $F(2, 268) = 2.46$, $p = .08$ and no main effect of time $F(2, 268) = 1.24$, $p = .29$ nor of group $F(1, 134) = 1.33$, $p = .25$. For secondary school students analysis indicated no significant interaction between time and group $F(2, 398) = .43$, $p = .65$ and no main effect of time $F(2, 398) = 1.90$, $p = .15$ nor of group $F(1, 199) = 1.58$, $p = .21$.

To understand the impact of grade and school type on self-reported depression scores of grade 7 at risk participants a 2 (type: elementary, middle) x 3 time (pre, post, 6-month follow-up) x 2 (gender: male, female) mixed factorial ANOVA was conducted on CES-DC scores. The interactions between time and gender, time and school-type, gender and school-type, time, gender and school-type were non-significant. There were no main effects of time $F(2, 90) = .081$, $p = .38$, nor of school-type $F(1, 45) = .517$, $p = .59$. There was a significant effect of gender $F(1, 45) = 8.90$, $p < .005$, with at risk girls reporting higher scores at all time points.

4.3   Universal Intervention Effects on Coping Style

To assess the effects of the FRIENDS for Youth program on coping style analyses were conducted treating the 4 subscales (Assistance Seeking, Problem Solving, Cognitive Avoidance, and Behaviour Avoidance) of the Coping Scale for Children and Youth (CSCY) as separate dependent variables. Table 4.8 presents means and standard deviations for each of the subscales by gender and group.

Table 4.8. Means and Standard Deviations for Coping Subscales by Gender

Coping Subscale		Assistance Seeking					
Group	Time	Pre		Post		6-month	
		M	SD	M	SD	M	SD
Intervention (n = 275)	Male	2.16[††]	0.61	2.24	0.76	2.23	0.67
	Female	2.56[††]	0.77	2.57	0.68	2.54	0.74
Intervention Total		2.37	0.73	2.42	0.73	2.40	0.72
Control (n = 242)	Male	2.32[††]	0.66	2.18	0.65	2.21	0.59
	Female	2.48[††]	0.68	2.53	0.67	2.43	0.67
Control Total		2.40	0.67	2.37	0.68	2.33	0.64

Note. [††] Indicates 2-tailed significance.

[††] Indicates a significant gender difference ($p = .001$) at pre-intervention (girls higher).

Table 4.8, continued

Coping Subscale		Cognitive Behavioural Problem Solving					
Group	Time	Pre		Post		6-month	
		M	SD	M	SD	M	SD
Intervention (n =273)	Male	2.14†	0.68	2.14	0.71	2.09	0.65
	Female	2.4†	0.61	2.46	0.68	2.38	0.68
Intervention Total		2.28	0.66	2.31*	0.71	2.25	0.68
Control (n = 242)	Male	2.28†	0.58	2.07	0.63	2.13	0.62
	Female	2.23†	0.63	2.25	0.64	2.23	0.61
Control Total		2.25	0.61	2.16*	0.64	2.19	0.62

Notes. † Indicates 2-tailed significance.

† Indicates a significant gender difference (*p* = .05) at pre-intervention (girls higher).

* Indicates a significant group difference (*p* < .008) at post-intervention (intervention higher).

Coping Subscale		Cognitive Avoidance					
Group	Time	Pre		Post		6-month	
		M	SD	M	SD	M	SD
Intervention (n = 271)	Male	2.09†	0.61	2.11	0.64	1.97	0.62
	Female	2.12†	0.59	2.01	0.57	2.08	0.62
Intervention Total		2.10	0.60	2.06	0.61	2.03	0.62
Control (n = 240)	Male	2.06†	0.55	1.95	0.59	1.91	0.53
	Female	2.08†	0.59	2.01	0.49	2.06	0.60
Control Total		2.07	0.57	1.98	0.54	1.99	0.57

Note. † Indicates 2-tailed significance.

† Indicates a significant gender difference (*p* = .05) at pre-intervention (girls higher).

Coping Subscale		Behavioural Avoidance					
Group	Time	Pre		Post		6-month	
		M	SD	M	SD	M	SD
Intervention (n = 277)	Male	1.59†	0.52	1.67	0.57	1.59	0.55
	Female	1.69†	0.61	1.70	0.65	1.69	0.59
Intervention Total		1.64	0.57	1.69	0.61	1.64	0.57
Control (n=244)	Male	1.59†	0.56	1.59	0.62	1.59	0.56
	Female	1.74†	0.55	1.66	0.59	1.73	0.64
Control Total		1.67	0.56	1.63	0.60	1.66	0.61

Note. † Indicates 2-tailed significance.

† Indicates a significant gender difference (*p* = .05) at pre-intervention (girls higher).

4.3.1 Child and Youth Coping Scale Pre-Intervention Differences

Prior to examining the effects of the FRIENDS for Youth program on coping, pre-intervention differences were assessed using independent-samples t-tests to compare levels of assistance seeking, problem solving, cognitive avoidance and behavioural avoidance across group, gender, type of school and grade. There were no significant differences for group on any subscales. There was a significant difference on scores for males and females on Assistance Seeking t (664) = -4.48, p = .001 (two-tailed), Problem Solving t (664) = -2.28, p = .02 (two-tailed), Cognitive Avoidance t (662) = -1.96, p = .05 (two-tailed), and Behavioural Avoidance t (666) = -3.71, p = .001 (two-tailed), with girls having higher scores than boys on all subscales. There were no significant differences for grade for Assistance Seeking, but there were significant differences for Problem Solving t (664) = -2.73, p = .006 (two-tailed), Cognitive Avoidance t (662) = 3.09, p = .002 (two-tailed), and Behavioural Avoidance t (666) = 1.92, p =.05 (two-tailed), with grade 8 students having higher scores for Problem Solving and Grade 7 students having higher scores for Cognitive Avoidance. For school type there was a significant difference on subscale scores between elementary and middle school participants on Assistance Seeking t (407) = 1.98, p < .048 (two-tailed), with middle school students having higher scores than elementary students. There were no significant differences between middle school students and elementary students on Problem Solving, Cognitive Avoidance or Behavioural Avoidance. There was also no significant difference between middle and secondary school students for Assistance Seeking or Behavioural Avoidance; there was a significant difference between middle and secondary students on Problem Solving t (461) = 3.70, p = .001 (two-tailed), and on Cognitive Avoidance t (459) = -2.84, p = .005 (two-tailed), with secondary students having higher scores on Problem Solving and middle school students having higher scores on cognitive avoidance.

4.3.2 Group and Gender Differences in Coping

To assess the effect of the FRIENDS for Youth program on coping style a 2 (gender: male, female) x 2 (group: intervention, control) x 3 (time: pre, post, 6 month follow-up) mixed factorial ANOVA was conducted on each of the 4 subscales. For Assistance Seeking the interactions between time and group $F(2, 1026) = 1.2$, $p = .22$, time and gender $F(2, 1026) = .71$, $p = .49$, gender and group $F(1, 513) = 1.19$, $p = .28$, and time, gender and group $F(2, 1026) = 2.03$, $p = .13$ were non-significant. There was no main effect of time $F(2, 1026) = .29$, $p = .68$, nor of condition $F(1, 513) = .39$, $p = .59$. There was a significant main effect of gender $F(1, 513) = 39.25$, $p < .001$, with girls reporting higher scores than boys at all assessment times regardless of group.

For Problem Solving the interaction between time and group $F(2, 1022) = 2.65$, $p = .07$, and time, group and gender $F(2, 1022) = 1.09$, $p = .34$ were non-significant. There was a significant interaction between time and gender $F(2, 1022) = 3.27$, $p < .038$, and between gender and group $F(1, 511) = 5.50$, $p < .019$. Females in the intervention group showed higher problem-solving scores than females in the control group, and higher than males in both groups. There was no significant main effect of time $F(2, 1022) = 1.53$, $p = .22$, nor for group $F(1, 511) = 2.23$, $p = .14$. There was a significant main effect of gender $F(1, 511) = 15.50$, $p < .001$, with girls having higher problem-solving scores than boys at all time points. Further analysis of covariance (ANCOVA), with pre-intervention scores as the covariate, indicated a significant difference in Problem Solving for group at post-intervention $F(1, 584) = 6.97$, $p < .008$, Cohen's $d = .16$, with those in the intervention group showing higher problem-solving scores than those in the control group. This was no longer significant at 6-month follow-up $F(1, 544) = .99$, $p = .99$.

For Cognitive Avoidance the interactions between time and group $F(2, 1014) = .55$, $p = .58$, group and gender $F(1, 507) = .63$, $p = .43$, and time, group and gender $F(2, 1014) = 1.21$, $p = .30$ were non-significant. There was a significant interaction between time and

gender $F(2, 1014) = 3.80$, $p = .023$ with females showing an increase in cognitive avoidance scores over time and males showing a decrease in cognitive avoidance scores over time. Analysis indicated a significant main effect of time $F(2, 1014) = 4.93$, $p < .007$ with scores generally decreasing over time. There was no significant main effect of group $F(1, 507) = 1.51$, $p = .22$, nor of gender $F(1, 507) = .261$, $p = .26$. Participants from both the intervention and control groups had lower Cognitive Avoidance scores over time.

For Behavioural Avoidance the interactions between time and group $F(2, 1034) = 1.53$, $p = .22$, time and gender $F(2, 1034) = 1.06$, $p = .35$, gender and group $F(1, 517) = .29$, $p = .59$, and time, group and gender $F(2, 1034) = .01$, $p = .99$ were non-significant. There was no significant main effect of time $F(2, 1034) = .03$, $p = .97$, nor of condition $F(1, 517) = .02$, $p = .89$. There was a significant main effect of gender $F(1, 517) = 6.14$, $p < .014$, with females showing higher behavioural avoidance scores than males at all time points.

4.3.3 Differences in Coping by Location and School-type

To assess differences in coping by geographic location and school-type a 3 (time: pre, post, 6-months) x 3 (geographic location: urban, small urban, rural) x 3 (school-type) mixed factorial ANOVA was conducted for each coping sub-scale. A Bonferroni adjusted alpha of .016 was used to adjust for Type I error (Tabachnick & Fidell, 2007). For Assistance seeking the interactions between school-type and location $F(4, 509) = .49$, $p = .74$, location and time $F(4, 1018) = 2.33$, $p = .055$, and between school-type, location, and time $F(8, 1018) = .35$, $p = .26$ were non-significant. There was a significant interaction between time and school-type $F(4, 1018) = 3.20$, $p < .013$. Assistance seeking in middle schools increased over time but not in elementary or secondary schools and assistance seeking increased in urban locations over time but not in small urban or rural locations. There was no main effect of time $F(2, 1018) = .09$, $p = .91$, of school-type $F(2, 509) = .01$, $p = .99$, nor of geographic location $F(4, 509) = .1.34$, $p = .26$.

For Problem Solving the interactions between time and location $F(4, 1014) = 1.12$, p = .35, time and type $F(4, 1014) = 1.17$, $p = .32$, and location and type $F(4, 507) = .47$, p = .76, and time, location and type $F(8, 1014) = 2.47$, $p = .12$ were not significant. There was no main effect of time $F(2, 1014) = 1.80$, $p = .17$, nor of location $F(2, 507) = 1.80$, $p = .17$. There was a significant main effect of school-type $F(2, 507) = 7.07$, $p < .001$. Post-hoc comparisons using the Tukey HSD test indicated that the mean score for secondary schools were significantly higher than for middle or elementary schools; the mean scores for urban schools was significantly higher than for rural schools.

For Cognitive Avoidance the interaction between time and school-type, school-type and location, and time, school-type and location were non-significant. There was a significant interaction between time and location $F(4. 1006) = 3.28$, $p < .011$. There was no significant main effect of time $F(2, 1006) = 3.90$, $p = .021$, of school-type $F(2, 513) = 1.30$, p = .27, nor of geographic location $F(2, 513) = 1.75$, $p = .17$. Post-hoc comparisons using the Tukey HSD test indicated that the mean score for rural schools were significantly higher than for small urban or urban schools, and the mean scored for middle schools were higher than for secondary schools.

For Behavioural Avoidance the interactions between time and location $F(4, 1026) =$ 2.08, $p = .08$, time and school-type $F(4, 1026) = 1.71$, $p = .15$, location and school-type $F(4, 513) = 1.12$, $p = .33$, and location, school-type and time $F(8, 1026) = .62$, $p = .76$ were non-significant. There was no main effect of time $F(2, 1026) = .05$, $p = .95$, of school type $F(2, 513) = 1.12$, $p = .33$, nor of geographic location $F(2, 513) = .02$, $p = .98$. Post-hoc ANCOVA, with pre-intervention scores as the covariate, indicated a significant effect of school type F $(2, 548) = 6.42$, $p < .002$, with secondary school students ($M = 1.73$, $SD = .62$) having significantly higher behavioural avoidance scores at 6-month follow-up than middle ($M = 1.60$, $SD = .56$) or elementary ($M = 1.60$, $SD = .55$) school students.

4.3.4 Intervention Effects on Coping Style of "At Risk" Participants

To assess the impact of the FRIENDS for Youth program on changes in coping style of "At Risk" participants a 2 (group: intervention, control) x 3 (time: pre, post, 6 month follow-up) repeated measures of analysis was conducted on each of the coping subscales. Table 4.9 presents subscale means and standard deviations for "At Risk" participants by gender and group. For all subscales the interaction between time and group was non-significant. There were also no significant main effects of time nor of group for any subscale.

