A Developmental Approach to the Prevention of Anxiety Disorders during Childhood.

by

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Abstract

The studies presented in this thesis sought to investigate a number of developmental factors that influence the efficacy of preventive intervention for child anxiety disorders. Preventive intervention has emerged as a vital step forward in clinical research following data indicating anxiety disorders are among the most common forms of psychopathology in youngsters (Kashani & Orvaschel, 1990; Mattison, 1992). Several risk and protective factors associated with childhood anxiety disorders have been identified, along with effective treatment protocols (Kendall, 1994; Howard & Kendall, 1996; Barrett, 1998, 1999; Silverman et al., 1999a, 1999b), as prerequisites to the development of preventive programs for child anxiety problems (Spence, 2001).

The first objective of this research was to add to the literature on risk and protective factors by investigating the role of peer interaction in the development of child anxiety problems. Study one examined developmental differences in the influence of peer interaction on children’s anxiety-related cognition and behaviour. One hundred and sixty two children enrolled in grade 6 (n = 96) aged between 9 and 10 years, and grade 9 (n = 66) aged between 14 and 16 years participated in the study. Participants were stratified into either an at risk group or to a healthy group, based on their anxiety scores on the Spence Child Anxiety Scale (SCAS; Spence, 1997), and further allocated to a peer group comprising of 3 ‘healthy’ (non-anxious) and 3 ‘at risk’ (high anxious) children. Prior to and following a peer discussion, participants completed a standardised self-report measure of threat interpretation and response plans to two ambiguous vignettes (Barrett, Rapee, Dadds, & Ryan, 1996; Dadds, Barrett, Rapee, & Ryan, 1996). Results showed all participants evidenced
changes in threat interpretation and response plans following the discussion with peers ($p < .001$). Overall, findings highlight the potential importance of peer interaction in the development of anxiety-related cognition and behaviour. The findings of study one have important implications for the future development of school-based intervention programs; specifically those conducted in the classroom.

Study two sought to advance the current research on preventive intervention for child anxiety by establishing the age at which youngsters benefit the most from the FRIENDS program as a classroom-based universal intervention. Study two presents the results of a longitudinal study evaluating the effects of a universal school-based intervention for child anxiety at two developmental stages. The study involved a cohort of 733 children enrolled in grade 6 ($n = 336, 45.6\%$) aged between 9 and 10 years, and grade 9 ($n = 401, 54.4\%$) aged between 14 and 16 years. Participants were allocated to either a school-based cognitive behavioural intervention or to a monitoring group. Participants completed standardised measures of anxiety, depression and coping style. Participants identified as ‘at risk’ of an anxiety disorder were assessed for a clinical diagnosis with a structured diagnostic interview. Results indicated the universal intervention effective in significantly reducing anxiety ($p < .001$), depression ($p < .001$) and behaviour avoidance in children at post- intervention and 12-month follow-up intervals. Grade 6 children reported significantly higher anxiety at pre-intervention and greater reductions in anxiety at post intervention compared with the grade 9 ($p < .001$), although both primary and secondary school participants showed equal reductions in anxiety at 12-month follow up. Overall, findings suggest universal intervention potentially successful in reducing symptoms of anxiety and increasing coping skills in children.
Primary school children reported the greatest changes in anxiety symptoms, suggesting earlier preventive intervention potentially more advantageous than later intervention. Developmental differences in anxiety, depression and coping strategies are discussed in addition to the implications and limitations of this study and directions for future research.
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Declaration of Originality

I declare that the work contained in this thesis is original. The work has not previously been submitted for a degree or diploma in any university. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made in the thesis itself.

Please note that a modified version of Chapter 3 has been published in the Australian Educational and Developmental Psychologist. A modified version of Chapter 5 has been submitted for publication in the Journal of Child Psychology, and a modified version of Chapter 6 has been accepted for publication in Behaviour Change.


Signed: .................................................................

Date: .................................................................
CHAPTER ONE

CHILDHOOD ANXIETY

Anxiety disorders constitute one of the most common forms of psychopathology among children and adolescents. However, childhood anxiety has been a relatively neglected area of research until twenty years ago, with the inclusion of anxiety disorders for children in the third edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-III; American Psychiatric Association, 1980). The publication of the DSM-III (1980) instigated a substantial increase in empirical research in the area of anxiety disorders in youth. Subsequently, our understanding of the nature of anxiety in children and adolescents has advanced considerably over the last two decades. There is now clear evidence that clinical symptoms of anxiety in childhood, if left untreated, frequently follow a chronic course often into adulthood, and co-occur with other problems including depression.

Anxiety disorders have been shown to interfere significantly with children’s adaptive functioning including social competence, interpersonal relationships and school adjustment. Given these potentially long-term debilitating effects, early intervention (before the onset of the disorder) has become a priority for many researchers interested in reducing the prevalence of anxiety disorders within Australia.

The aim of this chapter is to provide a general overview of anxiety in childhood and adolescence, beginning with a discussion of the phenomenology and developmental aspects of childhood anxiety. This chapter will also discuss the assessment of child anxiety and the literature on the prevalence rates, stability of
anxiety over time, comorbidity and psychosocial correlates of child anxiety problems.

Chapter 2 will explore the developmental psychopathology of anxiety, focusing on risk and protective factors influential in the aetiology and maintenance of anxiety symptoms. Chapter 3 will review the theoretical and empirical literature on intervention and prevention of child anxiety. Chapter 4 will present the general method of the present studies, and include a summary of aims and hypotheses. Chapters 5 and 6 comprise of two data studies exploring developmental considerations in the prevention of child anxiety. Study one (chapter 5) will examine the effects of peer interaction on children’s threat interpretation and responses in anxious children at two stages in development. Study two (chapter 6) will examine the effects of universal preventive intervention for child anxiety processing in anxious children at two stages in development. Finally, chapter 7 will discuss the implications of the research findings and propose directions for future research.

Phenomenology: A Developmental Perspective of Child Anxiety

Anxiety is considered a normal emotional response that is experienced throughout the lifespan and can be defined as an emotional reaction to actual or imagined situations perceived as threatening (King, Hamilton & Ollendick, 1988). Anxiety is considered a multidimensional construct similar to fear involving physiological, cognitive and behavioural components (Lang, 1968). Examples of physiological symptoms are increased heart and respiration rates, trembling and nausea. Typical cognitive symptoms include worrying, negative thoughts or selective attention to threat cues. Behavioural responses include actions to avoid or escape from anxiety-provoking or scary situations (Lang, 1968). The primary
difference between anxiety and fear is that fear is the response to immediate and real
danger to the self, whereas anxiety is predominantly a response to perceived threat
to events either past or future (Gullone and King, 1993).

“Normal” anxiety is considered adaptive in that it activates the “fight or
flight” response and serves to motivate the mind and body for performance in novel,
unfamiliar and challenging situations (Heimberg & Barlow, 1991). From a clinical
perspective, both children and adults are considered to experience anxiety. However,
children often express anxiety symptoms differently from adults. The symptoms and
behaviours specific to childhood anxiety involve high physiological arousal,
separation anxiety, phobias, fearfulness, extreme self-consciousness, extreme
worrying and extreme concerns about past behaviour (King et al., 1989).
Adolescents express similar anxiety symptoms, although the anxiety and worries
about peer and family relationships, financial concerns and school performance tend
to predominate (King et al., 1989).

The literature indicates that children’s experience of anxiety is influenced by
changes in cognition and social-cognition, emotional awareness and self-concept
that usually occur throughout the developmental trajectory (Schniering et al., 2000).
Research has shown that children’s cognitive abilities, in terms of reasoning,
concept comprehension, formulation and communication of such concepts, develop
rapidly from birth through to adulthood (Bee & Mitchell, 1980). Cognitive studies
suggest there are clear differences between anxious adults, adolescents and children
in the way they conceptualise, interpret and report anxiety experiences (Campbell,
Rapee & Spence, 1996). Cognitive development in late childhood and early
adolescence involves extended social cognitive abilities, related to both increases in
self-consciousness and self-focus and to issues with independence, identity and
susceptibility to peer pressure (Adams, Montemayor and Gullotta, 1996). Changes in social-cognition further increase children’s and adolescents’ ability to conceptualise consequences of one’s behaviours, including negative outcomes, increasing the ability to worry about future events (Prins, 2001). Empirical studies show that children’s self-awareness also increases throughout the developmental trajectory (Damon & Hart, 1982). Towards late childhood, children aged approximately 9 years are able to recognise and communicate anxious thoughts and feelings; however, research suggests that the capacity for true introspection does not fully develop until adolescence (Harter, 1990). Overall, the literature indicates that anxiety symptoms may change and vary throughout child development.

It is important to outline that, for many children, anxiety is a normal and transient experience, which parallels the biopsychosocial changes and challenges inherent throughout development. Extensive research details developmentally normal fear and anxiety in childhood and adolescence (Gullone & King, 1993; Gullone, 2000), which differ in definition from an anxiety disorder. Normal fears are considered age appropriate and generally transitory in nature. On the contrary, an anxiety disorder involves anxiety that is not typical of a child’s age, that causes a child too much distress and/or that impairs a child’s personal and interpersonal functioning.

Understanding the difference between normal fear and clinical anxiety can be considered essential for both researchers and clinicians in determining what is developmentally appropriate anxiety or a reason for concern. Findings of a comprehensive research review conducted by Gullone (2000) outline that normal fears in children typically change at different stages in the developmental continuum. Research examining normal childhood fears has primarily been based on
children’s self-report on questionnaires, specifically the Fear Survey Schedule for Children – Revised (FSSC-R; Ollendick, 1987) or its more recent revision, the Fear Survey Schedule for Children-II (Gullone & King, 1992). From birth to age 5, children usually experience fear related to separation from their caregivers, loud noises or loss of support, strangers, unfamiliar objects and heights (Jersild & Holmes, 1935; Miller, Barrett & Hampe, 1974; Scarr & Salapatek, 1970). Fears of being alone and of the darkness, as well as animal fears, are common in pre-school age children (Jersild & Holmes, 1935; Pratt, 1945).

Corresponding with the development of cognitive abilities, in the primary school years children often experience abstract, imaginary, or anticipatory fears such as fears of failure and criticism, of bodily injury, of death and of supernatural phenomena (Bauer, 1976; Gullone & King, 1993, King et al., 1989). For many children, these fears continue into adolescence. Consistent with increased social-cognitive abilities, normal fears throughout adolescent development relate to physical appearance, social comparison, personal conduct and school performance (Croake, 1969; Miller, Barrett, Hampe & Noble, 1972). Global fears about the world such as economic stability and political concerns also emerge (Angelino & Shed, 1953).

Gullone (2000) also detailed that throughout development children’s fears changed not only in from but also in frequency. Studies where children were interviewed show that children aged 4 to 19 years report an average of between two (Maurer, 1965) and five fears (Eme & Schmidt, 1978). Studies based on self-report questionnaires indicate children report a greater number of fears compared to adolescents (Gullone, 2000). Ollendick, Matson & Helsel (1985), for example, found that in their sample children aged 7 to 9 years reported an average of
approximately 14 fears, whereas 16 to 18 year olds reported approximately 11 fears. Although there is a discrepancy between results of interview and self-report studies regarding the number of fears children experience, findings of cross-sectional and longitudinal studies converge to suggest that fears decrease in frequency and severity with age (Gullone, 2000). Gender differences have also been found, with females reporting more frequent and severe fears compared to males (Gullone, 2000).

Further, longitudinal research found that fearfulness generally decreases with maturation. However, individuals who score above or below the norm continue to do so over time (Gullone, 2000), which suggests that individual differences in fear levels may remain stable over time; therefore “fearfulness” may be a temperamental characteristic (Gullone & King, 1997).

Finally, there is evidence of cross-cultural similarities in the number and content of reported fears. Ollendick and his colleagues (Dong, Yang & Ollendick, 1994; Ollendick, King & Frary, 1989; Ollendick, Yang, King, Dong & Akande, 1996) have conducted extensive research into the prevalence and nature of cross-cultural fears in children and adolescents using the FSSC-R. Results revealed surprising similarities in terms of fear content, with seven of the same fears found in a top-ten list from countries such as America, Australia, Africa, Israel, China and Britain. Fear of being hit by a car or truck ranked highest in all countries sampled, followed by fears of not being able to breathe, a bomb attack, fire, a burglar, falling from a height, and death. Burnham & Gullone (1997) also found that eight of the most common fears were the same in samples of Australian and American youth.

Prevalence of fears, however, was found by Ollendick et al. (1989, 1996) to be more culturally bound. In the Western English-speaking countries, children 7 to 17
years of age reported an average of 14 fears. Fear prevalence was notably higher in the African and Israeli samples, where traditional beliefs fostered superstition in children. After reviewing studies examining fears in Dutch and Portuguese children, Fonseca, Yule and Errol (1994) proposed that fear prevalence was culturally specific. They found that Dutch children reported fewer fears and Portuguese children reported more fears than English-speaking children did. Fonseca et al. (1994) concluded that these differences may be explained by variations in socialisation practices, where people in Latin cultures tend to be highly expressive, in contrast to Nordic people, who may learn from an early age not to express their feelings so openly.

In summary, developmental changes in cognition and social-cognition, emotional awareness and self-concept influence children’s experiences of anxiety. The term “normal” fear and worry pertains to symptoms that are age appropriate, transitory, and a natural aspect of development, and that typically decrease as children mature. On the contrary, an anxiety disorder can be differentiated from “normal” fear or anxiety by the severity and duration of physiological, cognitive and behavioural symptoms, and by the level of personal distress and interpersonal impairment caused by the symptoms. As mentioned earlier, anxiety disorders are among the most common psychological problems experienced by youth. Consequently, the remainder of this chapter presents research regarding the various categories of anxiety disorders, the assessment of child anxiety, prevalence rates, comorbidity, the stability of anxiety over time and implications of anxiety on children’s psychosocial functioning.
DSM-IV Anxiety Disorders


Separation Anxiety Disorder (SAD) is the only diagnosis specified in the category “disorder first diagnosed in infancy, childhood or adolescence”. As outlined in Gullone’s (2000) research, for many children separation fears are normal and transient throughout early and late childhood development. For a diagnosis of SAD, a child must experience excessive and pervasive symptoms of anxiety relating to being separated from important attachment figures, such as their mother or primary caretaker or being away from home. Children with SAD report cognitive symptoms such as negative thoughts, worries and often nightmares about something dangerous or harmful happening to themselves (e.g. being kidnapped) or their caretaker (e.g. being in a car crash, dying) when they are apart. Behavioural symptoms of SAD involve actions to avoid separation such as refusing to go to bed without their parent being present, refusing to go to school (Last, Francis, Hersen, Kazdin & Strauss, 1987), or refusing to spend the night away from home. Children with SAD often report other fears, such as the dark, monsters or having nightmares,
or have to sleep in their parents’ bedroom, even in the later years of primary school or high school (Black, 1996). SAD impacts on the child’s everyday life by hindering their ability to engage in spontaneous and potentially rewarding learning experiences such as attending school, going on sleepovers, or going away on camp.

In early childhood many children naturally experience fears of the dark, particular animals (e.g. dogs), insects (e.g. spiders), heights (e.g. elevators), thunderstorms and medical procedures (e.g. the dentist). When such fears cause excessive anxiety and significant distress to a child, they may receive a diagnosis of Specific Phobia (Sp.P; formerly referred to as simple phobia in the DSM-III, 1980). Specific Phobia is defined as excessive and persistent fear and subsequent severe avoidance of a specific object or situation, which interferes with the child’s academic, social, or family functioning.

During late childhood it is normal for children to experience fear pertaining to failure and criticism, bodily injury and death (Gullone, 2000). An additional common diagnosis in childhood and adolescence is Generalised Anxiety Disorder (GAD), which is characterised by excessive anxiety and worry regarding at least two areas (e.g. schoolwork, friends and illness). For a diagnosis of GAD, children and adolescents must report cognitive symptoms in terms of excessive, pervasive and uncontrollable worry occurring more days than not for a period of at least six months. The diagnostic criteria for GAD also requires at least one physical symptom associated with the worry, such as headaches, stomach aches, nausea, irritability, muscle tension and sleeping difficulties.

Normal fears throughout adolescent development involve physical appearance, social comparison, personal conduct and school performance. Children and adolescents who report excessive anxiety during social interactions, such as
going to a party or giving an oral presentation in class, may warrant a diagnosis of Social Phobia (Soc.P; formerly avoidant disorder for children). Soc.P is defined as a “marked and persistent fear of one or more social or performance situations in which the person is exposed to unfamiliar people or to possible scrutiny by others (and) the individual fears that he or she will act in a way that will be humiliating or embarrassing” (APA, 1994, pp. 416). Socially phobic children and adolescents are able to relate well to familiar people; however, in fearful situations they worry excessively about being negatively evaluated or rejected by others, the anxiety of which interferes with their social interaction. Children and adolescents with social phobia typically try to avoid anxiety-provoking social situations.

A final common anxiety disorder in youth is Obsessive Compulsive Disorder (OCD). OCD is characterised by perpetual obsessions and compulsions sufficiently severe to cause substantial distress to the child or adolescent and to significantly interfere with their daily routine (Healy, Barrett & Piacentini, in press), school performance (Toro, Cervera, Osejo & Salamero, 1992) and social functioning (Allsopp & Verduyn, 1990). Obsessions are recurrent intrusive and distressing thoughts, images and/or ideas, while compulsions are recurrent repetitive behaviours aimed at reducing the likelihood of a negative event. Clinical research indicates that the most common obsessions in childhood involve fears concerning contamination and germs, followed by fears pertaining to having things symmetrical, even or arranged and fears related to being burgled or losing things. The most common compulsions involve cleaning, washing, ordering and arranging and checking things (Healy et al., in press). An individual may experience both obsessions and compulsions of just one category of the symptoms (Healy et al., in press). OCD is considered the most severe of the anxiety disorders because of the specific cognitive
disturbance and often-bizarre behaviours. OCD also commonly co-occurs with severe depression (Barrett & Healy, in press).

In summary, the DSM-IV is the classification system most widely used in the diagnosis of anxiety in both children and adults. The most common anxiety disorders in childhood and adolescence are Separation Anxiety Disorder, Specific Phobia, Generalised Anxiety Disorder, Social Phobia and Obsessive-Compulsive Disorder. The diagnostic criteria for all of these anxiety disorders involve a combination of cognitive, physiological and behavioural symptoms. Although the DSM classification system is a useful method of assessment, there remains considerable controversy regarding the categorical approach in the diagnostic assessment of child anxiety. Although a detailed discussion of the DSM classification system is beyond the scope of this review, the primary issues regarding the categorical approach to child anxiety will be discussed in brief below.

**Issues in the DSM Classification of Child Anxiety**

The underlying assumption of the categorical approach is that each anxiety disorder can be recognised as qualitatively different from the others by the primary focus of the child’s anxiety. However, there is considerable overlap in defining symptoms between some of these diagnostic categories. For example, cognitive symptoms of performance anxiety involving fear of incompetence and fear of humiliation are often reported in Soc.P and GAD (Labellarte, Ginsburg, Walkup & Riddle, 1999). Similarly, school refusal is often a behavioural symptom of SAD, SpP, SO.P or GAD (Last & Strauss, 1990).

A further criticism of the categorical approach is the largely dichotomous nature of diagnoses (Albano, Chorpita & Barlow, 1994), 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 the “threshold” for a disorder (Frances, Widiger & Fyer, 1990).

Given these issues regarding the categorical approach, some authors advocate that a dimensional approach may be more parsimonious in the classification of child anxiety (Clarkin & Kendall, 1992). The dimensional approach is based on the assumption that anxiety occurs along a continuum of severity, rather than falling above or below a diagnostic threshold or into discrete diagnostic categories (Fonseca & Perrin, 2001). The categorical and dimensional approaches to understanding child anxiety each present different procedures used in the assessment of child anxiety, which will be now be discussed.

The Assessment of Child Anxiety

The accurate assessment of anxiety in children and adolescents is essential for clinical diagnosis, intervention formulation, evaluation, and also for research practices. Assessment based on a categorical approach to the understanding of anxiety is typically undertaken through the use of interviews (e.g. structured or unstructured diagnostic interviews). On the contrary, assessment based on a dimensional approach to the understanding of anxiety is typically undertaken through the use of questionnaires, whereby the severity and pattern of the child’s symptoms are statistically compared to the normal levels of anxiety reported by children of the same age and gender (Fonseca & Perrin, 2001). Although less commonly used methods of assessing childhood anxiety are available (e.g. direct
observation, physiological measures); diagnostic interviews and questionnaires are
the most common assessment methods used in clinical research in child anxiety. Accordingly, this section will review these assessment techniques, focusing in more
detail on those methods employed in the research presented in chapters five and six.
In addition, methodological issues and developmental considerations in the
assessment of child anxiety will also be discussed.

Interviews

Diagnostic interviews enable researchers and practitioners to identify
whether a child meets criteria for a DSM-IV anxiety disorder. Diagnostic interviews
are defined as either structured, semi-structured or unstructured, each of which
provides a format to gather information about the nature and severity of symptoms.
Structured or semi-structured diagnostic interviews involve a set of specific
questions relating to the presence and severity of key symptoms defined in the
current edition of the DSM. In contrast, unstructured interviews involve a flexible
format, which enables investigators to elicit a wider range of information regarding
the nature of the child’s anxiety problems.

Structured interviews or semi-structured interviews have a number of
advantages over unstructured interviews. A structured diagnostic interview is
considered to be the “gold standard” in research as the standardised format provides
a more accurate anxiety disorder diagnosis (March & Albano, 1998). Structured
interviews provide information, which is quantifiable, that assists in obtaining a
formal DSM-IV anxiety disorder diagnosis and have shown moderate to high
reliability for the majority of the childhood anxiety disorders (Rapee, Barrett, Dadds
& Evans, 1994; Silverman & Eisen, 1992). In contrast, although unstructured
interviews enable greater flexibility in administration, their lack of objectivity and reliability is considered a major limitation. To allow for the compilation and comparison of information from different informants, most interview schedules are available in parent and child format.

There are a variety of diagnostic interviews that have been developed for the assessment of child anxiety disorders. These include the Kiddie-Schedule for Affective Disorders and Schizophrenia (K-SADS; Puig-Antich & Chambers, 1978), the Diagnostic Interview Schedule for Children and Adolescents (DICA; Herjanic & Reich, 1982), the Diagnostic Interview Schedule for Children (DISC; Costello, Edelbrock, Dulcan, Kalas & Klaric, 1984), the Child and Adolescent Psychiatric Assessment (CAPA; Angold & Costello, 1995), the Diagnostic Interview Schedule for Children, Adolescents and Parents (DISCAP; Holland & Dadds, 1995) and the Anxiety Disorders Interview Schedule for Children and Parents (ADIS-C/P; Silverman & Albano, 1996; Silverman & Nelles, 1988).

The interview most commonly used in research examining child anxiety is the ADIS-IV-C/P (Silverman & Albano, 1996), which was specifically designed for assessing DSM-IV anxiety disorders (Silverman, Saavedra & Pina, 2001). The ADIS-C-IV is designed for use with children aged 6 to 17 years. The following problem areas can be diagnosed with the ADIS-C-IV: school refusal behaviour, separation anxiety disorder, social phobia, simple phobia, panic disorders, panic disorder with agoraphobia, agoraphobia without history of panic disorder, generalised anxiety disorder, obsessive compulsive disorder, post traumatic stress disorder, dysthymia, major depression and attention deficit hyperactivity disorder. The ADIS-C has good to excellent test-retest reliability (Silverman & Eisen, 1992; Silverman & Rabian, 1995; Silverman, Lissett, Saavedra, & Pina, 2001) and
moderate to high inter-rater reliability (Silverman & Nelles, 1988; Silverman et al., 2001; Rapee, Barrett, Dadds & Evans, 1994).

**Questionnaires**

Questionnaires used in the assessment of childhood anxiety typically fall into the categories of rating scales or self-report questionnaires. Behaviour rating scales are pencil and paper measures which seek information about the frequency of the observed behaviours of the child, and which are generally completed by either parents or teachers. The most commonly used behaviour rating scale is the Child Behaviour Checklist (CBCL; Achenbach & Edelbrock, 1983; Achenbach, 1991a). This scale has parallel versions to be completed by youth (Youth Self-report; Achenbach, 1991c) and teachers (Teacher Report From; Achenbach, 1991b). The strength of the CBCL is that it provides an overall psychological profile of the child’s general functioning. However, the primary limitation of the CBCL scales is that the focus of assessment is on the presence of general childhood psychopathology and is not specific to the identification of anxiety symptoms (Silverman & Serafini, 1998). Self-report questionnaires have been designed to elicit greater information about specific symptoms of anxiety in childhood and adolescence.

Self-report measures aim to identify and quantify the occurrence of specific anxiety-related symptoms and behaviours (Silverman & Serafini, 1998). These types of questionnaires are commonly used in clinical and community settings and in research, particularly as these measures are relatively quick and cost-effective to administer. Research suggests that children’s self-report provides the best measure of children’s anxiety because children themselves are aware of their internal cues
(e.g. thoughts, feelings and physiological arousal) that accompany their anxious behaviour (March & Albano, 1998; Klein, 1991). There are a number of self-report questionnaires that have been developed specifically to assess children’s fears and anxieties, which will now be discussed.

Research examining normal childhood fears has primarily utilised the Fear Survey Schedule for Children – Revised (FSSC-R; Ollendick, 1987) or its more recent revision, the Fear Survey Schedule for Children-II (Gullone & King, 1992). These measures provide detailed information about specific types of feared objects or situations and the intensity of fear associated with each item. The scales were not developed for diagnostic assessment, although the FSSC-R has received criticism for its limited ability to differentiate anxious children from non-anxious children (Perrin & Last, 1992). However, the FSSC-R has shown an ability to discriminate children diagnosed with separation anxiety, overanxious disorder and school phobia (Last et al., 1989) and between children diagnosed with specific phobia and social phobia (Weems, Silverman, Saavedra, Pina & Lumpkin, 1999). Furthermore, research suggests that the FSSC-II may be useful for distinguishing between clinical and non-clinical fears (Gullone et al., 2000).

The most commonly used self-report measures in the assessment of child anxiety are the Spielberger State Trait Anxiety Inventory for Children (STAIC: Spielberger, 1973), the Revised Children’s Manifest Anxiety Scale (RCMAS; Reynolds & Richmond, 1978, 1985), and the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1999).

The STAIC (Spielberger, 1973) provides two general measures of childhood anxiety, state anxiety and trait anxiety. State anxiety refers to situation-specific transient anxiety, whereas trait anxiety refers to anxiety that is chronic and stable
across time and situations. Studies show poor discriminate validity for the STAIC, although the measure has shown concurrent validity with the RCMAS and other measures of anxiety (Kendall and Ronan, 1990).

The RCMAS (Reynolds & Richmond, 1978, 1985) is designed to assess the presence of cognitive, behavioural and affective symptoms of anxiety and negative affect, as well as items that measure a child’s social desirability. This measure has been demonstrated to be reliable across different gender, racial and age groups in children from ages 7 to 17 (Reynolds & Paget, 1983). The RCMAS has been shown to have good convergent validity with the STAIC (e.g. Reynolds & Paget, 1983). There is some evidence to indicate that the RCMAS can discriminate between clinical and non-clinical symptoms (Perrin & Last, 1992).

The Strengths and Difficulties Questionnaire (DSQ; Goodman, 1997) is a behavioural screening questionnaire designed for use with children aged 4 to 16 years in both clinical and community populations (Goodman, Ford, Simmons, Gatward & Meltzer, 2000). The DAQ is available in parent/teacher and child versions and consists of five subscales which provide a measure of prosocial functioning, hyperactivity, emotional symptoms, conduct problems and peer problems. The DSQ has shown good retest reliability and internal consistency (Goodman, 2001), adequate predictive validity (Goodman, Renfew & Mullick, 2000), adequate discriminate validity between community and clinical samples (Goodman, 1999; Goodman, Meltzer & Bailey, 1998), and adequate convergent validity with the CBCL (Goodman & Scott, 1999).

In addition to questionnaires designed to assess a broad range of anxiety symptoms, a small number of measures have been developed to specifically assess cognition in anxious children. These instruments are the Cognition Checklist (CCL;
Ambrose & Rholes, 1993), the Thought Checklist for Children (TCC; Laurent & Stark, 1993), the Negative Affect Self-Statement Questionnaire (NASSQ; Ronan, Kendall & Rowe, 1994) and the Children’s Automatic Thoughts Scale (CATS; Schniering & Rapee, 2002). An additional measure used in child anxiety research is the Ambiguous Situations questionnaire developed in Australia to assess anxious children’s cognition and behaviours (Barrett, Rapee & Dadds, 1996). This aims to assess anxious children’s interpretation of threat and response plans in a series of ambiguous hypothetical situations. In order to take into account developmental differences in anxiety-provoking situations, this measure is available in two formats, one for children and one for adolescents. This cognitive measure has been extensively used in previous research in child anxiety and has high validity and reliability as a measure of cognitive mechanisms shown to underlie the maintenance of anxiety in young people (e.g. Barrett et al., 1996; Dadds et al., 1996, Shortt, Barrett, Dadds & Fox, 2001a).

The central limitation of many self-report questionnaires of children’s anxiety is their lack of reliability in distinguishing anxious from non-anxious children or in distinguishing among the anxiety disorders or between anxiety disorders and depression (Campbell & Rapee, 1996). Consequently, in order to improve the discriminant validity of self-report anxiety questionnaires, a number of measures have been developed to assess the different child anxiety disorders as defined by the DSM-IV. These include the Screen for Child Anxiety-related Emotional Disorders (SCARED; Birmaher et al., 1997), the Multidimensional Anxiety Scale for Children (MASC; March, Parker, Sullivan, Stallings & Conners, 1997) and the Spence Children’s Anxiety Scale (SCAS; Spence 1997, 1998).
The SCARED was developed in the clinical population for the assessment of anxiety symptoms of panic disorder, generalised anxiety disorder, social phobia, separation anxiety disorder, and school phobia in children and adolescents aged 8 to 14 years. The SCARED has shown acceptable reliability and validity (Birmaher et al., 1997; Essau, Muris & Ederer, 2002; Muris, Merkelbach, Ollendick, King & Bogie, 2002).

The MASC was designed for use in clinical and community populations to provide a measure of a wide spectrum of anxiety symptoms common in children aged 8 to 19 years. The MASC consists of items pertaining to four main domains, defined as physical symptoms, social anxiety, harm avoidance, and separation anxiety. The MASC has shown good internal reliability, retest reliability, and convergent and divergent validity (March et al., 1997).

The SCAS is a measure of anxiety for use with children aged 8 to 14 years that was developed as a screening instrument in normal populations and standardised within Australia. Consequently, this measure is often utilised in the assessment of anxious children for intervention research in Australian populations (Barrett & Turner, 2001; Lowry-Webster et al., 2001, 2003). The SCAS aims to assess six specific groups of anxiety symptoms (Social Phobia, Separation Anxiety, Panic Attack and Agoraphobia, Physical Injury Fears, Obsessive Compulsive Disorder and Generalised Anxiety Disorder). The SCAS has shown good reliability and discriminant validity in preschool (Spence, Rapee, McDonald & Ingram, 2001), child (Spence, 1998) and adolescent samples (Spence, 1998; Spence, Barrett & Turner, in press). Issues in the assessment of child anxiety will now be discussed.
**Issues in the Assessment of Child Anxiety**

A review of the literature in the assessment of child anxiety indicates that the main limitation of questionnaires is that many lack the ability to discriminate between anxious and non-anxious children or between anxiety disorders and other forms of psychopathology in children and adolescents (Campbell & Rapee, 1996; Schniering et al., 2000). In comparison to questionnaires, structured interviews elicit relatively accurate information on the features of anxiety and have shown adequate reliability and validity across the anxiety disorder categories (Campbell & Rapee, 1996; Schniering et al., 2000). As previously mentioned, the main limitations of diagnostic interviews based on the categorical approach to child anxiety involve symptom overlap and high rates of comorbidity among the anxiety disorder diagnoses and between anxiety and depression (Campbell & Rapee, 1996; Schniering et al., 2000).

Some authors suggest that comorbidity reflects the number of categories and the symptom overlap within the disorders (Angold & Costello, 1993; Caron & Rutter, 1991). An alternative explanation provided by Brown and Barlow (1992) is that anxiety disorders might share an underlying temperamental characteristic of anxious apprehension and over-arousal that forms a general vulnerability to emotional disorders. This explanation is supported by the high rates of comorbidity reported among anxiety disorders and the observed changes in anxiety diagnoses throughout the developmental trajectory (e.g. Beidel, Fink & Turner, 1996). Comorbidity rates and the stability of anxiety diagnoses over time will be discussed later in this chapter.

A central methodological issue in child anxiety assessment involves inconsistent agreement between parent and child reports of the child’s anxiety.
symptoms (Campbell & Rapee, 1996; Kendall & Flannery-Schroeder, 1998). Mixed results have been shown in the level of concordance between children and parents, with children typically reporting fewer anxiety symptoms than parents (Rapee et al., 1994). Nevertheless, there is general agreement that children and adolescents are an important source of information of their thoughts, feelings and behaviours and it is more vital to obtain information from children and adolescents about their subjective experience of anxiety, rather than from their parents (Silverman, 1994). Variations in the format of parent and child assessment measures (Edelbrock, Costello, Duncan, Kalas & Conover, 1985) and the developmental insensitivity of assessment methods have been proposed to account for these differences (Campbell & Rapee, 1996; Schniering et al., 2000). Developmental considerations in the assessment of child anxiety will now be discussed.