Table 4.9. Child and Youth Coping Scale Subscale Means and Standard Deviations for "At Risk" Participants by Gender and Group

Subscale			Assistance Seeking					
Group*			Pre			Post		6-month
	Gender	M	SD	N	M	SD	M	SD
Intervention	Male	2.14	0.58	25	2.16	0.84	2.15	0.84
	Female	2.86	0.68	20	2.49	0.63	2.63	0.72
Intervention Total		2.46	0.72	45	2.31	0.76	2.36	0.81
Control	Male	2.49	0.68	17	2.37	0.58	2.41	0.74
	Female	2.68	0.47	18	2.49	0.61	2.40	0.62
Control Total		2.59	0.58	35	2.43	0.59	2.41	0.67
Total								

*No significant main effect of group was found

Subscale			Problem Solving					
Group*			Pre			Post		6-month
		M	SD	N	M	SD	M	SD
Intervention	Male	2.25	0.60	24	2.04	0.66	2.11	0.63
	Female	2.41	0.66	20	2.38	0.69	2.36	0.49
Intervention Total		2.32	63.00	44	2.19	0.69	2.23	0.58
Control	Male	2.26	0.62	17	2.37	0.66	2.33	0.73
	Female	2.42	0.47	18	2.23	0.71	2.40	0.68
Control Total		2.34	0.55	35	2.30	0.68	2.37	0.70

*No significant main effect of group was found

Table 4.9 continued

Subscale					Cognitive Avoidance				
Group*			Pre			Post		6-month	
		M	SD	N	M	SD	M	SD
Intervention	Male	2.26	0.59	24	2.23	0.59	2.25	0.65
	Female	2.29	0.56	20	2.20	0.60	2.32	0.50
Intervention Total		2.28	0.57	44	2.22	0.62	2.29	0.58
Control	Male	2.14	0.59	17	2.04	0.75	2.07	0.63
	Female	2.29	0.51	18	2.19	0.54	2.36	0.58
Control Total		2.22	0.54	35	2.12	0.64	2.22	0.62

*No significant main effect of group was found

Subscale					Behavioural Avoidance				
Group*			Pre			Post		6-month	
		M	SD	N	M	SD	M	SD
Intervention	Male	1.81	0.46	25	1.85	0.66	1.81	0.58
	Female	2.08	72.00	20	2.05	0.59	2.02	0.48
Intervention Total		1.93	0.60	45	1.93	0.63	1.90	0.54
Control	Male	1.96	0.54	17	1.99	0.76	1.67	0.58
	Female	2.00	0.46	18	2.08	0.69	2.17	0.70
Control Total		1.98	0.50	35	2.04	0.72	1.92	0.68

*No significant main effect of group was found

4.4   Universal Intervention Effects on Parent and Teacher Assessments

Independent samples t-tests were conducted to compare pre-intervention total SDQ score differences by group and gender for teachers and parents. There was a significant difference in pre-intervention teacher SDQ scores between the intervention group (M = 6.39, SD = 5.78) and the control group (M = 5.48, SD = 5.80), t (672) = 2.01, p = .045 (two-tailed) and between males (M = 7.32, SD = 6.25) and females (M = 4.79, SD = 5.06), t (673) = 5.80, p = .001 (two-tailed). There was no significant difference in pre-intervention parent SDQ scores between the intervention group (M = 7.69, SD = 5.70) and the control group (M

= 7.54, *SD* = 5.63), *t* (708) = .34, *p* = .73. However, there was a significant difference in

parent SDQ scores pre-intervention for males (*M* = 8.27, *SD* = 5.86) and females (*M* = 7.05,

SD = 5.43), *t* (709) = 2.87, *p* = .004.

     Independent sample t-tests were also conducted to compare pre-intervention score

differences on two SDQ sub-scales, the Emotional sub-scale and the Prosocial sub-scale, by

group and gender for teachers and parents. There was a significant difference in pre-

intervention teacher SDQ Emotional Sub-scale scores between the intervention group (*M* =

1.40, *SD* = 1.90) and the control group (*M* = 1.11, *SD* = 1.76), *t*(642) = 1.99, *p* = .047 (two-

tailed), but not between males and females. There was a significant difference in pre-

intervention teacher SDQ Prosocial Sub-scale scores between the intervention group (*M* =

7.50, *SD* = 2.3) and the control group (*M* = 8.21, *SD* = 2.15), *t*(574) = -3.86, *p* = .001 (two-

tailed) and between males (*M* = 7.20, *SD* = 2.35) and females (*M* = 8.38, *SD* = 2.02), *t*(536)

= 6.52, *p* =.001 (two-tailed). There was no significant difference in pre-intervention parent

SDQ Emotional sub-scale scores between the intervention and control groups nor between

males and females. There was a significant difference in pre-intervention parent SDQ

Prosocial scores between males (*M* = 7.96, *SD* = 1.83) and females (*M* = 8.66, *SD* = 1.5),

t(623) = 5.50, *p* = .001, but not between the intervention and the control groups.

4.4.1 Teacher Assessments

     To evaluate the effect of the FRIENDS for Youth program on teacher evaluations of

participants' functioning, a 2 (group: intervention, control) x 2 (time: post, 6-month follow-

up) mixed factorial ANCOVA, with pre-intervention scores as the covariate, was conducted

with teacher total SDQ scores, Emotional sub-scale scores, and Prosocial sub-scale scores.

The means and standard deviations for total SDQ scores by gender and group are presented

in Table 4.10.

Table 4.10. Teacher Strengths and Difficulties Questionnaire Means and Standard Deviations by Group and Gender

	Measure		Teacher Strengths and Difficulties Questionnaire					
Group			Pre		Post		6 Month	
		N	M	SD	M	SD	M	SD
Intervention	Male	132	7.38	5.65	7.87	7.21	7.53	7.26
	Female	156	5.30	5.23	5.00*	6.11	4.83	5.49
	Total	288	6.25	5.52	6.32**	6.78	6.07	6.49
Control	Male	123	6.89	6.33	7.85	7.12	7.14	6.66
	Female	142	4.28	4.76	5.42*	5.91	5.00	5.60
	Total	265	5.49	5.68	6.55**	6.60	6.00	6.19

Notes.

*Indicates a significant group difference for girls ($p < .01$) at post-intervention (control higher)

**Indicates a significant group difference ($p < .015$) at post-intervention (control higher).

The interactions between time and group $F(1, 550) = 1.16$, $p = .28$ was non-significant. There was no main effect of time $F(1, 550) = .04$, $p = .85$. There was a trend towards a significant effect of group $F(1, 550) = 3.48$, $p = .063$. Teachers assessed all participants as improving over time, and those in the intervention group as having lower SDQ scores than those in the control group at post-intervention and 6-month follow-up. Univariate analysis conducted post-hoc indicated a significant difference in teacher assessed SDQ scores of participants, with those in the intervention group being assessed as having lower difficulties than those in the control group at post-intervention $F(1, 631) = 5.91$, $p < .015$, Cohen's $d = .03$. This difference was no longer significant at 6-month follow-up $F(1, 559) = 1.89$, $p = .17$.

Further analyses were conducted separately for boys and girls. To assess teachers evaluation of the effects of the FRIENDS for Youth program on girls functioning a 2 (group: intervention, control) x 2 (time: post, 6 month follow-up) mixed factorial ANCOVA was conducted. Pre-intervention SDQ scores were used as the covariate in this analysis as there were significant pre-intervention group differences in teacher SDQ scores. The interaction

between time and group $F(1, 295) = .69$, $p = .41$ was non-significant. There was also no significant effect of time $F(1, 295) = .96$, $p = .33$. There was a significant main effect of group $F(1, 295) = 5.33$, $p < .022$, with girls in the intervention group having lower SDQ scores than girls in the control group. Post-hoc ANCOVA at post-intervention, with pre-intervention SDQ scores as the covariate, indicated a significant difference of group $F(1, 333) = 6.74$, $p < .010$, Cohen's $d = .07$, with teachers evaluating girls in the intervention group as having lower SDQ scores than girls in the control group. This was no longer significant at 6-month follow-up $F(1, 333) = 2.80$, $p = .09$.

To assess teachers evaluation of the effects of the FRIENDS for Youth program on boys functioning a 2 (group: intervention, control) x 2 (time: post, 6 month follow-up) mixed factorial ANCOVA was conducted. Pre-intervention SDQ scores were used as the covariate in this analysis. The interaction between time and group $F(1, 252) = .61$, $p = .43$ was non-significant. There was also no significant main effect of time $F(1, 252) = 1.77$, $p = .19$, nor of group $F(1, 295) = .106$, $p = .75$.

To further assess teachers evaluation of the effects of the FRIENDS for Youth program a 2 (group: intervention, control) x 2 (time: post, 6 month follow-up) mixed factorial ANCOVA was conducted on Emotional and Prosocial sub-scale scores. Pre-intervention scores were used as the covariate in this analysis. . For teacher Emotional sub-scale scores the interaction between time and group $F(1, 549) = .55$, $p = .45$ was non-significant. There was also no significant main effect of time $F(1, 549) = .023$, $p = .88$, nor of group $F(1, 549) = 2.61$, $p = .10$. For teacher Prosocial sub-scale scores there was a significant interaction between time and group $F(1, 467) = 5.48$, $p = .02$. There was no main effect of time $F(1, 549) = 1.49$, $p = .22$ nor for group $F(1, 467) = .72$. $p = .39$.

Given pre-intervention teacher Prosocial sub-scale differences, further analyses were conducted separately for boys and girls. A 2 (group: intervention, control) x 2 (time: post, 6 month follow-up) mixed factorial ANCOVA was conducted with pre-intervention scores as

the covariate. Analysis indicated there were no significant main effects of time $F(1, 256) =$ .052, $p = .81$ nor of group $F(1, 256) = .88$, $p = .34$. There was also no interaction between time and group $F(1, 256) = 3.17$, $p = .076$.

To assess teachers evaluation of the effects of the FRIENDS for Youth program on boys functioning a 2 (group: intervention, control) x 2 (time: post, 6 month follow-up) mixed factorial ANCOVA was conducted using Prosocial sub-scale scores, with pre-intervention scores as the covariate. Analysis indicated there were no significant main effects for time $F(1, 207) = 2.78$, $p = .097$ nor for group $F(1, 207) = 3.25$, $p = .07$. There was also no interaction between time and group $F(1, 207) = 2.10$, $p = .148$.

4.4.2 Parent Assessments

To evaluate the effects of the FRIENDS for Youth program on parent evaluations of participants' functioning, a 2 (group: intervention, control) x 2 (time: post, 6-month follow-up) mixed factorial ANCOVA was conducted using total SDQ scores, Emotional sub-scale scores and Prosocial sub-scale scores. Pre-intervention scores were used as the covariate. The means and standard deviations for total SDQ scores by gender and group are presented in Table 4.11. The interaction between time and group $F(1, 239) = .04$, $p = .84$ was non-significant. There was no significant main effect of time, $F(1, 239) = .003$, $p = .96$, nor of group $F(1, 239) = .61$, $p = .44$.

Analyses were conducted separately for boys and girls. To assess parent evaluations of the effects of the FRIENDS for Youth program on girls functioning a 2 (group: intervention, control) x 3 (time: pre, post, 6 month follow-up) mixed factorial ANOVA was conducted. The interaction between group and time $F(2, 262) = .17$, $p = .85$ was non-significant. There was also no significant effect of time $F(2, 262) = 1.09$, $p = .34$, nor of group $F(1, 131) = .462$, $p = .50$.

Table 4.11. Parent Strengths and Difficulties Questionnaire Means and Standard Deviations by Group and Gender

Measure			Parent Strengths and Difficulties Questionnaire					
Group*			Pre		Post		6 Month	
		N	M	SD	M	SD	M	SD
Intervention	Male	62	8.77	6.28	8.37	5.81	8.00	5.92
	Female	76	6.93	6.17	6.43	5.87	6.59	5.94
	Total	138	7.85	6.22	7.40	5.84	7.50	5.93
Control	Male	47	7.65	5.60	6.87	5.25	6.72	5.48
	Female	57	6.26	4.84	6.01	4.50	5.84	4.90
	Total	104	6.96	5.22	6.44	4.88	6.28	5.19

* No significant effect of group was found

To assess parents evaluation of the effects of the FRIENDS for Youth program on boys functioning a 2 (group: intervention, control) x 3 (time: pre, post, 6 month follow-up) mixed factorial ANOVA was conducted. Similar to the findings for girls, the interaction between group and time $F(2, 214) = .14$, $p = .87$ was non-significant, and there was also no significant effect of time $F(2, 214) = 2.76$, $p = .06$, nor of group $F(1, 107) = 1.58$, $p = .21$.

To further assess parents evaluation of the effects of the FRIENDS for Youth program a 2 (group: intervention, control) x 2 (time: post, 6 month follow-up) mixed factorial ANCOVA was conducted on Emotional and Prosocial sub-scale scores. Pre-intervention scores were used as the covariate in this analysis. . For parent Emotional sub-scale scores the interaction between time and group $F(1, 239) = .63$, $p = .42$ was non-significant. There was also no significant main effect of time $F(1, 239) = .076$, $p = .78$, nor of group $F(1, 239) = 2.01$, $p = .15$. For parent Prosocial sub-scale scores there was no main effect of time $F(1, 231) = 1.78$, $p = .67$, nor for group $F(1, 231) = .27$. $p = .59$. There was also no interaction between time and group $F(1, 231) = .066$, $p = .79$.

Given pre-intervention teacher Prosocial sub-scale differences, further analyses were conducted separately for boys and girls. A 2 (group: intervention, control) x 2 (time: post, 6 month follow-up) mixed factorial ANCOVA was conducted with pre-intervention scores as

the covariate. Analysis indicated that for girls there were no significant main effects of time $F(1, 126) = 2.62$, $p = .67$, nor of group $F(1, 126) = .001$, $p = .98$. There were also no significant interactions between time and group $F(1, 126) = 1.53$, $p = .218$. For boys there was no significant main effects of time $F(1, 101) = .27$, $p = .602$ nor of group $F(1, 101) = 1.04$, $p = .31$. There were also no significant interactions between time and group $F(1, 101) = .21$, $p = .64$.

4.4.3 Correlation Between Parent and Teacher SDQ Scores and Participant MASC Scores

To assess the degree of agreement between teacher and parent SDQ scores as well as the agreement of these scores with participant self-report MASC scores a Pearson product-moment correlation coefficient was performed. At pre-intervention and post-intervention there was a moderate correlation between teacher and parent SDQ scores, and a high correlation at 6 month follow-up. There was a low correlation between participant MASC scores and both teacher and parent SDQ scores at all time periods. Results are presented in Table 4.12.

4.5   Summary of Key findings

This chapter presented the results of the study. First, the descriptive results related to data screening and the study sample were presented. Second, results related to analysis of the effects of the FRIENDS program on self-reported anxiety and depression were presented. This section included examination of the relationship of group, gender, risk status, geographic location and school type to anxiety and depression, and to the effects of the intervention. Third, results related to analysis of the effect of the intervention on changes in coping style were presented. This section included examination of the relationship of group, gender, risk status, geographic location and school type to coping style, and to the effects of the intervention. Finally, results related to the effects of the

Table 4.12. Pearson Product-moment Correlations Between Parent and Teacher Strengths and Difficulties Questionnaire and Multidimensional Anxiety Scale for Children Scores

Pre-Intervention Scores			
Scale	1	2	3
1. MASC	1	0.044	.197(**)
2. TSDQ	0.044	1	.424(**)
3. PSDQ	.197(**)	.424(**)	1

** Correlation is significant at the 0.01 level (2-tailed).

Post-Intervention Scores			
Scale	1	2	3
1. MASC	1	.081(*)	.218(**)
2. TSDQ	.081(*)	1	.462(**)
3. PSDQ	.218(**)	.462(**)	1

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

6 Month Follow-up Scores			
Scale	1	2	3
1. MASC	1	.096(*)	.162(**)
2. TSDQ	.096(*)	1	.528(**)
3. PSDQ	.162(**)	.528(**)	1

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

intervention on parent and teacher reports of participants strengths and difficulties were presented.