*Developmental Considerations in the Assessment of Child Anxiety*

A review of the research suggests that gender and age-related changes in cognitive and language development may contribute to the observed variations of children’s self-report of anxious symptoms (Boyle et al., 1993; Campbell & Rapee, 1996; Silverman & Eisen, 1992). Research suggests age-related gender differences are often observed in the assessment of childhood fears and anxiety symptoms. Studies show that males and females under 7 years of age have shown to report equal levels of anxiety symptoms (Ialongo et al., 1995; La Freniere & Dumas, 1996; Spence et al., 2001). Gender differences in self-reported anxiety become apparent in late childhood and adolescence, with females frequently reporting higher levels of anxiety compared to males (Muris, Schmidt & Merckelbach, 2000; Spence, 1998; Spence et al., in press).
As discussed previously, the content and frequency of children’s fears and worries change from separation, the dark, strangers and animals in early childhood to more performance and social-evaluative worries in adolescence. These changes in the focus of anxiety reflect normal developmental advances in children’s cognition, in their abstract reasoning and in their ability to use internal representations of concepts. The accuracy of the information obtained from a youngster during the assessment process depends on the sensitivity of the measure to these cognitive developmental abilities (Schniering et al., 2000).

In a research review of developmental issues in the assessment of child anxiety, Schniering et al. (2000) concluded that age-related changes in cognitive understanding and language development influence the way children comprehend and subsequently answer questions about themselves. Preadolescent children have shown to have difficulty answering complex questions (Schniering et al., 2000). Studies show younger children (6 to 9 years of age) tend be less reliable in reporting their anxiety symptoms, with the exception of simple fears, compared to children aged 10 years and older (Edelbrock et al., 1985; Rapee et al., 1994; Silverman & Eisen, 1992).

Cognitive development has also shown to influence children’s concept of worry (Campbell, Rapee & Spence, 1996) and ability to report their thoughts accurately (Ronan et al., 1994). In a study investigating how children interpret instructions on a self-report measure of worry, Campbell et al. (1996) found that adults and adolescents equated the term worry with frequency of thought, whereas children under 10 years of age associated the concept of worry with the adverseness of the outcome. Ronan et al. (1994) also found that younger children under 10 years
focused more exclusively on negative self-statements on the Negative Affect Self-Statement Questionnaire, compared to older children aged 11 to 15 years.

In addition to cognitive ability, there is evidence to suggest that even when children can access their thoughts, the accuracy in reporting may be influenced by a child’s desire to be seen as coping (social desirability) or to please the experimenter (Kendall & Flannery-Schroeder, 1998). Anxious children have been identified as a subject group particularly prone to the effects of social desirability due to their tendency to be concerned with issues of appearance and performance evaluation (Kendall & Flannery-Schroeder, 1998; Schniering et al., 2000). Inaccurate reporting by children may occur as a result of two alternate influences. Anxious children may be more likely to fake good due to the desire to respond in a non-distressed or socially desirable manner. On the other hand, anxious children often have need to please parents or other authority figures and may be inclined to amplify their reports of anxiety symptoms if they perceive this is what they are expected to do (Kendall & Flannery-Schroeder, 1998).

Minimising the effects of social desirability is therefore particularly important when working with anxious children. Recommendations include having researchers assist children to complete questionnaires, reassuring them that there are no right or wrong answers, and by presenting the assessment as a way of “getting to know them” rather than as tests (Kendall & Flannery-Schroeder, 1998). Other researchers have highlighted the importance of phrasing questions to minimise social desirability (La Greca, 1990) or recommended the inclusion of a measure of social desirability such as the lie scale on the RCMAS (Schniering et al., 2000).

Unfortunately attempts to examine the relationship between anxiety and social desirability using, for example, the lie scale on the RCMAS, has not produced
clear findings (Dadds, Perrin, & Yule, 1998). In the original analyses of the
inventory’s psychometric properties, Reynolds and Richmond (1978) found a low
positive correlation between the anxiety and lie scales. In contrast, Hagborg (1992)
found that high lie scale scores were associated with lower self-reported anxiety for
boys, but not girls, while others have found no relationship (Dadds et al., 1998;
Joiner, Schmidt, & Schmidt, 1996). Dadds et al. (1998) however, did find a complex
interaction between gender, lie scale scores and the discrepancy between child and
teacher reports of anxiety. They concluded that lie scale scores could be used to
increase the agreement between child and teacher ratings for girls but not for boys
(Dadds et al., 1998).

In an in-depth study of the RCMAS lie scale, Pina, Silverman, Saavedra, and
Weems (2001) assessed 284 anxious children to examine the role of lie scale scores
in predicting anxiety levels. Analyses of age and ethnicity revealed that younger
children (aged 6 to 10 years) had higher lie scale scores than older children (11-17
years), and that Hispanic American children were more likely to endorse the lie
scale items than children of European descent. These findings confirmed the
importance of developmental and cultural considerations in accurate assessment of
anxiety symptoms. No gender differences were found for lie scale scores.
Interestingly, lie scale scores were shown to have added value in predicting child-
rated anxiety levels over and above the contribution of parent-rated anxiety scores,
for younger but not older children, and for European American but not Hispanic
American children. Lie scores were not able to differentiate between specific types
of anxiety disorders, but lie scale scores were higher among girls with two or more
anxiety disorders compared to girls with comorbid anxiety and disruptive problems.
Additional research with valid and reliable measures of social desirability is needed.
to further clarify how child expectations and biases impact on the accuracy of anxiety measurement.

In summary, several methods of assessment have been developed to measure childhood anxiety; the most common are diagnostic interviews and questionnaires. Diagnostic interviews based on the DSM categorical system are widely used in clinical research and practice in the diagnosis of anxiety disorders. The main issue with the categorical approach underlying diagnostic interviews stems from research consistently showing a high overlap of symptoms and comorbidity among the anxiety disorders and between anxiety and depression.

Behavioural rating scales and self-report questionnaires based on the dimensional approach provide an alternative method for assessing anxiety in children and adolescents. Questionnaires are generally time effective and easy to administer, elicit useful normative data and assist in assessing intervention outcome. Several questionnaires have been developed to measure a wide range of anxiety symptoms, although valid and reliable cognitive measures are sparse. A common limitation of some questionnaires is their lack of discriminant validity, while cross-informant agreement is a problem found in both diagnostic assessment and self-report data.

In addition to methodological issues in the assessment of child anxiety, developmental considerations involving gender and age-related changes in normal fears, cognition and language and social desirability influence the accuracy to which children self-report their anxiety symptoms. Children 10 years and older are considered to have an increased understanding of their symptoms and provide a more accurate report of their experience of anxiety than younger children. Given these methodological and developmental issues, it is generally recommended that
multiple methods and multiple informants are used and that it is important to obtain information from children about their own anxiety using developmentally sensitive protocols in the assessment of child anxiety. Following this review of the currently available assessment instruments for child anxiety symptoms and disorders, this chapter continues with an overview of the research examining the prevalence rates of anxiety problems in children and adolescents.

**Prevalence**

Prevalence estimates of childhood anxiety presented in the literature vary depending on a number of methodological factors. These include the age of the child or children, the nature of the population studied (e.g. clinical or community population), assessment used (e.g. questionnaires or diagnostic interview), the informant (e.g. child or parent), the diagnostic criteria used for determining an anxiety disorder (Silverman & Ginsburg, 1998) and, of course, cultural factors (Fonseca et al., 1994). In addition, some studies examine the prevalence of a lifetime anxiety disorder, while other studies examine the incidence or current prevalence rate of anxiety disorders. Nevertheless, a number of trends have emerged from the studies published to date. The following section will discuss research examining the prevalence rates of child anxiety problems.

Overseas data indicates subclinical levels of anxiety are common in the youth population. Bell-Dolan, Last and Strauss (1990) examined symptoms of anxiety disorders in a community sample of 62 children aged between 5 and 17 years in the United States. Participants completed several questionnaires including the RCMAS (Reynolds & Richmond, 1979), the STAIC (Speilberger, 1973) and the FFSC-R (Ollendick, 1987). Children and adolescents also completed the Child
Depression Inventory (CDI: Kovacs, 1981) and were interviewed with the K-SADS (Puig-Antich & Chambers, 1978). Findings showed that between 9.7% and 30.6% of children and adolescents self-reported subclinical levels of worry and phobic symptoms. Another important finding of this study was that children identified with subclinical symptoms of anxiety on the K-SADS also reported higher levels of depression on the CDI.

Substantial cross-cultural research also shows high prevalence rates of anxiety disorders in both community and clinical populations. In North America, Costello and Angold (1995) conducted a review of epidemiological studies in the last decade. The research revealed that, when considered as a group, the prevalence rate of anxiety disorders in youth ranged from a minimum of 5.7% to a maximum of 17.7%, with 50% of the reviewed studies reporting an estimated life-time prevalence rate above 10%. Similar rates were reported in a German epidemiological study involving adolescents and young adults aged between 14 and 24 years of age (Wittchen, Nelson & Lachner, 1998). The data showed a lifetime prevalence rate of 14.4% for anxiety disorders.

Consistent with international research, high incidence rates of anxiety disorders have been reported in Australia (Boyd, Kostanski, Gullone, Ollendick & Shek, 2000; Dadds, Spence, Holland, Barrett & Laurens, 1997). As part of a project investigating early intervention for child anxiety disorders, Dadds et al. (1997) assessed a large community sample of primary school children aged between 7 and 14 years in Brisbane, Australia. The methodology used in the study involved children’s self-report of anxiety on the RCMAS (Reynolds & Richmond, 1979) and parent reports of the child’s anxiety on the ADIS-P (Silverman & Nelles, 1988). Of the 1786 participants, 175 children (10%) reported high anxiety symptoms on the
RCMAS. Follow-up parent interviews showed that, of the highly anxious children, 5 children (3%) met criteria for separation anxiety, 35 children (19%) met criteria for simple phobia, 25 children (14%) met criteria for generalised anxiety disorder and 35 children (19%) met criteria for social phobia. The study also found that separation anxiety and generalised anxiety disorder were significantly more prevalent in females compared to males. Similar prevalence rates were reported in a community study of Australian high school students aged 11 to 18 years (Boyd et al., 2000). Results showed that, of the 270 adolescents assessed on the RCMAS, between 10% and 20% reported high anxiety symptoms.

Overall the research reviewed indicates that anxiety disorders are a common problem for many children and adolescents worldwide. A number of studies further suggest the prevalence of anxiety problems is similar in ethnic minority groups (Casper, Belanoff & Offer, 1996; Ginsburg & Silverman, 1996; Last & Perrin, 1993; Treadwell, Flannery-Schroeder & Kendall, 1995). Last and Perrin (1993) and Treadwell et al. (1995) compared the prevalence of anxiety disorders in a small group of African-American children with Caucasian children who presented for treatment in speciality anxiety disorder clinics. Results of both clinical studies showed that, based on the data from both parent and child self-report and clinical interview, African-American and Caucasian children showed similar rates of anxiety symptoms and diagnoses. Casper et al. (1996) reported consistent results in their study, which compared psychiatric symptoms in Caucasian, African-American, Asian and Hispanic adolescents aged 16 to 18 years. All adolescents, regardless of race, reported similar psychiatric symptoms, however, significantly higher levels of emotional distress were reported by females compared to males.
Similar prevalence rates of anxiety disorder diagnoses in Hispanic and Caucasian children were reported in another clinical study conducted by Ginsberg and Silverman (1996). Children aged 6 to 17 years and their parents were interviewed with the ADIS (Silverman & Nelles, 1988). Children completed the STAIC (Spielberger, 1973), the RCMAS (Reynolds & Richmond, 1978), the FSSC-R (Ollendick, 1983), and the CDI (Kovacs, 1983). Their parents completed the FSSC-R/P and the RCMAS/P. Results of this study showed no differences between Hispanic and Caucasian children in the rates of primary anxiety disorders diagnoses, with simple phobia being the most prevalent disorder, followed by overanxious disorder, separation anxiety disorder and social phobia. The only significant difference reported in this study was a greater presentation of separation anxiety in Hispanic children compared to Caucasian children, a finding which Ginsburg and Silverman suggested may be attributed to variations in family values between cultural groups. Taken together these studies clearly suggest that prevalence rates of anxiety disorders may be more similar than different among cultural groups within the United States.

In comparison to research showing similarities in anxiety disorders across cultural populations, studies based on self-reported anxiety show inconsistent findings regarding the prevalence of anxiety symptoms across age and gender. A study conducted by Spence (1997) in Australia showed age and gender differences in the prevalence of children’s self-reported anxiety symptoms on the SCAS. This study involved a community sample of 698 children aged 8 to 12 years. Children were divided into two groups, children 10 years and younger and children 11 years and older. The prevalence of anxiety symptoms was lower in the younger age group compared to the older group. The prevalence rates for children 10 years and younger
were; generalised anxiety 4%; separation anxiety 17%; panic 18%; social phobia 19%; obsessive compulsive disorder 20%; and physical injury fears 33%. The prevalence rates for children 11 years and older were generalised anxiety 11%; separation anxiety, 28%; panic, 28%; social phobia 29%; obsessive compulsive disorder, 29%; and physical injury fears 42%. Females were found to report higher anxiety symptoms than males across each category other than obsessive compulsive symptoms.

On the contrary, results of an Australian study which compared the rates of anxiety across development found that self-reported anxiety decreased over time (Turner & Barrett, in press). Turner and Barrett identified 16.7% of young children (mean age 7.75 years), 14.4% of older children (mean age 10.6 years) and 5.3% of adolescents (mean age 13.5 years) as anxious on the SCAS (Spence, 1998). Consistent with the results of Spence (1997), more females than males were identified as self-reporting high levels of anxiety.

Aged-related variations in the prevalence of anxiety symptoms where also reported in two additional community studies involving preschool children (Spence et al., 2001) and adolescents (Spence et al., in press). Overall prevalence rates for each category were not reported. However, parent reports on the Spence Children’s Anxiety Scale for parents (SCAS-P; Nauta et al., 2003) showed the most prevalent anxiety symptoms in preschool children aged 36 to 71 months \((n = 510)\) related to physical injury fears (dogs, spiders, thunderstorms, swimming and the dark) and separation anxiety (sleeping alone and being away from home). This study found no differences between females and males in anxiety symptoms (Spence et al., 2001).

In a later study, Spence et al. (in press) examined self-reported anxiety symptoms on the SCAS in a sample of 875 adolescents aged 13 and 14 years.
Findings indicated the most prevalent anxiety symptoms in adolescents related to social-evaluative fears and concerns. Gender differences were also found, with females reporting greater levels of anxiety for all categories except obsessive compulsive disorder.

The research reviewed above shows inconsistent findings regarding the prevalence of anxiety symptoms across age and gender, although, consistent with Gullone’s research (2000) studies converge to show age-related differences in the focus of fears and anxiety symptoms. Additional research using diagnostic interviews provides further evidence that the prevalence of the specific anxiety disorders varies according to the child’s age and the time of onset.

Separation Anxiety Disorder (SAD) is more prevalent in younger children, with clinical studies showing the mean age of onset at 7.5 years (Last et al., 1992). Epidemiological studies using diagnostic interviews show SAD ranges between 3.5% and 5.4% in preadolescent children (Anderson, Williams, McGee & Silvia, 1987; Benjamin, Costello & Warren, 1990; Costello, 1989) and decreases to between 0.6 and 2.4% in adolescent samples (Bowen, Offord & Boyle, 1990; Kashani & Orvaschel, 1988; Verhulst, Van Der Ende, Ferdinand & Kasius, 1997). This decline in SAD is consistent with the findings of the Spence et al. (in press) study that showed self-reported symptoms of separation anxiety declined with age. This decrease in the rate of SAD between childhood and adolescence parallels the previously mentioned changes in the focus of normal fear and the presentation of anxiety during development (Gullone, 2000; Schniering et al., 2000).

The onset of specific phobias appears to occur between 10 and 14 years old (Burke, Burke, Rae & Regier, 1991; Strauss & Last, 1993). Epidemiological studies report the prevalence rate for specific phobia to range from 1.7% to 2.4% in children.
(Anderson et al., 1987; McGee et al., 1990) and slightly higher at approximately 3.6% for adolescents (McGee et al., 1990; Essau, Conradt & Petermann, 2000a).

Generalised anxiety disorder and social phobia become more prevalent during adolescence (King, Ollendick & Mattis, 1994; Last, Hersen, Kazdin, Finkelstein & Strauss, 1987). Overanxious disorder (OAD) was the childhood variant of GAD in the DSM-III and these two diagnoses have been defined as types of the same disorder in most studies. In their review conducted in the United States, Costello and Angold (1995) reported that the rate of GAD/OAD disorder varied widely, ranging from 2.6% to 15.4%.

The onset for social phobia is typically late (approximately 11.3 years) and is more prevalent in adolescence and is reported equally in females and males (Davidson, Hughes, George & Blazer, 1993; Vasey, 1995). The 12-month prevalence rate for social phobia is less than 1% in 11 year olds (Anderson et al., 1987) and as high as 6.3% in adolescents (Verhulst et al., 1997).

Research indicates the average age of onset for OCD is approximately 10.2 years (Healy et al., in press). Recent epidemiological studies estimate the prevalence rate for obsessive compulsive disorder (OCD) ranges between 0.2% to 4% of children and adolescents (Douglass et al., 1995; Essau, Conradt & Petermann, 2000b; Flament et al., 1988; Hollingsworth, Tanquay, Grossman & Pabst, 1980; Zohar et al., 1992; Vallen-Basile et al., 1994a). Studies based on both self-report and diagnostic assessment consistently show that OCD is equally represented in females and males (Healy et al., in press, 2003; March, Leonard & Swedo, 1995; Spence et al., in press).

In summary, despite methodological variations across the prevalence studies reviewed above, cross-cultural research shows that subclinical levels of anxiety and
anxiety disorders are amongst the most common problems reported by youth. Community studies indicate that between 6% and 20% of Australian children and adolescents experience an anxiety disorder of one from or another, with some evidence that females tend to report more anxiety disorders than males.

Consistent with changes in the focus of normal anxiety and fear throughout the developmental trajectory, prevalence rates vary according to specific disorder and to the developmental age of the child. SAD is more common in early childhood, while the onset of specific phobia, GAD, social phobia and OCD typically occur in late childhood and early adolescence. However, community and clinical studies show that many children and adolescents who meet criteria for any one anxiety disorder report one or more comorbid disorders, most common comorbid conditions are other anxiety disorders and depression (Caron & Rutter, 1991). A review of the research examining comorbidity of anxiety in epidemiological and clinical samples is presented below.

Comorbidity

Comorbidity can be defined as the occurrence or existence of more than one disorder at the same time (Campbell & Rapee, 1996). Comorbidity is of considerable interest to both researchers and practitioners because of the associated implications of co-occurring groups in the conceptualisation and treatment of child anxiety disorders. Comorbidity among anxiety disorders and depression is extremely common in epidemiological samples and higher in clinical samples (Caron & Rutter, 1991). Comorbidity rates also vary according to sample and respective differences in methodology employed. A review of comorbidity rates from both clinical and community studies is presented below.
Clinical studies show high rates of comorbid disorders in clinically referred children with any specific anxiety disorder, though the most common is another anxiety disorder (Kendall & Brady, 1995; Last et al., 1987). Werry, Reeves and Elkind (1987) point out that this finding is likely to reflect a referral bias since children with multiple problems are more likely to be referred for treatment. Last et al. (1987) examined comorbid anxiety disorders in a small sample 65 children presenting for treatment at an anxiety disorders clinic. Children were assessed using a DSM-III based diagnostic interview. The majority of children had more than one anxiety disorder diagnosis: 42% of children with separation anxiety disorder (SAD), 55% of children with overanxious disorder (OAD/GAD) and 65% of children with social phobia had an additional anxiety disorder.

Kendall and Brady (1995) reported similar high rates of comorbidity in their clinical study. A sample of 106 children aged 9 to 13 years were assessed using the ADIS-C (Silverman & Nelles, 1988). OAD was the most common diagnosis, present as a primary or comorbid disorder; approximately 80% of children had comorbid OAD. For children with primary OAD, 20% had comorbid SAD. Kendall, Kortlander, Chansky and Brady (1992) noted that approximately 50% of children with significant anxiety also meet criteria for specific phobia. Francis, Last and Strauss (1992) found that 91% of children with social phobia met criteria for another anxiety disorder. Overall, most children who receive treatment for anxiety disorders are most likely to present with an overlapping range of anxiety symptoms.

Depression is the next most common comorbid disorder, after anxiety disorders, reported in clinical samples of children with any specific anxiety disorder. In a sample of adolescents with an anxiety disorder diagnosis, Orvaschel, Lewinsohn and Seeley (1995) reported that 64.5% of adolescents later developed a
secondary major depressive disorder. High rates of secondary comorbid depressive disorders have been reported in several clinical studies of children and adolescents with OCD (Flament et al., 1990; Lenane et al., 1990) and with any anxiety disorder (Francis et al., 1992; Last et al., 1987; Kendall, et al., 1992; Straus & Last, 1993).

Comorbidity rates reported in epidemiological studies are lower than those reported in clinical populations. Lewinsohn, Zinbarg, Seeley, Lewinsohn and Sack (1997) examined the comorbidity of anxiety disorders with other anxiety disorders in a community sample of 1,507 adolescents assessed by diagnostic interview. Of the 134 adolescents who had met diagnostic criteria for an anxiety disorder at some time in their lives, 81% met criteria for only one disorder, 15.7% had two anxiety disorder diagnoses and 3% had three anxiety disorder diagnoses.

In community populations the most common comorbid disorder with anxiety is depression. The findings of the Dunedin Multidisciplinary Health and Developmental Study, a large-scale (n = 943) longitudinal study conducted in New Zealand (Anderson, Williams, McGee & Silva, 1987; McGee et al., 1990; McGee, Feehan, Williams & Anderson, 1992; Williams, Anderson, McGee & Silva, 1990), indicated that, for children with anxiety disorders the most common comorbid disorder was a depressive disorder. Of the 101 adolescents assessed with the Diagnostic Interview Schedule for Children (DISC; Costello et al., 1984) as having an anxiety disorder at age 15, 13% had a co-occurring depressive disorder (McGee et al., 1990). The data also showed that rates of anxiety and comorbid mood disorders increased with age. By age 18, the number of participants with an anxiety disorder had increased to 183; 46% of these cases also met criteria for a depressive disorder (Feehan, McGee, Raja & Williams, 1994).
Similar high rates of comorbid anxiety and depression have been reported in a study of adolescents conducted in America. Result of the Oregon Adolescent Depression Project (Lewinsohn, Hops, Roberts, Seeley & Andrews, 1993; Orvaschel, Lewinsohn & Seeley, 1995) showed similar findings to McGee et al. (1990). A sample group of 1710 adolescents’ aged 14 to 18 years was randomly selected from various high schools in Oregon. Adolescents were interviewed twice on the K-SADS (Puig-Antich & Chambers, 1978), approximately 1 year apart. Results showed that 150 participants had a lifetime anxiety disorder. Unfortunately, comorbidity rates among the anxiety disorders were not reported; however, 49% of adolescents with an anxiety disorder also met criteria for major depression (Lewinsohn et al., 1993). In another birth cohort of almost 1000 adolescents (Fergusson, Horwood & Lynskey, 1993), adolescents with an anxiety disorder at age 15 were significantly more likely to have a comorbid mood disorder, compared to non-anxious adolescents.

High rates of comorbid anxiety and depression were also reported in a community study of adolescents conducted by Essau et al. (2000b). Furthermore, adolescents in the study reported that anxiety problems usually preceded the depressive symptoms. This finding replicated the results of a study by Kovacs, Gatsonis, Paulauskas and Richards (1989), who found that, among the childhood cases of anxiety disorder and comorbid depression, the anxiety disorder preceded the depression about two thirds of the time and often persisted after the depression remitted.

To conclude, both clinical and community studies show that comorbidity is common among the anxiety disorders and between anxiety and depression (Labellarte et al., 1999; Last & Strauss, 1990). In clinical studies, the most common
comorbid group is another anxiety disorder (Kendall & Brady, 1995), followed by depression (Francis et al., 1992; Last et al., 1987; Strauss & Last, 1993). Community studies have been limited to adolescent populations, where the most common pattern of comorbidity is anxiety and depression (Essau et al., 2000b; Fergusson et al., 1993; Lewinsohn et al., 1993; McGee et al., 1990; Kovacs et al., 1989).

As previously discussed the issue of comorbidity has instigated marked controversy regarding the categorical approach to childhood anxiety disorders (Brown & Barlow, 1992; Frances et al., 1990). Consequently, some authors argue that a dimensional approach to classification may be more valid than a categorical approach to classification (Clarkin & Kendall, 1992). Despite these different approaches in the conceptualisation of child anxiety, the DSM-IV classification system continues to be a useful method of communication among researchers and practitioners. Overall, research investigating comorbidity suggests that symptoms of anxiety in childhood continue unless treated and may lead to additional or other anxiety symptoms or depression in adolescence. The stability of anxiety over time will be discussed further below.

Stability of Anxiety Over Time

For many children and adolescents, certain fears and anxiety may be both normative and transient during periods of development. Yet for some children and adolescents, anxiety levels exceed developmental expectations, the symptoms of which significantly impair their personal and interpersonal functioning. There is often a misconception that children with anxiety disorders ‘grow out of it’. However, the research reviewed suggests that, while some children and adolescents may overcome their anxiety without intervention, children with severe anxiety levels
or those with an anxiety disorder at some point in time remain at high risk for future anxiety episodes, additional anxiety disorders and depression if left untreated. There are a limited number of studies examining the stability of anxiety over time: these are described below.

Findings of a recent longitudinal study examining the developmental patterns of anxiety (Gullone et al., 2001) showed that normal levels of anxiety subside over time. Sixty-eight children and adolescents aged between 7 and 18 years completed a standardised self-report measure of anxiety at two time intervals, 3 years apart. Results of the study showed that overall anxiety decreased overtime, although anxiety levels at time one were found to be significant predictors of anxiety levels 3 years later, indicating continuity in anxiety symptoms. These findings are consistent with the results of other studies showing that normal anxiety and fears typically decrease in frequency and intensity over time (Gullone & King, 1997; Ferrari, 1986; Draper & James, 1985).

Caspi, Henry, McGee, Moffit & Silva (1995) first assessed children at 5 years of age and then followed them through childhood and adolescence. Findings showed that children identified as shy at age 5 years were more likely to be shy in late childhood and adolescence. Moreover, in adulthood, shy males were more likely to marry and have children later and take longer to establish a stable career compared to non-shy males.

Beidel et al. (1996) examined the stability of anxious symptomatology in a community sample of children aged 7 to 12 years. The researchers assessed 148 anxious and non-anxious children using a self-report measure and a DSM-III-R (APA, 1987) based diagnostic interview at two time points, 6 months apart. At time one, 26 children were diagnosed with a social-evaluative disorder (SOP or OAD).
Of those children, 62% had retained the diagnosis, 21% had subclinical symptoms and 17% were diagnosis-free at the 6-month follow-up. Results also showed that many of the diagnoses did change during this period but were most likely to change to another diagnosis. Overall, findings of this study suggested anxiety disorders in children seem to fluctuate in both focus and severity, yet there is usually a moderate level of stability in anxiety symptoms across a 6-month period.

The stability of anxiety symptoms was shown in a study of anxiety in primary school children (Ialongo, Edelsohn, Werthamer-Larsson, Crockett & Kellam, 1995). Ialongo et al. (1995) found that children in the first grade who rated themselves with high levels of anxiety were nearly twice as likely as their peers to rate themselves with high levels of anxiety when they were re-assessed in the fifth grade. Similar results were reported in a four-year longitudinal study in the United Kingdom (Rutter, Tizard, Yule, Graham & Whitmore, 1976). Rutter et al. (1976) found that approximately 50% of the children who reported emotional problems (predominantly anxiety disorders) at age 10 continued to have the same or similar problems when they were 14 years of age.

Continuity of anxiety problems throughout childhood was shown in the findings of the Dunedin Multidisciplinary Health and Development Study (Anderson et al., 1987; McGee et al., 1990, 1992; Williams et al., 1990). Results of this longitudinal study showed that the prevalence of anxiety disorders almost doubled between 11 and 15 years of age, increasing from 9.3% to 14.9% respectively (McGee et al., 1992). Children diagnosed with an anxiety disorder on the DISC (Costello et al., 1984) at age 11, 15, or 18 years were significantly more likely to have an anxiety disorder diagnosis at age 21 years (61.5%), than a diagnosis of a different disorder (18.9%) or no disorder (19.5%).
Similar findings were reported in a 6-year epidemiological study in Holland (Verhurst & Van Der Ende, 1992). The researchers obtained parent ratings of anxiety in a sample of 936 children aged 4 to 11 years at two time intervals, 6 years apart. Results showed that, compared to other children, children rated at time one in the clinical range of internalising symptoms by their parents were 10 times more likely to have scores in the clinical range at time two.

Additional information on the stability of anxiety disorders during adolescence is shown in a recent community study conducted by Essau et al. (2002) in Germany. The researchers interviewed 523 adolescents using DSM-IV (1994) diagnostic criteria at two time points, 15 months apart. Results showed that 14% of adolescents, who met criteria for an anxiety disorder at time one, received an anxiety disorder diagnosis at time two, although 77.4% of adolescents were diagnosis-free. Compared to adolescents with a single anxiety disorder, adolescents with comorbid disorders were more likely to have an anxiety disorder (68.4%) and a depressive disorder (75%) at 15-month follow-up. The findings of this study suggested that some adolescents may learn to manage their anxiety over time; however, recovery without intervention may be less favourable when comorbid disorders are present. As the vast majority of children with anxiety disorders present with comorbid diagnoses, intervention is always recommended.

Clinical studies provide further information on the stability of anxiety disorders throughout child and adolescent development. Pfeffer, Lipkins, Plutchik and Mizruchi (1988) found that 71% of children aged 6 to 12 years, with overanxious disorder retained this diagnosis at 2-year follow up. Cantwell and Baker (1987) followed a cohort of 34 children diagnosed with DSM-III internalising disorders for 4 years. Children were administered the RCMAS (Reynolds &
Richmond, 1978) and a DSM-III based diagnostic interview. At follow-up, 34% of the children were disorder-free, 24% had the same disorder and 42% had developed another disorder (defined as either another emotional disorder or a behaviour disorder). In a retrospective study of 275 children and adolescents aged 6 to 19 years, Keller et al. (1992) found 14% of the children had a history of an anxiety disorder and 66% met criteria for an anxiety diagnosis at the time of the assessment.

In a more recent study, Last, Perrin, Hersen and Kazdin (1996) examined the developmental course of anxiety disorders in a clinical sample of anxious children aged 5 to 18 years. Children were assessed over a period of 3 to 4 years using the K-SADS (Puig-Antich & Chambers, 1978). The study found that although 82% of children initially diagnosed with an anxiety disorder were diagnosis-free at follow-up, 19% continued to experience their previous primary anxiety disorder, 8% had a recurrence, 16% had new anxiety disorders and 13% of children had shifted to a depressive disorder. As previously discussed, it is also common for children with anxiety diagnoses at one point in time to receive a subsequent diagnosis of depression (Last et al., 1996; Newman et al., 1996; Pine et al., 1998). This pattern of relations has raised the question of whether anxiety in childhood precedes depression in adolescence (Kendall & Brady, 1995).

In an extensive literature review on the relation between anxiety and depression based on seven studies using both community and clinic samples, Kovacs and Devlin found that anxiety disorders had the earliest age of onset and children at risk of a disorder were most likely to first exhibit an anxiety disorder during early childhood and then a depressive disorder during late childhood and early adolescence (Flament et al., 1988, 1990; Giaconia et al., 1994; Last, Perrin, Hersen
Longitudinal studies using community samples provide the strongest support that anxiety may precede depression. Research conducted by Reinherz et al. (1989, 1993) found that highly anxious children aged 9 were twice as likely to report high depressive symptoms at age 15 and that anxiety symptoms reported at age 15 significantly predicted depression at age 18 (Reinherz et al., 1993). Similar findings were reported by Sanford et al. (1995), who found that symptoms of anxiety in adolescence significantly increased the risk of developing depression over a 12-month follow-up period. Results of a longitudinal study by Lewinsohn, Gotlib & Seeley (1995) suggested that having an anxiety disorder at one point in time significantly elevated the likelihood of developing depression within the next 5 years. These findings were somewhat limited as prior levels of depressive symptoms were not controlled for in some studies, hence results may reflect the co-occurrence of anxiety and depression in youth (Cole, Peeke, Martin, Truglio & Seroczynski, 1998).

In an effort to overcome this methodological limitation, Cole et al. (1998) addressed these issues, by controlling for levels of depression at pre-intervention in a landmark longitudinal study examining the relationship between anxiety and depression in childhood. Their sample consisted of 330 primary school children assessed on self-report and parent reports on the RCMAS (Reynolds & Richmond, 1978) and the CDI (Kovacs, 1985) every six months over a 3-year period. Results showed that symptoms of anxiety and depression remained stable over time and that after controlling for prior levels of depression, high levels of anxiety symptoms at
one point in time predicted high levels of depressive symptoms at subsequent points in time.

In summary, research on the stability of childhood anxiety over time indicates that although children and adolescents may spontaneously outgrow normal anxiety and fear throughout development, for children with anxiety disorders the prognosis is less positive. For many children, anxiety disorders usually follow a continuous course from childhood to adolescence. Research (e.g. Cantwell & Baker, 1989; Beidel et al., 1996) suggests that anxiety disorders show both developmental continuity (i.e. persist in from across time) and developmental discontinuity (e.g. change into other anxiety disorders across time).

In addition, there is evidence to suggest that anxiety in childhood precedes depression in adolescence. This evidence comes from studies showing that children with anxiety disorders tend to be younger compared to children with depressive disorders (Cole et al., 1998; Stavrakaki, Vargo, Boodoosingh & Roberts, 1987). Children with comorbid anxiety and depression are typically older than children with a single anxiety or depressive disorder; older children are more likely to have more anxiety symptoms, with symptoms of anxiety typically preceding symptoms of depression (Brady & Kendall, 1992; Last, Strauss & Francis 1987). Moreover, children and adolescents with anxiety and comorbid disorders frequently experience problems in areas of personal, family, peer and academic functioning. The literature emphasising the psychological and social implications of childhood anxiety will now be discussed.
Psychosocial Implications of Childhood Anxiety

Normal anxiety and fears are a natural element of childhood development; however, anxiety disorders inhibit children’s personal enjoyment and social adjustment (Kendall, 1994). Community and clinical studies suggest that children with severe symptoms of anxiety are likely to experience problems in their psychological and social functioning, therefore hindering healthy development. The following section reviews the research outlining the potential negative effects of anxiety problems in a number of important areas of development including self-esteem and self-competence, academic performance, and family and peer relations.

There is some evidence to suggest that symptoms of anxiety impair childrens’ academic performance (Dweck & Wortman, 1982; Ialongo et al., 1994, 1995). Ialongo et al. (1994,1995) examined the effects of anxiety on children’s academic achievement in a community sample of 1197 children in first grade. The results showed that children with high anxiety symptoms were more likely to be achieving in the lowest quartile in reading and mathematics, compared to non-anxious children.

Anxious children have been shown to have lower self-competence and self-esteem than non-anxious children. In a community study, Messer and Beidel (1994) examined psychosocial correlates of childhood anxiety disorders in children in grades 3 to 6. Children were assessed using the ADIS-C (Silverman & Nelles, 1988) and several questionnaires including the STAIC (Spielberg, 1973) and the Perceived Self-Competence scale (Harter, 1982). Results indicated that children with an anxiety disorder reported greater impairment on the indices of perceived physical and cognitive self-competence and self-esteem.
In addition to impaired self-esteem and competence, anxious children and adolescents have consistently been found to have greater social problems compared to other children. Benjamin et al. (1990) examined correlates of anxiety disorders in a community sample of 300 children aged between 7 and 11 years. Children were assessed using the DISC (Costello et al., 1982). Parents and teachers completed the CBCL (Achenbach and Edelbrock, 1983). Children diagnosed with an anxiety disorder were identified by their teachers as more impaired in their social competence, social functioning (getting on with friends), level of social activities (hobbies, clubs, part-time work) and school performance, compared to non-anxious children.

Similar findings were reported by Kashani and Orvaschel (1990) in a community sample of children and adolescents ($n = 210$). The researchers compared psychosocial problems in children aged 8, 12 and 17 years diagnosed with an anxiety disorder on a DSM-III based diagnostic interview. All anxious children were found to have more peer and family problems compared to non-anxious children. Anxious children aged 12 and 17 years were found to have more family problems compared to anxious children aged 8 years. Anxious children aged 12 and 17 years were found to have more negative self-images and more problems at school compared to their non-anxious counterparts.

The potential impact of anxiety on psychosocial functioning is further highlighted in studies involving anxious adolescents. Wittchen, Nelson and Lachner (1998) found that adolescents with an anxiety disorder reported severe psychosocial impairment during the worst episode of their disorder. Similar findings were shown in a more recent study conducted in Germany by Essau et al. (2000b) that found that
a high proportion of German adolescents with an anxiety disorder reported that their daily life was impaired during the worst episode of their disorder.

A number of studies show that anxious children and adolescents experience difficulties in their peer relationships (Edelbrock, 1985; Strauss, Lahey, Frick, Frame & Hynd, 1988). Strauss et al. (1988) compared anxious and non-anxious children, aged 6 to 13 years on measures of peer status. Children with an anxiety disorder were significantly less liked than non-anxious children and were more likely to fall into the socially neglected category in terms of overall peer status. These results are consistent with findings of a study conducted by Edelbrock (1985) involving a clinical sample of children aged 6 to 16 years. Children who were identified by teachers as anxious were also likely to be identified as disliked and teased by peers. Anxious children were also reported to prefer to play with younger peers and to have generally poorer peer relationships compared to non-anxious children.

From the evidence reviewed here, research suggests that anxious children experience greater deficits in academic functioning, self-esteem and competence, peer and family relations and social adjustment compared to their non-anxious counterparts. Developmental theorist Rubin (2001) proposes that anxious children are prone to developing perceptions of social incompetence; this leads to social inhibition, difficulty forming and maintaining relationships and the avoidance of peer interaction, which in turn results in social isolation, deficits in social skill acquisition and increased symptoms of anxiety and depression. Accordingly, for many anxious children and adolescents, anxiety symptoms and the associated psychosocial problems impact on development, in terms of the ability to successfully navigate the cognitive, social and physical challenges of growing up.
Further empirical research examining the long-term psychosocial effects of childhood and adolescent anxiety disorders is needed.

Chapter Summary

The research reviewed here outlines the developmental nature of anxiety and the potential risk children with severe anxiety problems have of further emotional, psychological and social difficulties. Childhood anxiety is recognised as a normal emotional response to perceived threatening situations, characterised by a variety of physiological, cognitive and behavioural symptoms. For many children and adolescents, anxiety is a normal and transient experience that parallels the biopsychosocial changes and challenges inherent throughout development. Children and adolescents’ experiences of fear and anxiety are influenced by age-related changes in cognition and social-cognition, emotional awareness and self-concept that occur throughout the developmental trajectory. However, many children appear to be at risk of developing anxiety disorders, the symptoms of which exceed developmental expectations and cause personal and interpersonal distress. Risk and protective factors play a central role in the aetiology of child anxiety disorders and will be outlined in chapter two.

The accurate assessment of anxiety in children and adolescents is essential for clinical diagnosis, intervention formulation and evaluation. The most common assessment methods used in child anxiety research are diagnostic interviews and questionnaires. Assessment issues involve symptom overlap, comorbidity, cross informant inconsistency, the reliability of child report, and the developmental sensitivity of measures. Gender, age-related changes in normal fears, increased cognitive and language abilities and social desirability influence the accuracy to
which children self-report their anxiety symptoms. Therefore it is important to consider developmental factors in the assessment of child anxiety.

The above review of cross-cultural research clearly shows that anxiety disorders are among the most prevalent of the childhood and adolescent disorders. The developmental nature of child anxiety is further reflected in the observed prevalence rates for the specific anxiety disorders, which vary according to gender and age of the child. Research examining age and gender differences in anxiety has produced mixed results. Studies using clinic samples of children usually report an equal ratio of males to females with anxiety. In comparison, research using community samples has found evidence that females are more likely to report high anxiety symptoms. Further research is required to establish age-related gender differences in the presentation of anxiety symptoms among children and adolescents with varying levels of anxiety symptoms.

Child anxiety disorders show both developmental continuity and discontinuity. Some children and adolescents may gradually learn to cope with stress and anxiety without intervention; yet for most children anxiety disorders lead to the development of more severe symptoms, often continuing from childhood into adolescence and usually accumulating into the development of depression in late adolescence and adulthood. Given the high youth suicide rates in the western world, this developmental trend warrants particular attention from researchers, and more work is needed in targeted preventive intervention. Why some children outgrow their anxiety problems while other children develop more chronic symptoms will be discussed in the next chapter on risk and protective factors in the development of child anxiety.
Children and adolescents who experience anxiety at one point in time are at risk of additional anxiety disorders or depression. Anxiety disorders in childhood have been shown to precede depression in adolescence and, in the process, cause significant impairment in healthy development, specifically in the areas of self-esteem and competence, peer and family relationships and academic functioning. Given the potentially negative immediate and long-term implications of anxiety on child, adolescent and adult functioning, it is clearly important to establish the most effective methods of intervening in early childhood to reduce the prevalence of anxiety disorders throughout the lifespan. However, the aetiology of anxiety disorders involves complex interactions between a combination of individual and environmental factors that occur throughout child and adolescent development. In order to develop and implement effective interventions we need to better understand the causes of anxiety disorders in children. Risk and protective factors in child anxiety are reviewed in chapter two.
CHAPTER TWO
PREVENTION PREREQUISITES PART I: RISK AND PROTECTIVE FACTORS ASSOCIATED WITH THE DEVELOPMENT OF CHILDHOOD ANXIETY DISORDERS

The previous chapter clearly outlined the high prevalence of child anxiety problems in cross-cultural populations, and detailed the developmental variations in the manifestation of anxiety symptoms and disorders. Child anxiety disorders show both developmental continuity and discontinuity and typically persist if left untreated, often resulting in substantial personal and interpersonal problems. Consequently, the identification of children at risk for anxiety problems, for the purposes of prevention and early intervention, has become an important focus for child anxiety research. One of the prerequisites to designing effective programs for reducing anxiety problems is the identification of factors that increase the risk of psychopathology, and/or factors that serve to protect the child from an anxiety disorder (Spence, 2001).

However, the majority of theoretical and empirical research conducted in the past two decades has been based on various theories (e.g. biological, genetic, and behavioural) used to explain the aetiology and maintenance of child anxiety disorders. Although a detailed review of each of these theories is beyond the scope of this thesis, empirical studies based on these theories have typically focused on single causal factors in the aetiology of child anxiety disorders, often without considering developmental factors. Current research now recognises that an interplay of individual and environmental influences that occur throughout development as causal in the emergence of child psychopathology (Eyberg, Schuhmann & Rey, 1998).
Recent research advances have focused on understanding both the multiple and often complex developmental pathways through which child anxiety symptoms emerge, continue and remit, and the factors that increase the risk of anxiety disorders in childhood and adolescence (Donovan & Spence, 2000; Spence, 2001; Vasey & Dadds, 2001). This chapter aims to strengthen the argument for preventive intervention of child anxiety by providing a review of the research on the developmental psychopathology of anxiety, with a specific focus on empirical research examining risk factors and protective factors in the onset and maintenance of anxiety disorders in childhood and adolescence.

The Developmental Psychopathology Model of Anxiety

In the last two decades, developmental psychopathology has emerged as an interdisciplinary framework for conceptualising normal and maladaptive development (Cicchetti & Cohen, 1995). Developmental psychopathology provides a model to explain the complex dynamic interactions that occur between multiple individual and environmental factors associated with the development of childhood anxiety disorders (Vasey & Dadds, 2001). In addition, the developmental psychopathology model provides a framework for understanding the age-and gender-related variations in the prevalence and manifestation of anxiety symptoms, as well as symptom overlap.

One of the main assumptions of the developmental psychopathology perspective is that most forms of psychopathology are understood to result from multiple causal influences, as opposed to single factors operating in isolation. Therefore many factors are considered to contribute to the onset, maintenance or remittance of child anxiety disorders. These multiple influences are defined as risk
and protective factors which operate together through dynamic transactional pathways throughout child and adolescent development (Cicchetti & Toth, 1998). Accordingly, understanding the role of risk and protective factors in the various and multiple pathways to the development of child anxiety disorders has vital implications for the design of effective prevention and intervention protocols.

Risk and Protective Factors in Child Anxiety

Risk and protective factors are defined as either enduring or transient in nature (Cicchetti & Cohen, 1995). Vulnerabilities are considered to be permanent characteristics or life circumstances that assist maladaption. Enduring protective factors may either compensate for the effects of risk factors in a cumulative way or they may interact to moderate the effects of risk factors. Transient risk and protective factors refer to influences that play a role at only one time in the development of the anxiety disorder. Furthermore, risk and protective factors are considered to function differently depending on the time of occurrence during the developmental trajectory.

From a developmental psychopathology perspective, child anxiety disorders are the outcome of an imbalance between risk and protective factors. Risk factors involve influences that predispose, precipitate, maintain or intensify anxiety symptoms. In comparison, protective factors are influences that assist in maintaining normal developmental pathways and protect against the emergence of child anxiety disorders. Many risk and protective factors serve different roles at different points in the development of child anxiety symptoms and disorders. Accordingly, child anxiety disorders can develop through multiple pathways.
Several risk factors have been found to contribute to the development of child anxiety problems. These include factors which appear to be embedded in the characteristics of the individual, such as genetic, biological, temperamental, and cognitive factors, as well as external factors, such as early control and stressful experiences, and parental responses and behaviour (Cicchetti & Toth, 1998; Vasey & Dadds, 2001). The effect these risk factors have on the child is mediated by the relevance of those factors to the child’s developmental stage (Cicchetti & Toth, 1998). These risk factors will each be discussed in turn, followed by a review of the protective factors known to buffer against child anxiety disorders.

**Individual Risk Factors**

There is substantial evidence that anxiety disorders tend to cluster within families (Boer & Lindhout, 2001; Kovacs & Devlin, 1998). The premise of a biological/genetic transmission of anxiety disorders is based on a collaboration of family studies investigating the first-degree relatives of children with anxiety disorders (called ‘bottom-up’ studies), studies of the offspring of adults with anxiety disorders (called ‘top-down’ studies), and both genetic and behavioural inhibition research. None of these studies to date have demonstrated a direct process of familial transmission of a specific anxiety disorder; however biological, genetic, temperamental influences, and cognitive processes are considered as individual risk factors in the development of child anxiety disorders (Vasey & Dadds, 2001). Familial and genetic research examining the biological risk factors in the development of child anxiety will now be discussed.
**Family studies**

The proposition of an inheritable transmission of anxiety symptoms is based on research examining psychopathology in families (Beidel & Turner, 1997; Berg, 1976; Last, Hersen, Kazdin, Orvaschel, & Perrin, 1991; Martin, Cabrol, Bouvard, Lepine, & Mouren-Simeoni, 1999; Turner, Beidel & Costello, 1987; Weissman et al., 1984). In a bottom-up study conducted by Last et al. (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 DSM-III based diagnostic interview. Of the initial sample, 94 children were diagnosed with an anxiety disorder, and the data from 274 first-degree relatives of these anxious children were assessed. Last et al. found that the relatives of children diagnosed with anxiety had significantly higher rates of anxiety disorders than both first-degree relatives of non-anxious children and children with Attention Deficit Hyperactivity Disorder.

High rates of anxiety disorders in parents of anxious children were also reported in a more recent study conducted by Martin et al. (1999). The study investigated the incidence of anxiety and depressive disorders in mothers and fathers in anxious children with school refusal. Findings of the study showed a high rate of anxiety and depression in the parents of anxious children. Results showed that 78% of mothers and 50% of fathers reported a lifetime anxiety disorder and 53% of mothers and 25% of fathers reported a depressive disorder.

Studies conducted using a top-down design also show high rates of anxiety in parents of anxious children. In an early top-down study Berg (1976) examined anxiety disorders in a sample of 299 children with mothers with agoraphobia. Results showed that when considered separately 7% of children aged 7 to 10 years
and 15% of children aged 11 to 15 years reported school phobia. Similar prevalence rates were reported by Weissman et al. (1984) in a study of 194 children aged 6 to 17 years whose parents suffered from depression with comorbid anxiety. Although this study did not include an anxiety only group, results showed that 16% of the offspring of these parents had significantly more anxiety disorders \(n = 69\) compared to 2 to 3% of children of parents without anxiety and depression \(n = 87\).

Familial anxiety was examined in a later top-down study conducted by Turner et al. (1987). In their study, Turner et al. utilised a sample of 59 children aged 7 to 12 years to compare the offspring of parents with either obsessive compulsive disorder or agoraphobia to three comparison groups: 1) children of dysthymic parents, 2) children of normal parents who were recruited as volunteers for the study and 3) children of parents of a normal group. Children completed several self-report measures of anxiety and were assessed by structured interview by clinicians’ blind to parental diagnoses. Results showed that children with parents with an anxiety disorder were almost three times more likely to have a DSM-III disorder (38%) compared to children whose parents had dysthymia. Children with an anxious parent were twice as likely to have a DSM-III anxiety disorder compared to children whose parents had dysthymia, and nine times more likely to have a DSM-III disorder compared to children whose parents were in the control group.

Findings of a study by Silverman, Cerney, Nelles and Burke (1988) also demonstrated a relationship between parental anxiety and child psychopathology. In their thorough study Silverman et al. (1988) assessed 42 children of parents diagnosed with either agoraphobia with panic attacks, GAD, panic disorder or Social Phobia. Among the children, 72% of females and 50% of males exhibited
some form of behaviour problem. Moreover, children’s behaviour problems were found to be anxiety-related, with the exception of three clinical diagnoses.

Further evidence of a familial transmission for anxiety disorders is provided in a more recent clinical study conducted by Beidel and Turner (1997) which examined risk factors for anxiety. Beidel and Turner investigated psychopathology in a sample of 129 children aged 7 to 12 years and their parents. Parents were from four different diagnostic categories: 1) anxiety disorders ($n = 28$), 2) depressive disorders ($n = 24$), 3) mixed anxiety/depressive disorders ($n = 29$) and 4) no psychiatric disorder ($n = 48$). Children and parents were assessed using a DSM-III-R based diagnostic interview. Findings of this study demonstrated that children from the three parent disorder categories were significantly more likely to meet the diagnostic criteria for a DSM-III-R disorder than children of normal parents. However, inconsistent with the results of the study conducted by Turner et al. (1987), no differences were found between the offspring of the parents from these ‘high-risk’ groups. Nevertheless, children of anxious parents were significantly more likely to be diagnosed with an anxiety disorder only (i.e. 90% of those with diagnosable disorders), compared to children from the other two high-risk groups who exhibited a broader range of psychopathology (only 55% were anxiety disorders).

In summary, both bottom-up and top-down studies provide evidence that anxiety problems tend to cluster within families, although variations in the methodology employed (type of diagnostic interview, self-report measure) across studies may account for some of the variance reported in family psychopathology. Compared to children of non-anxious parents and of depressed parents, children of anxious parents are more likely to have a diagnosable disorder, but not necessarily
an anxiety disorder. Although there appears to be a familial transmission of anxiety disorders, studies of this type do not explain the relative contribution of genetic influences in the development of childhood anxiety. Genetic studies examining anxiety symptoms in monozygotic (identical) and dizygotic (fraternal) twins have been conducted in an attempt to distinguish between genetic and environmental factors in the aetiology of anxiety disorders (Kovacs and Devlin, 1998).

**Genetic Studies**

Twin studies provide evidence of a moderate genetic risk for symptoms of anxiety, that may also be common to depression (Vasey & Dadds, 2001). Thapar and McGuffin (1997) investigated 316 twin pairs aged 8 to 16 years using parent and child ratings on the RCMAS (Reynolds & Richmond, 1978) and the CDI (Kovacs, 1985). Results showed a discrepancy between parent and child ratings of anxiety. Parental ratings indicated that additive genes accounted for 59% of the variance, a finding that suggested those anxiety symptoms were highly heritable. However, the twin’s ratings of anxiety were inconsistent with parent reports and suggested that shared environmental effects rather than genetic factors appeared to be of primary importance. The disagreement between parent and child reports of anxiety may indicate a sign of unreliability. However, Thapar and McGuffin proposed that their findings may be explained by the fact that parents may be rating more enduring traits, while the twins may be rating more acute ‘state’ rather than ‘trait’ symptoms, which may be more influenced by shared environmental factors.

Support for Thapar and McGuffin’s (1997) conclusion comes from previous adult studies which have demonstrated a genetic contribution to most anxiety disorders, varying from a modest size (30% to 35% explained variance) for
generalised anxiety disorder and specific phobia to a moderate size (41% to 44% explained variance) for panic disorder (Kendler, Heath, Martin & Eaves, 1987; Kendler, Neale, Kessler, Heath & Eaves, 1992; Kendler et al., 1995).

A review of the genetic research provides evidence that anxiety disorders are not aetiologically homogenous and that a shared genetic vulnerability may account for the co-occurrence of anxiety symptoms and depression often reported in both clinical and community studies (Boer & Lindhout, 2001). Thapar and McGuffin (1997) also examined the causes of covariation between parent’s reports of anxiety and depressive symptoms and found that this covariation in symptoms may be explained by genetic factors that influence both.

Eley and Stevenson (1999) provide further support for the hypothesis of genetic vulnerability in a study examining anxiety and depression in a sample of 529 child twins. Using behavioural genetic analyses, Eley and Stevenson found that high levels of comorbidity between anxiety and depression were most likely due to shared genetic factors that influence both disorders. These results suggest that there may be a genetic non-specific predisposition to developing either internalising disorder. This finding is consistent with the adult research (Jardine, Martin, & Henderson, 1984; Roy, Neale, Pedersen, Mathe & Kendler, 1995) which shows a shared genetic influence for anxiety and depression.

An important finding to emerge from Eley and Stevenson’s (1999) research was that the influence of environmental factors on anxiety and depression symptoms appears to be disorder specific. This result parallels the findings of an extensive twin research conducted in the United States (Kendler et al., 1987, 1993, 1995). Kendler et al. (1992) investigated the incidence of anxiety and depression in a sample of 1003 pairs of twin female adults from the Virginia Twin Registry. Consistent with
the child studies discussed previously, Kendler et al. found a shared genetic basis for both generalised anxiety disorder (GAD) and depression, and further proposed that personal environmental experiences determine whether a female develops GAD or depression.

Consistent with the previous research on developmental variations in anxiety discussed in chapter one, there is further preliminary evidence to suggest age and gender differences in the inheritability of anxiety symptoms. 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 1412 same-sex twins (Eaves et al., 1997; Topolski et al., 1997). A higher genetic influence was also found for females with separation anxiety disorder in a sample of 2043 same-sex twin pairs aged 3 to 18 years (Feigon, Walman, Levey & 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 2570 young adult same-sex twin pairs (Tambs, Harris & Magnus, 1995). In comparison, Feigon et al, (1997) found somatic complaints were more highly heritable in males compared to females, and males showed higher inheritability to fears of animals and injury/injection in a study of 1106 same sex twin pairs aged 7 to 9 years (Lichenstein & Annas, 1997). In terms of gender differences, there is some evidence to indicate that compared to children and younger adolescents, older adolescents show higher inheritability to anxiety symptoms (Eley & Stevenson, 1999; Thapar & McGuffin, 1994, 1995).

In summary, genetic research with adults and children implies that genetic influence as a moderate risk factor to anxiety disorders and that age and gender
differences in inheritability may exist. It appears that, rather than inheriting a specific gene for specific anxiety disorders, individuals appear to inherit a general vulnerability towards either anxiety or depression. 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 for some children of an anxiety disorder, of a depressive disorder for other children, or of an anxiety first then a depressive disorder later in adolescence, for a further group of children. The various pathways through which child anxiety disorders may develop will be discussed later in the chapter. A review follows here of the research on temperament, which has some empirical support as another biological predisposing risk factor implicated in the development of anxiety disorders.

**Temperament**

Temperamental factors are considered either to predispose children at risk for developing anxiety or to serve as a protective factor which decreases the risk of future psychopathology (Vasey & Dadds, 2001). The most widely studied temperamental factor is behavioural inhibition (BI). Behavioural inhibition is hypothesised as a relatively stable temperament style considered as genetically transmitted that is proposed to predispose children to the development of anxiety disorders (Kagan, Reznick & Gibbons, 1989; Kagan & Snidman, 1991). Behavioural inhibition can be 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). Behavioural inhibition has been studied mostly by Kagan in a series of longitudinal studies (Kagan, Reznick &
Snidman, 1988; Kagan et al., 1989) and is reported to be exhibited in approximately 10 to 20% of Caucasian children.

Kagan (1994) proposed that children can be classified into two qualitative categories: behaviourally inhibited and uninhibited to the unfamiliar (Kagan, 1994; Snidman, Kagan, Riordan & Shannon, 1995). Inhibited children tend to display fear to unfamiliar people or situations, typically reacting by ceasing their ongoing vocalising or behaviour and seeking comfort from a familiar person. In comparison, uninhibited children are more outgoing and sociable, frequently smiling, vocalising, exploring play situations and exhibiting approach behaviours in unfamiliar settings (Kagan et., 1988). However, consistent with the developmental psychopathology perspective on anxiety disorders, there is some evidence to suggest that behavioural inhibition is influenced in part by environmental factors (Turner et al., 1996). The empirical research examining behavioural inhibition in anxious children will be discussed below.

In an initial study Garcia-Coll, Kagan and Reznick (1984) assessed behavioural inhibition in 21-month old toddlers on measures of physiology, behaviour and parental questionnaires. Toddler behaviours involving fretting, crying, distressful noises, facial expression, withdrawal and interaction or initiation with the experimenter were measured during several novel or unfamiliar situations. A behavioural inhibition index was also constructed, based on those specific behaviours, the time taken by the toddler to start interaction with the experimenter or objects, play inhibition, and the level of distress exhibited by the toddler during the interaction. Physiological measures involved heart rate, variations in heart rate, pupillary dilation, cortisol, and norepinephrine.
Findings of the Garcia-Coll et al. (1984) study showed that 21-month old inhibited male toddlers had higher heart rates, less variation and more stable heart rates compared to inhibited females and uninhibited toddlers. At ages 4 to 5.5 years, inhibited children had larger pupillary dilation, higher salivary cortisol levels, higher and more stable heart rates compared to uninhibited children, although the differences in heart rate were no longer significant when the children were assessed at 7.5 years of age. Overall, results of the behavioural and physiological assessment conducted at ages 21-months, 4, 5.5 years and 7.5 follow-up indicated that behavioural inhibition was relatively stable, although not irreversible, and some children can become less inhibited.

There is further preliminary evidence to suggest a genetic basis for behavioural inhibition (DiLalla, Kagan & Reznick, 1994; Matheny, 1989; Robinson et al., 1992). For example, Matheny (1989) examined behaviour inhibition in a twin study of children assessed at 18 months and 30 months of age. Behaviour inhibition was operationalised as emotional tone, fearfulness, and withdrawal/approach behaviours. Findings of this study showed that correlations for behaviour inhibition were consistently and significantly higher for monozygotic twins compared to dizygotic twins. Similar findings were reported in a twin study by DiLalla et al. (1994); however, the inheritability estimates were found to be greater for extremely inhibited children, a finding which suggests the genetic component may be strongest for children with extreme behaviour inhibition.

Additional support for the construct of behavioural inhibition is shown in cross-cultural studies (e.g. Asendorpf, 1990, 1993; Broberg, 1993). Asendorpf (1990, 1993), for example, examined behavioural inhibition in a four-year longitudinal study conducted in Munich. Children were assessed at 3 years 9 months
old and 8 years old using a behavioural assessment paradigm similar to that employed by Garcia-Coll et al. (1984). Behavioural inhibition scores were based on children’s interaction with either unfamiliar or familiar people/environment. Moderate to high correlations were reported for behavioural inhibition scores for children at age 4 and 8 years for interactions in unfamiliar environments with unfamiliar peers and adults. Low to moderate significant correlations were reported for interactions in a familiar environment with unfamiliar peers, although correlations for interactions in a familiar environment with a familiar peer were non-significant. The results of this study indicate that familiarity with a person may be an important influence in the expression of behavioural inhibition, although familiarity with a physical environment is not.

In summary, the studies reviewed so far suggest behaviour inhibition is a valid temperament construct, which has a genetic component. Turner et al. (1996) outline several limitations in the research in a comprehensive review of the studies examining the relationship of behaviour inhibition to the anxiety disorders. These limitations include variations in the operationalisation of behavioural inhibition, and assessment protocols. An additional limitation is that developmental changes in behaviour and physiology have not been taken into account in the assessment of behavioural inhibition. Nevertheless there is some evidence to support the role of behaviour inhibition in the aetiology of anxiety disorders.

A number of studies have examined the relationship between behavioural inhibition and anxiety in families (Biederman et al., 1990, 1993a, 1993b, 1995; Kagan, Snidman, Zenter & Peterson, 1999; Rosenbaum et al., 1991). Bottom-up studies demonstrate that a history of childhood anxiety disorders, higher rates of social phobia, or a continuing anxiety disorder is significantly higher in parents of
behaviourally inhibited children compared to parents of uninhibited children (Biederman et al., 1995). Correspondingly, top-down studies provide evidence to suggest that the rates of behavioural inhibition are significantly higher in children of parents with anxiety and depressive disorders than in children of parents without a psychiatric diagnosis. For example, Rosenbaum et al. (1991) found parents of behavioural inhibited children were more likely to have two or more anxiety disorders compared to parents of uninhibited children.

Similar findings were reported by Biederman et al. (1993b) in a study that indicated that behavioural inhibition was exhibited in 85% of children whose parents were diagnosed with panic disorder with agoraphobia and in 70% of children whose parents had panic disorder with agoraphobia and depression. Another finding reported by Beiderman et al. was that inhibited children had a greater prevalence of anxiety disorders compared to uninhibited children and to children in a paediatric control group. However, consistent with the developmental psychopathology model that assumes that temperamental factors interact with environmental factors, results of a three-year follow-up study of behaviour inhibition in children whose parents did not have an anxiety disorder showed that behaviour inhibition alone did not predict later anxiety disorders (Biederman et al., 1993a).

Data to support the proposition that behaviour inhibition is a risk factor for anxiety have also been provided in studies examining the prevalence of anxiety disorders in behaviourally inhibited and uninhibited children. Beiderman et al. (1990), for example, investigated anxiety disorders in a clinical sample and in a non-clinical sample of behaviourally inhibited children. Mothers were assessed using the Diagnostic Interview for Children and Adolescents-Parent Version (DICA-P; Herjanic & Reich, 1982). Results showed that inhibited children were significantly
more likely to have anxiety disorders compared to the uninhibited children. However the main limitations of this study were that children were not interviewed and that parental psychopathology was not assessed. Without child interview data and parental diagnoses, the findings of this study need to be viewed with caution.

Further support for the role of behavioural inhibition as a risk factor in the development of anxiety disorders is provided in findings of a longitudinal study of infant temperament conducted by Kagan et al. (1999). In this study Kagan et al. assessed 164 children from four different infant temperament categories until they were 7 years of age. Findings showed that, compared to infants classified as low reactive, children who had been identified as highly reactive infants at four months were more vulnerable to the development of anxiety symptoms, more subdued as they interacted with an unfamiliar person, and tended to be cautious on task and uncertain in their responses. These results provide some evidence that the development of anxious symptoms in later childhood is influenced by temperamental factors. However, given that less than 10% of the original infants categorised as highly reactive went on to develop anxiety symptoms, temperamental factors appear to be more of a diathesis to the development of anxiety rather than a direct cause.

In summary, behavioural inhibition is often considered a risk factor for the development of an anxiety disorder, particularly for children who show stable behavioural inhibition from infancy through to middle childhood (Turner et al., 1996). The research reviewed above suggests a trend for behaviourally inhibited children and their parents to have significant anxiety problems, although Turner et al. consider the critical factor between behavioural inhibition and anxiety appears to be a family history of anxiety as opposed to the behaviour inhibition. Furthermore,
many children who show a temperamental style of behavioural inhibition do not proceed to develop anxiety disorders or anxiety symptoms (Biederman et al., 1993; Rosenbaum et al., 1992; Kagan et al., 1999). Thus additional factors are also likely to play an important part in determining the development of anxiety disorders. Therefore more research is required to establish behaviour inhibition as a predisposing risk factor for child anxiety disorders. This chapter continues with a review of the research examining anxiety sensitivity, a risk factor also shown to play a role in the development and maintenance of anxiety in childhood and adolescence.

**Anxiety Sensitivity**

In the expectancy model of fear and anxiety, Reiss (1991) proposes that anxiety sensitivity is one of three fundamental fears that increase or cause common fears. Anxiety sensitivity can be defined as the fear of anxiety-related sensations due to the belief that such sensations may have harmful consequences (Reiss, 1991; Taylor, 1995). The origins of anxiety sensitivity are further proposed to be influenced by genetic factors that make anxiety a displeasure and cognitive factors which involve beliefs regarding the individual consequences of anxiety sensations (Reiss, 1991).

Research in adult populations has provided substantial support for anxiety sensitivity as a valid construct and a risk factor to anxiety problems, in particular panic disorder (Taylor, 1999; Watt & Stewart, 2000). Longitudinal research has suggested high anxiety sensitivity serves as a pre-morbid risk factor in the development of panic attacks (Schmidt, 1999). Additional studies with adults, for example, have demonstrated that anxiety sensitivity discriminated panic disorder from other anxiety disorders (Apfledorf, Shear, Leon & Portera, 1994), predicted
fear responses in situations that provoke panic symptoms (e.g. Rapee, Brown, Antony & Barlow, 1992), and predicted the development of panic attacks (e.g. Schmidt, Lerew & Jackson, 1997) and hypochondriasis (Watt & Stewart, 2000).

Empirical support for the proposition that anxiety sensitivity has a genetic component (Reiss, 1991) is provided in a twin study conducted by Stein, Jang and Livesley (1999). In their study Stein et al. examined the inheritability of anxiety sensitivity in 179 monozygotic and 158 dizygotic twin pairs. Results showed that inheritability accounted for 45% of the variance, which implied a strong genetic component in anxiety sensitivity. However, the findings of this study also suggested that environmental influences, including cognitive factors and childhood learning experiences, contributed the greatest proportion of the variance in anxiety sensitivity levels. Given these findings, researchers have begun to examine the role of anxiety sensitivity in the development and maintenance of child anxiety problems.