Results indicated self-reported anxiety scores of all participants improved over time. There was no significant difference between anxiety scores of participants in the intervention group and those in the control group at post-intervention, however, at 6-month follow-up this became significant, with those in the intervention group reporting lower anxiety than those in the control group. The reported Cohen's effect size is very small.

Gender differences in level of self-reported anxiety as well as in response to the intervention were found. Girls reported higher anxiety scores at all time points than boys, and girls in the intervention group had significantly lower self-reported anxiety scores at post-intervention and at 6-months follow-up compared to girls in the control group. The reported Cohen's effect size was between small and medium. Girls depression scores were also significantly higher than boys at all time points. There were no significant differences between self-reported anxiety scores of boys in the intervention group and those in the control group. There were also no significant differences in self-reported depression scores of boys between the intervention and control groups at any time period.

The proportion of "at risk" participants decreased in the intervention group over time but not in the control group. A higher percentage of "at risk" participants in the intervention group were no longer "at risk" at post-intervention than in the control group, a proportion that increased even more at 6 month follow-up. Results of analysis indicated a trend towards a main effect for group at post-intervention among "at risk" participants with those in the intervention group having lower anxiety scores than those in the control group. This group difference became significant at 6 month follow-up. The Cohen's effect size at 6-month follow-up was medium. Gender differences were also significant for at risk participants, with girls reporting higher anxiety and depression scores than boys at all time periods. There was a trend for at risk girls in the intervention group to have lower anxiety scores than those in the control group at post-intervention, which became significant at 6-month follow-up. The Cohen's effect size was medium. Caution should be used in interpreting results of at risk girls due to the small sample size. There were no significant changes in the depression scores of "at risk" participants.

Students attending urban schools reported higher anxiety scores than those attending either small urban or rural schools. Grade 7 students in elementary schools had lower anxiety scores than grade 7 students in middle schools at all time periods, and grade 7

students in the intervention group had significantly lower anxiety scores than those in the control group at post-intervention. The Cohen's effect size was small and this difference was no longer significant at 6 month follow-up. Intervention group students in elementary schools also reported significantly lower anxiety scores than those in the control group at post-intervention and 6-month follow-up. The Cohen's effect size was approaching medium. Grade 7 at risk students in middle schools reported significantly higher anxiety scores those in elementary schools.

Gender differences in coping were found, with girls having higher scores than boys on all scales. Analysis indicated there was a significant difference in Problem Solving scores at post-intervention, with participants in the intervention group having significantly higher scores than those in the control group. All participants had lower Cognitive Avoidance scores over time regardless of group. Analysis of changes in the coping style of "at risk" participants indicated no significant group differences on any of the coping subscales at post-intervention or 6 month follow-up.

Analysis of teacher SDQ evaluations indicated a significant difference for group for girls at post-intervention with girls in the intervention group having lower difficulties scores than those in the control group. The effect size was very small and this difference was no longer significant at 6 month follow-up. Teachers evaluated girls as having lower SDQ scores than boys at all time periods. There were no significant group differences for teacher evaluations on the emotional or prosocial sub-scales. There were no significant group differences for parent evaluations of difficulties nor on the emotional or prosocial sub-scales at post-intervention or 6 month follow-up. There was a moderate correlation between teacher and parent SDQ scores at pre and post intervention and a large correlation at 6 month follow-up. There was a small correlation between participant MASC scores and teacher and parent SDQ scores.

In summary, it would appear that overall, the effects of the intervention on anxiety levels were very small. For at risk participants, however, there was evidence of a trend at post-intervention and significant benefits at 6 month follow-up of medium effect size. The effect of the intervention on girls was stronger. At 6-month follow-up the effect for girls was approaching medium. At risk girls received the most benefit from the intervention, with a medium effect at 6-month follow-up.

CHAPTER 5. DISCUSSION

This investigation examined the effectiveness of a universal school-based cognitive behavioural intervention in decreasing the anxiety problems and anxiety disorders experienced by early adolescents in grades 7 and 8 (11-14 years of age) during a particularly stressful juncture, the transition from elementary to middle or secondary school. In a random control trial implemented throughout British Columbia, students in the intervention group participated in the FRIENDS for Youth (Barrett et al., 2004a; 2004b) program within their regular classroom setting, one hour per week over a 10 week period. The program was run by the classroom career and planning teacher. Students not randomized by school into the program were provided a control condition of regular classroom activities. Students (n=722) were assessed at three time points using self-report measures: Multidimensional Anxiety Scale for Children (MASC: March 1997), Center for Epidemiological Studies – Depression Scale for Children (CES-DC: Radloff, 1977), Coping Scale for Children and Youth (CSCY: Brodzinsky et al., 1992). Parents and classroom teachers reported on children using the Strengths and Difficulties Questionnaire (SDQ: Goodman, 1997). Parents and teachers completed this assessment at the same three time points as students: pre-intervention, post-intervention and 6 month follow-up.

Anxiety disorders in late childhood and early adolescence are a known risk factor for depression in later adolescence and early adulthood. In addition the role of gender, coping style, geographic location (rural, small urban, or urban), grade, and school type were assessed. It was hypothesized that grade 7 and 8 students in BC public schools who received the FRIENDS for Youth program as part of the regular classroom curriculum would have lower anxiety and depression levels and increased proactive coping compared to students in a control group.

5.1   Anxiety and Depression

As one of the first public school-based randomized effectiveness trials of the effects of a universal-school-based cognitive-behavioural intervention on anxiety, depression and coping style in young adolescents, this study offers important findings. This is also the first trial of the FRIENDS for Youth program outside of Australia. Overall results are cautiously positive in that a preventive effect was found indicating the FRIENDS for Youth program has the potential to reduce the number of children at risk of developing an anxiety disorder and suggesting further investigation of universal school-based preventive interventions for anxiety is warranted.

The first objective of the study was to examine the effects of a universal preventive intervention on anxiety. The hypothesis that the intervention group would demonstrate greater reductions in self-reported anxiety than the control group was partially supported. Participants in the study showed general reductions in anxiety across time regardless of intervention status. This finding is consistent with previous research (Barrett et al., 2006; Barrettet al., 2004; Last et al., 1996; Lock & Barrett, 2003; Lowry-Webster et al., 2001; Lowry-Webster et al., 2003) demonstrating a tendency for children to decrease their reports of anxiety over time. At post-intervention there were no significant differences between participants in the intervention group compared to those in the control group; however at 6-month follow-up, reductions in anxiety were significantly greater for participants in the intervention group, although the effect size was very small.

Delays in intervention effects were also found in the targeted Queensland Intervention Project (Dadds et al., 1997), as well as in another more recent universal prevention trial (Barrett et al., 2005), and are consistent with the results of a prevention trial for depression (Jaycox et al., 1994). These results differed from those reported by Lowry-Webster and colleagues (2003) and Barrett and Turner (2003) who found lower levels of anxiety in children in the intervention group compared to those in the control

group at post-intervention as well as at 6-month follow-up. Barrett and colleagues (2006) reported mixed findings with grade 6 participants (10 to 11 years) reporting lower levels of anxiety at post-intervention, 12 months, 24 months and 36 months, but grade 9 participants (13 to 14 years) reporting no differences in anxiety between the intervention and control groups.

As anxiety is a risk factor for depression (Cole, Peeke et al., 1998), the second objective of this study was to examine the effects of the FRIENDS for Youth intervention on depression. The hypothesis that the intervention group would demonstrate greater reductions in self-reported depression than the control group was not supported. There were no differences in depression between the intervention and control groups at any time points, which may not be surprising given the non-clinical nature of a community sample. This finding is consistent with those of Barrett and Turner (2003) and of Lowry-Webster et al. (2001), who reported no significant changes in depression levels. Results from the current study differ from those found by Lock and Barrett (2003) who, similar to Dadds et al. (1997) and Jaycox et al. (1994) did find a significant difference in depression scores between groups at 12-month follow-up. A possible explanation for differences in results may be due to varied characteristics of the cohorts of children recruited.

The third objective of this study was to examine the effectiveness of a universal preventive intervention in reducing self-reported anxiety in students identified as "at risk" (as indicated by a T-score > 60 on the MASC) of developing an anxiety disorder. It was hypothesized that participants "at risk" in the intervention group would evidence greater reductions in anxiety at post intervention and 6 month follow-up in comparison to those "at risk" in the control group. Consistent with other studies (Dadds et al., 1997; Lock & Barrett, 2003), and with what would be expected in a community sample, one in six participants was found to be "at risk" for anxiety using self report assessment. Results from this study showed a trend toward a significant difference in the anxiety scores of "at risk" participants

in the intervention group compared to those in the control group at post-intervention, which became significant at 6-month follow-up. These results differ from those found by Lock and Barrett (2003) but are consistent with results of several other studies (Dadds et al., 1999; Dadds et al., 1997; Lowry-Webster et al., 2003). As expected from other work (Lock & Barrett, 2003; Lowry-Webster et al., 2001) depression scores for "at risk" participants were significantly higher than those of healthy participants. Self-report depression scores for these participants were not affected by the intervention nor over time.

Similar to findings reported by Barrett et al. (2006) there were proportionately more participants "at risk" in the control group than in the intervention group over time based on self-report anxiety scores. The proportion of "at risk" participants in the control group remained stable over time (6.2% at pre-intervention, 5.5% at post-intervention, and 6.1% at 6-month follow-up), whereas there was a substantial decrease of "at risk" participants in the intervention group (10.2% pre-intervention, 8.7% post-intervention, and 6.2% at 6-month follow-up. Of those "at risk" pre-intervention, 48% of those in the intervention group compared with 30% in the control group were no longer "at risk" at post-intervention and 61% of those in the intervention group compared to 25% in the control group were no longer "at risk" at 6-month follow-up. These findings along with those from Barrett et al. (2006) add support to the practical significance of the FRIENDS for Youth program in treating mild and emerging anxiety problems.

5.2   Coping

A fourth objective of the study was to examine the effects of the universal intervention on increasing children's coping ability, by comparing the proactive strategies (assistance seeking, cognitive-behavioural problem-solving) and avoidant strategies (cognitive avoidance, behavioural avoidance) children use to manage difficult experiences. This was assessed by self-report on the CSCY (Brodzinsky, 1992). The hypothesis that the

coping style of students in the intervention group would become more proactive compared to students in the control group was partially supported. There were no significant changes in assistance seeking for any participants; however, participants in the intervention group did report using more problem-solving than those in the control group at post-intervention. Problem-solving is a skill taught in the FRIENDS for Youth program. This difference was no longer significant at 6-months follow-up, which may suggest that without ongoing intervention or support children may revert back to poorer coping habits. This finding is similar to that reported by Lock and Barrett (2003) who found an increase in problem-solving for females and grade 9 students. In the current study there were no changes in reported use of avoidant strategies, regardless of group. This differs from results reported by Lock and Barrett (2003) who found the FRIENDS for Youth program effective in decreasing reported use of avoidant strategies; however, specific data were not provided for grade 9 students. Similar to Lock and Barrett (2003), the current study found that "at risk" participants reported higher use of cognitive avoidance and behavioural avoidance than healthy participants. This is consistent with previous research with anxious adults and children that has shown that avoidance of difficult experiences increases anxiety (Compas et al., 1988; Donovan & Spence, 2000). The lack of a decrease in avoidant strategies in the current study may indicate that the coping section of the FRIENDS for Youth program should be strengthened for Canadian students or that the coping styles of Canadian children differ from those of Australian children.

5.3   Gender Effects

The fifth objective was to examine gender differences in the effects of the universal intervention on anxiety and depression. The hypothesis that there would be no difference in response by girls in comparison to boys was not supported. In this study gender was an important factor, with girls reporting higher anxiety levels than boys at all time points. Girls

in the intervention group showed significant reductions in anxiety at post-intervention and at 6 months follow-up compared to girls in the control group. For boys, there were no significant differences in self-reported anxiety between those in the intervention and control groups at any time period. This result differs from those reported by Lowry-Webster, Barrett, and Lock (2003) who found no differences in anxiety levels between males and females. However, it is consistent with results reported by Lock and Barrett (2003), Barrett, Lock and Farrell (2005), and Barrett et al. (2006) who found that girls showed higher levels of anxiety than boys at all time periods and that girls in the intervention group reported lower levels of anxiety compared to those in the control group at post-intervention, 12-month follow-up, 24-month follow-up, but not at 36 month follow-up. This is also consistent with results reported in a recent study by Brown, Teufel, Birch, and Kancherla (2006), who found that adolescent girls reported significantly more worries than adolescent boys.

Girls also reported higher depression scores than boys at all time points. This finding is similar to other studies that have reported a depression female-to-male ratio of approximately 2:1, paralleling the ratio reported for adults (Flemming & Offord, 1990; Kessler et al., 1994; Lewinsohn, Clarke, Seeley, & Rhode, 1994).

A gender effect was evident in "at risk" participants, with girls having higher self-reported anxiety scores than boys at all time points. "At risk" girls in the intervention group showed significantly lower anxiety levels at post-intervention and at 6-month follow-up compared to those in the control group, with a medium effect size. There were no significant differences between at risk boys in the intervention group compared to the control group. This could have been due to less power given the sample size. Together with other research (Barrett et al., 2006; Dadds, Spence et al., 1997; Lock & Barrett, 2003), the results from this study indicate that gender may play an important role in terms of risk for anxiety as well as for response to intervention. On the other hand, given that delayed effects are associated with

prevention initiatives, it would be interesting to determine if a preventive effect becomes apparent for boys over a longer time period.

Another possible explanation for the gender differences in this study is the developmental differences between boys and girls in early adolescence. Girls tend to be more mature than boys and to have an earlier age of onset of puberty.

5.4   Geographic Location, School-type, and Grade

An additional objective of the study was to explore the effects of location (urban, small urban, or rural) on the impact of the universal intervention. Findings indicated all participants had lower anxiety levels across time regardless of geographic location; girls reported significantly greater reductions in anxiety than boys regardless of geographic location. It is of interest to note, however, that students in urban locations had higher levels of anxiety than those in small urban or rural locations at pre-intervention. This difference was no longer present at post-intervention or at 6-month follow-up. This is an interesting finding given that urban students comprised 44% elementary students, 23% middle school students and 33% high school students, and overall elementary students had lower anxiety levels than students in middle or high school. A possible explanation could be that there were stressful activities that were part of the elementary curriculum in urban schools occurring at the beginning of the school year, when pre-intervention measures were assessed, or that urban elementary school students find the start of the school year particularly stressful. Previous studies have been conducted within urban schools in Australia. This study suggests that similar outcomes may be expected in school populations across different geographic locations.