Anxiety Sensitivity in Childhood

Consistent with the research reviewed in chapter one, which outlined the role of cognitive development in children’s fears and anxiety (e.g. Gullone, 2000; Schniering et al., 2000), Reiss, Silverman and Weems (2001) proposed that cognitive factors also influence the development of anxiety sensitivity in childhood. According to Reiss et al. (2001), a child’s inherited sensitivity to anxiety is mediated by that child’s beliefs regarding the consequences of symptoms of anxiety and stress; these beliefs are generally formulated between the ages of 7 to 10 years.

Children’s’ experience of anxiety sensitivity is considered to be similar to that of adults (Reiss et al., 2001). For children with high anxiety sensitivity, sensations such as shaking body and pounding heart are considered to be very
frightening and lead to the belief that such sensations lead to loss of control, illness or embarrassment (Reiss et al., 2001). Repeated anxiety episodes are considered to lead to a vicious cycle where children highly sensitive to anxiety symptoms worry about their sensations, which results in more stress. In contrast, children with average or low anxiety sensitivity regard anxiety symptoms as harmless. A number of studies have demonstrated support for the role of cognitive factors in anxiety sensitivity in childhood (Mattis & Ollendick, 1997; Silverman, La Greca & Wasserstein, 1995; Weems, Hammond-Laurence, Silverman & Ferguson, 1997; Weems, Berman, Silverman & Saavedra, 2001).

*Cognitive Processes in Anxiety Sensitivity*

A relationship between worry and anxiety sensitivity was shown in a study by Silverman et al. (1995) in a clinical sample of children. Participants completed the Childhood Anxiety Sensitivity Index (CASI; Silverman, Fleisig, Rabian & Peterson, 1991) and additional measures of anxiety. The CASI measures the extent to which children believe the experience of anxiety will result in unpleasant physiological consequences, and has shown high internal consistency estimates and good test-retest reliability for both community and clinical samples (Silverman et al., 1991). Children with high anxiety sensitivity reported a greater number, frequency and intensity of worries compared to children with low anxiety sensitivity. The findings of this study suggest that children who worry about a range of things also worry about their anxiety symptoms.

Mattis and Ollendick (1997) examined anxiety sensitivity and cognitive responses to physical symptoms of panic in a community sample of children aged 8 to 15 years. Participants completed the CASI (Silverman et al., 1991) and also
participated in a cognitive task during which they listened to a tape describing a panic attack and were asked to imagine that they were experiencing the condition described on the tape. Children’s level of anxiety sensitivity was found to significantly predict their internal catastrophic attributions (e.g. thoughts of dying, losing control or going crazy). Mattis and Ollendick concluded that the development of panic attacks and panic disorder in childhood was possibly influenced by high levels of anxiety sensitivity and elevated cognitive attributions in response to negative events.

The relationship between cognitive errors and anxiety sensitivity was also demonstrated in recent research conducted by Weems et al. (2001). In their study, Weems et al. investigated cognitive errors and anxiety symptoms, including anxiety sensitivity, in a sample of 251 children aged 6 to 17 years. Children were assessed on a number of standardised self-report measures including the Children’s Negative Cognitive Error Questionnaire (CNCEQ; Leitenberg et al., 1986) and the CASI (Silverman et al., 1991). The CNCEQ (Leitenberg et al., 1986) was developed to assess four main forms of cognitive distortions. These cognitions-catastrophising, overgeneralising, personalising, and selective abstraction-will be discussed in further detail later in this chapter. The children and their parents were also interviewed with the Anxiety Disorders Interview Schedule (ADIS-C/P; Silverman & Nelles, 1988).

Statistical analysis of the relation between cognitive errors and anxiety sensitivity revealed that catastrophising and personalising showed the strongest correlation with anxiety sensitivity and anxiety symptoms. In comparison, overgeneralising showed the strongest correlation with trait anxiety, while overgeneralisation and selective abstraction were the strongest predictors of depression. Therefore, consistent with theory (Reiss et al., 2001), children with high
anxiety sensitivity appear to be prone to cognitive errors such as expecting the worst possible outcome of an event or situation. Hence, cognitive errors appear to play a central role in anxious symptomatology, a finding that has important implications for cognitive intervention for childhood anxiety disorders. However, given the cognitive component of anxiety sensitivity and the suggestion from past research that because of cognitive development, panic disorder presents mainly in adults (Lau, Calamari & Waraczynski, 1996), the construct validity of anxiety sensitivity in children is not without some controversy.

Empirical Studies of Anxiety Sensitivity in Childhood

The construct of anxiety sensitivity in children and adolescents has been examined in several studies (Chorpita, Alabano & Barlow, 1996; Rabian, Embry & MacIntyre, 1999; Muris, 2002; Muris, Schmidit, Merckelbach & Schouten, 2001; Weems, Hammond-Laurence, Silverman & Ginsburg, 1998). In an early study Chorpita et al. (1996) examined the construct validity of the CASI (Silverman, et al., 1991) using a sample of 112 children and adolescents aged 1 to 17 years. The sample was divided into two age groups consisting of children aged 7 to 11 years ($n = 43$) and adolescents aged 12 to 17 years ($n = 69$). Children completed the RCMAS (Reynolds & Richmond, 1978), the FSSC-R (Ollendick, 1987), and the STAIC-T (Speilberger, 1973).

Results of the Chorpita et al. (1996) study showed that anxiety sensitivity was significantly correlated with level of trait anxiety on the STAIT-T and fear on the FSSC-R, for the adolescent group only. Consequently, Chopita et al. concluded that anxiety sensitivity was not a valid construct in preadolescent children. However, the findings of this study were limited by the small sample size of children ($n = 43$).
and the methodology employed, which based the construct validity of anxiety sensitivity on a measure of trait anxiety (Reiss et al., 2001).

To address the limitations of the Chorpita et al. (1996) study, Weems et al. (1998) examined the utility of anxiety sensitivity in a larger sample of children and adolescents. In their replication study, Weems et al. assessed a sample of 280 children aged 6 to 17 years on several self-report measures involving the CASI, the RCMAS, the FSSC-R, and the STAIC. Children and their parents were interviewed using the Anxiety Disorders Interview Schedule (Silverman & Nelles, 1988). In comparison to the methodology employed in the Chorpita et al. (1996) study, Weems et al. examined the relationship between anxiety sensitivity, anxiety symptoms and fears by controlling for trait anxiety and anxiety frequency. Results showed that, for all children aged 6 to 17 years, anxiety sensitivity predicted anxiety and fears when trait anxiety was controlled for. In contrast to the Chorpita et al. findings, these results provided evidence of anxiety as a valid construct in both children and adolescents.

Further support for the construct of anxiety sensitivity in children was shown in a study by Rabian et al. (1999) which examined the behavioural validation of the CASI (Silverman et al., 1991). In their study, Rabian et al. assessed a sample of 56 children aged 8 to 11 years using the CASI, the STAIC and self-reported level of fear during a behavioural challenge task. In the behavioural challenge task children performed a physically challenging, stair-stepping task designed to increase physiological arousal. Results of this study showed that children’s level of anxiety sensitivity predicted their level of state anxiety and fear during the behavioural task, and also predicted changes in fear between pre-task assessment and post-task
assessment in response to the behavioural task. Findings of this study provide support for the construct of anxiety sensitivity in pre-adolescent children.

Factor analytic studies provide further support for the construct of anxiety sensitivity in children and adolescents (e.g. Muris, 2002; Silverman, Ginsburg & Goedhart, 1999). Silverman et al. (1999) examined anxiety sensitivity in a sample of children aged 7 to 16 years with an anxiety disorder and non-anxious children. Silverman et al. concluded that, based on the results of principal components analysis, anxiety sensitivity can be conceptualised as a hierarchal construct consisting of ‘fear of physical symptoms’, ‘fear of mental incapacitation’, and ‘fear of social evaluation’. Similar findings have since been reported in two factor-analytic studies conducted by Muris et al. (2001, 2002). Overall, the research reviewed above suggests that anxiety sensitivity is a valid construct in children and adolescents. Further research exists examining the role of anxiety sensitivity in childhood anxiety disorders.

**Anxiety Sensitivity and Childhood Internalising Disorders**

Studies have shown that the level of anxiety sensitivity is correlated with anxiety symptoms (Pollock et al., 2002; Rabian, Peterson, Richters & Jensen, 1993; Vasey, Daleiden, Williams & Brown, 1995) and panic symptoms in children and adolescents (Calamari et al., 2001; Lau, Calamari & Waraczynski, 1996; Kearney, Albano, Eisen, Allan & Barlow, 1997; Muris et al., 2001). In a community sample of 201 children, Rabian et al. (1993) reported that scores on the CASI were significantly higher for children with anxiety and externalising disorders compared with children without a diagnosis. No significant difference was found on the CASI scores between anxious and externalising children, a finding that may be explained
by comorbid anxiety externalising symptoms in some children in the sample. Consistent results were reported in a study by Vasey et al. (1995) which compared anxiety sensitivity in a small sample of 24 children with and without an anxiety disorder. Children with anxiety disorders were found to have significantly higher scores on the CASI compared to children without an anxiety disorder.

The relationship between anxiety sensitivity and panic symptomatology was examined by Lau et al. (1996) in a community sample of 77 adolescents aged 14 to 16 years. Results of this study showed that anxiety sensitivity was significantly associated with adolescents’ self-reports of the number of panic attacks, the level of distress associated with panic symptoms, the number of autonomic symptoms, and the negative cognitive appraisal and judged seriousness of panic attacks. These findings were replicated in a study by Kearney et al. (1997) which found that scores on the CASI significantly differentiated between children with panic disorder and children with other anxiety disorders.

Calamari et al. (2001) also examined the relationship between anxiety sensitivity and panic symptoms in a community sample of 114 children aged 11 to 18 years. Participants in the study completed the CASI (Silverman et al., 1991) as well as measures of anxiety and depression. Findings of this study showed that anxiety sensitivity, anxiety and depressive symptoms were significantly correlated with panic symptoms. Furthermore, anxiety sensitivity was found to relate to panic/agoraphobia, generalised anxiety and obsessive compulsive symptoms on the Spence Children’s Anxiety Scale (SCAS; Spence 1998), although no differences were found between children who reported panic attacks and children without panic attacks. Similar findings were also reported in the Muris et al. (2001) study discussed earlier, which found that anxiety sensitivity in adolescents was
significantly correlated to symptoms of anxiety on the SCAS (Spence, 1998). Moreover, a stronger association was found among anxiety sensitivity and panic disorder and agoraphobia, compared to the other anxiety disorders.

Weems et al. (1997) investigated the relationship between anxiety sensitivity and depression in a clinical study of 234 children aged 6 to 17 years. Children completed the CASI (Silverman et al., 1991), the RCMAS (Reynolds & Richmond, 1978) and the CDI; (Kovacs, 1981). Children and their parents were also interviewed using ADIS-C/P (Silverman & Nelles, 1988). Of the children assessed 93% were diagnosed with an anxiety disorder, the most common being simple/specific phobia (38%), generalised anxiety disorder (19%), separation anxiety disorder (14%) and social phobia (11%). Only 2% of children were diagnosed with either depression or dysthymia.

As predicted, results of the Weems et al. (1997) study showed a significant correlation between anxiety sensitivity and anxiety symptoms on the RCMAS, even after controlling for scores on each on the RCMAS subscales and for scores on the CDI. A significant and fairly strong correlation was also shown between anxiety sensitivity and depression, even after controlling for anxiety scores on the RCMAS. A significant correlation was also found between anxiety symptoms and depression, even after controlling for anxiety sensitivity. The findings of this study support previous research that suggests that for some children there appears to be a general vulnerability towards either anxiety or depression (Jardine et al., 1984; Roy et al., 1995).

Overall, correlation studies suggest that anxiety sensitivity is strongly related to internalising symptoms, specifically anxiety and panic in children and adolescents. However, anxiety sensitivity does not account for the entire variance of
anxiety disorders, consequently, recent research advances have been directed toward investigating additional factors that contribute to the development of anxiety sensitivity in childhood.

The Development of Anxiety Sensitivity in Childhood

Retrospective studies with anxious adults provide preliminary information regarding the development of anxiety sensitivity in childhood (Scher & Stein, 2003; Stewart et al., 2001; Watt & Steward, 2000; Watt, Stewart & Cox; 1998). Two studies by Watt et al. (1998, 2000) investigated the role of childhood learning experiences, involving operant learning and vicarious conditioning, in the development of anxiety sensitivity. In both of these studies, Watt et al. examined whether anxiety sensitivity was associated with learning experiences related to both arousal-reactive and arousal-non-reactive somatic symptoms in university students. Participants completed the Anxiety Sensitivity Index (Peterson & Reiss, 1992), the Panic Attack Questionnaire, Revised (PAQ-R; Cox, Norton & Swinson, 1992), and the Learning History Questionnaire (Ehlers, 1993), in which they reported on their own and their parents’ experiences of somatic symptoms and being sick prior to age 18. Participants also responded to questions designed to measure previous parental reinforcement and punishment of their sick/somatic symptoms.

Results of the first study (Watt et al., 1998) indicated that the learning experiences of students with high anxiety sensitivity were not found to be specific to anxiety symptoms, although both studies showed that heightened anxiety sensitivity was related to retrospectively reported learning experiences, involving parental reinforcement and modelling, in childhood and adolescence. Watt et al. concluded that the development of anxiety sensitivity is influenced by childhood experiences...
during which individuals learn to catastrophise the meaning of internal bodily sensations in general rather than of anxiety-related symptoms.

Expanding on the findings of the Watt et al. (1998, 2000) research, Stewart et al. (2001) investigated the influence of childhood operant and vicarious learning experiences on the frequency of panic attacks and on anxiety sensitivity. Participants in this retrospective study were 478 university students who completed the same measures described in the Watt et al. research. Structural equation modelling showed that 1) learning history was a direct influence on panic attack frequency and the bodily symptoms caused by arousal, 2) childhood learning experiences exerted a direct influence on levels of anxiety sensitivity and 3) level of anxiety sensitivity was directly related to the frequency of panic attacks. Overall, findings of this study again support the proposition that anxiety sensitivity is a risk factor to panic-related symptoms; results also suggest that parental responses influence the development of an individual’s sensitivity to somatic sensations.

In a recent retrospective study, Scher and Stein (2003) also investigated the correlation between parenting behaviours during childhood and anxiety sensitivity in a sample of 249 university students. Participants completed several self-reports assessing parental hostility rejection and threatening behaviour, as well as the ASI (Peterson & Reiss, 1992) and standardised measures of anxiety and depression. Results of this study showed that those parental hostile, rejecting, and threatening behaviours accounted for approximately 7% of the variance in anxiety sensitivity. Although the variance was small, results showed that parental threatening behaviours correlated the most with fears of publicly observable anxiety symptoms, while parental rejecting and hostile behaviour correlated the most with fears of losing control over one’s thoughts. Scher and Stein concluded that individual
differences in childhood experiences contributed to differences in anxiety sensitivity, although ‘a great deal of research remains to be done on the role of early experiences in the development of anxiety sensitivity’ (pp.267).

In summary, impressive research advances in this field have provided evidence that anxiety sensitivity is a risk factor to panic disorder and, to a lesser extent, anxiety disorders and depression. Empirical support has been demonstrated for the genetic and cognitive components that are proposed to contribute to anxiety sensitivity. Factor analytic studies provide ample support for the construct of anxiety sensitivity in children and adolescents aged 6 to 17 years. Children’s and adolescents’ experience of anxiety sensitivity appears to be similar to that of adults, involving both fear of anxiety sensations and beliefs regarding the negative outcomes of these symptoms, such as loss of control. Correlation studies supply substantial evidence to suggest that anxiety sensitivity is a significant predictor of panic-related symptoms, anxiety symptoms and depression in children and adolescents. A main limitation of correlational data is that causality cannot be established, hence the need for longitudinal data.

Silverman & Weems (1999) show preliminary evidence of the developmental nature of anxiety sensitivity in research. In their longitudinal study, Silverman and Weems assessed anxiety sensitivity at two time points seven years apart, and found that children whose scores on the CASI (Silverman et al., 1991) increased over time reported significantly more panic attacks at time two, seven years later. In comparison, children whose scores on the CASI decreased during this time interval reported no panic attacks.

In conclusion, Silverman and Weems (1999) suggest that childhood anxiety sensitivity is a potential risk factor for panic attacks and the presentation of panic
disorder later in the developmental trajectory. Further, there is preliminary evidence to suggest that early childhood learning experiences and parent-child interaction contribute to the development of anxiety sensitivity, although these findings are limited to retrospective data based on adult self-reports of childhood experiences. Further longitudinal research is clearly required to establish the various developmental pathways through which anxiety sensitivity develops, and/or the extent to which it contributes to the development of anxiety and panic disorders in childhood and adulthood. This chapter continues with a review of the research that further examines cognitive processes, as these constitute a risk factor also shown to play a role in the development and maintenance of anxiety in childhood and adolescence.

**Cognitive Risk Factors**

Information processing and cognitive biases and distortions have been shown as risk factors that may predispose, precipitate, maintain or intensify anxiety symptoms in children and adults (Vasey & Dadds, 2001). Information processing models of childhood anxiety are congruent with cognitive theory of adult anxiety (Beck & Emery, 1985), which posits that anxiety is mediated by schemata, and distorted and maladaptive cognition’s.

At present, cognitive theory (Kendall & Ronan, 1990) and information processing theory (Daleiden & Vasey, 1997) provide a conceptual framework explaining cognitive factors in child anxiety. Kendall et al. (Kendall & Chansky, 1991; Kendall & Ronan, 1990) were the first to propose a cognitive theory of child anxiety, which outlines the role of schemata, and cognitive deficits and distortions believed to play a key role in the aetiology and maintenance of anxiety. A schema is
an individual’s information processing network that has been created and molded by personal and social experiences. These schemas are then used to view and interpret the world and current situations. Specifically, anxious individuals are expected to have a selective threat-schema or attentional bias in which a person selectively attends to, and over-interprets, environmental cues related to harm or threat (e.g. Barlow, 1991; Beck & Emery, 1985). Similar to adult perspectives, Kendall’s theory proposes that child anxiety disorders result from hyperoperative schemata that focus on themes of threat and danger, which are also mediated by cognitive deficits and distortions. Cognitive deficits are defined as maladaptive thinking skills, such as problem solving, while cognitive distortions are defined as errors in thinking, such as personalising, overgeneralising, catastrophising, & selective abstraction of threatening information (Kendall & Chansky, 1991; Kendall & Ronan, 1990).

Expanding on Kendall’s cognitive theory, Daleiden and Vasey (1997) posit an information-processing model, which describes anxiety-related cognitive distortions and deficits apparent at six stages throughout the information-processing sequence. Information processing is considered to involve two modes, defined as automatic and controlled considered to be measurable along a continuum (Bargh, 1989). Automatic processing involves unconscious, autonomous, fast, unintentional, and effortless processing. Controlled processing involves conscious, deliberate, slow, strategic and effortful processing. The first stage of the information-processing model involves the encoding process during which the child selectively attends and focuses upon threatening information. The second stages involves interpretation of the encoded information as dangerous or threatening, expecting something negative to occur, and an inability to cope with the event or anxiety. These negative cognitive
distortions lead to the third stage, which involves goal clarification or construction of actions to take. The fourth stage of the sequence involves response access or construction based on retrieval of memories of previous situations. The fifth stage consists of response selection based on expectations, outcome expectations, and response appropriateness for the purpose of enactment. The last stage of the model is enactment of the selected response. During the final four stages of the information processing sequence, an anxious child is hypothesised to consider coping strategies but will typically choose to avoid or escape rather than problem solve the situation.

From this perspective, the sequence through which an individual processes information, involving cognitive biases and distortions and selective attention to threat may serve to predispose, precipitate, maintain or intensify anxiety symptoms in children and adolescents (Vasey & Dadds, 2001). In a literature review of the cognitions associated with anxiety disorders, Prinz (2001) noted that the main difference between cognitive theory and information processing models of anxiety is more methodological than theoretical. Specifically, the cognitive behavioural approach relies more heavily on self-report measures, while the information processing approach utilises experimental methods (e.g. Stroop task, Probe-detection task) for studying anxiety-related cognition. A brief review of studies conducted exploring child anxiety cognition from each of these approaches follows.

Cognitive Studies

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. For example, in studies of high test-anxious children, these
children tend to exhibit higher rates of cognitive distortions, such as personalising, overgeneralising, catastrophising, and selective abstraction (Leitenberg, Yost & Carroll-Wilson, 1986). Further, these children also report greater proportions of negative self-evaluative thoughts (e.g. “I’m too stupid for this”) and more off-task thoughts than low test-anxious children (King et al., 1995; Prinz, Groot & Hanewald, 1994; Zats & Chassin, 1985).

Higher proportions of negative cognitions have also been demonstrated in studies of dental-anxious children. A study conducted by Prinz (1985), for example, 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. Studies by Kendall and Chanksy (1991) and King, Mietz, Tinney and Ollendick (1995), in studies of socially phobic children (Beidel, 1991) and of children with an anxiety disorder diagnosis (Kendall, 1994), and in studies with children with high trait anxiety (Fox, Houston & Pittner, 1983; Houston, Fox & Forbes, 1984). Overall, these studies indicate that prior to and during anxiety-provoking situations, high-anxious children endorse or report more negative self-cognitions, compared to low-anxious children.

However, the role of positive self-talk in anxiety remains unclear. Despite logic suggesting that the presence of positive cognition would be associated with lowered levels of anxiety, research to date offers conflicting results. Some studies have found that, compared to high-anxious children, low-anxious children reported more positive cognition, such as on-task cognition, positive self-evaluative and coping thoughts (Zats & Chassin, 1983, 1985) while other studies have not found such a correlation. A number of community studies have found no relationship
between positive self-statements and children aged 8 to 12 years during a stressful situation (Prinz, 1986), children with high test anxiety in grade eight (Prinz et al., 1994), or children with trait anxiety in grade four (Fox et al., 1983; Houston et al., 1994). Furthermore, Kendall and Treadwell (1996) found that negative but not positive cognition was significantly related to anxiety. Such findings lend support for Kendall’s proposition of ‘the power of non-negative thinking’, which refers to the idea that it is the lower frequency of negative cognitions as opposed to the presence of positive cognitions that differentiates anxious and non-anxious children.

**Attentional Processing studies**

Several studies have examined attentional processing of anxious children (Ehrenreich & Gross, 2002; Martin, Horder & Jones, 1992; Vasey, Daleiden, Williams & Brown, 1995; Vasey, El-Hag & Daleiden, 1996). A common component of the cognitive theories of adult anxiety is the prediction that anxious individuals will endorse an attentional bias toward 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 et al., 1996). Research has shown that this attentional bias also occurs among children.

Several studies have examined attentional processing in anxious children, utilising the Stroop task, the probe-detection task, or self-report methodology. Martin et al. (1992) used the Stroop colour-naming task (Stroop, 1935) to compare children aged 6 to 13 years who reported a fear of spiders with children who reported no fear. In the Stroop task, 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, dependent on the irrelevant word content, may be taken as an indication of the degree to which word meaning has been selectively processed (Matthews, 1990). Results showed that non-fearful children showed no impairment, while children fearful of spiders were significantly slower to colour-name neutral words versus spider-related words.

Kindt et al. (1997) examined the cognitive processing bias of children in a real-life stress situation and a neutral situation using the Stroop task. Forty-seven children aged between 8 and 9 were divided into high-anxious \((n = 25)\) and low-anxious \((n = 22)\) groups based on their self-reported scores on the FSSC-R (Ollendick, 1987) and the STAIC (Spielberger, 1973). Results showed no differences between high-anxious children and low-anxious children: all children showed a bias for threatening information in general, to both the real-life stress situation and a neutral situation. Gender differences were also found where the bias for generally threatening information was only significant for females.

However, the mechanisms responsible for colour-naming interference remain unclear in emotional Stroop tasks. A possible explanation may be that anxious children are slower because their attention is disproportionately drawn to threat words; alternatively, children’s slower emotional reactions may be due to interference to such words or because of a defensive attentional shift away from threatening words (Dalgleish and Watts, 1990). This uncertainty was resolved by the development of a probe-detection task, which measures the effect of word content on the direction of attention.

Vasey et al. (1995) used the probe-detection task to compare attentional biases in anxious children aged 9 to 14 with non-anxious children. The probe-detection task (MacLeod, Mathews, & Tata, 1986) involves a series of word pairs,
which appear on a computer screen for a fixed time. One of the words is neutral and the other is threatening. Children are instructed to read the top word on each trial and to press a button when they see a dot probe replace one of the two words. Reaction time to the dot probe is hypothesised to provide a measure of visual attention to the word that the dot replaced. Findings showed that anxious children exhibited an attentional bias toward threat words in that they detected probes significantly faster when they were preceded by threatening words than when they were preceded by neutral words.

Taghavi, Neshat-Doost, Moradi, Yule and Dalgleish (1999) also used the probe-detection task to examine attentional biases in 24 children aged 14 years diagnosed with generalised anxiety disorder. Results indicated that clinically anxious children selectively allocated processing resources towards threat stimuli, compared to a group of normal controls. These controlled laboratory studies have provided support for the proposition that anxious youngsters think differently about things from non-anxious youngsters.

Using similar procedures, Waters, Lipp & Cobham. (2000) studied the startle eye-blink response of 16 clinically anxious children following the presentation of threat and neutral words. A startle-eliciting auditory stimulus was presented during exposure to the words at intervals varying from 60 to 3500 milliseconds. Findings indicated a bias in favour of threat words at the 60-millisecond interval, leading the researchers to conclude that an anxiety-related threat bias is present at a very early stage of information processing.

Vasey et al. (1996) compared selective attention in high-anxious and low-anxious children. Vasey et al. (1996) examined the hypothesis that low-anxious children would shift attention away from threatening information whilst high-
anxious children would shift attention toward threatening information, by comparing participants’ performance on the probe-detection task. Forty children in grades six and eight were divided into high-anxious ($n = 20$) and low-anxious ($n = 20$) groups based on their self-reported scores on the STAIC (Spielberger, 1973). Results showed that high–test-anxious children made attentional bias toward threat cues. However, the same attentional bias toward threat was found for low-test–anxious females, whereas low-test-anxious males did show an attentional bias away from threatening information.

Further support for cognitive theory of child anxiety is provided in studies showing that anxious children interpret ambiguous situations as threatening and endorse maladaptive coping responses (Barrett, Rapee, Dadds & Ryan, 1996; Bögels & Zigterman, 2000; Chorpita, Albano & Barlow, 1996; Logsdon-Conradsen, 1998). Barrett et al. (1996) examined anxious children’s thinking in a clinical sample of 152 anxious children aged 7 to 14 years. Participants completed an information-processing questionnaire based on the ambiguous situation task detailed by Butler and Mathews (1983), that involved interpretations and responses to 12 ambiguous, hypothetical situations. For example, the situation of “You arrange to have a party at 4:00pm and at 4:30pm no one has arrived. What do you think is happening and what would you do?” These situations could be interpreted as threatening (e.g. “Nobody likes me and they don’t want to come to my party”) or as non-threatening (e.g. ‘perhaps mum or dad wrote the wrong time on the invitations’).

Barrett, et al. (1996) found that, compared to non- anxious children, anxious children perceived ambiguous situations as more threatening. For example, when asked to interpret a scenario in which children were laughing while playing a game, non-anxious children thought the children were laughing because they were having
fun playing the game, whereas anxious children were more likely to think that the children were laughing at them. Barrett et al. were also interested in comparing children’s plans of response to the situation. Responses were classified as either prosocial (e.g. “I would phone one of my friends and try and find out what had happened”), avoidant (e.g. “I would be really upset and go to my bedroom”), or aggressive (e.g. “I’d tell the kids that I don’t like them”). Findings showed that anxious children chose more avoidant response plans in hypothetical ambiguous situations compared to non-anxious children. The findings of the Barrett et al. study were replicated by Chorpita et al. (1996). Utilising a small sample of four anxious children aged 9 to 13 years and a shortened version of this ambiguous situations task, the researchers also found anxious children showed a threat bias when interpreting ambiguity.

In a recent study, Bögels and Zigterman (2000) investigated cognitive biases in a clinical sample of 15 children aged 8 to 17 years with an anxiety disorder diagnosis. Participants were exposed to stories in which ambiguous situations were described and were asked to report their interpretations. Results showed that anxiety disordered children reported more negative cognitions compared to children in the control group. Further, in comparison to the control group, anxious children evidenced lower estimations of their own competency to cope with danger.

Further evidence that anxious children tend to interpret ambiguity as threatening is provided by findings of a community study conducted by Bell-Dolan (1995). In this study Bell-Dolan (1995) examined whether anxious children perceived peer behaviours as more threatening, negative, or physically hostile than non-anxious children perceived them to be. Participants involved 52 non-anxious children and 38 anxious children aged 8 to 13 years who scored one or more
standard deviations above the sample mean on the RCMAS (Reynolds & Richmond, 1985). The results indicated that both anxious and non-anxious children correctly interpreted hostile intent in videotaped peer interactions. However, anxious children tended to misinterpret non-hostile ambiguous situations as threatening. Additionally, in response to perceived threat, anxious children were more likely to propose maladaptive strategies toward solving the problem, such as telling the teacher or walking away while feeling bad.

In summary, recent theoretical and empirical research has begun to enhance our understanding of the potential importance of cognitive factors that predispose, precipitate, maintain or intensify anxiety symptoms and disorders in children (Kendall & Chansky, 1991; Kendall & Ronan, 1990; Vasey, 1993; Vasey et al., 1996). Support for both information processing and cognitive models of child anxiety is provided by studies showing that children with high anxiety or an anxiety disorder demonstrate higher rates of cognitive distortions and utilise a greater proportion of negative self-talk compared to low-anxious or non-anxious children. There is further empirical evidence that children with high anxiety and an anxiety disorder typically show a greater selective attention towards threatening information in potentially anxiety-provoking situations than non-anxious children do, and respond to this perceived threat with avoidance. Moreover, there is also preliminary evidence to suggest low-anxious females show attentional biases to threat equal to their high-anxious counterparts.

One conclusion drawn by Vasey and Macleod (2001) in a recent review of information processing in childhood anxiety is that a heightened risk for the development of anxiety disorders may be an individual’s inability to strategically control attention or shift attention away from threatening information (Vasey et al.,
Further research is needed to establish the cognitive mechanisms that enhance children’s ability to cope with anxiety-provoking situations. Moreover, additional research exists to explain how children develop such threat biases. The following section will discuss further research, consistent with the developmental psychopathology model of anxiety that examines environmental factors that contribute, exacerbate or attenuate individual factors including cognitive processes in children.

**Environmental Risk Factors**

Individual factors such as biological and genetic influences, behavioural inhibition, anxiety sensitivity and cognitive factors are considered to increase children’s risk to anxiety symptoms and disorders. But these individual factors alone do not account for the entire variance observed in studies of anxiety. Consequently, additional research has examined environmental factors involving both early control and stressful experiences as well as parental influences, which may interact with the child’s individual characteristics in the development and maintenance of anxiety problems.

Although a detailed review of various theories (e.g. family systems, social learning, conditioning theory) is beyond the scope of this thesis, this chapter will focus on the empirical research that provides evidence of the environmental influences that increase the risk of child anxiety disorders. This section will examine both environmental events involving early control and stressful experiences that may predispose and precipitate anxiety in some children and parental behaviours that may model and reinforce anxiety. The developmental pathways through which the interactions between a child’s individual characteristics, parental attributes and
Early Control and Stressful Experiences

In combination with biological and genetic factors, the development of anxiety is believed to be influenced by early childhood experiences (Barlow, 1988). In early childhood, limitations on children’s ability to master experiences that involve opportunities to control significant aspects of the environment are considered to increase the risk of anxiety (Chorpita & Barlow, 1998). Accordingly, two such early experiences considered to increase the risk of developing anxiety disorders are uncontrollability and stressful events.

In the majority of empirical research conducted in the past the term ‘control’ has been defined as the degree of familiarity, predicability, or influence that a child has over the events or outcomes in their life (Zvolensky, Lejuez & Eifert, 2000). Several studies provide support for the proposition that perceived uncontrollability is a precipitating factor in the experience of anxiety (Barlow, 1998, 1991; Beck & Emery, 1985; Chorpita, 2001; Sanderson, Rapee & Barlow, 1989). Therefore, anxiety symptoms tend to increase in situations where individuals feel a lack of control over, a familiarity with, or a predicability of the situation. In addition, an experience of prolonged exposure to unpredictable or uncontrollable negative events may predispose an individual to chronic anxiety or maintain anxiety symptoms (Chorpita & Barlow, 1998).

Expanding on these findings, there is further research to support the proposition that repeated early experiences of diminished control may increase feelings of helplessness and anxious responses (Albano et al., 1996; Schneewind,
1995). However, the majority of empirical support for the role of early control experiences in the development of anxiety has been based on animal research. For example, experimental research conducted by Mineka, Gunnar and Champoux, (1986) with rhesus monkeys has shown that the degree of control over the acquisition of food, water and treats was related to anxiety responses at a later time. Moreover, the research found that early experience with control over exposure to appetitive events such as food and toys buffers against the subsequent development of fears in novel or challenging situations (e.g. Mineka et al., 1986; Mineka and Zinbard, 1995).

Developmental research based on observations of mother-infant interactions provides further support for the role of early experiences in the development of anxiety (Sroufe, 1990). In this research, Sroufe (1990) observed that mothers who allowed their infant a degree of control over their care, and therefore responded appropriately to subtle infant cues, typically prevented fretful and disorganised affect in their infant. The relationship between children’s locus of control and their level of anxiety has been demonstrated further in clinical and community studies (e.g. Chorpita & Barlow, 1998; Rapee, Craske, Brown & Barlow, 1996). Barlow (1988) concluded that both early experiences of uncontrollability contribute to the development of an anxious temperament, and parenting behaviours, which may contribute to anxiety symptoms in the child. These environmental events may make up the within-family unshared environmental variance that is noted in inheritability studies of anxiety (Barlow, 1988).

In addition to early control experiences, there is evidence to suggest that children who experience uncontrollable traumatic and/or stressful events such as earthquakes, lightening strikes and bushfires are at greater risk of anxiety problems
(Dollinger, O’Donnell & Staley, 1984). Although traumatic experiences such as earthquakes and bushfires are relatively uncommon, 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 children’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 recent twin study conducted by Eley and Stevenson (2000) which examined specific life events in children with symptoms of anxiety and depression. The study involved a sample of 61 child twin pairs in which at least one twin had very high self-reported anxiety or depression. Twins with anxiety or depression were compared to 29 non-anxious, non-depressed twin pairs on the number of events experienced in the previous 12-months.

Eley and Stevenson (2000) found that, compared to non-anxious children, anxious children reported more recent life events characterised by threat, such as experiencing the risk of losing a loved one (e.g. terminally ill parent), witnessing something traumatic, being in physical jeopardy or facing a psychological challenge (e.g. having to sit an important exam). In comparison, children with high levels of depression reported more recent life events marked by loss, such as loss of an attachment figure or loss of a valued idea. The findings of this study indicate that those children who face threatening events may be at risk of anxiety problems; also that there may be associations between specific life events and whether a child develops an anxiety disorder or a depressive disorder.

Further evidence for the role of stressful events in the development of anxiety is provided in several previous studies showing that anxious children report experiencing a greater number of stressful life events compared to non-anxious
children (e.g. Benjamin et al., 1990; Goodyer & Altham, 1991; Compas, Howell, Phares, Williams & Giunta, 1989; DuBois, Felner, Brand, Adan & Evans, 1992; Stranger, McConaughy & Achenbach, 1992). However, all of these studies are cross-sectional and correlational in nature and consequently the direction of the relationship between stressful life events and anxiety problems in children is yet to be established.

In summary, there appears to be an association between early control experiences and traumatic or stressful experiences that occur throughout childhood and adolescence and anxiety problems. Findings of recent research indicate that the type of stressful event experienced (either threat or loss) may influence whether a child develops anxiety symptoms or depressive symptoms. However, not all children who experience stressful life events proceed to develop anxiety problems, a finding that supports the premise that additional variables must moderate the relationship between anxiety problems and stressful life events (Donovan & Spence, 2000), and/or that anxiety disorders result from complex interactions between multiple risk factors (Vasey & Dadds, 2001).

The research reviewed earlier in the chapter suggests the possibility of a biological/genetic transmission of anxiety pathology. Yet although genetics appear to explain a modest proportion of the variance, studies to date do not explain how anxiety is actually transmitted. Consequently, substantial research has been conducted examining the learning mechanisms through which children become anxious and the methods by which their parents contribute to the development of their anxiety disorders.
Contemporary behavioural conceptions of anxiety propose that conditioning and social learning processing contribute to the development and maintenance of anxiety disorders (Dadds, Barrett & Cobham, 1997). Research with adults has shown that specific fears are acquired through classical conditioning (e.g. being attacked by a dog), vicarious observation (e.g. observing a friend show intense distress through public speaking), or informational transmission (e.g. being warned about potential dangers). As discussed in chapter one, avoidance behaviour maintains the fear by preventing any natural extinction of the fear response to occur, avoidance behaviour is considered to be negatively reinforced by the reduction in anxiety it produces. Operant factors, such as reinforcement from parents or peers, and the avoidance of difficult experiences may also assist in maintaining the anxiety (Dadds et al., 1997).

In the past, however, much of the empirical research examining the mechanisms through which children acquire their fears has been retrospective in nature, based on adults with specific phobias (Öst, 1987; Öst & Hugdahl, 1981) or broader fears such as panic disorder, hypochondriasis and anxiety sensitivity (Ehlers, 1993; Watt et al., 1998). Studies investigating such learning mechanisms in children and adolescents are slowly beginning to emerge. From the research reviewed previously, it is apparent that there is a familial transmission of anxiety disorders; thus it can be expected that parental attributes play a role in the development of child anxiety disorders (Rapee, 1997; Turner, Beidel, Roberson-Nay & Tervo, 2003). Few studies have directly assessed the mechanisms through which children acquire their fears or anxiety from their parents. However, Ollendick and
King (1991) reported that the majority of children attributed the onset of their fears to informational transfer (89%) and parental modelling (56%).

The direct assessment of the acquisition of fear through parental modelling has been examined in only a small number of studies with children (Gerull & Rapee, 2002; Muris, Steernemann, Mercklebach & Meesters, 1996; Turner et al., 2003). Gerull and Rapee (2002) conducted an observational study with a sample of 30 toddlers. Toddlers were shown a rubber snake and spider, these objects were paired with their mother’s facial expressions. Their mother’s facial expression alternated between either negative (frowning) or positive (smiling). Both the rubber snake and spider were presented again after a 1-minute and a 10-minute delay period, during this time delay mothers maintained a neutral expression. Findings showed that, regardless of gender, toddlers showed greater fear expressions and avoidance of stimuli following negative reactions from their mothers. Of significance for theories of fear acquisition was the finding that the fear and avoidance demonstrated by the children in response to the negatively paired stimulus persisted for up to 10 minutes. Therefore, it seems that toddlers as young as 15 months can learn threat associations to novel, fear-relevant stimuli based on a relatively brief affective reaction from their mother.

The transmission of fear through parental modelling of anxious behaviour was examined in a study conducted by Muris et al. (1996). The children in the study were assessed on the Fear Survey Schedule for Children, and an ‘overt expression of fear’ measure was obtained by mothers’ self-report of the extent to which they openly expressed their fears in front of their children on a 3-point rating scale. Results of the study showed that mother and child fears were related; children of mothers who often expressed their fears exhibited the highest fear levels, while
children of mothers who reported never expressing their fears showed the lowest fear. This is an important finding because the data suggests that the fear in the child was directly related to their mother’s behaviour.

Recently, Turner et al. (2003) aimed to expand on the findings of the Muris et al. (1996) study and previous research by examining parental transmission of anxiety in a child interaction task. In their study, Turner et al used multiple assessment methods including an observational procedure to measure parent-child interaction during a normal play task. The study utilised a sample of 43 parents with an anxiety disorder and their 58 children, and 38 non-anxious parents and their 52 children. Parents were assessed on a DSM-III-R diagnostic interview, a parent behaviour interview designed specifically for the study to assess overprotective parenting, and the Family Environment Scale (FES; Moos & Moos, 1986). Children were aged 7 to 12 years and assessed using the K-SADS and the child version of FES (Pino, Simons & Slawinowski, 1984). Parents and their children participated in a behavioural interaction task involving a typical (as opposed to anxiety-provoking) play situation. Parent-child interactions were coded for positive/negative verbalisation’s and approach/avoidance behaviours.

Results of this study showed that 40% of children with an anxious parent met criteria for a DSM-III-R disorder compared to 15% of children with a non-anxious parent. No significant differences were found between anxious and non-anxious children’s behaviours or between anxious parents and non-anxious parents on the number of anxious expressions exhibited during the play task. However, anxious parents reported significantly greater levels of distress when separated from their child and when their child engaged in physical activities during the play task, compared to non-anxious parents.
Finally, anxious parents reported significantly less cohesion, expressiveness and greater conflict and achievement orientation on the FES, compared to non-anxious parents. Children of anxious parents also reported significantly less cohesion at home, compared to the children of non-anxious parents. Although these findings confirm previous research showing that psychopathology tends to cluster in families (Last et al., 1996), the results of this study failed to support a familial transmission for fear through direct modelling of anxious behaviours during a normal play task. This outcome suggests that parent’s anxious verbal interactions and behavioural responses may not be consistent across settings, and they may only respond in a negative way when the situations are anxiety-provoking or contentious.

Despite these preliminary findings of studies examining the direct transmission of anxiety through parent modelling, further research is needed to replicate and expand on these results, and longitudinal studies are required to determine the effect of parental modelling in the development of anxiety disorders throughout the child and adolescent trajectory. However, further support for the role of social learning in child anxiety is provided in several observation studies that have examined the interactions of anxious children with their parents (Barrett, Dadds & Rapee, 1996; Dadds, Barrett, Rapee & Ryan, 1996; Logsdon-Conradsen; 1998; Shortt et al., 2001a).

*Parent-child Interaction*

In the study described previously, Barrett et al. (1996) examined the influence of family environment on anxious children’s thinking and behaviours utilising an information processing questionnaire and family discussions paradigm. Anxious children and their parents completed a questionnaire detailing 12
hypothetical ambiguous potentially threatening situations: following this a family discussion was conducted during which members talked about their answers and were instructed to arrive at a mutual solution. Children were asked to respond to the situations twice, before and after the family discussion. After the five-minute family discussion, the child was asked to give their preferred response in the presence of their parents. Barrett et al. found that a significant number of anxious children changed from non-threat interpretation to threat interpretation and from prosocial responses at pre-discussion to avoidant responses after talking with their parents. Barrett et al. labelled this the FEAR effect-Family Enhancement of Avoidant and Aggressive Responses. The findings of this study further indicate that parental modelling and information transfer play an important role in the maintenance of anxiety disorders.

However, Logsdon-Conradsen (1998) investigated cognitive biases and familial influence in a sample of 23 socially phobic adolescents aged 13 to 17 years using the family discussions methodology (Barrett et al., 1996). Results were inconsistent with the findings of the Barrett et al. study, as the majority of participants did not change their plans from pre-to post-intervention family discussion. Moreover, findings of a study by Cobham et al. (1999) suggest parent interaction may assist in increasing prosocial and approach behaviour in anxious children. The study examined children’s cognitive processes utilising the family discussion methodology, but using a real experimental task as opposed to hypothetical situations. The experimental task required children to conduct a 3-minute speech about themselves, which was videotaped and then viewed by the researcher and their parents. A second optional component was that the child could then volunteer for a second speech about something that scared them very much.
Results showed that the speech task generated only low-moderate levels of anxiety. Consequently anxious children and control children reported comparable levels of anxiety and avoidance. Furthermore, the parents of anxious children were able to facilitate their child’s performance of the optional speech. Family discussion enhanced children’s approach behaviour, effects opposite to Barrett et al.’s (1996) FEAR effect finding.

In order to examine these contradictory findings, Shortt et al. (2001a) examined whether parental levels of anxiety, and experimental variables such as the nature of the experimental task, influenced anxious children threat interpretation and response plans to ambiguous situations. Anxious children \( (n = 101) \) aged 6 to 14 years and their parents were asked to interpret seven ambiguous situations and to discuss what their child would do if that scenario actually occurred. Findings indicated that anxious children were more likely to interpret ambiguous situations as threatening than non-anxious children. Anxious children were also found to be more likely to respond to ambiguous situations with avoidance, and 22% of anxious children showed increased avoidance after discussing a threat situation with their parents. Anxious families who completed the discussion task as part of the assessment process were more likely to show this FEAR effect than families who completed the task after they had been offered treatment. Overall, findings of this study suggest that parent enhancement of threat interpretation and avoidant behaviours is influenced by the treatment context and maternal anxiety, which correlated with the child’s increased avoidance following family discussion.

In addition to parental modelling, a study conducted by Dadds et al. (1996) suggests that parental responses may contribute to anxiety in children and adolescents. Dadds et al. conducted an observation study of parents’ responses to
their anxious children during the ambiguous situation tasks described in the Barrett et al. (1996) study. Results showed that parents of anxious children attended less to their child’s non-anxious approach behaviour than to their anxious avoidant behaviours. In this study Dadd’s et al concluded that parents of anxious children might accidentally reinforce anxious behaviour and pay less attention to desirable behaviours. From an operant conditioning perspective, such positive reinforcement for anxious behaviour would increase the likelihood of anxious children engaging in the same behaviour in the future.

In summary, considered together, the studies reviewed above suggest that there is some evidence that parents of anxious children may differ from other parents with regard to the processes through which they teach their children to interpret and respond to ambiguous hypothetical potentially anxiety-provoking situations. These findings differ from those reported by Turner et al. (2003) in their recent study of parent-child interaction in a normal play task situation. A possible explanation is that anxious expression in parents varies according to the degree of threat perceived to occur in the situation. Nevertheless, the dynamics of parent-child interaction may assist in maintaining, intensifying, or reinforcing child anxiety symptoms. Parental attributes such as verbal or physical response, and/or modelling of fear and avoidant behaviours may further predispose, precipitate, maintain and intensify anxiety in their children. Taken together, parental modelling and information transfer have the potential to be a risk factor in anxiety disorders or a potential protective factor through enhancing prosocial behaviour. Protective factors will be discussed later in this chapter. In addition to parental modelling, a further family factor often considered to be related to child anxiety is parental overprotection or control (Hudson & Rapee, 2001; Rapee 1997).
Parental Overcontrol

Observation studies with anxious children and retrospective self-report studies with anxious adults provide evidence that parents of anxious children are perceived as less autonomous and more controlling than parents of non-anxious children (Rapee 1997). In an observation study, Siqueland, Kendall and Steinberg (1996) compared psychological autonomy and warmth/acceptance of parents of anxious children and parents of non-anxious children. Each family participated in an observation task during which they discussed anxiety-provoking topics.

‘Psychological autonomy granting’ was defined as ‘the degree to which the parent constrains or encourages the child’s individuality through the use of inductive disciplinary techniques (1996, pp. 229)’. Warmth was defined as ‘the affective or emotional qualities of the parent child relationship (1996, pp. 230), extending from cold, distant, and lacking expression of warmth to frequent and consistent expressions of warmth.

Findings of this study showed that parents of anxious children were less granting of psychological autonomy than parents of non-anxious children. In addition, anxious children reported that their parents were less accepting than parents of non-anxious children. Siqueland et al. (1996) concluded that a combination of the child’s perceived lack of acceptance or tolerance of his/her own opinions and feelings, and discrepancies between the child’s and parents’ own opinions and feelings might contribute to the development of anxiety problems.

Chorpita, Brown and Barlow (1998) examined the relationship between anxious children’s perceptions of parental control, family environment and negative effect in a cross-sectional study. The study involved a clinical sample of 62 children with an anxiety disorder and 31 normal children. Chorpita et al. (1998) found that
family environment characterised by limited opportunity for personal control was correlated with anxiety and negative affects. Also, children’s perceived control mediated the relationship between negative effect and family environment. This finding further suggests that children’s perceptions play an important role in the development of anxiety problems.

In a recent study, Hudson and Rapee (2001) examined maternal over-involvement during parent-child interactions in a clinical study of anxious \( (n = 43) \), oppositional defiant \( (n = 20) \), and non-clinical children \( (n = 32) \) aged between 7 and 15 years. Children were assessed using the RCMAS (Reynolds & Richmond, 1978) and the parent and child versions of the ADIS (Silverman & Albano, 1996). Parent and child interaction was assessed using a 5-minute observation task involving a problem solving activity. Children were divided into two age groups: 7 to 9 years and 10 to 11 years.

The results of this study showed that after controlling for sex and age, the child’s anxiety and internalising symptoms significantly correlated with the level of maternal involvement and negativity during the observational interactive task.\(^1\) Interestingly, no correlation was found between maternal self-reports of anxiety and depression and level of maternal involvement or negativity. Hudson and Rapee (2001) concluded that maternal over-involvement probably was more likely to be a reaction to the child anxiety, as opposed to a casual factor in the aetiology of child anxiety disorders.

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\(^1\) These latter results differ from the findings of previous child studies, which have failed to demonstrate a relationship between maternal criticism and anxiety (Grüner, Muris, Merckelbach, 1999; Hirshfeld, Biederman, Brody, Faraone, & Rosenbaum, 1997; Stubbe, Zahner, Goldstein, & Leckman, 1993).
The relationship between maternal over-involvement or control and anxiety in children has been further examined in parents of anxious children (Boer, 1998 cited in Boer & Lindhout, 2001). In a preliminary study investigating children of anxiety-disordered parents, anxious parents themselves reported a more controlling, and a somewhat less affectionate rearing style (Boer, 1998 cited in Boer & Lindhout, 2001). Boer (1998 cited in Boer & Lindhout, 2001) found that parents with an anxiety disordered child reported being more controlling and less affectionate, compared to parents whose child had not (yet) developed an anxiety disorder. These findings can be interpreted in two ways. First, it is possible that only anxious parents with a more controlling, less affectionate parental style produce anxious children. Second, and consistent with Hudson and Rapee’s (2001) conclusion, the results of this study suggest that when an anxious parent has an anxious child, the parent may develop a more controlling, less affectionate parental rearing style. Accordingly, this finding outlines the interaction between the child’s individual characteristics and their parent’s responses.

Following up on the findings of the above study, Boer (1998 cited in Boer & Lindhout, 2001) examined whether parents’ reported interaction style differed between anxious children and their non-anxious siblings. The findings showed that anxious children reported more maternal control compared to their non-anxious siblings. Findings of this study also suggest a reciprocal transaction between anxious children and their parent’s response to their anxiety symptoms. However, the small sample size was a notable limitation of Boer’s study; therefore, further investigation is needed before firm conclusions can be drawn.

In a recent study examining parental style in siblings, Fox, Barrett and Shortt (2002) provide further evidence of an interaction between parental control and
anxious children’s behaviour. Fox et al. (2002) compared the parent-child interactions of anxious children to those of their non-symptomatic siblings and to non-anxious children. The study involved 33 anxious children, their siblings and parents, and 14 non-anxious children and their parents. Child and parent were observed participating in an ambiguous situation discussion previously described in the Barrett et al. (1996) study. Parent-child interactions were coded for variables of control, warmth, reward of coping behaviour and task involvement.

Consistent with previous findings of the Hudson and Rapee (2001) study, parents of the anxious children showed more control, less warmth as well as less reward of coping behaviour toward their anxious child compared to parents of non-anxious children. However, with the exception of fathers’ exhibiting more control toward their anxious child, this study found that parent-child interactions with an anxious child were similar to those with the non-anxious sibling. Although, parent-sibling interactions were found to be similar to those of the non-anxious child parent interactions, with only mother’s showing more control toward their non-anxious sibling, compared to the mother’s of the non-anxious children.

In summary, the studies reviewed here suggest that there appears to be a relationship between parental attributes and anxiety disorders in children and adolescents. Preliminary evidence also suggests that this relationship may be reciprocal, whereby the anxious child influences the parenting style exhibited. Research has also implicated the role of parental modelling, prompting and reinforcement of anxious behaviour, as well as highlighting the role of parent’s communication of their own threat interpretations and responses to their anxious child. However, much of the research examining parent-child interaction to date has involved mothers; hence, clearly future research needs to establish the contribution
of paternal psychopathology and parenting behaviour in the development of children’s anxiety problems. However, these findings provide evidence that family interaction among its members is largely influenced by the dynamics between the individual characteristics of each parent and each of their children. The pathways through which the interaction between a child’s individual characteristics and parental attributes may lead to the development of anxiety problems will now be discussed.

Summary of Risk Factors

Understanding the role of risk and protective factors in the development of child anxiety disorders has vital implications for the design of effective prevention and intervention protocols. The research reviewed above has demonstrated that a number of individual characteristics often present at birth may increase the risk of children developing an anxiety disorder. The important individual characteristics of the child that act as risk factors in very early development involve biological/genetic factors, behavioural inhibition and anxiety sensitivity. Genetic research points to a shared genetic vulnerability, suggesting that children may be predisposed to both anxiety and depression, and that a combination of additional risk factors may determine in part whether a child develops an anxiety or depressive disorder. A abundant amount of research demonstrates that heightened anxiety sensitivity, in terms of fear of anxiety–related sensations combined with cognitive distortions and worry about the consequences of these symptoms, increases the risk of panic disorder, anxiety disorders and depression throughout development. From early childhood onwards, paralleling the age-related changes in cognition, information-processing involving cognitive biases and distortions, in addition to selective
attention to threat, are likely to predispose, precipitate, maintain, and intensify anxiety symptoms.

Substantial evidence suggests a familial transmission of anxiety, although the mechanisms through which this occurs has been difficult to prove. Individual factors have been shown to account for approximately 30 to 40% of the variance found in anxiety research; consequently a number of studies have examined the role of a range of environmental factors that may further contribute to the development of anxiety problems. Empirical support has been shown for early control and traumatic and/or stressful experiences, children’s learning mechanisms, and social-learning experiences involving parent-child interaction as environmental influences that increase the risk of child anxiety.

To conclude this section on risk factors, the aetiology of anxiety disorders in children includes biological, cognitive and behavioural components. Dysfunctional anxiety can be considered a self-perpetuating cycle of elevated biological response to stress, negative cognitive processing, and avoidance of stressful circumstances. Anxiety symptoms are further reinforced by environmental factors including parental responses, which interfere with children’s attempts at solving their own problems, and instead emphasise threat in situations, and encourage children’s avoidance behaviour. The exposure to traumatic or stressful situations also increases the risk of children developing anxious responses. It is important to point out, however, that there are many individuals who experience particular risk factors who do not proceed to develop an anxiety disorder. Recently, this has led to research efforts being directed toward the role of protective factors, which produce a resilience effect, thus reducing the developmental risks of anxiety (Coie et al., 1993; Mrazek & Haggerty, 1994). These protective factors will now be discussed.
Protective Factors

The developmental psychopathology of anxiety outlines the important role of protective factors in the pathways of healthy and normal development (Cicchetti, 2002; Vasey & Dadds, 2001). The impact of specific risk factors can be mediated and moderated by protective factors which are considered to operate by building resilience to the development of a psychological disorder (Coie et al., 1993). Unfortunately, in comparison to risk factors, relatively little research has been conducted examining protective factors in the development of anxiety in children and adolescents (Donovan & Spence, 2000). However, protective factors are similar in nature to risk factors in that they can be grouped broadly into individual and environmental factors. Individual characteristics involve developmentally appropriate coping skills, which play a role in providing a buffer against factors that increase the risk of anxiety and stress. Environmental factors such as social support, involving family and peer support, also provide protection against factors that increase the risk of anxiety (Spence, 2001). The influence of coping abilities and social support, as well as peer interaction in building children’s resilience to the development of anxiety disorders, will now be discussed.

Coping Skills

For many children the developmental challenges that parallel growing up can be stressful and naturally anxiety-provoking. Throughout the lifespan, from birth to childhood and through to adolescence and adulthood, individuals are confronted with many biological, cognitive, psychological, and social tasks inherent in development (Parker et al., 1994). Throughout development these psychosocial demands can be either acute or chronic, and can have a cumulative effect which
leads to stress and anxiety-related symptoms (Compas, 1988). Demands or stressful events commonly reported in childhood and adolescence typically centre around the family and school environment (Compas et al., 1988, 2001). Examples of stressful events and daily hassles include any environmental changes, family conflict, parental divorce, sibling and peer conflict, peer rejection, and schoolwork (Compas et al., 1988, 2001).

The way individuals cope with daily stressors as well as more aversive situations is of critical importance to mental health and physical wellbeing. Children and adolescents who experience psychological stress, and who do not cope with such stress, are considered to be at greater risk of current and future psychopathology (Compas et al., 1988, 2001). Spence (2001) also details that the type of responses children use to cope with unpleasant experiences greatly influences the degree of fear, anxiety and distress they experience. Coping skills are considered to be acquired over the course of development as children increase their competence in areas of affective, cognitive and social functioning (Cichetti and Rogosch, 2002).

However, despite the available theory, empirical studies examining specific coping strategies in children with anxiety disorders are particularly sparse: much of our current knowledge of coping is based on research with adults (Compas et al., 2001), on studies examining the relation between coping and internalising symptoms in childhood (Compas et al., 1988, 2001), and on treatment outcome studies of anxious children (eg., Barrett et al., 1998, Kendall, 1994; Silverman et al., 1999a, 1999b).

A review of the literature suggests that a number of models of coping have been used in adult research (Billings & Moos, 1981; Compas et al., 2001; Lazarus &
Lazarus & Folkman (1984) defined coping as ‘constantly changing efforts to manage specific external demands that are appraised as taxing or exceeding the resources of the person’ (Lazarus & Folkman 1984, pp.141). From this perspective, coping is considered as a deliberate effort to change the relationship with the external demands (problem-focused coping) or to regulate the negative emotions that result from the stressful demands of the situation (emotion-focused coping).

Billings and Moos (1981) proposed three general coping strategies: 1) active behavioural strategies, such as actions to deal directly with the problem, 2) active-cognitive strategies, such as attempts to appraise the stressful event and 3) avoidance strategies involving attempts to indirectly reduce tension by means of behaviour such as eating or drinking or attempts to avoid confronting the problem. Proactive coping, therefore, can be considered a goal-directed process in which conscious effort is made to direct psychological and physical energy towards managing the source of stress and one’s emotional responses to that stress.

Coping mechanisms are also considered to relate to the concepts of competence - skills, resources, and characteristics required for adaptation to be successful - and resilience - the capacity to put competence and coping into action in the face of adversity (Rothman, Weisz & Synder, 1982). Rothman et al. (1982) proposed that coping efforts are directed at maintaining, relinquishing, or altering control over primarily the environment and secondarily the self. More recently, Compas et al. (2001) defined coping as ‘conscious volitional efforts to regulate emotion, cognition, behaviour, physiology, and the environment in response to stressful events or circumstances’ (Compas et al., 2001, p.89).
Empirical Studies of Children’s Coping

Until recently most of the research on coping has focused on adult populations. Initial evidence that children use coping methods was shown in a study conducted by Band and Weisz (1988) using a community sample of 73 children aged 6 to 12 years. In their study, Band and Weisz (1988) interviewed children on their coping across various stressful situations such as being separated from a friend, receiving a needle from the doctor, receiving school grades, being hurt in an accident, getting in trouble from a parent or teacher, and experiencing conflict with peers at school. Findings of this study showed that 96% of children reported making efforts to cope, compared to 3% who did not. The approaches children used to cope were found to be dependent on the situation. For example, children were found to make a greater effort to cope with conflict with peers, receiving school grades and separation from a friend, compared to receiving an injection from the doctor.

Findings of this study also indicated that coping skills might change across age. Younger children aged 6 and 9 were found to try to cope using behaviour methods more often than children aged 12. On the contrary children aged 12 were more likely to use cognitive coping methods. As one of the first studies examining children’s coping abilities, this study is important for providing some evidence that children’s coping skills may change during development, the shift in cognitive coping possibly an indication of the development changes in cognitive-social thinking in early adolescence.

Unfortunately, past research investigating children’s coping has been limited by the lack of standardised assessment measures, with studies relying on unstructured interview procedures (Band & Weisz, 1988; Compas et al., 1988; Ebata & Moos, 1991). In response to this limitation, recent research advances in the area
have focused on the development of self-report measures of coping in children (see Compas et al., 2001 for a review). For example, Brodzinsky et al. (1992) designed a self-report measure specifically to assess children and adolescents coping in stressful situations. The Coping Scale for Children and Youth (Brodzinsky et al., 1992) was developed using a community sample of 498 children aged 10 to 17 years. Children completed an initial questionnaire consisting of items pertaining to five general strategies of coping defined as cognitive/affective engagement, behavioural engagement, cognitive affective avoidance, behavioural avoidance and passive resignation. Principal component analysis resulted in a four-factor solution consisting of a total of 44 items. Confirmatory factor analysis confirmed four subscales pertaining to coping in children and adolescents, defined as assistance seeking, cognitive-behavioural problem solving, cognitive avoidance and behavioural avoidance. Further statistical analysis showed the CSCY to have good internal reliability, test-retest reliability, and construct and external validity.

In their research, Brodzinsky et al. (1992) also examined the types of stressful events commonly experienced by children. 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 or siblings. Findings of this study further showed that children used assistance seeking and cognitive behavioural problem solving more often in a response to peer problems than to school and family problems. Cognitive avoidance (e.g. trying not to think about the problem) was reportedly 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. The
findings of this study were consistent with the results reported by Band and Weisz (1998): children were more likely to attempt to cope with problems such as peer and school problems that they perceive to have some control over. In contrast, children were more likely to use strategies such as cognitive avoidance as ways of minimising the distress of events they perceive to have little or no control over, such as conflict with family members.

Additional studies conducted with adults suggest that emotion-focused coping and avoidance coping strategies are associated with higher levels of anxiety in response to stressful life events (Donovan & Spence, 2000). Preliminary findings with children suggest similar effects, in that these coping strategies are also associated with higher levels of anxiety in children and adolescents (Lopez & Little, 1996; Sandler, Tein & West, 1994). However, empirical research examining coping in anxious children is sparse, with the majority of studies examining internalising symptoms (Causey & Dubow, 1992; Compas, Milacron & Fondacoro, 1988; Connor-Smith, Compas, Wadsworth, Harding-Thomsen & Saltzman, 2001) rather than specific anxiety disorders.

Lopez and Little (1996) investigated the relation between coping and anxiety symptoms in a sample of 314 children aged 6 to 10 years. Children completed STAIC (Speilberger, 1973). 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.

Sandler et al. (1994) investigated coping strategies in a sample of 258 children aged 7 to 13 years who had experienced parental divorce. Children were assessed using the RCMAS (Richmond & Reynolds, 1978) and the CBCL (Achenbach & Edelbrock, 1983). Proactive coping including problem solving was
found to be positively correlated with better adjustment and fewer depressive 
symptoms, while avoidant coping correlated with greater anxiety and depressive 
symptoms.

Lengua and Sandler (1996) used the same methodology as Sandler et al. 
(1994) in a study of 202 children aged 8 to 12 years who had also experienced 
parental divorce. Lengua and Sandler reported similar findings; children who used 
active coping strategies were found to be better-adjusted and less anxious and 
depressed than children who used avoidant coping methods are.

There is further evidence of the relationship between coping and 
internalising symptoms in children and adolescents. Compas et al. (1988) 
investigated coping with stressful events in a community sample of 130 children 
aged 10 to 14 years. Participants responded to an open-ended interview inquiring 
about interpersonal and academic stressful events. Children and mothers also 
Results of this study showed that proactive problem-focused strategies were related 
to greater psychosocial adjustment and fewer internalising symptoms in both 
females and males. On the contrary, emotion-focused strategies were related to 
poorer psychosocial adjustment and greater internalising symptoms, particularly in 
females.

Results also showed that, in response to social stressors, emotion-focused 
strategies increased with age, while problem-focused strategies decreased with age. 
Compared to males, females were found to use more emotion-focused strategies in 
managing social and academic stressors, which also increased as they got older. All 
children reported they felt they had more control over the cause of academic events
than of social events, and also reported more problem-solving strategies for academic stressors compared to social stressors.

Causey and Dubow (1992) reported similar findings in a community study of children aged 7 to 10 years. Results showed that problem-focused strategies were related to greater psychosocial adjustment, greater competence and fewer internalising symptoms in both females and males. On the contrary, avoidant strategies were related to poorer psychosocial adjustment, lower competence and greater internalising symptoms.

Compas et al. (2001) provide further evidence that problem-solving strategies increase psychosocial adjustment and reduce internalising symptoms in a recent study of 450 adolescents aged 14 to 16 years. Consistent with previous research, approach strategies involving problem-solving coping were significantly correlated with better adjustment and lower internalising symptoms, while avoidance coping strategies were significantly correlated with poorer adjustment and higher internalising symptoms in adolescents.

Overall, the findings of the research reviewed above suggest that a strong relationship exists between active approach (problem solving), emotion-focused, and avoidant coping approaches and both anxiety and internalising symptoms in children and adolescents. Coping strategies that involve active approach behaviours such as problem solving appear to reduce the effects of stressful events and related internalising responses. In comparison, and consistent with the cognitive behaviour perspective of anxiety, avoidant coping strategies have shown to correlate with anxiety symptoms. In addition to the evident differences across age and gender in coping approaches, these findings are also consistent with research previously
discussed: perceived control, specifically to social stressors, plays an important role in the maintenance of anxiety symptoms (Chorpita et al., 1998)

Further knowledge of coping in anxious children has been provided by cognitive behavioural treatment (CBT) outcome studies that aim to teach children coping strategies to manage anxiety-provoking situations (Barrett. 1999; Kendall, 1998; Silverman et al., 1999a, 1999b). These controlled clinical trials involve a combination of cognitive and behavioural techniques such as positive self-talk and problem solving skills. Chapter three provides a comprehensive review of the research demonstrating effective treatment protocols for child anxiety disorders and discusses the specific coping strategies in greater detail. With regard to coping strategies, the effectiveness of CBT is typically assessed by changes in children’s diagnostic status and levels of self-reported anxiety prior to and following their participation in the program. While these controlled clinical trials suggest CBT is effective in enhancing anxious children’s coping skills, not one of the studies to date has directly measured specific coping skills (e.g. assistance seeking, cognitive-behavioural problem solving, cognitive avoidance and behavioural avoidance). In light of the reviewed research outlining the importance of coping abilities as a protective factor against stress and related anxiety, clearly this is a gap in the research that warrants further attention.