The effect of grade and school type on student's level of self-reported anxiety, depression, and coping strategies, and their response to the intervention was explored in this study. This study was completed during one school year and the sample size of grade 8

students in middle school was very small, therefore a full examination of the effects of transition was not possible. However, exploring the effects of grade and school type does provide some initial insight that may be helpful in decisions about timing the intervention for maximum effectiveness.

All students, including the "at risk" group, who had just transitioned (grade 7 middle school students and grade 8 secondary school students) reported higher anxiety and depression than students who had not yet transitioned (grade 7 elementary school students and grade 8 middles school students). Given that grade 7 students in elementary school and grade 8 students in middle school are the oldest children in their school, whereas grade 7 students in middle school and grade 8 students in highschool are the youngest students in their school this finding is not surprising. Study results also indicated that grade 7 students in the intervention group had significantly lower anxiety scores than those in the control group at post-intervention; however, grade 7 students in elementary schools benefited most from the intervention.

5.5   Teacher and Parent Ratings

Teachers assessed the difficulties of students in the intervention group as lower than those of students in the control group at post-intervention. This was no longer significant at 6-month follow-up. Further analysis indicated that it was the girls who had been assessed as having lower difficulties scores over time. There were no significant differences between boys in the intervention group compared to those in the control group. With girls, however, those in the intervention group were assessed by teachers as having significantly lower difficulties scores than those in the control group at post-intervention. This finding adds strength to the study findings that the intervention was effective in reducing anxiety in girls. It should be noted that teachers completed pre-intervention questionnaires early in the school year, at a time when they were still getting to know their students, which may have

affected the accuracy of their assessments. As well, teachers completed questionnaires on top of their regular workload, often in the evening, which may have resulted in a ceiling effect as they completed forms on all of their students. Additionally, due to study design, none of the teachers were blinded; teachers reporting on their own students knew if these students were in the intervention or the control condition.

Like teachers, parents assessed girls as having lower difficulties than boys at all time periods, and all participants as having lower difficulties scores over time. Similar to previous studies (Dadds et al., 1997; Lowry-Webster et al., 2001; Lowry-Webster et al., 2003; Shortt, Barrett, & Fox, 2001) analyses of parent assessments indicated no significant changes in difficulties scores from pre- to post-intervention. Response rates of parents in previous studies were reported as poor. In this study the response rate of parents at pre-intervention was 98%, at post-intervention the response rate dropped to 55% (56% for the intervention group, 52% for the control group) and at 6-month follow-up to 49% (45% for the intervention group, 53% for the control group). Despite the initial high response rate (of those students with consent) and a significant decline of nearly half the parents responding, a 49% response rate is considered robust. A possible explanation for the response rate is that the teachers involved in this study were very enthusiastic about the potential of the FRIENDS for Youth program and were aware that an important aspect of the study was parent responses. Teachers worked hard to encourage the return of parent questionnaires from sending reminders to having class prizes.

An explanation for the difference between teacher and parent assessments may be that only parents of children doing well were motivated to respond at post-intervention and at 6-months follow-up, there by biasing the results. Another explanation may be that teachers were more aware of whether or not they were implementing the FRIENDS for Youth program in their classrooms, which may have unconsciously affected their assessment of students. It is interesting to note that in spite of these differences, correlation

between teacher and parent assessments scores was moderate to high. There was a low degree of correlation between students and either parent or teacher assessments. This is the first study examining a universal school-based anxiety prevention program to include data from parents and teachers as well as self-report data from participants.

5.6 Study Strengths and Limitations

Strengths of this study that serve to increase the generalizability of findings include random assignment of schools to conditions, the presence of a control group, the relatively large sample size, intervention fidelity checklists, implementation of an evidence-based protocol, teacher delivery of the program within the regular classroom curriculum, the use of highly reliable and valid measures of assessment, and inclusion of multi-informant self-report measures (teacher, parent, student).

It is important to acknowledge inherent issues in conducting school-based preventive research trials and the limitations of this study. The research empirical design used in this study involved comparison between intervention and control groups. A strength of this type of design is that it enables careful evaluation of intervention effects at different time points and enhances internal validity by controlling for external factors (such as maturation, selection and testing procedures) that may account for results (Kazdin & Weisz, 1998). Limitations of this experimental design include ethical concerns regarding delaying the intervention for the control group, absenteeism on the day of post-intervention and 6-month follow-up assessment, and non-specific effects such as participants seeking medical, alternative, or additional treatment. Schools that participated in the research may be schools that are motivated towards prevention. For those that were in the control group this may have resulted in other prevention programs and activities being implemented. These factors may have impacted on intervention outcome.

Another methodological limitation of this study was that anxiety, depression, and coping were measured using self-report questionnaires. Although this method has been used previously, and represented the best methodology for assessing a large cohort of children in a relatively short time frame, the question of degree of accuracy of children's self-report measures is widely documented in the literature. The addition of diagnostic interviews would strengthen results; however, the use of collateral data from teacher and parents offsets this to some extent.

Use of self-assessments for intervention integrity is another limitation of this study as teachers may have been biased about the strength of their own performance. Having an objective evaluation of the integrity of program implementation would have been preferred; however, the financial limitations of the study did not allow for travel to each site.

Teachers with classrooms in the intervention group as well as those with classrooms in the control group participated in the one day teacher workshop, Sept. 2006, where they learned about childhood anxiety and the FRIENDS program. This may have resulted in some contamination of control groups as teachers may have inadvertently included concepts from the intervention program in their interactions with students. This impact of this on study results may have been a decrease in the reported effectiveness of the intervention.

5.7 Implications

As the first effectiveness trial of a universal cognitive-behavioural school-based preventive intervention conducted outside of Australia, this study has some important implications. Previous research suggests that gender plays an important role in predicting risk for anxiety as well as intervention outcome. Results were most significant for girls at risk; however, this was also true for girls overall. Results from this study support the importance of gender, both as a risk factor for anxiety, as well as in terms of response to the intervention. This has implications for program implementation as it suggests it may be

more cost effective to target the preventive intervention to girls. However, given the practical challenges of accurate targeting, as well as the stigma that often results from targeted programs, nesting a targeted intervention within a universal approach may make the most sense.

Although several previous studies have concluded that early childhood is the ideal time to provide an anxiety prevention program, the current study suggests that another opportunity to intervene may be when students are transitioning from elementary to middle or high school. Results from this study indicate grade 7 classrooms overall, but particularly those in elementary schools, as being the best timing for this type of program with early adolescents. This is particularly relevant in BC, as many teachers of grade 7 and 8 classrooms have indicated an interest in the FRIENDS for Youth program and teacher support is a key factor in successful implementation of any school-based program.

5.8   Policy Implications

So where does this leave policy makers? This study found a significant effect of the intervention of low moderate size with all girls, a moderate effect size with "at risk" girls, and a moderate effect size with grade 7 and elementary participants. With these results it may be logical to recommend a targeted preventive approach. However, the challenges associated with accurate targeting, and the difficulties of implementing a targeted approach within the school system make this an unattractive option. Further, the stigma that often results from a targeted approach has the potential to be an even bigger factor with 12 and 13 year olds; this is an age when being seen as "different" can have devastating social consequences.

On the other hand, the broad dissemination of prevention programs is costly, and such an investment cannot be justified unless there is convincing evidence of efficacy and effectiveness. As indicated in chapter 2, when studies of anxiety cognitive-behavioural

prevention programs are evaluated against rigorous standards, consistent with those recommended by the Society for Prevention Research (Flay et al., 2005), only two previous studies met standards, and only one of those specifically looked at the FRIENDS for Youth program. Certainly the current study adds to the evidence base.

A complete cost-benefit analysis was beyond the scope of this study. However, using available information, a strong argument can be made for the cost effectiveness of the FRIENDS Youth program. The cost of implementing the FRIENDS program for 50,000 students (the approximate number of grade 7 students for 2006/07 in BC) is $516,000. Given an estimated prevalence of anxiety disorders for children of 6.4%, 3,200 of these children would potentially have a diagnosable anxiety disorder. It is expected that 50% (1,600) of these children would have reduced anxiety symptoms following exposure to the FRIENDS Youth program. A conservative estimate of the cost of providing Cognitive Behavioural Therapy to 1,600 children ($2,000 per child) is $3,200,000. This does not include the cost of potential hospital admissions or the cost of medication including physician follow-up. Based on these estimates, implementing the FRIENDS Youth program for 50,000 children would result in a cost savings of approximately $2,684,000.

The social and fiscal costs associated with childhood anxiety are significant. The results of this study along with the existing evidence base make a case for policy makers to give serious consideration to the universal implementation of the FRIENDS Youth program. At the very least, it is recommended that where teachers are interested, the program should be made available for grade 7 elementary classrooms.

5.9 Future Research

The aboriginal child population (0 − 18) is 9.3% of the BC child population (British Columbia Ministry of Children and Family Development, 2004). Although aboriginal students were part of the population included in this study, their anxiety levels and their

response to the intervention were not specifically addressed. This study also did not examine cultural factors that may affect outcomes among diverse populations. Future research is needed to explore the effects of the FRIENDS program with aboriginal children, as well as to examine cultural factors that may impact intervention effects.

The intervention in this and other anxiety prevention studies has been 10 weeks in duration. Future research examining the potential benefits of implementing CBT programs over a longer duration, would be particularly helpful in further assessing the response of boys. While most CBT interventions have been developed in the clinical context and have been designed specifically to be brief and cost effective, longer-terms programs conducted as part of the classroom curriculum may have additional benefits. It would also be beneficial to examine whether prevention outcomes could be enhanced for older students if they had been previously exposed to these strategies, for example during primary or elementary school.

Further research to determine the factors that contribute to optimal prevention efforts with long-term follow-up are essential. Greenberg (2001) suggested that it might take time for prevention effects to emerge, and studies (Barrett et al., 2006; Dadds et al., 1999) including this one, have demonstrated increased prevention effects over time. These intervention effects may have been overlooked had the research been completed at post-assessment or 6-month follow-up. In this study, long-term follow-up would be particularly beneficial in terms of further investigating the issue of transition. It would be helpful to see if students who received the FRIENDS for Youth program before transition have lower anxiety levels following transition than those who did not receive the intervention, or whether it is more beneficial to wait and deliver the intervention after transition has occurred.

More research is needed to determine the factors that enhance the impact of preventive interventions, particularly for boys. Future research investigating individual

factors such as intelligence, children's attendance to sessions, completion of homework, and environmental factors such as school environment, teacher characteristics, and classroom layout would increase our ability to intervene successfully. Cost-effectiveness analysis of this program should also be undertaken.

Finally, this program should be evaluated with an alternate credible control condition other than time alone. Research supports this trend in design in clinical studies and would make for more robust conclusions in universal interventions.

5.10   Conclusion

This study sought to advance current research on preventive interventions for child anxiety by examining the effects of a universal school-based cognitive-behavioural intervention on the anxiety, depression, and coping styles of grade 7 and 8 students in BC public schools. It explored the effects of geographic location, school type, and grade. Results indicated that girls, particularly those "at risk" benefit from exposure to the FRIENDS for Youth program. Grade 7 students, particularly those in elementary school benefited from exposure to the program.

The findings of this study add to the growing body of research regarding school-based universal CBT programs conducted in the classroom. In this study the intervention was found to be an effective anxiety prevention and early intervention strategy for girls, particularly those "at risk", and for grade 7 elementary students. Previous research has indicated that teachers and parents often have difficulty detecting children with anxiety problems because their internalizing symptoms are less visible compared to the aggressive symptoms that are typical of children with externalizing disorders (Dadds et al., 1997). Teaching all children cognitive-behavioural strategies in the classroom is potentially less discomfiting than visiting a mental health center, and is also an effective method of

providing unidentified anxious children with the necessary skills required to manage their symptoms.

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APPENDIX 1. ETHICS APPROVAL

The University of British Columbia
Office of Research Services and Administration
Behavioural Research Ethics Board

Certificate of Approval

PRINCIPAL INVESTIGATOR	DEPARTMENT	NUMBER
Sheps, S.B.	Health Care/Epidemiology	**B06-0583**

INSTITUTION(S) WHERE RESEARCH WILL BE CARRIED OUT

Greater Victoria School District , Kamloops / Thompson School District, Maple Ridge / Pitt Meadows School District, New Westminster School District, , Nicola-Similkameen School District

CO-INVESTIGATORS:

Barker, Jayne, ; Miller, Lynn, Educ & Couns Psych & Spec Educ; Waddell, Charlotte, Psychiatry

SPONSORING AGENCIES

Simon Fraser University

TITLE :

Prevention of Anxiety Disorders in Youth: Universal School-based Intervention

APPROVAL DATE	TERM (YEARS)	DOCUMENTS INCLUDED IN THIS APPROVAL:
Sept 14th 2006	1	May 2006, Contact letter / Sept. 2006, Consent form / Questionnaires

CERTIFICATION:

The application for ethical review of the above-named project has been reviewed and the procedures were found to be acceptable on ethical grounds for research involving human subjects.