In summary, the research reviewed earlier in the chapter demonstrates that stressful life events are often a risk factor in the development of child anxiety disorders. Growing up is often a very challenging period characterised by many psychosocial demands. Common problems experienced by children relate to school demands including academic and behavioural difficulties, family difficulties including conflict between parents or siblings, and peer-related problems.
Consequently, children’s social competence involving their coping ability is proposed to be a protective factor that can buffer against the effects of stressful events such as school and peer problems (Donovan & Spence, 2000; Spence, 2001). Yet empirical studies that directly examine coping strategies in anxious children are particularly sparse. Despite the research suggesting that, like adults, children use various strategies to cope with stressful situations, further research on coping strategies in anxious children is clearly needed. At this stage it does appear that problem-focused (assistance seeking and cognitive behavioural problem solving) rather than emotion-focused or avoidance (cognitive and behavioural) strategies may be important protective factors for building resilience in children and adolescents at risk of developing anxiety disorders. In addition, an important protective factor considered influential in the development of coping responses is social support, which will now be discussed.

Social Support

Social support has been identified as a protective factor that serves as a buffer to a number of behavioural and emotional problems for vulnerable children (Beardslee & Podorefsky, 1988; Garmezy, 1985; Werner, 2000). Social support can be referred to as the social resources that an individual draws on to influence coping (Lazarus & Folkman, 1984). The social resources or individuals that children often seek assistance from can come from family members and individuals outside of the family. Peers, teachers, school counsellors, coaches, and mental health workers can provide social support. Social support can also be provided by any other available external support system such as youth groups, school and recreational activities, all of which build competence and provide children with role models and support.
(Jones & Offord, 1989; Werner, 2000; Werner & Smith, 1992). However, the two most accessible methods of social support commonly used by children are family and peers.

**Family Support**

Our knowledge about the causes of childhood anxiety disorders provides further support for the protective function that parents can provide. In early childhood, children’s family environment may directly influence the development of coping strategies. As discussed earlier, parents who encourage, prompt and reinforce their children for being brave and facing up to challenging situations are fostering self-esteem, desired coping behaviours and self-confidence.

Family support was found to be a significant moderator between stressful life events and self-reported anxiety in special education school children in a study conducted by Quamma and Greenberg (1994). Similarly, a study conducted by Pedro-Carroll, Alpert-Gillis and Cowen, (1992) with 102 children of parents who had divorced found that children with higher ratings of overall supports reported significantly less anxiety and worry. White, Bruce, Farrell and Kliewer (1998) provide further support for the family as a protective factor in their findings regarding children exposed to community violence. Results found a strong negative relationship between anxiety levels and social support. Taken together, these studies also highlight social competence as an important aspect of resilient children, as it serves to increase the likelihood of individuals building social support networks. A further important form of social support, often neglected in the research, comes from children’s interaction with their peers.
Peer Support

The support children receive through their interactions with their peers is considered to be both a potential protective factor against internalising problems (Spence, 2001), and paramount in children’s healthy development (Ladd, 1999; Parker, Rubin, Price & DeRosier, 1994). Throughout childhood and adolescence youngsters spend approximately six hours a day at school, and therefore increasingly more time with their friends and peers and less time with their families (La Greca, 2001; Parker et al., 1994). Children’s experiences in peer groups affects development and functioning in every aspect of their lives, including the family, the school and the community (Gifford-Smith & Brownell, 2003; Parker et al., 1994). From this perspective, children’s peer relationships can be considered to play an important role in their psychological functioning and social competence, and in the related development and maintenance of anxiety symptoms and disorders.

The nature of children’s peer relations is conceptualised to change throughout development (Gifford-Smith & Brownell, 2003; La Greca, 2001; Parker et al., 1994). A number of important changes occur in children’s social interactions during the primary school years (Gifford-Smith & Brownell, 2003; Parker et al., 1994). By middle childhood, more than 30% of children’s social interactions involve peers in a wide range of settings including the classroom and outside of the home and school (Rubin, Bukowski & Parker, 1998). During middle and late childhood, developmental changes in children’s social-cognition foster increasing empathy, cooperation and support in peer relationships (Parker et al., 1994). During this time friendships are based on affection, reciprocal enjoyment of each other, and friendly conversations (Parker et al., 1994). The nurturance and intimacy of friendships appear to progress steadily from childhood to adolescence. During adolescence, peer
influences become central in the transition to young adulthood and are important in enhancing socialisation through increasing social skill development, emotional security and comprehension of social rules (Parker et al., 1994). The most common social environment that facilitates the formulation of peer relations is without doubt the school classroom.

Several developmental theorists suggest one of the most important influences on children’s learning is interaction within their peer group (Parker et al., 1994; Ladd 1999). Peer interaction, involving the reciprocal exchange of social behaviours, is known to play an important role in the development of children’s social cognitive thinking and self-concept (Vygotsky, 1978) and of prosocial and delinquent functioning (Gifford-Smith & Brownell, 2003; Parker et al., 1994). However, much of the available research has focused on the peer interactions of bullies and aggressive children (Gifford-Smith & Brownell, 2003). This is mainly because these children present the greatest problem to teachers and schools; they are also known to be at greater risk of poor academic achievement, school drop-out, delinquency, substance abuse, and unemployment, and therefore also present as a greater societal problem (Risi, Gerhardstein & Kistner, 2003).

In addition to the interactions of bullies and aggressive children, the developmental literature outlines the characteristics of popular children as a framework for understanding appropriate social functioning (Gifford-Smith & Brownell, 2003). A review of the research in this area suggests that popular children are usually described by their peers as cooperative, helpful, considerate, and socially outgoing. Popular children are also observed to be friendlier and generate proactive problem-solving strategies (Gifford-Smith & Brownell, 2003; Nelson & Crick,
1999). Overall, it seems that popular children appear to exhibit the social competence required to cope with interpersonal demands and stress.

Research investigating the peer relationships of children with anxiety disorders is in its infancy. However, as discussed in chapter one, children with anxiety disorders often have difficulties with their peer relationships. There is evidence to suggest that anxious children are often disliked, neglected or rejected by their peers (Bell-Dolan, Foster, Smith-Christopher, 1995; La Greca, 2001; Ollendick, Weist, Borden & Green, 1992; Strauss, Frame & Forehand, 1987; Strauss et al., 1988), are often socially withdrawn (Rubin & Burgess, 2001), and are at risk of bullying (Dunn and McGuire, 1992). This problem is further exacerbated by the fact that anxious, socially withdrawn, neglected or rejected children are typically undetected by teachers because these children are typically academically motivated, function independently and behave appropriately in the classroom (Wentzel & Asher, 1995).

The available literature examining anxious children’s peer relations suggests that social anxiety plays an important role in interpersonal difficulties and psychosocial development (La Greca, 2001). Children with anxiety symptoms and disorders, specifically social anxiety, frequently avoid anxiety-provoking social situations, including peer interactions, because of fear of negative evaluation (La Greca, 2001). Developmental theorist Rubin (1982, Rubin & Asendorpf, 1993; Rubin & Burgess, 2001) defines such interpersonal avoidance as social withdrawal. According to Rubin, social withdrawal, which includes avoidance of peer interaction, is also common in depressed children and can result in peer rejection, related deficits in social skill acquisition and increased symptoms of anxiety and depression (Rubin & Asendorpf, 1993).
Empirical research investigating the relation between social anxiety and interpersonal relationships indicates that peer acceptance plays an important role in children’s healthy adjustment (La Greca, 2001). Several studies have shown strong correlations among social evaluative anxiety, social avoidance and peer rejection in children (La Greca et al., 1988; La Greca & Stone, 1993) and adolescents (Inderbitzen et al., 1997). These studies do not determine whether social anxiety causes peer rejection, or whether peer rejection causes social anxiety. Vernberg, Abwender, Ewell and Beery (1992) provided further evidence of the relation between social anxiety and peer relations in a two-year longitudinal study. In their study, Vernberg et al. (1992) assessed social anxiety, friendships and rejection experiences in a sample of 68 adolescents aged 12 to 14 years. Results showed that social anxiety influenced the quality of adolescents’ friendships, but was not directly related to rejection by peers. However, exclusion by peers contributed to significant increases in social anxiety (avoidance and distress) over time, which was also found to influence the quality of children’s friendships. The findings of the research reviewed above indicate that peer rejection, specifically peer exclusion, plays a casual role in social evaluative anxiety and social avoidance. From a developmental psychopathology perspective, it is likely that a complex interaction between an individual’s characteristics, their cognitive processes (social evaluative fears) and their avoidance behaviours, in combination with the individual characteristics of their peers, influences experiences of peer exclusion or rejection.

Given that peer interaction is vital for the development of social competence, peer relationships and friendships, and self-esteem (Rubin and Burgness, 2001), fostering peer acceptance and positive interpersonal interactions in anxious children seems a vital necessity in terms of promoting resilience. In response to this problem
researchers have begun to acknowledge the potential benefits of peer-mediated intervention for social anxiety, avoidance and withdrawal (Beidel, Turner & Morris, 2000; Morris, Messer & Gross, 1995). Peer-mediated interventions aim to increase peer acceptance by involving peers with prosocial skills in interactions with socially withdrawn and less socially competent children. Further, peer-mediated interventions aimed at enhancing positive social interaction have potential preventive advantages by reducing vulnerability through increasing social support (Morris et al., 1995).

Morris et al. (1995) provided evidence of the potential advantages of enhancing social interaction in peer-neglected children in a study of 229 children in first and second grade. Children were identified as either peer-neglected, popular or average by socialmetric nominations made by their classroom peers and by their social interaction during play, which was observed in the playground during recess. Children were randomly allocated to either an intervention or a control group. A peer-pairing intervention was then conducted in the classroom, where neglected children were individually paired with a popular child. The intervention consisted of twelve, 15-minute play sessions over a 4-week period. Each intervention session consisted of a series of tasks involving joint interaction (e.g. board games). Peer nominations and playground observations were conducted at post-intervention and 1-month follow-up.

Morris et al. (1995) found that at post-intervention and 1-month following the peer-pairing intervention a significantly greater number (75%) of peer-neglected children in the intervention group had improved in sociometric status, compared to peer-neglected children in the control group (17%). Analysis of changes in social interaction also showed that children in the intervention group demonstrated
significant improvements in their positive interactions in the playground compared to children in the control group. Also, the positive interactions of peer-neglected children improved by 13% to 45% following the peer-pairing task. Morris et al. concluded that the improvements found in their study were associated not only with the peer-pairing task, but also with the process mechanisms that involved reductions in children’s anxiety during the social interaction and the related improvements in social skills and self-efficacy.

Beidel et al. (2000) provide further evidence of the potential benefits of involving peers in the treatment of social anxiety in children. In their study, Beidel et al. aimed to increase children’s social skills and to decrease anxiety symptoms in a clinical sample of 67 children aged 8 to 12 years with social phobia. A comprehensive multi-method assessment was used in the study. Children were interviewed using ADIS-C/P (Silverman & Nelles, 1988), and also completed several standardised measures of anxiety and depression. The behavioural observation task involved a social interaction activity in which children’s social skills were assessed. Children also kept a daily diary of their participation in social situations. Parents completed the internalising scale of the CBCL (Achenbach & Edelbrock, 1983). Following the assessment, participants were randomly allocated to a Social Effectiveness Therapy for Children (SET-C) group ($n = 36$) or a control group ($n = 31$).

The SET-C intervention comprised several components: ‘child and parent education, social skills training, peer generalisation experiences and in vivo exposure’ (Beidel et al., 2000, pp.1075). Sessions were conducted twice weekly over a 12-week time interval. The peer generalisation of experiences session was 90 minutes in duration and followed the social skills component. Socially anxious
participants engaged in a variety of social situations (e.g. in-line skating, flying kites, having a pizza, or bowling) with non-anxious peers recruited to participate in the social interactions on the basis of their social skills and their motivation to help shy individuals.

Beidel et al. (2000) demonstrated that SET-C was effective in increasing social skills and reducing anxiety in children with social phobia. At post-intervention assessment, 67% of children no longer met criteria for social phobia, compared to 5% in the control group. These effects were maintained at 6-month follow-up, with 85% of the SET-C group diagnosis-free. Statistical analysis of the behavioural observation data revealed that children increased their social skills and evidenced reductions in anxiety immediately after participation in the 12-week SET-C intervention. Overall, the findings of the two studies discussed above provided important implications for future interventions aimed at enhancing anxious children’s resilience by increasing both peer acceptance and related social competence and skills.

In summary, an important protective factor in the development of child anxiety is the social support children receive from family members and individuals outside of the family. The most accessible resources are family members and peers, both of who can build competence and provide children with positive role models and support. Throughout development children and adolescents spend a substantial amount of time at school, in the classroom, and with their peers. Consequently, peer relationships become an important pathway through which children acquire social competence, social skills, friendships and related support. Acceptance and inclusion by peers is known to be vital in foreseeing healthy psychological and social development. Unfortunately, anxious children are often disliked, neglected or
rejected by their peers. It seems that for many children peer interaction can present as a stressful and anxiety-provoking experience that contributes to social-evaluative fears and to subsequent social avoidance and withdrawal. Limited peer acceptance and reduced positive interpersonal interactions may further prevent the development of social skills, and appropriate friendships as well as the support required to cope effectively with the demands of growing up.

One promising method shown to be successful in addressing the above problem is the involvement of peers in prosocial interventions aimed at enhancing peer acceptance and social competence, as well as reducing social anxiety. Yet despite these important findings, research investigating peer relations in anxious children is in its early stages. Further studies are required to ascertain and confirm the mechanisms through which peers can best support anxious children.

Chapter Summary

The research reviewed in this chapter suggests that the development of anxiety disorders during childhood and adolescence involves complex interactions between multiple individual and environmental factors. Table 2.1 summarises some of the key risk and protective factors thought to be involved in the development and maintenance of anxiety disorders during childhood. The individual predisposing risk factors include genetic factors, anxiety sensitivity and a child temperament style of behavioural inhibition. Cognitive and information processing serve as predisposing, precipitating factors that maintain and possibly intensify anxiety symptoms. Environment risk factors involve predisposing events such as traumatic, negative, stressful life events, parental anxiety, and parenting style characteristics and behaviours.
When considered together, the studies reviewed in this chapter support the developmental psychopathology premise that child anxiety disorders can be understood to result from multiple causal influences, as opposed to single factors operating in isolation. Many risk factors and protective factors, which operate together through dynamic transactional pathways throughout child and adolescent development (Cicchetti, 2002), more than likely contribute to the onset, maintenance or remittance of child anxiety disorders. Vasey & 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 an anxiety disorder.

Although empirical studies are yet to prove how these specific and various developmental pathways to anxiety occur, the following two hypothetical scenarios provide examples of how an accumulation of risk factors may influence the development of anxiety. With regard to parent-child interaction, Calkins (1994) proposed that extreme behavioural inhibition in some children continues because such behaviour will elicit accommodating responses from the child’s caregivers. Parents motivated to protect their child from threat may respond through conditioning or vicarious processes to accidentally signal threat, thus negatively reinforcing the child’s inhibited and avoidance behaviour.
Table 2.1

*Risk and Protective Factors and Change Methods across Childhood Development*

<table>
<thead>
<tr>
<th>Age of Influence</th>
<th>Risk Factors</th>
<th>Protective Factors</th>
<th>Preventive Approaches</th>
</tr>
</thead>
<tbody>
<tr>
<td>Across the lifespan</td>
<td>Traumatic life events</td>
<td></td>
<td>Coping skills training</td>
</tr>
<tr>
<td></td>
<td>Negative &amp; stressful life events</td>
<td></td>
<td>Trauma counselling</td>
</tr>
<tr>
<td>Prenatal period</td>
<td>Genetic history of anxiety disorder</td>
<td>Parental anxiety + poor parenting skills &amp; parental behaviour.</td>
<td>Parenting skills training</td>
</tr>
<tr>
<td></td>
<td>Parental psychopathology</td>
<td></td>
<td>Treatment of parental anxiety</td>
</tr>
<tr>
<td>Infancy</td>
<td>Temperament of behavioural inhibition</td>
<td>Positive parent/child relations</td>
<td>Adolescence anxiety &amp; other psychopathology</td>
</tr>
<tr>
<td></td>
<td>Parental anxiety + poor parenting skills &amp; parental behaviour.</td>
<td>Reduction of parents own anxious behaviour</td>
<td>Treatment of parental anxiety</td>
</tr>
<tr>
<td></td>
<td>Modelling of fearful responses &amp; cognitive styles</td>
<td>Modelling of nonfear/ coping skills</td>
<td>Enhancing family, child &amp; environmental social support</td>
</tr>
<tr>
<td></td>
<td>Operant conditioning of fear behaviours</td>
<td>Reinforcement &amp; encouragement for brave behaviour</td>
<td></td>
</tr>
</tbody>
</table>
Table 2.1 (*continued*)

*Risk and Protective Factors and Change Methods across Childhood Development*

<table>
<thead>
<tr>
<th>Age of Influence</th>
<th>Risk Factors</th>
<th>Protective Factors</th>
<th>Preventive Approaches</th>
</tr>
</thead>
<tbody>
<tr>
<td>Childhood</td>
<td>Overprotective/overcontrolling child-rearing style</td>
<td>Instructions &amp; education re: feared event &amp; coping skills</td>
<td><strong>Childhood to Adolescence</strong></td>
</tr>
<tr>
<td></td>
<td>Temperament of behavioural inhibition</td>
<td>Pre-exposure (Latent inhibition)</td>
<td>Relaxation training</td>
</tr>
<tr>
<td></td>
<td>Starting school</td>
<td>Social support</td>
<td>Cognitive training</td>
</tr>
<tr>
<td></td>
<td>Parental anxiety</td>
<td>Family cohesion</td>
<td>Restructuring &amp; skill training</td>
</tr>
<tr>
<td></td>
<td>Early symptoms of anxiety</td>
<td>Extended family/ social support</td>
<td>Social skills training</td>
</tr>
<tr>
<td>Adolescence</td>
<td>Transition to high school</td>
<td>Problem solving skills</td>
<td>Building Social</td>
</tr>
<tr>
<td></td>
<td>Parental Anxiety</td>
<td>Cognitive style</td>
<td>Coping skill training</td>
</tr>
<tr>
<td></td>
<td>Symptoms of anxiety</td>
<td>Social skills</td>
<td>Exposure to feared situations</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Positive peer relationships/support Coping skills repertoire</td>
<td>Academic competence</td>
</tr>
</tbody>
</table>

Modified from Spence (2001)
Building on Calkins’ (1994) proposition, developmental theorists Rubin & Asendorpf (1993) describe a pathway to anxiety that is apparent when a behaviourally inhibited child begins preschool. Such shy timid children are prone to developing perceptions of social incompetence, which lead to social inhibition and to difficulty forming and maintaining relationships. Consequently, shy withdrawn children seek to avoid peer interaction, which results in social isolation, deficits in social skill acquisition and increased symptoms of anxiety and depression (Rubin & Asendorpf, 1993). However, not all children exposed to various risk factors proceed to develop an anxiety disorder, a finding that highlights the multiple and complex pathways through which anxiety problems may develop, and the important role of the protective factors in reducing risk and building resilience in potentially vulnerable children.

Unfortunately there is a paucity of empirical studies directly examining protective factors, although there is evidence to suggest children’s coping abilities and social support play an important role in reducing risk to anxiety disorder. Coping skills involving problem-focused and cognitive behavioural strategies are considered to increase children’s competence and control over stressful events, and in part are developed through social learning experiences with family and peers. Family support involving good communication and problem solving skills, modelling, reinforcement, and prompting by parents for children who are brave and face up to challenges rather than avoiding them, as well as the peer relationships that children develop outside the family, can assist in building resilience to anxiety disorders.

As children develop and spend increasing amounts of time at school and in the classroom, peers become one of the fundamental resources through which children
acquire social competence, social skills, friendships and related support. However, peer interaction often presents as one of the most common problems reported by anxious children and adolescents, and poor peer relationships can be considered a risk factor for the development and maintenance of anxiety problems. Fortunately, there is some evidence to suggest that the inclusion of peers in psychosocial interventions is effective in increasing children’s social competence and reducing social anxiety. These findings have vital implications for the future development of psychosocial interventions, in terms of the potentially important protective role peers may play in the developmental course of anxiety problems.

In light of the research reviewed in chapter one and this chapter, it seems logical that the identification of children at risk and the associated prevention and early intervention in order to hinder the development of child anxiety disorders have become an important area of clinical child anxiety research. Recent research has begun to examine effective methods of intervention to reduce the prevalence of child anxiety by targeting various risk and protective factors which were concluded by Vasey & Dadds (2001) to contribute to the development of anxiety disorders. These factors involve avoidant cognitive and/or behavioural coping responses, emotional and social incompetence, cognitive biases and distortions, negative social experiences involving rejection from others, and the over-protection and reinforcement of anxious behaviour from parents and others. Table 2.1 further illustrates the way in which an awareness of risk and protective factors provides pathways into methods that may be incorporated into preventive programs. Notably, many of the preventive methods form the foundations of current treatment programs (Barrett, 1998; Kendall, 1994; Silverman et al., 1999).
CHAPTER THREE
PREVENTION PREREQUISITES PART II:
INTERVENTION AND PREVENTION PROTOCOLS
FOR CHILD ANXIETY DISORDERS

The objective of the previous chapter was to review the literature examining factors that contribute to the onset, development and maintenance of anxiety disorders in childhood and adolescence. Accordingly, the identification of risk and protective factors in child anxiety is a prerequisite for determining target variables for preventive intervention. A second prerequisite for preventive intervention is the establishment of effective treatment protocols for child anxiety disorders (Spence, 2001). The aim of the current chapter is to provide a review of research in anxiety intervention and to detail protocols shown to have been successful in reducing symptoms of anxiety in children and adolescents.

Anxiety Research Demonstrating Intervention Efficacy

In intervention into child anxiety, researchers have developed protocols for individual or groups of anxious youngsters. Studies that have targeted anxiety disorders collectively (inclusive of children with separation anxiety, specific phobia, social phobia, overanxious disorder, or generalised anxiety) were chosen as the focus for this chapter. Empirical support for the efficacy of psychodynamic therapy (Target & Fonagy, 1994) and psychopharmacological treatment (Bernstein & Borchardt, 1991) remains inconclusive, although findings appear more encouraging for psychosocial interventions. Cognitive behavioural therapy has emerged as the current treatment of choice for childhood anxiety disorders (Kazdin & Weisz, 1998).
Although researchers often place different emphasis on various aspects of the theory, cognitive behavioural therapy (CBT) generally proposes a social learning approach to psychopathology involving complex interactions among thoughts, feelings, behaviours, and social and environmental factors (Kendall, 1993). CBT interventions for child anxiety aim to address these physiological, cognitive, and behavioural components by providing youngsters with the coping skills necessary to enable them to successfully manage a variety of anxiety-provoking, difficult, or stressful situations (Kendall, 1993). An integrated approach (King, Hamilton & Ollendick, 1988; Ollendick & Francis, 1988) involves a combination of behavioural techniques (in vivo exposure, relaxation, and contingency management) and cognitive coping skills (self-instruction training) aimed at building a youngster’s resilience or protection against anxiety.

Empirical support for the cognitive behavioural model of anxiety is provided in studies showing that anxious youngsters typically experience increased automatic nervous activity and heart rates (Beidel, 1988), engage in negative thinking patterns, and display avoidance behaviours within the social context (Barrios & Hartmann, 1988). Further randomised clinical trials have demonstrated the efficacy of CBT interventions in a variety of formats (Kendall, 1994; Howard and Kendall, 1996; Barrett, 1998; Silverman et al., 1999a, 1999b). Most of these trials, which will be discussed, involved rigorous methodology including controlled conditions, multimethod assessment, diagnostic interviews, intervention integrity checks, and follow-up evaluation.
Cognitive Behavioural Intervention Research


Individual treatment programs for children with anxiety disorders (Kane & Kendall, 1989; Kendall, 1994) were the focus of initial clinical research. Kendall (1994) demonstrated the efficacy of child CBT in the first randomised clinical trial involving anxiety-disordered children. Forty-seven youngsters aged between 9 and 13 years with an anxiety disorder (separation, overanxious, or avoidant) were randomly assigned to either a CBT program or a waitlist control group. Treatment consisted of 16 sessions and resulted in significant improvements whereby 64% of treated children no longer met diagnostic criteria. Treatment gains were maintained at 12-month and 3.35-year follow-up (Kendall & Southam-Gerow, 1996).

Kendall et al. (1997, 2000) has replicated the efficacy of individualised CBT in the treatment of child anxiety. In a later randomised clinical trial with a sample similar to that from the first study, Kendall demonstrated that anxious youngsters treated with CBT showed significant improvements compared to a waitlist control group receiving no treatment. Overall, these studies showed that various combinations of CBT strategies, when implemented within the clinical setting, are effective in decreasing youngsters’ anxious symptomatology. A combination of cognitive behavioural strategies (e.g. relaxation training, positive self-talk, problem
solving) aim to increase coping skills by systematically targeting children’s thoughts, feelings, and learning.

Given the success of individual CBT based on the ratio of one therapist to one anxious child in the treatment process, subsequent research focused on maximising gains by including a family component. Concurrent studies that showed the role of parental factors in the aetiology of child anxiety (e.g. Siqueland, Kendall, & Steinberg, 1996; Barrett et al., 1996) indicated potential benefits. Incorporating parents in the therapeutic process was considered important because factors such as high parental control, parental anxiety and depression, and parental reinforcement of avoidant coping strategies have been implicated in the development and maintenance of anxiety in children (Rapee, 1997; Siqueland et al., 1996; Barrett, et al., 1996; Cobham et al., 1999). Teaching parent’s positive reinforcement contingencies and appropriate modeling behaviours can be considered to help maximise the likelihood that cognitive-behavioural work with the child will be reinforced and maintained within the family environment. Consequently, researchers began to examine the potential effects of including a family component in which parents received training on anxiety management.

Howard and Kendall (1996) were the first to evaluate the effectiveness of a cognitive-behavioural family intervention. Using a multiple baseline design, they studied six clinically anxious children aged 9 to 13 years. Four children showed positive changes in diagnostic status, standardised parent- and teacher-report measures, and parent and child reports on specific measures of coping at post-intervention. Three children maintained these gains at 4 months follow-up.

These positive results were replicated in the first randomised, controlled trial of CBT plus parent training by Barrett, Dadds and Rapee (1996). This randomised
controlled trial study compared child CBT plus family anxiety management (CBT+FAM) with child-only CBT and with a waitlist control group. Family anxiety management involved training in child management, parental anxiety management, and communication and problem solving skills. Participants were 79 children aged between 7 and 14 years diagnosed with an anxiety disorder. After treatment and 12-month follow-up, both CBT+FAM and CBT groups showed greater improvements than the waitlist control group and the CBT+FAM group showed significantly greater improvements than the child-only CBT group. At 12-month follow-up, 95% of the CBT+FAM group and 70% of the child-only CBT group were diagnosis-free.

Cobham, Dadds and Spence (1998) examined the role of parental anxiety in treatment outcome and tested whether training parents to better manage their own anxiety would alleviate poorer treatment outcome. Sixty-seven children aged 7 to 14 years meeting DSM-III-R diagnostic criteria for overanxious, social phobia or separation anxiety participated in this study. These children were divided into two groups: child anxiety only and child + parent anxiety. The first group consisted of 32 children whose parents reported low anxiety on the STAIC (Spielberger, 1973). The second group was composed of 35 children who had at least one parent who reported high levels of anxiety. Children from both groups were randomly assigned to either the child only CBT or child CBT plus parental-anxiety management (CBT + PAM). The results of this study indicated that high parental anxiety is a risk factor for poorer treatment outcomes for anxious children. Of the children who received child only CBT, 82% of children in the child anxiety only group were diagnosis-free at post-intervention, compared to 40% of children in the child plus parental anxiety group. In the CBT + PAM group, 80% of the child anxiety only group and 77% of the child + parent anxiety group were diagnosis-free. Therefore, the inclusion of
CBT + PAM increased the efficacy of child CBT, but only for children with anxious parents. At 12-month follow-up, children without anxious parents were more likely to remain diagnosis-free. However, the differential treatment effects for CBT + PAM and child only CBT were no longer statistically significant.

Family CBT has also proved effective in the long term. Barrett, Duffy, Dadds & Rapee (2001) examined 52 participants from the original study (Barrett et al., 1996) for long-term maintenance effects approximately 6.17 years after treatment completion. Both CBT + FAM and child-only CBT were equally effective in the long term, with 87% of participant’s diagnosis-free.

A group format of CBT that extends beyond the individual child to peers is also considered to have potential advantages involving normalisation, modelling, reinforcement, and helping behaviour. This format also has empirical support (Albano, Martin, Holt, Heimberg & Barlow, 1995; Heimberg et al., 1990; Heimburg, Salzman, Holt, & Blendall, 1993). Barrett (1998) was the first to provide evidence of the efficacy of group cognitive behavioural therapy (GCBT) in the treatment of anxious youngsters. In this controlled clinical trial, 60 anxiety-disordered children aged between 7 and 14 years were randomly assigned to three treatment groups: GCBT, GCBT with a family component (GCBT + FAM), and a waitlist (WL). The CBT component involved an Australian manualised treatment program (FRIENDS) adapted from Kendall’s Coping Cat workbook (1990).

Results of the Barrett study demonstrated that both GCBT and GCBT + FAM were superior to the WL, although no significant differences were found between treatment groups. After treatment, 64.8% of children no longer met diagnostic criteria, compared to 25% of children in the WL group. Effects were
maintained at 12-month follow-up, as 85% of children in the GCBT group and 65% of children in the GCBT+FAM condition were diagnosis-free.

Silverman et al. (1999b) completed a second randomised clinical trial of group cognitive behaviour therapy (GCBT) with 56 children aged 6 to 16 years ($M = 9.96$ years). Consistent with the results obtained by Barrett (1998), Silverman et al found that 64% of the children in the GCBT were free of their primary diagnosis at post-intervention, compared with 12.5% in the waitlist condition. Similar improvements were observed for clinician’s ratings of severity, and on child and parent self-report measures. These gains were maintained at 3, 6, and 12-month follow-up.

Shortt, Barrett, Dadds and Fox (2001b) replicated empirical support for the FRIENDS program as family-based FGCBT in a randomised clinical trial involving 91 children aged between 6 and 14 years. After treatment, data showed that 14% of the no-treatment group were diagnosis-free compared with 68% of youngsters in the FGCBT. At 12-month follow up, FGCBT benefits increased, in which 76% of youngsters in the treatment condition no longer met criteria for an anxiety disorder diagnosis.

However, Flannery-Schroeder and Kendall (2000) compared the efficacy of individual cognitive-behavioural treatment (CBT) with that of group cognitive behavioural treatment (GCBT) and a waitlist control group. Thirty-seven children aged 8 to 14 years with anxiety disorders were randomly assigned to individual CBT, GCBT, or WL. Greater effects were found for the children who had received individual CBT, although significantly more children in the 18-week treatment groups (50% GCBT, 73% individual) than in the waitlist group (8%) were free of their anxiety disorder after treatment. Moreover, these treatment gains were
maintained at 3-month follow-up. Unfortunately, the small number of participants meant that there was insufficient power to detect significant differences between the two treatment groups.

**Issues in Intervention Research**

Most research suggests that CBT in a group format, with or without a family component, is more effective than individual CBT and follow-up data suggests that treatment gains are maintained over time. The Flannery-Schroeder and Kendall (2000) research, however, was an exception: in this study they found individual CBT to be more effective that group CBT, although replication of these findings with a larger sample is clearly needed. Overall strengths of these studies have involved controlled conditions, multimodal assessment, comparison groups, and follow-up data. However, the typically small clinical sample sizes have limited the power of the results.

The studies reviewed test short-term treatments, ranging from 10 to 18 weeks’ duration, and use manualised protocols. However, group and/or family intervention programs increase demands for therapist expertise, such as specific parent management skills and sound knowledge of family and group processes during therapy. The publication of therapy manuals such as the FRIENDS program provides specific suggestions to aid group facilitation. The manualisation of treatment programs has also promoted transportability from clinical research centres to community clinic settings (Kendall & Southam-Gerow, 1996).

An important issue in family treatment of anxiety is that parental involvement has often been limited to mother representation; hence, clearly future
research needs to establish the contribution of paternal involvement in the treatment of children’s anxiety problems.

Despite the increasing number of intervention studies being conducted, there are relatively few studies examining process factors during treatment (Bergin, 1997). Future studies examining the factors that influence treatment outcomes, such as peer involvement, the optimal number of sessions, various combinations of cognitive behavioural techniques, developmental issues, treatment acceptability and therapist characteristics, will make substantive contributions to our current understanding of anxiety intervention.

In summary, Table 3.1 details empirical data from several controlled clinical trials showing manualised programs of cognitive behavioural intervention in individual, family, and group format have shown to be effective in the treatment of anxiety in children and adolescents. Cognitive behavioural treatment (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 (self-talk) and to engage in positive thinking. Further strategies to teach children include problem-solving skills and ways to self-reward for doing things well (Flannery-Schroeder, Henin & Kendall, 1996; Barrett, 1998). Given the undisputed success of CBT in the intervention of child anxiety disorders within the clinical setting, prevention has emerged as the next important step forward - potentially effective at reducing the risk, onset and development of anxiety disorders within the community (e.g. LaFreniere & Capuano, 1997; Spence &
Dadds, 1997). The theoretical and empirical research examining preventive intervention for child anxiety disorders will now be discussed.

Table 3.1

*Results of Randomised Clinical Trials for CBT for Child Anxiety Disorders*

<table>
<thead>
<tr>
<th>Author/s</th>
<th>Format</th>
<th>N</th>
<th>Comparison Group/s</th>
<th>Post-Intervention Results</th>
<th>Maintenance Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kendall, 1994</td>
<td>Child</td>
<td>47</td>
<td>Waitlist</td>
<td>64% diagnosis-free</td>
<td>12 month &amp; 3.35 years</td>
</tr>
<tr>
<td>Kendall et al., 1997</td>
<td>Child</td>
<td>94</td>
<td>Waitlist</td>
<td>53% diagnosis-free</td>
<td></td>
</tr>
<tr>
<td>Howard &amp; Kendall, 1996</td>
<td>Family</td>
<td>6</td>
<td>Waitlist</td>
<td>4 out of 6 participants</td>
<td>4 month</td>
</tr>
<tr>
<td>Barrett, Dadds &amp; Rapee, 1996</td>
<td>Child + Family</td>
<td>79</td>
<td>Waitlist, Child</td>
<td>Child + Fam 95% &amp; Child CBT 70%</td>
<td>Overall 87% diagnosis-free at 6.17 year follow-up</td>
</tr>
<tr>
<td>Cobham, Dadds &amp; Spence, 1998</td>
<td>Child + Parent Management</td>
<td>67</td>
<td>Child</td>
<td>Child + PAM - Child + parent anxiety 76%, child anxiety 80% diagnosis-free; Child CBT - Child + parent anxiety 38.9%, child anxiety 82.4% diagnosis-free</td>
<td>6 &amp; 12 months</td>
</tr>
</tbody>
</table>
### Table 3.1 (continued)

**Results of Randomised Clinical Trials for CBT for Child Anxiety Disorders**

<table>
<thead>
<tr>
<th>Author/s</th>
<th>Format</th>
<th>N</th>
<th>Comparison Group/s</th>
<th>Post-Intervention Results</th>
<th>Maintenance Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barrett, 1998</td>
<td>Group +</td>
<td>60</td>
<td>Waitlist</td>
<td>64.8% diagnosis-free</td>
<td>12 month; Group</td>
</tr>
<tr>
<td></td>
<td>Family</td>
<td></td>
<td>Group</td>
<td></td>
<td>85% &amp; Group +</td>
</tr>
<tr>
<td></td>
<td>Group</td>
<td></td>
<td></td>
<td></td>
<td>FAM 65% diagnosis-free</td>
</tr>
<tr>
<td>Silverman et al., 1999b</td>
<td>Group +</td>
<td>56</td>
<td>Waitlist</td>
<td>4% diagnosis-free</td>
<td>3, 6 &amp; 12 months</td>
</tr>
<tr>
<td>Shortt, Barrett</td>
<td>Group +</td>
<td>91</td>
<td>Waitlist</td>
<td>68% diagnosis-free</td>
<td>12 month; 76%</td>
</tr>
<tr>
<td>Dadds &amp; Fox, 2001b</td>
<td>Family</td>
<td></td>
<td></td>
<td></td>
<td>diagnosis-free</td>
</tr>
<tr>
<td>Flannery-Schroeder &amp; Kendall, 2000</td>
<td>Group</td>
<td>37</td>
<td>Waitlist</td>
<td>Group 50% &amp; Child</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Child</td>
<td></td>
<td>Child CBT</td>
<td>73% diagnosis-free</td>
<td></td>
</tr>
</tbody>
</table>

Preventive Intervention for Child Anxiety

Preventive intervention research typically adopts a substantially different approach to psychopathology, compared with traditional psychological interventions which target individuals with full blown disorders who are experiencing severe clinical symptoms and impairment in psychosocial functioning. The primary objectives of preventive interventions aim to reduce both the number of new or
existing cases of psychological maladjustment and the subsequent need for therapeutic services within the community (Greenburg, Domitrovich & Bumbarger, 2001).

Preventive interventions are generally considered to range along a continuum from primary intervention through secondary intervention to tertiary intervention, defined by the level of development or severity of the problem during which intervention is implemented (Durak & Wells, 1998). Primary preventive interventions aim to reduce the incidence rates (number of new cases) of any particular disorder or problem, and can be defined further as either universal, selected, or indicated (Gordon, 1987). Universal preventive interventions target whole population groups, such as in school-based social skills programs (Elias et al., 1991). Selective preventive interventions focus on individuals or subgroups identified as at risk of psychological problems, such as support groups for children of divorce (Alpert-Gillis, Pedro-Caroll & Coweb, 1989). Indicated preventive interventions target individual children identified by biological markers as at risk of behavioural problems (Gordon, 1987).

In comparison to primary preventive interventions, secondary preventive interventions aim to reduce the prevalence (number of existing cases) of psychological problems by targeting youngsters with subclinical symptomatology (Durak & Wells, 1998). Tertiary prevention refers to interventions that aim to reduce the effects or consequences of psychological disorders, such as school drop out, criminal violence and unemployment (Gordon, 1987).

Recently, universal school-based intervention has become an important area of research. This increased interest has been influenced by data showing the high incidence and prevalence of psychopathology in youth (Costello, 1989; DHHS,
1991) and by estimates that approximately one-third of youngsters in need of psychological services do not receive treatment (Stiffman, Earls, Robins & Jung, 1988). Barriers to clinical treatment include lack of access, service availability, and concerns about confidentiality.

In summary, the nature of preventive intervention differs considerably from clinical treatment, which traditionally requires participants to meet diagnostic criteria for a clinically significant DSM-IV disorder. Clinical treatment usually occurs after an acute or chronic escalation of symptoms, which cause high levels of distress or impairment in the individual’s interpersonal and social functioning. On the contrary, primary preventive interventions, specifically universal programs, are typically designed to target wider populations of individuals before the psychological problem escalates into such chronically deliberating levels. The saying ‘prevention is better than cure’, holds firm, as the next move forward in clinical research can be seen to investigate the potential of prevention programs to ‘prevent’ the chronic developmental course of such forms of psychopathology.

**Universal Preventive Intervention**

Universal preventive interventions are considered to involve psychosocial benefits and to increase the utilisation of psychological services by broadening access for a wider youth population (Adelman & Taylor, 1999). Many psychological services have limited resources; they tend to target youngsters with full blown or clinical disorders and to overlook youngsters with subclinical symptoms (Amburster, Andrews, Couenhoven & Blau, 1999; Evans, 1999; Kubiszyn, 1998). Long waiting lists, high non-attendance and high drop out rates from research trials also limit treatment availability and outcome.
School-based universal preventive interventions have further psychosocial benefits (Adelman & Taylor, 1999). Large numbers of youngsters with psychological, emotional, behavioural, or social difficulties present a serious problem to schools. Various forms of psychopathology affect the school environment, involving individual delays in learning, school achievement, and psychosocial development. Such changes in the school environment often lead to classroom disruption. Moreover, children and adolescents with varying degrees of psychological maladjustment present a challenge to teachers, and few schools have the resources to manage large numbers of youngsters with such problems (Adelman & Taylor, 1999).

Universal school-based prevention programs can be considered the next vital step forward in clinical child research. Universal preventive interventions conducted in the school context have the potential to reduce transportation difficulties and to accommodate a broad range of children and adolescents with varying levels of psychopathology, including those at risk, those with subclinical symptoms, and those with clinical disorders. Other potential advantages involve the reduction of psychosocial difficulties within the classroom and the promotion of learning and healthy development in children and adolescents. A number of universal interventions have been developed to increase resilience (Dubow, Schmidt, Mcbride, Edwards & Mark, 1993; Cunningham et al., 1999; Klingman & Hochdoft, 1993; Orbach & Bar-Jospeph, 1993; Schocket, Holland & Whitefield, 1997), although a review of these programs is beyond the scope of this thesis. Yet, despite these advantages of community based prevention programs targeting large populations, empirical research examining universal interventions for child anxiety is in its early
stages. The following section will focus on the research examining preventive interventions specifically for anxiety disorders in childhood and adolescence.

**Empirical Research in Preventive Intervention**

A small number of empirical studies that target children ‘at risk’ of anxiety disorders have investigated preventive interventions within community settings (Barrett & Turner, 2001; LaFreniere & Capuano, 1997; Lowry-Webster, Barrett & Dadds, 2001; Lowry-Webster, Barrett & Lock, 2003; Dadds et al., 1997, 1999). An indicated preventive program targeting preschoolers at risk failed to show reductions in anxious and withdrawn behaviour (LaFreniere & Capuano, 1997). This family-based indicated intervention targeted mother-child attachment. The researchers aimed to reduce anxious withdrawn behaviour and to increase social competence by enhancing mother-child attachment, through the promotion of mother-child interaction, positive parenting skills, reduction of parental stress, and increased parental sensitivity to their child’s needs. Forty-two anxious-withdrawn preschool children aged from 31 months to 70 months and their mothers were randomly allocated to either a treatment \( n = 21 \) or control group \( n = 21 \). The intervention involved 20 sessions of 45 to 60 minutes conducted in the family home over a 6-month period.

Results after the intervention, based on maternal self-reports of stress, behavioural observation of mother–child interaction (emotional support, maternal control, child cooperation, and motivation), and teacher reports of anxious-withdrawn behaviour and social competence, showed mixed findings. The intervention was successful in enhancing maternal control and child motivation and social competence. Mothers in both treatment and control groups reported
significant changes in maternal-child interaction and maternal stress. Teacher reports showed no reductions in anxious-withdrawn behaviour.

The Queensland Early Intervention and Prevention of Anxiety Project (QEIPAP) has obtained encouraging results (Dadds et al., 1997, 1999). In this indicated preventive intervention, children at risk in eight preselected Brisbane schools took part in this cognitive behavioural program. A range of children aged between 7 and 14 years was selected, from those without a diagnosis of a clinical disorder but showing mild anxious symptoms to those that met criteria for an anxiety disorder but were in the less severe range. From an initial sample of 1,786 school children, 128 were selected to participate and were randomly allocated to either an intervention or to a monitoring control group. A comprehensive screening and assessment process utilising psychometrically sound self-report questionnaires and diagnostic interviews involved children, parents, and teachers. Exclusion criteria involved children with disruptive behavioural problems, learning problems, disability, developmental delays, and children from non-English speaking families. Selection of participants was based on self-reported levels of anxiety on the RCMAS (Reynolds & Richmond, 1979), teacher nominations, and diagnostic status based on parents’ response on the ADIS (Silverman & Nelles, 1988). Participants attended ten sessions of 2 hours after school. Group sizes ranged from 5 to 12 children. Parents of participants attended three 2-hour sessions on a monthly basis.

Prior to the intervention, 75% of participants met criteria for an anxiety disorder (mild to moderate severity). Both groups showed improvement immediately after assessment. Differences between the intervention and monitoring groups based on self-report measures and diagnostic interviews, however, were nonsignificant. At 6-month follow-up, changes on diagnostic status indicated that improvements were
maintained in the intervention group only. Sixteen percent of participants in the intervention condition met criteria for an anxiety disorder compared to 54% in the monitoring condition. At 12-month follow-up, 15% of participants had dropped out, and no significant differences were found between intervention and monitoring groups. At 2-year follow-up intervals, significant group differences were found, such that 20% of participants in the intervention group achieved diagnostic status compared to 39% in the monitoring group. Consistent with prior research, participants showed a general improvement across time regardless of their intervention status (Last, Perrin, Hersen & Kazdin, 1996).

*Universal Preventive Intervention for Child Anxiety*

Studies examining universal intervention programs for child anxiety disorders are notably sparse. Roth (2000) conducted a universal prevention study of internalising disorders in 25 preschools in Australia. The program aimed to build resilience by helping shy withdrawn children to gain self-esteem, and confidence with the help of supportive adults. Seven hundred and thirty-four parents of children between 4 and 6 years of age were invited to participate in the study and were assigned to control groups (n = 379 families) or intervention groups (n = 355 families). Of the 355 families who were invited to attend the program, only 28 (8%) completed the full six sessions of the program. Findings from this study showed no intervention effects based on parental reports at post-intervention or follow-up. Teacher reports at post intervention indicated a slight effect with the control group showing more anxious-withdrawn and angry-aggressive behaviours, and children in the intervention group showing significantly less of these behaviours. However, these group differences had disappeared by 12-month follow-up.
More encouraging were recent findings of a study, which examined the potential effects of a universal train-the-trainer model in the prevention of child anxiety and depression (Lowry-Webster et al., 2001, 2003). Teachers and school counsellors were trained by clinical psychologists on implementation of the FRIENDS program prior to conducting the intervention as part of the school curriculum. The FRIENDS prevention program is a CBT program shown to be effective within the clinical context (Barrett, 1998), which teaches children and adolescent's strategies for coping with anxiety within a group format. Five hundred and ninety-four children aged between 10 and 13 years were allocated to either an intervention or a monitoring condition and, based on self-reported levels of anxiety on the SCAS (Spence 1998), were further divided into high risk (above 42.48) and healthy (below 42.48) groups. At post-intervention all children reported significant reductions in anxiety, although these decreases were significantly greater in the intervention group compared to the monitoring group. A significant reduction in depression was found for children with high anxiety in the intervention group only.

Further analysis of changes in risk status showed positive findings. Of the children in the intervention group at risk at pre-intervention, 75.3% were no longer at risk at post-intervention, compared to 54.8% of high-risk children in the monitoring group. The effects of the intervention were maintained at 12-month follow-up based on self-reports and diagnostic interviews (Lowry-Webster et al., 2003). Eighty-five percent of children in the intervention group who scored above the clinical cut-off for anxiety and depression were diagnosis-free, compared to only 31.2% of children in the control group. Examination of factors predictive of maintenance effects showed that children in the intervention group, children with low to moderate levels of anxiety at pre-intervention, and children aged 12 were
least likely to be ‘at risk’ of an anxiety disorder at post-intervention and 1-year follow-up intervals. No differences were found between males and females in treatment outcomes. Age was found to be a strong risk factor, as children aged 10 years were most likely to be ‘at risk’ of an anxiety disorder.

Findings outlined in the Lowry-Webster et al. (2001, 2003) studies 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. The effects of universal intervention were based on child self-report data at post-intervention, wherein no significant differences were found between females and males. Results suggested late childhood as a potentially critical time in the development of anxiety problems.

Building on these findings, Barrett & Turner (2001) evaluated the effects of a universal cognitive behaviour intervention for the prevention of internalising symptoms in grade 6 children aged between 10 to 12 years. Ten schools in the Brisbane region were recruited to the project, which involved all children participating in the FRIENDS program (Barrett, 1998) in their classroom during the school curriculum. Participants completed standardised self-report measures of anxiety at pre-intervention and post-intervention, and were further divided into high risk (>42.48) and healthy (<42.48) groups based on self-reported levels of anxiety on the SCAS (Spence 1998). Either trained psychologists or teachers implemented the FRIENDS program over a period of ten 75-minute sessions. Parents were invited to attend four parent evenings, which involved psychoeducation and parenting strategies. Evaluation of children’s self-report measures of anxiety at post-intervention indicated the FRIENDS program was effective in significantly reducing anxiety symptoms across psychologist and teacher intervention conditions,
compared to the monitoring group. Females reported significantly higher anxiety compared to males at pre-intervention and post-intervention. Due to the small number of participants in the ‘at risk’ group, there was insufficient power to detect any statistically significant changes in risk status. The findings of this study provide preliminary evidence that children aged 10 to 12 years may benefit from universal interventions developed to reduce symptoms of anxiety in clinical settings.

To explore age differences in anxiety prevention further, Barrett, Lock and Turner (in press) conducted a preliminary study comparing the effects of a universal school-based preventive intervention for child anxiety at two developmental stages. Participants were 692 children enrolled in grade 6 ($n = 293$) aged between 9 and 10 years, and grade 9 ($n = 399$) aged between 14 and 16 years allocated to either the FRIENDS intervention group or to a monitoring group. Participants completed the SCAS (Spence 1998) and the CDI (Kovacs, 1985) and were stratified into low, moderate and high-risk groups based on their anxiety scores at pre-intervention. Children in the intervention condition participated in twelve, 45-to-60-minute sessions of the FRIENDS program conducted by trained psychologists within the classroom. Parents were invited to attend four parent evenings, which involved psychoeducation and parenting strategies.

The effects of the prevention program were evaluated at post-intervention and 12-month follow-up intervals. Overall, findings of the (Barrett et al, in press) study provided further support for the FRIENDS program as a universal intervention effective in reducing symptoms of anxiety in children at two developmental levels. Concurrent with previous research (Dadds et al., 1997, 1999; Lowry-Webster et al., 2001, 2003), all children in both the intervention and monitoring conditions in the study reported reductions in anxiety over time. No differences were found between
the intervention and monitoring conditions in anxiety depression at post-intervention, although the effects of the program became apparent 12 months after the program. Primary school children in grade 6 reported greater reductions of anxiety symptoms at post-intervention compared to high school children in grade 9, whilst moderate and high-risk children reported the greatest reductions in anxiety at 12-month follow-up.

Issues in Preventive Intervention Research

Table 3.2 provides a summary of studies examining preventive interventions for children and adolescents. With preventive intervention based on cognitive behavioural strategies for building resilience, symptoms of anxiety have been reduced in primary and secondary school children with clinical disorders and in those at risk with mild to moderate levels of anxiety (Dadds et al., 1997, 1999; Barrett & Turner, 2001; Lowry-Webster et al., 2001, 2003).

However, the effectiveness of interventions targeting preschool children remains unclear. Targeting mother-child attachment in preschool children failed to show reductions in anxious-withdrawn behaviour (LaFreniere & Capuano, 1997), although maternal control and child motivation and social competence were enhanced. This study has a number of implications for researchers and practitioners. Firstly, although effective at increasing children’s social competence, changing parental interaction style alone may not be sufficient enough to produce immediate changes in children’s anxious-withdrawn behaviour. Secondly, there may be time delays in the observable effects of increased positive parent-child interaction on preschoolers’ anxious-withdrawn behaviour.
Table 3.2

*Results of Preventive Intervention Studies for Child Anxiety.*

<table>
<thead>
<tr>
<th>Research</th>
<th>Intervention</th>
<th>N</th>
<th>Age</th>
<th>Post-intervention Results &amp; Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>LaFreniere &amp; Capuano, (1997)</td>
<td>Mother-child</td>
<td>42</td>
<td>From 31 mths to 70 mths +</td>
<td>At post-intervention enhanced maternal l control, child motivation &amp; social competence. Mothers in both treatment &amp; control groups reported significant changes in mother-child interaction &amp; maternal stress.</td>
</tr>
<tr>
<td>Dadds et al., (1997, 1999)</td>
<td>Indicated</td>
<td>128</td>
<td>7 to 14 yrs</td>
<td>At post-intervention significant reductions in anxiety across monitoring &amp; intervention conditions. At 6-month follow-up effects maintained in monitoring group only</td>
</tr>
<tr>
<td>Roth (2000)</td>
<td>Universal</td>
<td>25</td>
<td>4 to 6 yrs</td>
<td>No intervention effects based on parental reports at post intervention or follow-up.</td>
</tr>
</tbody>
</table>
Table 3.2 (continued)

Results of Preventive Intervention Studies for Child Anxiety.

<table>
<thead>
<tr>
<th>Research</th>
<th>Intervention Format</th>
<th>N</th>
<th>Age Group</th>
<th>Post-intervention Results &amp; Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lowry-Webster, Barrett &amp; Dadds, (2001)</td>
<td>Universal train-the-trainer model: CBT preventive intervention</td>
<td>594</td>
<td>10 to 13 yrs</td>
<td>At post-intervention &amp; 12-month assessment significant reductions in anxiety in both intervention &amp; monitoring groups, significant decreases in the intervention group compared to the monitoring group. Positive changes in risk status reported; of the children in the intervention group, 75.3% were no longer at risk at post-intervention, compared to 54.8% of high-risk children in the monitoring group.</td>
</tr>
<tr>
<td>Barrett, Lock &amp; Turner, (in press)</td>
<td>Universal school-based preventive intervention</td>
<td>692</td>
<td>9 to 16 yrs</td>
<td>At post-intervention significant reductions in anxiety in both intervention &amp; monitoring groups, significant decreases in the grade 6 group compared to the grade 9 group.</td>
</tr>
</tbody>
</table>

A third possible explanation for the non-significant findings is that level of cognitive development in early childhood may affect intervention effects on anxious-withdrawn preschool behaviour. Finally, school-based preventive
intervention involving family, peers, and teachers is likely to be a more powerful intervention, because children’s anxious and withdrawn behaviour is contextual and varies as a function of home and school environment.

Most encouraging are results of the QEIPAP (Dadds et al., 1997, 1999), a program for a ‘selective’ group of at risk children. Treatment effectiveness was demonstrated through the reduction of existing rates of anxiety disorder and the prevention of the onset of new anxiety disorders (Dadds et al., 1999). The data indicated that childhood anxiety disorders and the number of children at risk with mild to moderate levels of anxiety can be successfully reduced through selected school-based cognitive behavioural intervention. An interesting outcome was the overall general improvement effect. That is, immediate reductions in symptoms were reported across both intervention and monitoring groups, although these improvements were maintained by only the intervention group at 6-month and 2-year follow-up intervals. The general trend of decreased levels of anxiety over time might reflect the transient nature of mild self-reported anxiety throughout childhood development.

A possible limitation, which may have contributed to the nonsignificant findings, was that due to time constraints, post-intervention diagnostic assessment was conducted during school vacation. (Dadds et al., 1999). Potentially, this is a less stressful time for children. The delay in the observed effects of the intervention is consistent with the results of a similar prevention trial for adolescent depression (Jaycox, Reivich, Gillham & Seligman, 1994), in which adolescent reductions in depression only emerged 6 months after the treatment.

Unfortunately Roth (2000) found no intervention effects based on parental reports at post-intervention or follow-up. There are a number of possible
explanations for these findings. The intervention may have been ineffective, and/or there may have been too few sessions (6) for the program to be effective. An important shortcoming of the research was the large number of participants who dropped out of the study. Further, analyses indicated that those participants that dropped out reported lower overall stress and lower scores on difficult child indices on self-report measures. Participants were also self-selected, and may have moved from high stress to low stress throughout the program. Therefore, self-selection and the differential drop out rates limit the external validity of the results. While further research is necessary, it appears that one way to overcome the sampling and drop out limitations of this study would be to conduct universal programs as part of the school curriculum.

Studies of the FRIENDS program by Lowry Webster et al. (2001, 2003), Barrett & Turner (2001), Barrett et al., (in press) provided further evidence of the potential effectiveness of universal cognitive behavioural intervention for primary school children, when implemented by psychologists, trained teachers, or school counsellors. The findings of these studies also provide insight into the complex methodological and practical difficulties of implementing psychosocial interventions within the school setting.

The study by Barrett et al., (in press) evidenced a methodological issue similar to that evidenced by Roth (2000), in which interpretation of the effects of the intervention was limited by large drop out rates. A large percentage of children from the monitoring group (28%) were absent or had dropped out of the study compared to the participants in the intervention group (15.4%). Over twice the number of participants missing within the monitoring group were those with high levels of anxiety at pre-intervention, 37% from the high-risk group and 30.4% from the low
risk group, compared to 15.9% and 17.1% in the respective intervention groups.

Another limitation of the study was that the effects of the intervention were based on children’s self-reports of anxiety and depression. Further research involving multiple methods of assessment including diagnostic interview would provide further support for the potential long-term effects of the FRIENDS program as a universal preventive intervention program.

Chapter Summary

In the last decade, results of several randomised clinical trials have shown cognitive behavioural therapy (CBT) effective in the treatment of child anxiety disorders (Table 3.1). Overall, these studies indicate that various CBT protocols are successful in enhancing coping skills in anxious children and their parents.

Preventive intervention has emerged as the next important step toward reducing the high prevalence of anxiety disorders in our youth population. The many benefits include targeting large cohorts of youngsters at risk with subclinical and clinical symptoms of anxiety, increasing access to treatment, and reducing social costs (Donovan & Spence, 2000).

Although preventive intervention appears imperative in reducing psychopathology within our community, research examining the prevention of anxiety problems in children and adolescents is sparse and still in its infancy. Initial findings have suggested that CBT is potentially effective as a ‘selective’ and universal school-based intervention targeting all children including those with moderate to high symptoms of anxiety (Table 3.2). These initial studies have provided insight into the inherent practical and methodological difficulties of implementing psychosocial interventions to large groups of youth within the school
setting. Despite recent research advances in the area of prevention and early intervention there are major limitations to the existing research and findings. The preventive intervention study presented in chapter six of this thesis attempts to address some of the gaps identified in the literature by examining universal school-based early intervention of anxiety disorders. However, before this research is presented, chapter four provides an overview of the most salient issues in current literature and outlines the projects’ methodology and explains how this research aims to overcome the limitations in the literature.
CHAPTER FOUR

GENERAL METHOD: SUMMARY, AIMS AND HYPOTHESES

This chapter provides an outline of the current status of the literature examining anxiety in childhood and adolescence and identifies areas of research that need to be conducted in order to address the existing gaps in knowledge. Consequently, a summary of the preceding literature on the developmental nature and prevalence of fears, anxiety symptoms and disorders in childhood and adolescence is provided. In addition, the risk factors and protective factors that influence the development and maintenance of anxiety are discussed, along with the associated treatment and prevention protocols designed to reduce risk and build resilience to anxiety. Some key areas for further research are identified as an introduction to the contribution the present studies aim to make to the current literature. Finally, the aims and hypotheses for the empirical studies in chapter five and six will be presented.

Summary of Major Advances in the Childhood Anxiety Research

- Anxiety symptoms and disorders are clearly developmental in nature. For many children, fears and anxiety are a normal aspect of development, paralleling the age-related changes in biological, cognitive and social functioning that occur throughout childhood and adolescence. However, many children appear to be at risk of anxiety disorders, currently one of the most common and debilitating forms of child psychopathology, with studies estimating a point prevalence of 5% to 10%, and a lifetime prevalence of approximately 20%. Furthermore, severe anxiety problems often persist if untreated and typically interfere with a
child’s academic performance as well as with their psychological and social development. Childhood anxiety disorders not only impact on healthy development, but may also place children at risk of further psychopathology including depression and psychosocial problems in adulthood. These findings highlight the importance of research examining the developmental psychopathology of anxiety in childhood and adolescence.

- Research examining age and gender differences in anxiety has produced mixed results. The studies reviewed in chapter one shows inconsistent findings regarding the prevalence of anxiety symptoms across age and gender, although, consistent with Gullone’s research (2000) studies converge to show age-related differences in the focus of fears and anxiety symptoms. With regard to gender, studies using clinic samples of children usually report an equal ratio of males to females with anxiety. In comparison, research using community samples has found evidence that females are more likely to report high anxiety symptoms. These findings suggest that further research is required specifically to examine the effects of the interaction between age and gender in the presentation of anxiety symptoms and intervention outcome.

- The identification of children at risk of anxiety disorders has emerged as an important step toward reducing both the high prevalence of anxiety disorders within the community and the associated psychosocial effects experienced by anxious children and adolescents. Consequently, the early identification of the risk factors that increase children’s vulnerability and the protective factors that serve to enhance children’s resilience to anxiety disorders has become a primary prerequisite to effective prevention and early intervention. Identified individual
factors involve genetic and biological influences, a temperament of behaviour inhibition, heightened anxiety sensitivity, and cognitive processes. Identified environmental risk factors involve early control and stressful experiences, learning mechanisms, parental behaviours and parent-child interaction.

- The developmental psychopathology of anxiety suggests that a combination of multiple risk factors contribute to the development of severe anxiety problems in childhood, with genetic studies indicating a shared biological vulnerability to negative affect common to both anxiety and depression. Moreover, anxiety disorders do not appear to be aetiologically homogenous. It is most likely that an interaction between a combination of individual and environmental risk factors that occur from birth onwards influence the developmental pathways to specific anxiety disorders, depression, and mixed anxiety and depression. Furthermore, anxiety disorders in childhood have shown as a risk factor for depression in adolescence (e.g. Kovacs et al., 1989). Consequently, the early intervention and prevention of anxiety in childhood is considered to provide long-term benefits by potentially reducing children’s risk for further depressive disorders or other forms of psychopathology.

- The development and maintenance of anxiety disorders are known to be influenced or mediated in part by heightened anxiety sensitivity, and cognitive processes involving cognitive biases and distortions, increased selective attention to threat, threat interpretation, and avoidant behaviours (e.g. Leitenberg et al., 1986; Kendall & Chansky, 1991; Vasey & Macleod, 2001). How these cognitive processes emerge and persist throughout childhood and adolescent development remains unclear. However, there is some evidence to suggest that
parental anxiety and behaviours involving conditioning and vicarious learning contribute to the ways children interpret threat and respond with avoidance during hypothetical ambiguous anxiety-provoking situations (e.g. Barrett et al., 1996; Chorpita et al., 1996; Shortt et al., 2001a).

- In contrast to our knowledge of risk factors, empirical evidence of the protective factors that serve to build children’s resilience to anxiety disorders is sparse. There is some support for the role of coping skills in building children’s competence and perception of control over stressful and negative effects (Compas et al., 2001). Coping skills typologies involve active problem-focused coping (assistance seeking and cognitive-behaviour problems solving strategies), emotion-focused coping (strategies to reduce the personal distress) and avoidance coping (cognitive and behavioural strategies) to avoid the problem or situations (Brodzinsky, et al., 1992; Compas et al., 1988). There is evidence that anxious children typically cope with stress and anxiety-related situations with avoidance strategies, which are a further maintaining risk factor in the developmental course of anxiety disorders (Barrett, 1998; 1999).

- The development of children’s coping abilities is related to their social competence and the their ability to elicit social support in times of anxiety or stress. Social support is a second protective factor considered to be important in buffering against risk effects and reducing children’s vulnerability to a number of behavioural and emotional problems. However, the majority of the literature on social support for anxious children is theoretical in nature (Beardslee & Podorefsky, 1988; Bolig & Weddle 1988; Garmezy et al., 1984; Werner, 2000),
with parents and peers considered to provide the most accessible methods of support available to children.

- Throughout development children and adolescents spend an increasing amount of time with peers at school and in the classroom. Accordingly, positive peer interaction involving peer acceptance is known to be paramount in the development of social competence, social skills and related psychosocial adjustment (Ladd et al., 1999; Parker et al., 1994). However, peer difficulties present are one of the most common stressful problems reported by anxious children. There is further evidence that anxious children typically cope ineffectively with such peer problems with social avoidance and withdrawal. Research outlines the importance of including peers in psychosocial interventions to foster peer acceptance and support, and development of social competence in anxious children (La Greca, 2001; Parker et al., 1994).

- The identification of the risk factors and protective factors which contribute to the development of anxiety disorders is the first prerequisite to developing preventive interventions designed to reduce risk and increase children’s resilience. A second prerequisite is the establishment of effective treatment protocols that aim to reduce anxiety symptoms and disorders in childhood and adolescence. There is a substantial body of evidence to suggest that cognitive behavioural interventions are effective in treating childhood anxiety disorders and that treatment effects are maintained for up to 6 years (Barrett, 1998; Barrett et al., 1996, 2001; Cobham et al., 1998; Kendall, 1994; Kendall & Southam-Gerow, 1996; Silverman et al., 1999a, 1999b). Several studies suggest that incorporating parents in the therapeutic process may be advantageous because
factors such as high parental control, parental anxiety and depression, and parental reinforcement of avoidant coping strategies have been implicated in the development and maintenance of anxiety in children. Teaching parent’s positive reinforcement contingencies and appropriate modeling behaviours can help to maximise the likelihood that cognitive-behavioural work with the child will be reinforced and maintained within the family environment. Research to date, indicates that cognitive behavioural strategies are effective in both modifying risk characteristics such as an avoidant coping style and negative interpretations of events and in promoting protective factors such as family and peer support. Therefore a strong theoretical rationale exists to suggest that cognitive behavioural strategies might be effectively applied as preventive interventions for childhood anxiety.

- Research advances in preventive intervention have progressed to examining the potential efficacy of indicated, selective and universal programs in reducing the high prevalence of anxiety disorders within the community. Universal preventive interventions conducted in the school context are considered to have several advantages over indicated or selective programs. Potential benefits of universal programs include the reduction of transportation difficulties and the capacity to accommodate a broad range of children and adolescents with varying levels of psychopathology, from those at risk and those with subclinical symptoms, to those with clinical disorders. Other potential advantages involve increased peer support, reduction of psychosocial difficulties within the classroom and promotion of learning and healthy development in children and adolescents.
Research examining preventive intervention for child anxiety disorders is in its early stages. Selective and universal school-based preventive interventions, implemented by psychologists or school staff, have shown to be potentially effective in reducing symptoms of anxiety in children with clinical disorders and in those ‘at risk’ with mild to moderate levels of anxiety (Dadds et al., 1997, 1999; Barrett & Turner, 2001; Lowry-Webster et al., 2001, 2003). Universal prevention programs are typically considered to involve greater social benefits compared with indicated or selected programs (e.g. Armburster et al., 1999). However, whilst research findings on universal preventive intervention are encouraging, a number of developmental and methodological considerations have yet to be addressed.

The Current PhD Study as a Means to OverCome Gaps and Limitations in the Literature.

The literature reviewed in this thesis outlines the developmental nature of anxiety symptoms and disorders. A developmental approach to understanding how anxiety emerges, persist and remits with regard to how best to intervene and prevent the often chronic and deliberating effects of the psychopathology of anxiety, is clearly needed. Important directions for future research on the preventive intervention for child and adolescent anxiety are outlined in the following section.

Future Research Directions: Protective Factors

A review of the literature suggests that very few empirical studies have examined protective factors, particularly the potential role of peer interaction
and support in preventive interventions for anxiety in children and adolescence. From this perspective it appears important to consider the potential role of peers in teaching and modelling proactive coping behaviours as a supportive strategy for anxious children.