Approved on behalf of the Behavioural Research Ethics Board
by one of the following:
Dr. Peter Suedfeld, Chair,
Dr. Jim Rupert, Associate Chair
Dr. Arminee Kazanjian, Associate Chair
Dr. M. Judith Lynam, Associate Chair

This Certificate of Approval is valid for the above term provided there is no change in the experimental procedures

APPENDIX 2. POWER CALCULATION
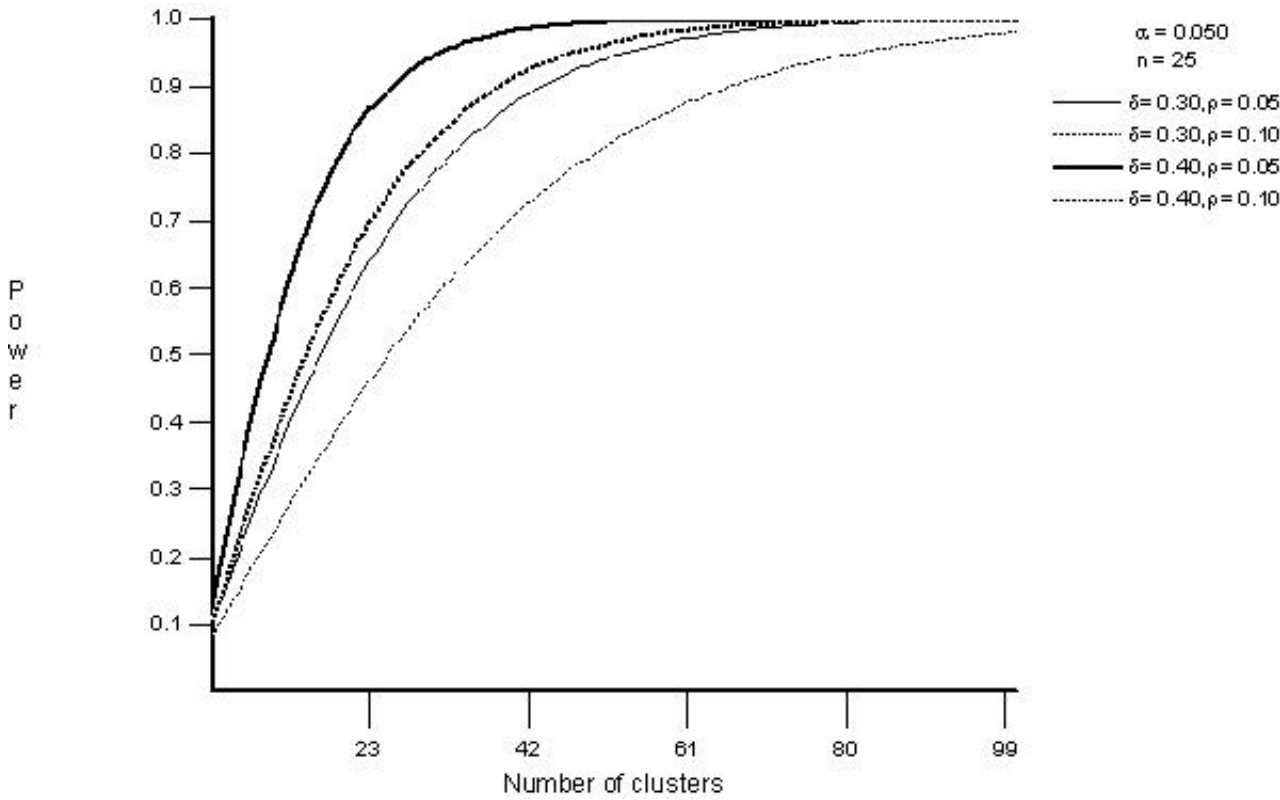
APPENDIX 3A: TEACHER INFORMATION AND CONSENT FORM

THE UNIVERSITY OF BRITISH COLUMBIA

Consent Form: Teachers

Prevention of Anxiety Disorders in Youth: Universal school-based intervention (FRIENDS for Youth program)

Principal Investigator: This study is being conducted through the University of British Columbia. The Principal Investigator is Dr. Sam Sheps, Director, MSc/PhD Program, Department of Health Care and Epidemiology, Faculty of Medicine. Tel: (604) xxx-xxx. The project lead is Jayne Barker, an Interdisciplinary doctoral student.

Dear Teacher,

Purpose: The purpose of FRIENDS for Youth is to reduce the rate of anxiety symptoms in adolescents. Anxiety is a very common condition and usually acts as a motivating factor in most people (this is helpful anxiety). However, when anxiety interferes with daily function, it can lead to people avoiding things, fearing new situations, and refusing to participate in routine activities. The transition from elementary to middle or high school has been identified as a particularly stressful time. Research has demonstrated that early intervention and prevention can be extremely successful in helping adolescents overcome stress and anxieties. If anxiety goes untreated, it can manifest in an anxiety disorder and may pose difficulties throughout life.

Research Plan: All teachers from participating classrooms will attend six hours of training during the school day in late September 2006. The project will pay for all costs associated with this day of training. The purpose of this training is to: (1) Increase understanding of anxiety including helpful and unhelpful anxiety as well as anxiety disorders (2) Identify anxiety symptoms and behavior in adolescents, and (3) Train teachers in implementation of the FRIENDS for Youth curriculum. FRIENDS for Youth is a cognitive behavioral (CBT) approach which educates students in lifelong coping skills, understanding physiological response of the body, appropriate assessment of threat or cues from the environment, relaxation techniques, gradual exposure, and communication techniques.

Study Procedures: All Principals of grade 7 and/0r 8 classrooms in BC public schools were contacted and offered the opportunity to participate in this study. Of those schools who indicated an interest is participating, 20 were randomly selected to be in the FRIENDS for Youth

study, half in the intervention group and half in the control group. Teachers in all participating classrooms will complete 6 hours of training about anxiety and the FRIENDS for Youth program. Information and consent forms will be sent home with students for signing in early October 2006. Three short self-report questionnaires, administered by a research assistant, will be completed by students at the beginning of the study in October 2006, December 2006 and June 2007. Parents and teachers will also complete one short questionnaire at the same times. All evaluation scores will be confidential, and will not be available to teachers. All teachers in classrooms in the intervention group will deliver the FRIENDS for Youth program one hour per week for ten weeks starting in October **2006.**

Teacher's Role: Teachers will be responsible for attending training as specified above and for delivering the weekly FRIENDS for Youth program for a period of 10 weeks. Any questions or concerns should be brought to the attention of the researcher immediately (tel: 250-xxx-xxxx). Teachers are responsible for completing a Strengths and Difficulties questionnaire on each student on 3 separate occasions, maintaining confidentiality at all times for the duration of the program and following completion of the project. Teachers will receive a $200 honorarium for their participation.

Confidentiality: Any information resulting from the research study will be kept strictly confidential. All documents will be identified only by code number and kept in a locked filing cabinet in the UBC project office. Participants will not be identified by name in any reports of the completed study. If the data records are kept on a computer hard disk, security will be maintained by a password that will be changed every month and available only to the research team. As with all psychosocial programs, there is risk that a previously unknown problem will be made known.

Contact: If you have any questions or desire further information with respect to this study, you may contact Jayne Barker at (250) xxx-xxxx. If you have any concerns about your rights as a research subject you may contact the Research Subject Information Line at 604-xxx-xxxx at the University of British Columbia.

Consent Form – Teachers

I understand that my participation in this study is entirely voluntary and that I may refuse to participate or withdraw from the study at any time without jeopardy to my faculty or student standing or any other school function.

I have received a copy of this consent form for my own records (pages 1 & 2).

I understand that completion of this form indicates my consent to participate in the study.

I consent / do not consent (CIRCLE ONE) to participation in this study.

Name (please print):_____

School: _____

Signature: _____

Date: _____

Years of teaching/counseling: _____

APPENDIX 3B: INFORMATION AND CONSENT FORM PARENT/GUARDIAN

THE UNIVERSITY OF BRITISH COLUMBIA

CONSENT FORM: Parent/Guardian
Prevention of Anxiety Disorders for Youth: Universal School-based Intervention

Dear Parent/Guardian:

Your son/daughter is being invited to take part in this research study because s/he is in a grade 7 or 8 classroom in a school that has volunteered to participate in this study. Your consent is required for your son or daughter to participate. Before you decide, it is important for you to understand what the research involves. This letter will describe the study, explain why the research is being done, the nature of your child's involvement during the study, and the possible benefits from participation.

If you wish to provide consent for your child to participate, you are asked to sign the attached form. Information about the study has been provided to your child at school. Please discuss the information this letter with your son or daughter, and if they would like to participate, have them sign the consent form as well. Once consent is provided for your child to take part, you are still free to withdraw your consent at any time, without giving any reason for your decision. If you do not wish your child to participate, you do not have to provide any reason for your decision. When students return the signed consent form, whether consent was provided or not, they will be entered in a draw for two $20 gift certificates.

This study is being conducted through the University of British Columbia. The Principal Investigator is Dr. Sam Sheps, Director, MSc/PhD Program, Department of Health Care and Epidemiology, Faculty of Medicine. Tel: (604) xxx-xxxx. The project lead is Jayne Barker who is an Interdisciplinary doctoral student.

Purpose
The purpose of the *FRIENDS for Youth* study is to reduce the rate of anxiety symptoms in adolescents. Anxiety is the most common mental health problem affecting children and youth. Some youth with anxiety problems will develop more severe anxiety disorders which may be associated with depression, substance abuse, and an increased risk of school drop-out. The transition from elementary school to middle and secondary school has been identified as particularly stressful. Research shows that early intervention and prevention can be extremely successful in helping adolescents overcome these stresses and anxieties. If anxiety goes untreated, it can pose difficulties throughout life. *FRIENDS for Youth* is supported by funding from the Children's Health Policy Center.

A well researched child version of the FRIENDS program is already being implemented in many BC schools. Feedback from children and teachers involved in the program has been very positive.

Study Procedures
Approximately 1,000 grade 7 and 8 students will take part in this study from 40 BC public school classrooms. Classrooms will be randomly assigned to either receive the *FRIENDS for Youth* program or to a control group. In October all participating students will be asked to complete three short self-report questionnaires. The MASC is a self-report checklist for adolescents that measures physiological symptoms, worry, and inattentiveness associated with anxiety problems, and produces an overall anxiety score. If your teen scores at a high level (clinical), you will be contacted by the research team and assisted with finding additional resources in the community for youth with anxiety disorders. The Child and Youth Coping Scale is a self-report questionnaire developed to assess different ways of coping with anxiety. Students will also fill out a measure on depression, the Center for Epidemiological Studies Depression Scale for Children (CES-DC). These student questionnaires will take approximately 30 minutes to complete. Teachers and parents will be asked to complete the Strengths and Difficulties questionnaire at the same time periods. These self-report measures will be repeated in December and 6 months later, taking a total of 90 minutes. Each time the completed forms will be collected from students by a research assistant and delivered directly to the researcher.

The *FRIENDS for Youth* program will be delivered by the teacher as part of the regular classroom curriculum on a weekly basis for ten weeks. Class sessions are about an hour long and use normalization of anxiety experiences, discussion and role play to help youth learn positive strategies from each other, and reinforce individual efforts and change. As part of the *FRIENDS for Youth* program students are provided with a workbook. As well, a teacher's manual describes the activities to be completed in each session.

For the purposes of this project, we are interested in seeing if there are any changes in the adolescents' assessments after participating in the *FRIENDS for Youth* program. The changes in scores, if any, will form the research for this project. We will also track students' age, gender, and whether they live in a rural or urban setting. The total amount of time required for the student assessment portion will be approximately 90 minutes.

Potential Benefits of the Study
It is now widely recognized that the social and emotional development and well-being of children and youth is critical to future academic and occupational success. It has also been established that the transition from elementary to middle or secondary school is associated with increased anxiety for many students.

CBT interventions to build psychological resilience and prevent anxiety problems in children and youth have shown enormous promise. By implementing the FRIENDS for Youth program in BC schools this research will potentially reduce the number of adolescents with anxiety problems and will increase the capacity of teachers to identify and support those students with anxiety problems.

Should results of this research indicate that the FRIENDS for Youth program is effective, training and program materials will be available to all BC school districts interested in implementing the program.

Confidentiality:

Any information resulting from the research study will be kept strictly confidential. All documents will be identified only by code number and kept in a locked filing cabinet. Participants will not be identified by name in any reports of the completed study. If the data records are kept on a computer hard disk, security will be maintained by a password that will be changed every month and available only to the research team. Data will only be released upon the written request of the parent/guardian (if that person wishes, for example, to seek individual psychological treatment). As with all psychosocial programs, there is risk that a previously unknown problem will be made known.

If you have any questions or desire further information about this study before or during your child's participation please contact Jayne Barker at 250-xxx-xxxx. If you have any concerns about your rights as a research participant you may contact the Research Subject Information Line at 604-xxx-xxxx at the University of British Columbia.

Consent Form – Parent/Guardian

I understand that my child's participation in this study is entirely voluntary and that s/he or I may refuse to participate or withdraw from the study at any time without jeopardy to my child's class standing or any other school function.
I have received a copy of this consent form for my own records (pages 1, 2 & 3).

Student's Name: _____

Date of Birth: _____   Age: _____

Homeroom Teacher's Name: _____   Grade: _____

School: _____

Home Language:_____   **Phone Number:** _____

I consent to participation in the *FRIENDS for Youth* study. (please circle)   Yes   No

Your (parent/guardian) Signature: _____

Your printed name: _____ Date: _____

_____   _____   _____
Youth participant (printed)   Youth signature   Date

APPENDIX 4: LIST OF RANDOMLY SELECTED SCHOOLS

Intervention	Superintendent/ Principal	Control	Superintendent/ Principal	Type
Thomas Haney Secondary (42 – Maple Ridge/Pitt Meadows)	P – Mrs. J Unwin S- Marjatta Lonjston	W. L. Seaton Secondary (22 – Vernon)	P – Mr. D Balcombe S – Dr. Bob Peacock	H
Ashcroft Secondary (74 – Ashcroft)	P- Mr. A Schiller S- Pat Pearce	Ucluelet Secondary (70 – Ucluelet)	P – Mr. J Hitchings S – Harry Janzen	H
Coquihalla Middle School (58 – Merritt)	P- Mr. S Mcniven S- Byron Robbie	Neil Middle School (70 – Port Alberni)	P- Mr. P Klaver S- Harry Janzen	M
Lansdowne Middle School (61 – Victoria)	P- Mrs. J Matthews S- John Gaiptman	Mt. Prevost/Quamichan Middle (79 – Ducnan)	P- Mr. W Macleod S – Peter Porte	M
Maple Creek Middle School (43 – Coquitlam)	P- Mr. S Robinson S- Laureen Doerksen	Banting Middle School (43 – Coquitlam)	P- Mrs. C Lauzon S – Laureen Doerksen	M
Montgomery Middle School (43 – Coquitlam)	P – Mr. J Nelson S LaureenDoerksen	Maillard Middle School (43 – Coquitlam)	P – Mr. B Cass S- Laureen Doerksen	M
Hillcrest Middle School (43 – Coquitlam)	P- Mrs. G Speight S- Laureen Doerksen	Minnekhada Middle School (43 – Coquitlam)	P – Mr. B Carabine S- Laureen Doerksen	M
Edgehill Elementary School (47 – Powell River)	P- P- Mrs. K Mcintosh S- Jay Yule	Highland Park Elementary School (42 – Maple Ridge)	P- S- Marjatta Lonjston	
Bert Edwards Elementary School (73 – Kamloops/Thompson)	P –Ms. S Cooley S - Terry Sullivan	Dufferin Crescent Elementary (68 – Nanaimo)	P – Mrs. S Androski-Collins S- Rick Borelli	E
Brooksbank Elementary School (44 – North Vancouver)	P- Mrs. J Martins S – Dr. Robin Brayne	Capilano Elementary School (44 - North Vancouver)	P – Ms D Watters S – Dr. Robin Brayne	E

APPENDIX 5: COMMUNICATION WITH SCHOOL DISTRICTS

May 29, 2006   Ref: 154526

Dear Principal:

I would like to offer the grade 7 and 8 classrooms in your school the opportunity to implement the FRIENDS for Youth program through participation in a research pilot project of the program in the fall of 2006. Many of you will be familiar with the FRIENDS for Life program, currently being offered to schools districts for implementation in grade 4 and 5 classrooms throughout BC. Training and materials for the FRIENDS programs are provided by the Ministry of Children and Family Development. A number of districts have expressed interest in implementing the Youth program as the transition from elementary to middle or secondary school can be stressful for many youngsters.

Background

Anxiety disorders are the most common mental disorders affecting children and adolescents. School-age children with anxiety disorders have reduced access to learning related to their higher rates of absenteeism, decreased concentration, lower rates of participation in classroom and extracurricular activities, impaired interpersonal functioning, and behavioral problems. Far too often, these effects result in more severe anxiety disorders, depression, substance abuse, higher rates of medical utilization, and increased rates of school dropout. Moreover, recent research has confirmed that anxiety is a strong predictor of youth suicide.

The transition from elementary school to middle or secondary school has been identified as particularly stressful for many students. The FRIENDS for Youth program, developed in Australia, is a prevention and early intervention program designed to be implemented in schools, to reduce the risk of anxiety problems and disorders, and to build psychological resilience. Like the FRIENDS for Life program being implemented in many BC grade 4 and 5 classrooms, the Youth program is based on a cognitive behavioral (CBT) intervention. Research on the effectiveness of the Youth program is in the early stages; however, preliminary results are promising.

Purpose of the Research
The objective of this study is to ascertain the efficacy of a brief CBT curriculum, delivered by classroom teachers, in preventing anxiety disorders and in reducing anxiety symptoms in those students experiencing anxiety problems. The project will also determine the stability of the treatment effects, and assess the impact of the program on symptoms of depression.

Procedures to be Used in the Study

Classrooms involved in the study will be randomly assigned to either receive the FRIENDS for Youth program or a waitlist control procedure. The research design will involve parent, teacher, and self-report measures prior to the intervention (fall 2006), at the conclusion of the program, and six months following the program. Measures include the Multidimensional Anxiety Scale for Children (MASC; March, 1997), the MASC-P (parent report), the Strengths and Difficulties Questionnaire (SDQ), the Center for Epidemiological Studies-Child Depression (CES-DC), and the Mobility Inventory for Teens (MI-Modified) to identify adolescents with anxiety.

Participating classroom teachers will receive a one-day training about the FRIENDS for Youth program in September, 2006. All travel, substitute teacher costs, training and materials will be covered by the project. Teachers will then implement the program, guiding students through a ten week series of class-based activities.

Potential Benefits and Implications

It is now widely recognized that the social and emotional development and well-being of children and youth is critical to future academic and occupational success. It has also been established that the transition from elementary to middle or secondary school is associated with increased anxiety for many students. Not unlike adults with anxiety disorders, youth with anxiety problems also tend to overuse support services, repeatedly winding up in the nurse's or counselor's offices.

CBT interventions for children and adolescents suffering from anxiety problems and disorders have shown enormous promise. By training teachers and implementing the FRIENDS for Youth program this research will reduce the number of adolescents with anxiety problems and will increase the capacity of teachers to identify and support those students with anxiety disorders.

Should results of this research indicate that the FRIENDS for Youth program is effective, the Ministry of Children and Family Development will provide training and program materials to all BC school districts interested in implementing the program.

Thank you for considering this exciting research opportunity. If your school is interested in participating please contact the FRIENDS Program Manager, Kelly Angelius, by phone (250 xxx-xxxx) or e-mail (xxx@xxxxx.com) by **Friday, July 14, 2006**. Please do not hesitate to contact me for clarification or further information. We look forward to the possibility of working with your school.

Sincerely,

[signature]

Jayne Barker
Executive Director
Child & Youth Mental Health

Superintendent,   School District
Address
Address
City, BC Postal Code

July14, 2006

Dear   ;

In May 2006 I sent you an e-mail indicating I would be contacting the principals of schools with grade 7 and/or 8 classes to offer them the opportunity to participate in a research project evaluating the effectiveness of the FRIENDS for Youth, an anxiety prevention program. The principal of _____ School in School District ___ has indicated an interest in participating in the study. This letter is my formal request to conduct research in the _____School District.

You may be familiar with the FRIENDS for Life program, currently being implemented in grade 4 and 5 classrooms in 75% of school districts in BC. A number of districts have expressed interest in implementing the Youth program as the transition from elementary to middle or secondary school can be stressful for many youngsters. The FRIENDS for Youth research project is being funded by the Ministry of Children and Family Development through a grant to the University of British Columbia.

Background

Anxiety disorders are the most common mental disorders affecting children and adolescents. School-age children with anxiety disorders have reduced access to learning related to their higher rates of absenteeism, decreased concentration, lower rates of participation in classroom and extracurricular activities, impaired interpersonal functioning, and behavioral problems. Far too often, these effects result in more severe anxiety disorders, depression, substance abuse, higher rates of medical utilization, and increased rates of school dropout. Moreover, recent research has confirmed that anxiety is a strong predictor of youth suicide.

The transition from elementary school to middle or secondary school has been identified as particularly stressful for many students. The FRIENDS for Youth program, developed in Australia, is a prevention and early intervention program designed to be implemented in schools, to reduce the risk of anxiety problems and disorders, and to build psychological resilience. Like

the FRIENDS for Life program being implemented in many BC grade 4 and 5 classrooms, the Youth program is based on a cognitive behavioral (CBT) intervention. Research on the effectiveness of the Youth program is in the early stages; however, preliminary results are promising.

Purpose of the Research

The objective of this study is to ascertain the effectiveness of a brief CBT curriculum, delivered by classroom teachers, in preventing anxiety disorders and in reducing anxiety symptoms in those students experiencing anxiety problems. The project will also determine the stability of the treatment effects, and assess the impact of the program on symptoms of depression.

Procedures to be Used in the Study

Classrooms involved in the study will be randomly assigned to either receive the FRIENDS for Youth program or a waitlist control procedure. In October all participating students will be asked to complete three short self-report questionnaires. The MASC is a self-report checklist for adolescents that measures physiological symptoms, worry, and inattentiveness associated with anxiety problems, and produces an overall anxiety score. If a student scores at a high level (clinical), the parents will be contacted by the research team and assisted with finding additional resources in the community for youth with anxiety problems. The Child and Youth Coping Scale is a self-report questionnaire developed to assess different ways of coping with anxiety. Students will also fill out a measure on depression, the Center for Epidemiological Studies Depression Scale for Children (CES-DC). These student questionnaires will take approximately 30 minutes to complete. Teachers and parents will be asked to complete the Strengths and Difficulties questionnaire at the same time periods. These self-report measures will be repeated in December and 6 months later, taking a total of 90 minutes. Each time, the completed forms will be collected from students by a research assistant and delivered directly to the researcher.

Participating classroom teachers will receive a one-day training about the FRIENDS for Youth program in September, 2006. All travel, substitute teacher costs, training and materials will be covered by the project. Teachers will then implement the program, guiding students through a ten week series of class-based activities.

Potential Benefits and Implications

It is now widely recognized that the social and emotional development and well-being of children and youth is critical to future academic and occupational success. It has also been established that the transition from elementary to middle or secondary school is associated with increased anxiety for many students. Not unlike adults with anxiety disorders, youth with anxiety problems also tend to overuse support services, repeatedly winding up in the nurse's or counselor's offices.

CBT interventions for children and adolescents suffering from anxiety problems and disorders have shown enormous promise. By training teachers and implementing the FRIENDS for Youth program this research will reduce the number of adolescents with anxiety problems and will increase the capacity of teachers to identify and support those students with anxiety disorders.

Should results of this research indicate that the FRIENDS for Youth program is effective, the Ministry of Children and Family Development will provide training and program materials to all BC school districts interested in implementing the program.

Investigators
This research is being conducted as part of my PhD dissertation through the Interdisciplinary program at UBC. The principal investigator is Dr. Sam Sheps, Director, Western Regional Training Center for Health Services Research, Western Regional Mentoring Coordinator CHSRF EXTRA Program, Professor and Director MSc/PhD Program, Department of Health Care and Epidemiology, Faculty of Medicine, UBC. Other investigators include Dr. Lynn Miller, Assistant Professor, Department of Educational and Counselling and Special Education, Faculty of Education, UBC and Dr. Charlotte Waddell, Director, Children's Health Policy Center, Faculty of Health Sciences, Simon Fraser University.

Please do not hesitate to contact me for clarification or further information. Thank you for your consideration and we look forward to the possibility of working with the _____ School District on this exciting project.

Sincerely,

Jayne Barker

APPENDIX 6: PERMISSION FOR USE OF MEASURES

From: xxxxx@xxxxx.com on behalf of John March
[xxxx@xxxx.xxxx.edu]
Sent: Sunday, July 02, 2006 3:39 PM
To: JayneBarker
Cc: xxxxx@xxxxx.ubc.ca
Subject: Re: Permission to use the MASC

Sounds fine jayne. John

...... Original Message ....
On Sat, 01 Jul 2006 20:08:34 -0700 JayneBarker <xxxxxxxxx@xxxx.ca> wrote:
>Dear Dr. March:
>
>I am a PhD student in the Individual Interdisciplinary Graduate Studies
>Program at the University of British Columbia, doing research in the
>area
of
>universal school-based anxiety prevention through the Dept. of Psychiatry.
>Dr. Lynn Miller, a member of my Committee, suggested I contact you
>regarding use of the MASC as one of the measures in my study. I have
>read several articles describing the properties of the MASC and it will
>suit the needs of my study very well.
>
>First, I am seeking your approval to use the MASC under the supervision
>of Dr. Miller (who is using the MASC in other research projects with
>your permission). Second, Dr. Miller indicated you may consider
>letting me use the MASC at no charge if you are listed as a consultant
>and author. Thanks you very much for considering this request.
>
>Sincerely,
>Jayne Barker
>

___
Sent with SnapperMail on Treo 600
John March, MD,MPH
Duke University Medical Center
Office xxx-xxxx
Fax xxx-xxxx

APPENDIX 7: ASSESSMENT MEASURES

MASC

| **MASC** |
| by John March, M.D., M.P.H. |

Name:_____ **Age:**_____ **Gender:** Male   Female
(Circle one)

Date:_____/_____/_____ **School Grade:**_____
Month   Day   Year

This questionnaire asks you how you have been thinking, feeling, or acting recently. For each item, please circle the number that shows how often the statement is true for you. If a sentence is true about you a lot of the time, circle 3. If it is true about you some of the time, circle 2. If it is true about you once in a while, circle 1. If a sentence is not ever true about you, circle 0. Remember, there are no right or wrong answers, just answer how you have been feeling recently.

Here are two examples to show you how to complete the questionnaire. In Example A, if you were hardly ever scared of dogs, you would circle 1, meaning that the statement is rarely true about you. In Example B, if thunderstorms sometimes upset you, you would circle 2, meaning that the statement is sometimes true about you.

	Never true about me	Rarely true about me	Sometimes true about me	Often true about me
Example A I'm scared of dogs	0	(1)	2	3
Example B Thunderstorms upset me	0	1	(2)	3

Now try these items yourself. Don't forget to do the items on the back of the questionnaire as well.

1. I feel tense or uptight	0	1	2	3
2. I usually ask permission	0	1	2	3
3. I worry about other people laughing at me	0	1	2	3
4. I get scared when my parents go away	0	1	2	3
5. I keep my eyes open for danger	0	1	2	3
6. I have trouble getting my breath	0	1	2	3
7. The idea of going away to camp scares me	0	1	2	3
8. I get shaky or jittery	0	1	2	3
9. I try to stay near my mom or dad	0	1	2	3
10. I'm afraid that other kids will make fun of me	0	1	2	3
11. I try hard to obey my parents and teachers	0	1	2	3
12. I get dizzy or faint feelings	0	1	2	3
13. I check things out first	0	1	2	3
14. I worry about getting called on in class	0	1	2	3
15. I'm jumpy	0	1	2	3

Please flip the questionnaire over; the items are continued on the back page...

MASC (page 2)

MASC

by John March, M.D., M.P.H.

	never true about me	rarely true about me	sometimes true about me	often true about me
16. I'm afraid other people will think I'm stupid	0	1	2	3
17. I keep the light on at night	0	1	2	3
18. I have pains in my chest	0	1	2	3
19. I avoid going to places without my family	0	1	2	3
20. I feel strange, weird, or unreal	0	1	2	3
21. I try to do things other people will like	0	1	2	3
22. I worry about what other people think of me	0	1	2	3
23. I avoid watching scary movies and TV shows	0	1	2	3
24. My heart races or skips beats	0	1	2	3
25. I stay away from things that upset me	0	1	2	3
26. I sleep next to someone from my family	0	1	2	3
27. I feel restless and on edge	0	1	2	3
28. I try to do everything exactly right	0	1	2	3
29. I worry about doing something stupid or embarrassing	0	1	2	3
30. I get scared riding in the car or on the bus	0	1	2	3
31. I feel sick to my stomach	0	1	2	3
32. If I get upset or scared, I let someone know right away	0	1	2	3
33. I get nervous if I have to perform in public	0	1	2	3
34. Bad weather, the dark, heights, animals, or bugs scare me	0	1	2	3
35. My hands shake	0	1	2	3
36. I check to make sure things are safe	0	1	2	3
37. I have trouble asking other kids to play with me	0	1	2	3
38. My hands feel sweaty or cold	0	1	2	3
39. I feel shy	0	1	2	3

Thank you for completing the questionnaire.

CES-DC

Center for Epidemiological Studies Depression Scale for Children (CES-DC)

Number _____

Score _____

INSTRUCTIONS

Below is a list of the ways you might have felt or acted. Please check how *much* you have felt this way during the *past week*.

DURING THE PAST WEEK	Not At All	A Little	Some	A Lot
1. I was bothered by things that usually don't bother me.	____	____	____	____
2. I did not feel like eating, I wasn't very hungry.	____	____	____	____
3. I wasn't able to feel happy, even when my family or friends tried to help me feel better.	____	____	____	____
4. I felt like I was just as good as other kids.	____	____	____	____
5. I felt like I couldn't pay attention to what I was doing.	____	____	____	____

DURING THE PAST WEEK	Not At All	A Little	Some	A Lot
6. I felt down and unhappy.	____	____	____	____
7. I felt like I was too tired to do things.	____	____	____	____
8. I felt like something good was going to happen.	____	____	____	____
9. I felt like things I did before didn't work out right.	____	____	____	____
10. I felt scared.	____	____	____	____

DURING THE PAST WEEK	Not At All	A Little	Some	A Lot
11. I didn't sleep as well as I usually sleep.	____	____	____	____
12. I was happy.	____	____	____	____
13. I was more quiet than usual.	____	____	____	____
14. I felt lonely, like I didn't have any friends.	____	____	____	____
15. I felt like kids I know were not friendly or that they didn't want to be with me.	____	____	____	____

DURING THE PAST WEEK	Not At All	A Little	Some	A Lot
16. I had a good time.	____	____	____	____
17. I felt like crying.	____	____	____	____
18. I felt sad.	____	____	____	____
19. I felt people didn't like me.	____	____	____	____
20. It was hard to get started doing things.	____	____	____	____

Coping Scale for Children and Youth (page one)

Subject No._____   Age _____   Male ___ Female ___

COPING SCALE FOR CHILDREN AND YOUTH

All children and teenagers have some problems they find hard to
deal with and that upset them or worry them. We are interested in
finding out what you do when you try to deal with a hard problem.
Think about some problem that has bothered you or upset you in the
past few months. It could be a problem with homework, teachers,
parents, other kids, or anything else. Briefly describe what the
problem is in the space below.

_____

How much has this problem bothered you. Circle one of the answers.

          1   2   3
    a little bit   a medium amount   a great deal

Listed below are some ways that children and teenagers try to deal
with their problems. Please tell us how often you have used these
behaviors when you tried to deal with the problem you described
above.

		Never	Sometimes	Often	Very Often
1.	I asked someone in my family for help.	1	2	3	4
2.	I tried not thinking about the problem.	1	2	3	4
3.	I went on with my usual activities as if nothing was wrong.	1	2	3	4
4.	I thought about the problem and tried to figure out what I could do about it.	1	2	3	4
5.	I stayed away from things that reminded me about the problem.	1	2	3	4
6.	I tried not to feel anything inside me. I wanted to feel numb.	1	2	3	4
7.	I pretended the problem wasn't very important to me.	1	2	3	4

Coping Scale for Children and Youth (page two)

		Never	Sometimes	Often	Very Often
8.	I knew I had lots of feelings about the problem, but I just didn't pay any attention to them.	1	2	3	4
9.	I took a chance and tried a new way to solve the problem.	1	2	3	4
10.	I tried to get away from the problem for a while by doing other things.	1	2	3	4
11.	I made a plan to solve the problem and then I followed the plan.	1	2	3	4
12.	I pretended the problem had nothing to do with me.	1	2	3	4
13.	I went over in my head some of the things I could do about the problem.	1	2	3	4
14.	I thought about the problem in a new way so that it didn't upset me as much.	1	2	3	4
15.	I went to sleep so that I wouldn't have to think about it.	1	2	3	4
16.	When I was upset about the problem, I was mean to someone even though they didn't deserve it.	1	2	3	4
17.	I learned a new way of dealing with the problem.	1	2	3	4
18.	I tried to pretend that the problem didn't happen.	1	2	3	4
19.	I got advice from someone about what I should do.	1	2	3	4

Coping Scale for Children and Youth (page three)

		Never	Sometimes	Often	Very Often
20.	I hoped that things would somehow work out so I didn't do anything.	1	2	3	4
21.	I tried to pretend that my problem wasn't real.	1	2	3	4
22.	I tried not to be with anyone who reminded me of the problem.	1	2	3	4
23.	I shared my feelings about the problem with another person.	1	2	3	4
24.	I tried to figure out how I felt about the problem.	1	2	3	4
25.	I figured out what had to be done and then I did it.	1	2	3	4
26.	I kept my feelings to myself.	1	2	3	4
27.	I realized there was nothing I could do. I just waited for it to be over with.	1	2	3	4
28.	I decided to stay away from people and be by myself.	1	2	3	4
29.	I put the problem out of mind.	1	2	3	4

Teacher Strengths and Difficulties Questionnaire

Strengths and Difficulties Questionnaire

For each item, please mark the box for Not True, Somewhat True or Certainly True. It would help us if you answered all items as best you can even if you are not absolutely certain or the item seems daft! Please give your answers on the basis of the child's behaviour over the last six months or this school year.

Child's Name ....   Male/Female

Date of Birth ....

	Not True	Somewhat True	Certainly True
Considerate of other people's feelings	☐	☐	☐
Restless, overactive, cannot stay still for long	☐	☐	☐
Often complains of headaches, stomach-aches or sickness	☐	☐	☐
Shares readily with other children (treats, toys, pencils etc.)	☐	☐	☐
Often has temper tantrums or hot tempers	☐	☐	☐
Rather solitary, tends to play alone	☐	☐	☐
Generally obedient, usually does what adults request	☐	☐	☐
Many worries, often seems worried	☐	☐	☐
Helpful if someone is hurt, upset or feeling ill	☐	☐	☐
Constantly fidgeting or squirming	☐	☐	☐
Has at least one good friend	☐	☐	☐
Often fights with other children or bullies them	☐	☐	☐
Often unhappy, down-hearted or tearful	☐	☐	☐
Generally liked by other children	☐	☐	☐
Easily distracted, concentration wanders	☐	☐	☐
Nervous or clingy in new situations, easily loses confidence	☐	☐	☐
Kind to younger children	☐	☐	☐
Often lies or cheats	☐	☐	☐
Picked on or bullied by other children	☐	☐	☐
Often volunteers to help others (parents, teachers, other children)	☐	☐	☐
Thinks things out before acting	☐	☐	☐
Steals from home, school or elsewhere	☐	☐	☐
Gets on better with adults than with other children	☐	☐	☐
Many fears, easily scared	☐	☐	☐
Sees tasks through to the end, good attention span	☐	☐	☐

Signature ....   Date..

Parent/Teacher/Other (please specify:)

Thank you very much for your help

Parent Strengths and Difficulties Questionnaire

Strengths and Difficulties Questionnaire

For each item, please mark the box for Not True, Somewhat True or Certainly True. It would help us if you answered all items as best you can even if you are not absolutely certain or the item seems daft! Please give your answers on the basis of the child's behaviour over the last six months or this school year.

Child's Name ....   Male/Female

Date of Birth ....

	Not True	Somewhat True	Certainly True
Considerate of other people's feelings	☐	☐	☐
Restless, overactive, cannot stay still for long	☐	☐	☐
Often complains of headaches, stomach-aches or sickness	☐	☐	☐
Shares readily with other children (treats, toys, pencils etc.)	☐	☐	☐
Often has temper tantrums or hot tempers	☐	☐	☐
Rather solitary, tends to play alone	☐	☐	☐
Generally obedient, usually does what adults request	☐	☐	☐
Many worries, often seems worried	☐	☐	☐
Helpful if someone is hurt, upset or feeling ill	☐	☐	☐
Constantly fidgeting or squirming	☐	☐	☐
Has at least one good friend	☐	☐	☐
Often fights with other children or bullies them	☐	☐	☐
Often unhappy, down-hearted or tearful	☐	☐	☐
Generally liked by other children	☐	☐	☐
Easily distracted, concentration wanders	☐	☐	☐
Nervous or clingy in new situations, easily loses confidence	☐	☐	☐
Kind to younger children	☐	☐	☐
Often lies or cheats	☐	☐	☐
Picked on or bullied by other children	☐	☐	☐
Often volunteers to help others (parents, teachers, other children)	☐	☐	☐
Thinks things out before acting	☐	☐	☐
Steals from home, school or elsewhere	☐	☐	☐
Gets on better with adults than with other children	☐	☐	☐
Many fears, easily scared	☐	☐	☐
Sees tasks through to the end, good attention span	☐	☐	☐

Signature ....   Date..

Parent/Teacher/Other (please specify:)

Thank you very much for your help

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APPENDIX 8: INTERVENTION NTEGRITY CHECK-LIST LESSONS 6 & 8

## Treatment Integrity re: FRIENDS Program Structure - Youth

Please note: treatment integrity measures aim to determine how well the aims of the overall program are met, as well as how well the aims of each activity are met. As long as the essential aims of each activity are covered, the group leader has the freedom to be as creative in their presentation as they would like. The content of each activity is provided by the participants. These questions therefore do not assess group leader's strict adherence to the format of each activity, but rather whether the group leader has met the aims of each activity.

FRIENDS Session 6: Introduction to Step 4 of the FRIENDS Plan

1. <u>Warm-up Activity - Tied In Knots</u>
    <u>Aim:</u> To introduce participants to the concept of problem-solving and exploring coping strategies and solutions.
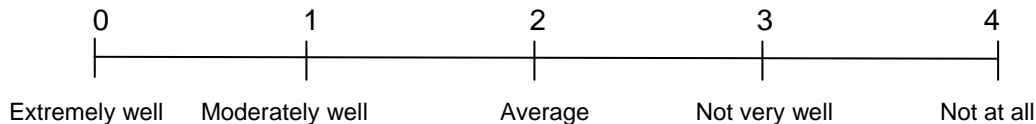
    How well was this aim achieved?

0	1	2	3	4
Extremely well	Moderately well	Average	Not very well	Not at all
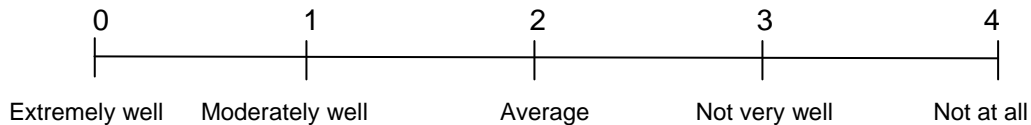
2. <u>Review Session 5 and Home Activities</u>
    <u>Aim:</u> To briefly review the content covered in session 5 and review the home activities
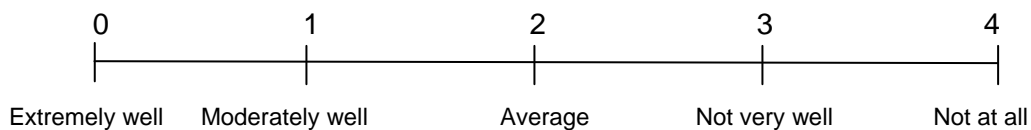
    How well was this aim achieved?

0	1	2	3	4
Extremely well	Moderately well	Average	Not very well	Not at all

3. <u>Mindfulness and Attention Training</u>
    <u>Aim:</u> To teach participants the importance focusing their attention on the positive aspects of a situation.
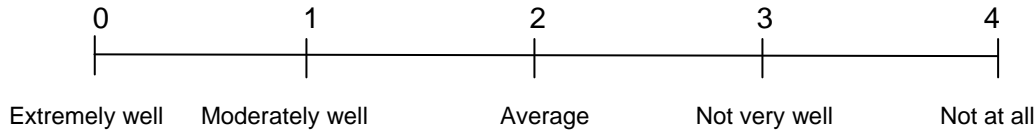
    How well was this aim achieved?

0	1	2	3	4
Extremely well	Moderately well	Average	Not very well	Not at all

4.   Introduction to Step 4 of the FRIENDS Plan
        Aim: To introduce participants to the third step of the F-R-I-E-N-D-S plan (E =
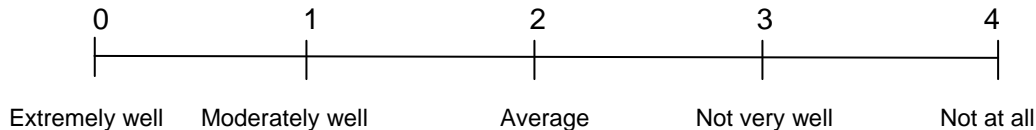   Explore Solutions and Coping Step Plans)

    How well was this aim achieved?

```
        0               1               2               3               4
        ├───────────────┼───────────────┼───────────────┼───────────────┤
Extremely well    Moderately well         Average         Not very well        Not at all
```

5.   Brainstorming Ways to Cope
        Aim: To encourage participants to brainstorm different coping strategies they could use
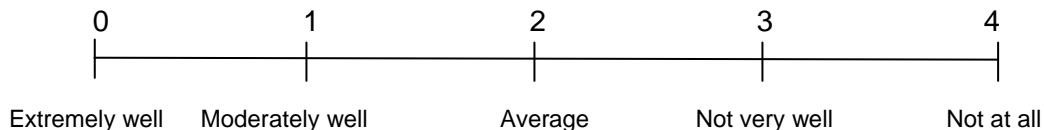   in difficult situations.

    How well was this aim achieved?

```
        0               1               2               3               4
        ├───────────────┼───────────────┼───────────────┼───────────────┤
Extremely well    Moderately well         Average         Not very well        Not at all
```

6.   Introduction to the Coping Step Plan
        Aim: To introduce and explain the coping step plan to participants.

    How well was this aim achieved?

```
        0               1               2               3               4
        ├───────────────┼───────────────┼───────────────┼───────────────┤
Extremely well    Moderately well         Average         Not very well        Not at all
```
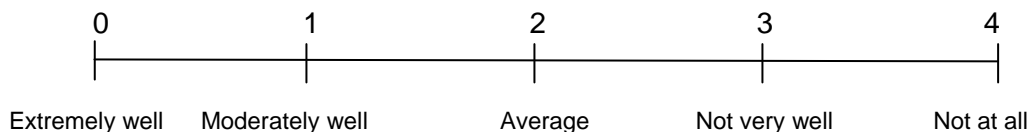
7.   Create Your Own Coping Step Plan
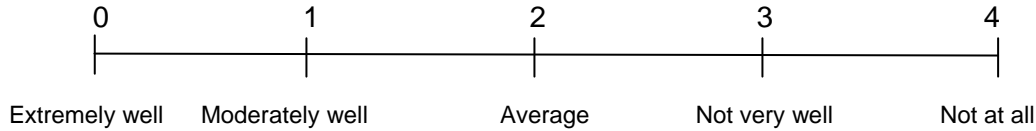   Aim: To encourage participants to apply the Coping Step plan to a number of worrying
        or difficult situations.

    How well was this aim achieved?

```
        0               1               2               3               4
        ├───────────────┼───────────────┼───────────────┼───────────────┤
Extremely well    Moderately well         Average         Not very well        Not at all
```

8.   <u>Thinking About Session 6</u>
       <u>Aim:</u> To encourage participants to reflect on what they have learnt from Session 6.

       How well was this aim achieved?

0	1	2	3	4

Extremely well   Moderately well   Average   Not very well   Not at all


9.   <u>Home Activity 6A – Lets Build on What We Have Learnt</u>
       <u>Aim:</u> To encourage participants to apply the Coping Step plan to a difficult situation that
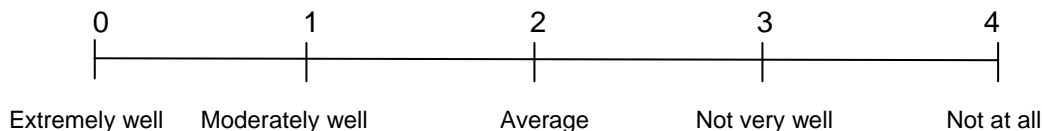   is coming up for them in the near future.

       How well was this aim achieved?

0	1	2	3	4

Extremely well   Moderately well   Average   Not very well   Not at all
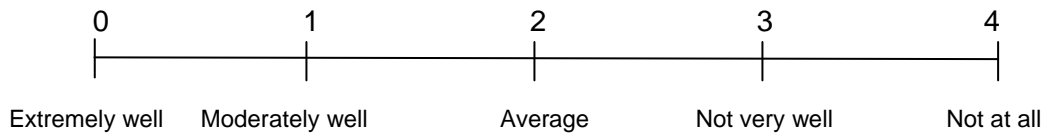
10.   <u>Home Activity 6B – Self-Awareness, Quiet Time, 'Being Still' Time, 'Slow' Time</u>
       <u>Aim:</u> To encourage participants to incorporate periods of quiet time, self-awareness
       time, being still time, and slow time into their daily routines.

       How well was this aim achieved?

0	1	2	3	4

Extremely well   Moderately well   Average   Not very well   Not at all
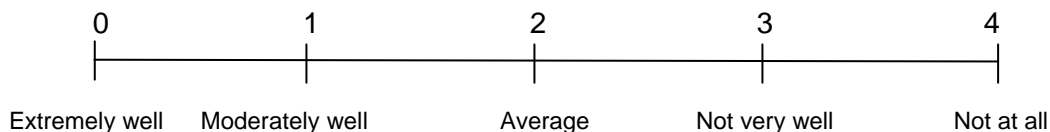
11.   <u>Home Activity 6C – Keeping A Brief Diary</u>
       <u>Aim:</u> To encourage participants to continually record daily positive and challenging
       events.

       How well was this aim achieved?

0	1	2	3	4

Extremely well   Moderately well   Average   Not very well   Not at all

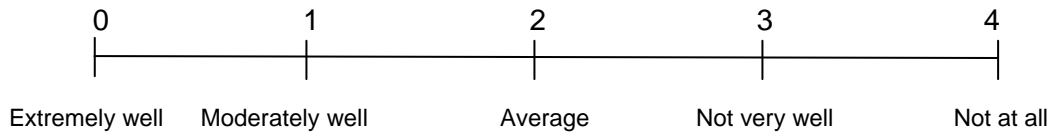# Treatment Integrity re: FRIENDS Program Structure - Youth

Please note: treatment integrity measures aim to determine how well the aims of the overall program are met, as well as how well the aims of each activity are met. As long as the essential aims of each activity are covered, the group leader has the freedom to be as creative in their presentation as they would like. The content of each activity is provided by the participants. These questions therefore do not assess group leader's strict adherence to the format of each activity, but rather whether the group leader has met the aims of each activity.

FRIENDS Session 8: Step 4 of the FRIENDS Plan Continued and Introduction to Step 5 of the FRIENDS Plan

1. Review Session 7 and Home Activities
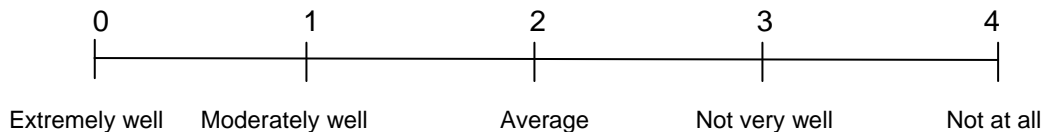   Aim: to briefly review the content covered in session 7 and to review the home activities

    How well was this aim achieved?

    ```
    0             1             2             3             4
    |-------------|-------------|-------------|-------------|
    ```
    Extremely well   Moderately well   Average   Not very well   Not at all

2. Introduce the 6-Stage Problem-Solving Plan
    Aim: To introduce the 6-Stage Problem Solving Plan.

    How well was this aim achieved?

    ```
    0             1             2             3             4
    |-------------|-------------|-------------|-------------|
    ```
    Extremely well   Moderately well   Average   Not very well   Not at all
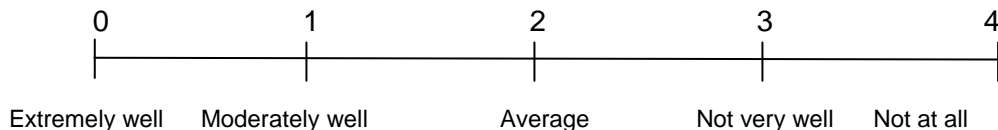
3. Using the 6-Stage Problem-Solving Plan to Sort Stuff Out
    Aim: The aim of this activity is to give participants an opportunity to practice applying the six sages of the 6-Stage Problem-Solving Plan to different situations.
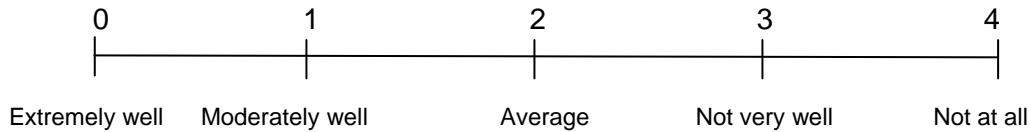
    How well was this aim achieved?

    ```
    0             1             2             3             4
    |-------------|-------------|-------------|-------------|
    ```
    Extremely well   Moderately well   Average   Not very well   Not at all

4. Introduction to Step 5 of the FRIENDS Plan
    Aim: To introduce participants to the fifth step of the F-R-I-E-N-D-S plan (N = Now reward yourself! You've done your best!)
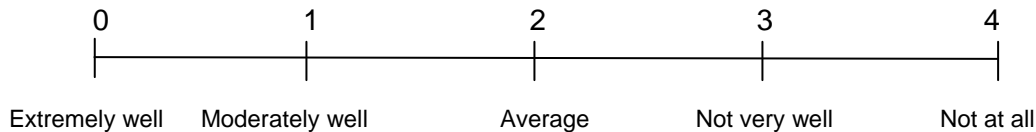
    How well was this aim achieved?

0	1	2	3	4

    Extremely well   Moderately well   Average   Not very well   Not at all

5. Thinking Like A Winner
    Aim: To teach participants to evaluate their own performance in terms of partial success.

    How well was this aim achieved?

0	1	2	3	4

    Extremely well   Moderately well   Average   Not very well   Not at all
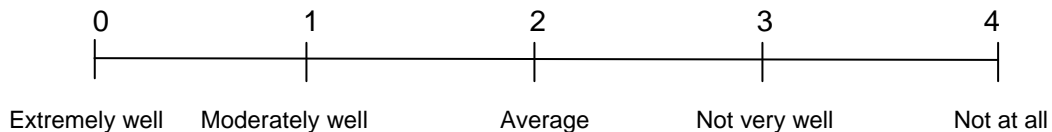
6. Thinking About Session 8
    Aim: To encourage participants to reflect on what they have learnt from Session 8.

    How well was this aim achieved?

0	1	2	3	4

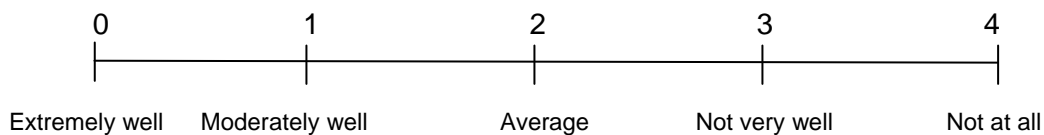   Extremely well   Moderately well   Average   Not very well   Not at all

7. Home Activity – 8A – Lets Build on What We Have Learnt
    Aim: To encourage participants to apply the 6-Stage Problem Solving Plan to a real life situation they experience during the week.
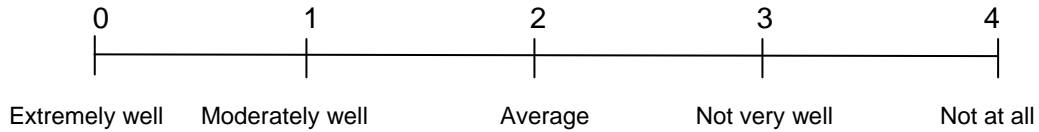
    How well was this aim achieved?

0	1	2	3	4

    Extremely well   Moderately well   Average   Not very well   Not at all

8.   <u>Home Activity 8B – Keeping A Brief Diary</u>
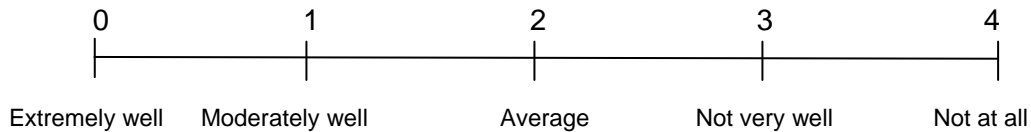   <u>Aim:</u> To encourage participants to continually record daily positive and challenging events.

       How well was this aim achieved?

```
0               1               2               3               4
├───────────────┼───────────────┼───────────────┼───────────────┤
```

Extremely well   Moderately well   Average   Not very well   Not at all

9.   <u>Home Activity 8C **–** Self-Awareness, Quiet Time, 'Being Still' Time, 'Slow' Time</u>
       <u>Aim:</u> To encourage participants to incorporate periods of quiet time, self-awareness time, being still time, and slow time into their daily routines.

       How well was this aim achieved?

```
0               1               2               3               4
├───────────────┼───────────────┼───────────────┼───────────────┤
```

Extremely well   Moderately well   Average   Not very well   Not at all

APPENDIX 9: OVERVIEW OF "FRIENDS" LESSONS

OVERVIEW – FRIENDS For LIFE Program

Session	FRIENDS for LIFE (Child)	FRIENDS for LIFE (Youth)
1	Working in groups; feeling confident and brave; getting to know one another and interacting; understanding and accepting differences; goals setting; identifying happy experiences.	
2	Understanding our own and other people's feelings; thinking in powerful or helpful ways; understanding how thoughts and feelings affect behaviour.	Self-esteem and feelings; self-confidence; recognizing personal achievements and strengths; safety cues to help us cope.
3	Listening to our body's clues to understand feelings; different methods of relaxation – progressive muscle relaxation, deep-breathing, using relaxation scripts, the importance of rest and quiet time.	Verbal and non-verbal communication; Understanding our own and other people's feelings; thinking in powerful or helpful ways; understanding how thoughts and feelings affect behaviour; learning to make good friendships.
4	Exploring what makes us happy; understanding self talk; helpful (green) thoughts make us feel strong, brave and happy; unhelpful (red) thoughts make us feel worried or upset.	Becoming more aware of self (body, feelings, thoughts), and surroundings (other people, the natural environment); empathy training; Listening to our body's clues to understand feelings; different methods of relaxation – progressive muscle relaxation, deep-breathing, using relaxation scripts, the importance of rest and quiet time; using humour to deal with different situations.
5	Paying attention to positive thoughts and things; challenging unhelpful thoughts; changing unhelpful thoughts into helpful thoughts; exploring ways to cope; coping step plans (breaking down difficult things into smaller steps).	Exploring what makes us happy; understanding self-talk; helpful (green, inner) thoughts make us feel strong, brave and happy; unhelpful (red) thoughts make us feel worried or upset; paying attention to positive thoughts and things; challenging unhelpful thoughts; changing unhelpful thoughts into helpful thoughts.
6	The importance of role models and support teams; 6-stage problem-solving plan (identifying the problem and possible solutions, listing possible consequences, picking the best solution, putting the plan into action, evaluating the results).	Mindfulness and attention training; focusing on other people (interpersonal), yourself (intrapersonal), and surrounding environment (environmental) aspects; exploring ways to cope; coping step plans (breaking down difficult things into smaller steps).
7	Reward ourselves for trying (effort is important); thinking like a winner, using humour to deal with different situations.	The importance of role models and support teams; dealing with conflict in a CALM way; understanding conflict styles; managing bullying.
8	Practice the skills learnt in FRIENDS; plan ahead for difficult situations; staying calm; being confident and brave; positive affirmations about self.	6-stage problem-solving plan (identifying the problem and possible solutions, listing possible consequences, picking the best solution, putting the plan into action, evaluating the results); reward ourselves for trying (effort is important); thinking like a winner.
9	Putting it all together; using the FRIENDS plan to help ourselves and others.	Practice the skills learnt in FRIENDS; plan ahead for difficult situations; staying calm; being confident and brave; positive affirmations about self.
10	Preparing for future challenges; party to celebrate new skills learnt.	Putting it all together; using the FRIENDS plan to help ourselves and others; preparing for future challenges; party to celebrate new skills learnt.

SKILLS/TECHNIQUES TAUGHT IN EACH SESSION

Concepts, Skills and Techniques	CHILD Program	YOUTH Program
• Working in groups • Feeling confident and brave • Getting to know one another and interacting • Understanding and accepting differences • Goal setting • Identifying happy experiences	Session 1	Session 1
• Self-esteem and feelings • Self-confidence • Recognising personal achievements and strengths • Safety cues to help us cope		Session 2
• Understanding our own and other people's feelings • Thinking in powerful or helpful ways • Understanding how thoughts and feelings affect behaviour	Session 2	Session 3
• Verbal and non-verbal communication • Learning to make good friendships		Session 3
• Listening to our body's clues to understand feelings • Different methods of relaxation – progressive muscle relaxation, deep-breathing, using relaxation scripts, the importance of rest and quiet time	Session 3	Session 4
• Exploring what makes us happy • Understanding self-talk – helpful (green) thoughts make us feel strong, brave and happy; unhelpful (red) thoughts make us feel miserable, worried or upset	Session 4	Session 5
• Paying attention to positive thoughts and things • Challenging unhelpful thoughts • Changing unhelpful thoughts into helpful thoughts	Session 5	Session 5
• Exploring ways to cope • Coping step plans (breaking down difficult things into smaller steps)	Session 5	Session 6
• Mindfulness and attention training • Looking at situation more positively, while focusing on other people (interpersonal), yourself (intrapersonal), and surrounding environment (environmental)		Session 6
• The importance of role models and support teams	Session 6	Session 7
• 6-stage problem-solving plan (identifying the problem and possible solutions, listing possible consequences, picking the best solution, putting the plan into action, evaluating the results)	Session 6	Session 8
• Dealing with conflict in a CALM way • Understanding conflict styles • Managing bullying		Session 7
• Reward ourselves for trying (effort is important) • Thinking like a winner	Session 7	Session 8
• Using humour to deal with different situations	Session 7	Session 4
• Practicing the skills learnt in FRIENDS • Planning ahead for difficult situations • Staying calm • Being confident and brave • Positive affirmations about self	Session 8	Session 9
• Putting it all together • Using the FRIENDS plan to help ourselves and others	Session 9	Session 10
• Preparing for future challenges • Party to celebrate new skills learnt	Session 10	Session 10