- Foremost, it seems paramount to examine the processes through which peers may influence anxious children’s thinking and behaviour. While research advances have enhanced our understanding of the role of cognitive processes and parent-child interaction as risk factors in the development and maintenance of anxiety in children, we still know very little about additional peer factors that influence the development of anxiety-related cognition in children. The first study (chapter five) represents a step in this direction. Given that little is known regarding the potential role of peer interaction in building children’s resilience to anxiety disorders, this study sought to examine the effect of peer interaction on children’s anxiety-related cognition and behaviour.

**Future Research Directions: Preventive Intervention**

- The assessment of developmental factors in the efficacy of intervention outcome is an important issue in preventive intervention research. The second study (chapter six) reports on the effects of preventive intervention at different ages in order to confirm the age at which children benefit the most from school-based prevention programs.

- Furthermore, exploration of children’s coping responses would enhance our understanding of effective intervention protocols. As discussed in chapter two, coping skills are an important protective factor in the development of child
anxiety (Spence, 2001), although researchers have yet to examine intervention effects on children’s coping style. The second study (chapter six) reports on intervention effects in enhancing children’s coping skills at two different developmental ages.

- Investigation of the effects of parental involvement in early intervention may increase our understanding of role of mothers and fathers in enhancing children’s resilience to anxiety. As discussed in chapter two and highlighted in table 2.1, throughout childhood children’s social-learning experiences involving negative parent-child interaction are environmental influences that increase the risk of child anxiety. In comparison, a protective factor in the prevention of child anxiety is parental support. Parents who encourage, prompt and reinforce their children for being brave and facing up to challenging situations are fostering self-esteem, desired coping behaviours and self-confidence. Study two aimed to examine the effects of involving mothers and fathers as a parental component in the FRIENDS intervention program.

- Whether gender is a predictor of intervention outcome also remains unclear, as studies that have examined gender differences in anxiety yield different results. In order to examine age and gender variations in children’s anxiety over time, and to establish which children may benefit the most from early intervention, the second study (chapter six) compares the intervention effects at different ages and across gender.

- A final methodological consideration is that universal preventive intervention research has been based on children’s self-reported changes in anxiety or diagnostic status using the same data set; no studies have incorporated a multi-
method approach inclusive of questionnaires and diagnostic interview at each
time point. The second study (chapter six) involves a longitudinal multi-method
design to examine the effects of a universal school-based cognitive behavioural
intervention for child anxiety at two developmental levels and to investigate the
role of gender and coping style in the prevention of child anxiety.

Aims and Hypotheses for Study One (chapter five)

The first study sought to examine the influence of peer interaction on cognition and
behaviour in anxious children: To this end the study aimed to:

- Measure threat interpretation (threat or non-threat) and plans of response
  (avoidant or prosocial) in children identified at risk of anxiety, and to compare
  the frequency of these children to a group of non-anxious healthy children.

- Examine how children’s thinking is influenced by peer interaction by utilising
  the information-processing questionnaire developed by Barrett et al. (1996). The
  study was conducted prior to the second study (chapter six) examining a school-
  based universal intervention for child anxiety. To investigate possible
developmental differences, the influence of peer interaction in children’s
cognition will be examined in two age groups, children in grade 6 and
adolescents in grade 9. Furthermore, given studies indicating gender differences
in threat interpretation, the influence of peer interaction in cognition will be
compared between male and females.
Hypothesis 1: Threat Interpretation.

- Consistent with the findings of previous research of Barrett et al. (1996), children with high anxiety considered at risk were expected to show a greater number of threatening interpretations compared to healthy children.

Hypothesis 2: Response Plans

- Consistent with the findings of previous research of Barrett et al. (1996) children with high anxiety considered at risk were expected to show a greater number of avoidant responses compared to healthy children.

Aims and Hypotheses for Study Two

- The first objective was to examine the effects of a universal preventive intervention by comparing changes in anxiety between children who had received the FRIENDS intervention program and those allocated to a monitoring group. As research suggests anxiety to be a risk factor to depression (Cole et al., 1998), the study also investigated changes in children’s level of anxiety over time and the effects of the intervention on reducing symptoms of depression. The specific aims were to compare self-reported anxiety and depression between an intervention group and a monitoring group at post-intervention and 12-month follow-up intervals.

- The second objective was to compare anxiety and depression between children at two developmental age levels, to examine the effects of the universal intervention and determine the age at which children would benefit the most from a preventive intervention. In order to answer this question, children in grade 6 at primary school and children in grade 9 in secondary school were to be
compared on self-reported anxiety and depression at pre-intervention, post-intervention and 12-month follow-up time intervals.

- The third objective was to examine the effects of the preventive intervention in reducing anxiety in children with severe symptoms identified ‘at risk’ of developing an anxiety disorder.

- The fourth objective was to compare the gender differences in anxiety symptoms and further examine effects of the preventive intervention in reducing anxiety in females and males with severe symptoms identified ‘at risk’ of developing an anxiety disorder.

- A fifth object was to examine gender differences in the effects of the preventive intervention in reducing anxiety in females and males at two developmental levels, children in primary school and adolescents in high school.

- A final objective was to compare the effects of the universal intervention on children’s coping responses. The aim was to examine changes in children’s coping style (approach versus avoidant strategies) between the intervention and monitoring groups in different age groups. In order to explore this question, grade 6 primary school children and grade 9 secondary school children were to be compared on a self-report measure of coping style at pre-intervention, post-intervention and 12-month follow-up time intervals.

**Hypothesis 1: Group Changes in Anxiety Symptoms**

- It was hypothesised that the intervention group would be associated with greater reductions in self-reported anxiety than the children in a monitoring group would.
Hypothesis 2: Changes in Anxiety for Children ‘At Risk’.

- It was hypothesised that children ‘at risk’ in the intervention group would evidence greater reductions in anxiety and changes in diagnostic status at post-intervention and 12-month follow-up intervals in comparison to children ‘at risk’ in the monitoring group.

Hypothesis 3: Changes in Anxiety across Gender.

- It was hypothesised that females in the intervention group would evidence greater reductions in anxiety and changes in diagnostic status at post-intervention and 12-month follow-up intervals in comparison to males in the monitoring group.

General Methodology for Studies One and Two

Ethical clearance for this research was obtained from the Griffith University Ethics Committee for Research with Humans and Animals (see Appendix A). All participants were recruited from one of seven schools within the geographic area of Brisbane, Australia. It was considered desirable to obtain a large heterogeneous sample of children and youth in order to maximise the generalisability of the findings. Therefore, schools invited to participate in the research were selected because they represented varying levels of socioeconomic advantage (SES) and religious affiliation. In addition, all schools were co-educational and extended from primary school through to grade 12. Students attending these schools (and living in Brisbane in general) were predominantly from Anglo-Saxon families with English as their primary language.
The studies reported in the following chapters were part of a project investigating the school-based prevention of anxiety and depressive symptoms. Schools responded to a written invitation to participate in a longitudinal project investigating the onset, course, and prevention of symptoms of anxiety and depression in children and youth. Of the eight schools invited to participate in the research, one declined because of an ongoing commitment to an independent research investigation, leaving seven schools remaining. The eight schools initially invited to participate were matched in pairs as closely as possible for geographic location, SES, and size of the student body. With regard to the prevention project, one school within each pair was randomly assigned to receive a preventive intervention, and one school within each pair served as a monitoring control comparison to evaluate the effectiveness of the intervention. As only seven schools accepted the invitation to participate in the research, three schools were assigned to the intervention group and four schools were assigned to the monitoring control group. Preliminary results from the prevention trial are reported in Barrett and Turner (2001) and Barrett et al. (in press). Participants for study one were a subset of those who participated in Study two. As noted above, all schools participating in Study one were also participating in a project investigating the effectiveness of a school-based preventive intervention.

Therefore, study one participants represented students from grades 6 and 9 within four of the seven participating schools. Data for study one were collected prior to the preventive intervention conducted in study two. Recruitment for the study commenced in 1999. Parental consent for students’ participation was obtained via a letter sent home to parents, and assent was obtained from each of the students at the time the measures were completed.
As both studies one and two focused on investigating age differences, it was considered desirable to obtain relatively homogeneous age groups within each of the participating grade levels. Age restrictions were therefore imposed, and data from students falling outside of these age restrictions were excluded from analyses.

Participation in the study involved students completing a number of self-report inventories asking about symptoms of anxiety, depression and coping strategies. The following measures were completed (see Appendix B): the Children’s Depression Inventory (CDI; Kovacs, 1981); the Coping Scale for Children and Youth (CSCY; Brodzinsky et al., 1992), the Revised Children’s Manifest Anxiety Scale (RCMAS; Reynolds & Richmond, 1978); the Spence Children’s Anxiety Scale (SCAS; Spence, 1997). Children who received high scores on the SCAS participated in face-to-face interviews using the Anxiety Interview Schedule for Children (ADIS-C; Silverman & Albano, 1998).

All students completed the self-report assessments within school hours. Students were asked to sit at their own desk and listen carefully to the standardised instructions that were provided. The author of this thesis slowly read the instructions and questionnaires aloud to all students. One or more postgraduate psychology students accompanied the author on each occasion, and walked around the classroom assisting students who required help, or who indicated they did not understand one of the questions asked. Students were informed that all questionnaire responses were confidential, and, upon completion of the questionnaires, all participants were encouraged to ask any questions they may have had. The design and methodology for each study is further discussed in chapters 5 and 6. Finally, general research conclusions, theoretical implications, and suggestions for future research are discussed in chapter 7.
CHAPTER FIVE
STUDY ONE: DEVELOPMENTAL DIFFERENCES IN THE INFLUENCE OF PEER INTERACTION ON CHILDREN’S ANXIETY-RELATED COGNITION AND BEHAVIOUR

The literature on child anxiety clearly outlines the developmental nature of fear, anxiety symptoms and disorders throughout childhood and adolescence. The focus of children’s fears and anxiety change throughout the trajectory in accordance with developmental changes in cognitive and social functioning. Unfortunately, many children are at risk of developing an anxiety disorder, the correlates of which interfere with all aspects of healthy development.

Research shows that complex interactions that occur between a combination of individual and environmental risk and protective factors as casual in the development of child anxiety disorders (Vasey and Dadds, 2001). Implicated individual risk factors involve genetic and biological influences, a temperament of behaviour inhibition, heightened anxiety sensitivity, and cognitive and information processing biases (Kendall & Chansky, 1991; Barrett et al., 1996; Weems et al., 2001). Implicated environmental factors involve early control and stressful experiences, learning mechanisms and parent-child interaction. In addition, a number of protective factors have been proposed to reduce the impact of aversive circumstances and experiences. These include family and peer support, a proactive coping style and positive problem solving skills (e.g. Chorpita & Barlow, 1998; Compas et al., 1988, 2001).

Some risk factors such as genetic and biological influences that exist from birth are virtually impossible to change. However, protective factors and cognitive factors have been identified as more amenable and are how considered a vital

The role of cognitive factors in the maintenance of child anxiety disorders has been demonstrated in studies showing that anxious children engage in higher rates of cognitive distortions and utilise a greater proportion of negative self-talk compared to low-anxious or non-anxious children (e.g. Leitenberg et al., 1986; Kendall & Chansky, 1991). There is further empirical evidence that anxious children show a greater selective attention towards threatening information in potentially anxiety-provoking situations than non-anxious children do, and respond to this perceived threat with avoidance (Vasey & Macleod, 2001). However, research investigating the role of environmental risk factors influential in the development of these cognitive processes in childhood is in its early stages.

Empirical studies have demonstrated that parent-child interaction influences the development of anxious children’s cognitive processing and related-behaviours (Barrett et al., 1994; Chorpita et al., 1996; Logsdon-Conradsen, 1998; Shortt et al., 2001a). This experimental research has shown that parents of anxious children often model threat interpretation and avoidant responses to their child during hypothetical ambiguous situations (Barrett et al., 1994; Chorpita et al., 1996; Logsdon-Conradsen, 1998; Shortt et al., 2001a). Despite these findings it is not known how children’s interactions outside of the family effect the development of anxiety-related cognition and behaviours. One such unexplored environmental influence is that of peer interaction.

There is evidence to suggest that peer interaction can be either a risk factor or a protective factor in the development of childhood anxiety problems (La Greca, 2001). Children and adolescents spend a substantial amount of time at school, in the
classroom, and with their peers (Parker et al., 1994). The nature of peer interactions changes throughout childhood and adolescence in conjunction with children’s social-cognitive development (Parker et al., 1994). Consequently peer relationships become increasingly influential in childhood and specifically during adolescence (Parker et al., 1994).

As the research reviewed in chapter two indicates, peer interactions are among the most common stressful problems reported by children (Band and Weisz, 1974; Brodzinsky et al., 1992; Compas et al., 1988, 2001). For many children peer interaction can present as a stressful and anxiety-provoking experience that contributes to social-evaluative fears and subsequent social avoidance and withdrawal (La Greca, 2001). Moreover, anxious children are often disliked, neglected or rejected by their peers (La Greca, 1988; Straus et al). Limited peer acceptance and reduced positive interpersonal interactions may further prevent the development of the interpersonal skills children require to cope effectively with the demands of growing up.

As a protective factor, peer relationships play an important role in the acquisition of children’s social competence, social and problem solving skills, as well as their friendships and related support (Parker et al., 1994; La Greca, 2001). Acceptance and inclusion by peers is known to be vital in foreseeing healthy psychological and social development in childhood (Parker et al., 1994; La Greca, 2001). From a social learning perspective, the role of peers in teaching and modelling proactive coping strategies and supporting anxious children is potentially one of the most powerful protective resources acceptable to children. The potential effects of peer involvement and support has been demonstrated in psychosocial
interventions aimed at enhancing peer acceptance, social competence, as well as reducing social anxiety (Morris et al., 1995; Beidel et al., 2000).

Despite the research outlining the importance of peer interaction on children’s cognitive and social development, and the potential effects of peer support in the treatment of socially anxious children, studies are yet to investigate the influence of peer interaction in children’s cognitive processing. To overcome this gap in the research, it is important to examine whether peer interaction may influence cognition and behaviour in anxious children at different stages in development. Such findings may provide important information for future research on how to optimise psychosocial intervention programs by using peer support in the process of enhancing proactive coping in children at risk of anxiety.

To address this issue, study one of this thesis aims to examine how children’s thinking is influenced by peer interaction by utilising the information-processing questionnaire developed by Barrett et al. (1996). The study was conducted prior to study two, which examined the effects of a school-based universal preventive intervention for child anxiety. To investigate possible developmental differences, the influence of peer interaction in children’s cognition will be examined in two age groups, children in grade 6 and adolescents’ in grade 9. Furthermore, given the research indicating gender differences in threat interpretation, the influence of peer interaction in cognition will be compared between male and females.

Several hypotheses and research questions are examined. Consistent with the findings previous research of Barrett et al. (1996) children with high anxiety considered at risk were expected to show a greater number of threatening interpretations than healthy children (Hypothesis 1). Anxious children at risk were
also expected to show more avoidant responses than healthy children (Hypothesis 2). Furthermore, changes in anxious and healthy children’s responses following discussion with their peers will be examined. The study also aims to investigate age and gender differences in threat interpretation and response plans. Children in grade 6 and grade 9 will be compared in threat interpretation and response plans at pre and post-peer discussion. Males and females will be compared in threat interpretation and response plans at pre and post-peer discussion. To evaluate these hypotheses and research questions the methodological design for this study is as follows.

Method

Participants

One hundred and sixty two children participated in the study. Participants were selected from four preselected schools in Brisbane, Australia, recruited to participate in a large-scale longitudinal project, which is described in study two. Children were assigned to either an 'at risk' group or a healthy group based on their scores on a standardised self-report measure of anxiety. The sample comprised of 96 grade 6 students, and 66 grade 9 students. Ninety-six students were male, and 66 students were female. The at risk group comprised of 81 participants, 53 were in grade 6 and 28 were in grade 9, 43 male, 38 female. The healthy group comprised of 81 participants, 44 were in grade 6 and 38 were in grade 9, 53 males and 28 females.

Materials

Children in study one were a subset from study two, and as such completed a battery of self-report questionnaire at three different points in time (pre-intervention,
post-intervention and 12-month follow-up (see Appendix B). However the following materials were used specifically for study one:

**Self-Report Measure.** Scores on the Spence Child Anxiety Scale (SCAS) determined children’s level of anxiety. The SCAS is a 45 item child self report measure designed to evaluate symptoms relating to separation anxiety, social phobia, obsessive-compulsive disorder, panic attack and agoraphobia, generalised anxiety, and fear of physical injury for 8-12 year olds. Children were asked to rate, on a 4-point scale ranging from never (0) to always (3), the frequency with which they experienced each symptom. This measure was selected due to its ability to reliably discriminate clinically anxious children from non-anxious controls, provide information as to the specific anxiety diagnoses, and because the scale was normed on an Australian population. A cut-off score of greater than 42.48 represents high levels of anxiety symptoms (Spence, 1994). The cut-off scores were based on the norms provided in the Australian research conducted by Spence (1994, 1997, 1998; Barrett et al., in press). This cut-off score and the method used to assign participants to the ‘at risk’ versus the ‘healthy’ group was based on the methodology used previously in several preventive intervention trials (Barrett & Turner, 2001; Lowry-Webster et al., 2001, 2003).

**Experimental Task.** Threat interpretation and response plans to ambiguity were measured. Threat and avoidance scores came from participant’s interpretation and plans of responses and solutions to two ambiguous situations respectively. This measure has been extensively used in previous research and has high validity and reliability as a measure of cognitive mechanisms shown to underlie the maintenance of anxiety in young people (Barrett et al., 1996; Dadds et al., 1996).
A total of 27 groups of six students were conducted, 16 groups were from grade 6 and 11 groups were from grade 9. Each peer group comprising of ‘healthy’ (non-anxious) and ‘at risk’ (anxious) children. Due to the overrepresentation of males in the sample, there was an unequal distribution of males to females in some groups. Of the grade 6 groups, 6 groups comprised of 3 males and 3 females, 10 groups comprised of 4 males and 2 females. Of the grade 9 groups, 6 groups comprised of 3 males and 3 females, 5 groups comprised of 2 females and 4 males. In order to minimise the possible effects of social desirability (Kendall & Flannery-Schroeder, 1998), as discussed in chapter one, the experimenter introduced herself and explained the following reasons and procedures of the assessment:

I am going to read aloud two situations on the questionnaire, please circle one answer that best describes what you would really think in each situation, and the one answer what you would really do in each situation. Remember, there are no right or wrong answers. Just circle the answer that is closest to what you think. No one from school will ever see what you write down, so please be honest.

To control for developmental differences children in grade 6 and children in grade 9 completed different ambiguous vignettes. The two ambiguous situations used for Grade 6 participants were as follows:

You see a group of students from another class playing a great game. You walk over and want to join in and you hear them laughing. What do you think is most likely to happen next in the story? (a) They are going to start looking at you and telling secrets about you, (b) They will soon ask you to join in and play, (c) One of them is likely to rush up and push you away, (d)
They are going to notice you and smile. Based on this story, what would you do? (a) I would keep on walking past them, and pretend I didn’t want to play, (b) I would ask them if I could play with them, (c) I would go and play with someone else, or (d) I would wait and see if they asked me to join them.

You have a test at school today, and on the way to school your stomach starts to feel really funny. Why do you think you feel funny in the tummy? (a) There is something wrong with your stomach and you need an operation, (b) You ate some bad food and are going to be really sick at school, (c) You are just a little scared or nervous about your exam, or (d) It's okay it will go away soon. Based on this story What would you do? (a) Go to school and do your test and see how you feel later, (b) Tell your mum or dad you are really sick and ask them to take you home, (c) Take some deep breaths and try not to worry about it, or (d) Go to the doctors straight away.

The two ambiguous situations used for Grade 9 participants were as follows: You see a group of students in your grade smoking behind the bus stop after school. You walk over and want to talk to them and you hear them laughing. What do you think is most likely to happen next in the story? (a) They are going to start looking at you and think you’re a nerd, (b) They will soon ask you if you’d like to join in and have a cigarette, (c) One of them is likely to yell out and tell you to get lost, or (d) They don’t notice you. Based on this story, what would you do? (a) I would walk/run away, (b) I would ask them if I could join them, and then decide if I wanted to smoke or not, (c) I would
say “No thanks – smoking is for losers”, and walk away, or (d) I would wait and see if they asked me to join them.

It is a free dress day at school and you don’t have anything cool to wear. You get to school and the friends you sit with are all wearing really great stuff. What do you think is most likely to happen next in the story? (a) You’re friends look at you and say “Oh no – why are you wearing that?” (b) No one notices your clothes and they just start talking to you about the weekend, (c) One of you friends looks at you and says “Next time, why don’t you borrow something of mine”, or (d) Your friend tells you that you look cool’. Based on this story, what would you do? (a) I would try really hard to avoid my friends for the rest of the day, (b) I would tell them to get lost and then walk off, (c) I tell them they look great and then join in the conversation, or (d) I just sit with my friends and say nothing.

Each peer group was instructed to discuss the two ambiguous situations and attempt to reach an agreement on what is most likely to happen next and what they would do about it. Participants were instructed to discuss each ambiguous situation for a 5-minute duration. During the group discussion the experimenter left the room and returned after the 5-minute duration. Participants were asked to complete a second ambiguous questionnaire and provided the following instructions:

What we want to find out is if what you think and would do in these situations has changed now you have talked as a group. So like before it is important that you circle one answer on the questionnaire that best describes what you would really think in each situation, and one answer what you
would really do in each situation. If you think the same way, that’s OK, just circle the same response as last time. If you think differently, that’s OK too, just circle a different answer. Do you understand?

In summary, the dependent variables derived from the experimental task were threat interpretations and response plans to the each of ambiguous situations. The explanation each participant gave was scored as threat if it indicated threat (e.g. One of them is likely to rush up and push you away, or, one of them is likely to yell out and tell you to get lost). It was scored as non-threat if it provided either a neutral or positive explanation (e.g. They are going to notice you and smile). Participant’s response plans to ambiguity were calculated as either avoidant or proactive solution to the each of the ambiguous situations. A solution was scored as proactive if it recommended a constructive solution (e.g. I would ask them if I could play with them) or avoidant if it suggested an action that involved avoidance of the situation (e.g. I would keep on walking past them, and pretend I didn’t want to play).

Design and Procedure

All participants completed the SCAS (Spence, 1998) in their classroom within regular school hours. Participants were assured of confidentiality and that they may withdraw at any time. All questionnaire items were read aloud to children. Participants were stratified into ‘at risk’ and ‘healthy’ groups, based on their pre-peer discussion scores on the SCAS (Spence, 1998). Consequently, participants were allocated to the ‘healthy’ group based on scores below the clinical cut off score of 42.48 at pre-intervention, and participants were allocated to the ‘at risk’ group by scores higher than the clinical cut off score of 42.48 at pre-peer discussion. An overall total of 27 groups were conducted. The study involved a total of 16 grade 6 groups and a total of 11 grade 9 groups.
A trained psychologist conducted the ambiguous situation task in a quiet room within school hours. The experimenter welcomed participants into the room and invited them to sit around a table. The experimenter introduced herself and explained the aforementioned reasons and procedures of the assessment. Each group member was asked to complete the ambiguous situation questionnaire prior to and following the peer group discussion of these vignettes as described previously.

Results

Descriptives

A number of t-tests were conducted to determine whether the groups differed on the SCAS (Spence 1998) at pre-peer-discussion. Means and standard deviations for the untransformed scores on the SCAS are presented in Table 5.1. Risk groups were significantly different on total anxiety scores on the SCAS, $t(160) = 28.33, p < 0.001$ Children in the at risk group scored higher on the SCAS than children in the healthy group. No significant differences were found on total anxiety scores on the SCAS, across grade $t(160) = 1.23$, ns, or gender $t(160) = .44$, ns.

Table 5.1

*Means and Standard Deviations for Spence Children’s Anxiety Scale*

<table>
<thead>
<tr>
<th>Measure</th>
<th>Spence Child Anxiety Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group</td>
<td>$M$</td>
</tr>
<tr>
<td>Healthy</td>
<td>6.53</td>
</tr>
<tr>
<td>At Risk</td>
<td>49.89</td>
</tr>
<tr>
<td>Grade 6</td>
<td>30.52</td>
</tr>
<tr>
<td>Grade 9</td>
<td>24.85</td>
</tr>
<tr>
<td>Male</td>
<td>26.02</td>
</tr>
<tr>
<td>Female</td>
<td>31.39</td>
</tr>
</tbody>
</table>
Results showed significant correlations ($p < .05$) between the threat interpretation and response plans variables ranging from 0.18 to 0.44. Table 5.2 presents the means and standard deviations for threat interpretation to the total ambiguous situations. Low scores represent threat interpretation and avoidance solutions and high scores represent non-threat interpretation and proactive solutions. Independent samples t-tests showed no significant differences in threat interpretation at pre-peer discussion between the risk groups ($t (160) = .847, \text{ns}$), grade ($t (160) = 2.12, \text{ns}$), or gender ($t (160) = 2.76, \text{ns}$). Analysis of pre-peer discussion differences between groups in response plans were significant for risk group ($t (160) = 8.46, p > .005$), grade ($t (160) = 2.12, p > .001$), and gender ($t (160) = 17.73, p > .001$). Anxious children, grade 9, and male children reported greater avoidance to hypothetical situations compared to the healthy, grade 6 and female groups.

**Table 5.2**

*Means and Standard Deviations for Threat Interpretation and Response Plans*

<table>
<thead>
<tr>
<th>Measure</th>
<th>Threat Interpretation</th>
<th>Response Plans</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Time</td>
<td>Pre</td>
</tr>
<tr>
<td>Group</td>
<td>$M$</td>
<td>$SD$</td>
</tr>
<tr>
<td>Healthy</td>
<td>3.49</td>
<td>0.59</td>
</tr>
<tr>
<td>At Risk</td>
<td>3.40</td>
<td>0.64</td>
</tr>
<tr>
<td>Grade 6</td>
<td>3.51</td>
<td>0.58</td>
</tr>
<tr>
<td>Grade 9</td>
<td>3.36</td>
<td>0.67</td>
</tr>
<tr>
<td>Male</td>
<td>3.38</td>
<td>0.65</td>
</tr>
<tr>
<td>Female</td>
<td>3.54</td>
<td>0.55</td>
</tr>
</tbody>
</table>
Group Changes in Threat Interpretation and Response Plans

To evaluate changes in children’s thinking and response plans in ambiguous situations, two 2 (risk group: healthy v's at risk) x 2 (grade: 6 v's 9) x 2 (gender: male v’s female) x 2 (time; Pre v’s post-peer discussion) repeated measures multivariate analyses (MANOVA) were conducted on the dependant variables (DV’s: threat interpretation and response plans) at pre- and post-peer discussion.

Multivariate results for threat interpretation using the Pillais Trace statistic at a significance level of $p < .05$ and statistical power were as follows. A significant main effect was found for time Pillais $F(1,154) = 18.14, p < .001, \eta^2 = .102$, indicating changes in threat interpretation in general. A significant main effect was found shown for time x grade Pillais $F(1, 154) = 10.93, p, < .001, \eta^2 = .074$.

However, all other multivariate results were non-significant. Examination of the time effect shows that overall participants increased their interpretation of ambiguous situations to non-threat following the peer discussion.

Follow-up univariate tests of threat interpretation at post-peer discussion showed no significant differences between at risk and healthy groups $F(1, 160) = 1.24, ns$. A significant difference was found for grade, $F(1,60) = 6.17, p < .010$. The grade 9 group evidenced significantly greater non-threat interpretation following the peer discussion, compared to the grade 6 group. Females also scored higher non-threat interpretation than males however this result was non significant $F(1, 160) = 3.58, ns$.

Table 5.2 presents the means and standard deviations for response plans the ambiguous situations in total. One way analysis of variance (ANOVA) showed significant differences in response plans at pre-peer discussion between the healthy
and at risk groups $F(1, 160) = 5.14, p < .05$, grade 6 and grade 9 participants $F(1, 160) = 6.17, p < .05$, and males and females $F(1, 160) = 3.58, p < .05$. Table 5.2 indicates that healthy, grade 6, and female children, were more likely to report proactive solutions compared to at risk, grade 9 and male children prior to the peer discussion.

Multivariate results for changes in response plans using the Pillais Trace statistic at a significance level of $p < .05$ and statistical power were as follows. A significant main effect was found for time Pillais $F(1,154) = 13.03, p < .001$, $\eta^2 = .996$, indicating changes in response plans in general. Examination of Table 5.2 indicates that compared to the at risk group, healthy children were more significantly more likely to endorse prosocial responses in ambiguous situations prior to the peer discussion $F(1, 160) = 5.14, p < .05$. and following the peer discussion $F(1, 160) = 4.45, p < .05$.

A significant effect was found for time and grade Pillais $F(1, 154) = 6.91, p < .010$, $\eta^2 = .026$. Follow-up univariate tests showed that grade 6 group were significantly more likely to endorse prosocial response plans compared to the grade 9 group prior to the peer discussion $F(1, 160) = 4.35, p < .05$. As shown in figure 1, an unexpected interaction was found for grade, whereby grade 6 children were more likely in choose prosocial solutions prior to the peer discussion compared to grade 9. However, at post-peer discussion grade 6 reported a decrease in prosocial responses, on the contrary grade 9 where more likely than grade 6 children to endorse prosocial responses.
Univariate tests for gender effects showed that at compared to males females were more significantly likely to chose prosocial responses to ambiguous situations prior to the peer discussion $F(1, 160) = 6.41, p < .05$, and this remained unchanged at post-peer discussion $F(1, 160) = 10.86, p < .05$. Again, no significant interactions were found for risk group, grade and gender.

Discussion

The aim of the first study in this thesis was to add to the current body of knowledge of the risk and protective factors in child anxiety by examining the effects of peer interaction on anxious children’s thinking and behaviours. Overall results showed that children in general increased their interpretation of ambiguous situations as non-threatening, and increased prosocial response plans following a discussion with their peers.
In this study, children at risk of an anxiety disorder were expected to endorse more threatening interpretations compared to healthy children (Hypothesis 1). This hypothesis was not supported as anxious and healthy children reported similar scores of interpretation of threat in ambiguous situations prior to and following the peer discussion. This finding is unexpected and particularly interesting given that the second hypothesis proposing that anxious children would offer more avoidant solutions than healthy children was supported. Hence, in the current study all children interpreted the situations as threatening to a certain degree, however healthy children were more likely to choose adaptive methods of coping, whereas anxious children were more likely to choose to avoid these situations.

The study also aimed to investigate age differences in threat interpretation and response plans. Grade differences were found between grade 6 and grade 9 groups prior to and following the peer discussion. Grade 9 children were more likely to interpret ambiguous situations as threatening and chose avoidant response plans prior to the peer discussion compared to the grade 6 group. However, the grade 9 group increased responses to non-threat and prosocial plans following the peer discussion. On the contrary an unexpected reverse effect was observed for the grade 6 group in response plans, whereby participants increased avoidant responses following the peer discussion. This finding was unexpected, and at this point we can only speculate why this is the case. One possible explanation is that in the current sample the anxious grade 6 children modelled avoidant solutions to their healthy (low-anxious) group members, resulting with increased choices of avoidant responses. This finding suggests that it is important for researchers to screen participants for group selection, in order to prevent such negative effects occurring in future studies. All children in the current study also participated in study two,
which involved a universal cognitive-behavioural preventive intervention for child anxiety. Follow-up research showed that children evidenced reductions in anxiety and increased prosocial coping following participation in the program (Lock & Barrett, in press).

Examination of gender differences also showed that in the current sample, males were more likely to perceive ambiguous situations as threatening, and chose avoidant response plans compared to females. This finding was incongruent with previous studies indicating girls with low-test anxiety showed selective attention to threatening information equal to high-anxious children (Kindt et al., 1997; Vasey et al., 1996). Further replication research is needed to confirm gender differences in threat interpretation and response plans.

Before summarising the results found it is important to consider the limitations of this study and how further research might address these. Firstly, due to the overrepresentation of males in the sample, there was an unequal distribution of males to females in some groups. As such, possible gender effects may limit the external validity of these findings. Further research incorporating equal gender ratio within peer groups is needed to confirm the results of this study.

Secondly, the effects of familiarity and social desirability within the peer groups may further limit the external validity of these results. Although participants were randomly selected from each grade based on their anxiety scores and measures were taken during the procedure to minimise the effects of social desirability, familiarity among peers varied from group to group and the true effects of social desirability among peers remains unclear. Additional research controlling for familiarity and including valid and reliable measures of social desirability is needed
to further clarify how child expectations and biases impact on the accuracy of anxiety measurement during peer group tasks.

Thirdly, self-report was the method used to measure children’s threat interpretation and response plans in ambiguous situations prior to and following the peer discussion, therefore it cannot be concluded how the children’s response plans would be related to actual child behaviour. Further research may advance the current literature by sample actual child behaviour using real-life situations. Fourthly, due to time constraints a small number of ambiguous vignettes were used in the present study, a potential limitation on the power of the results. Future research utilising a larger number of vignettes would increase understanding of children’s thinking and behaviours in a wider range of ambiguous situations, this study compared responses pre-peer discussion and post-intervention peer discussion as previous studies have done (Barrett et al., 1994; Chorpita et al., 1996; Cobham et al., 1999, Logsdon-Conradsen, 1998). Consequently, it is possible that it was the experience of responding twice to the vignettes and not the peer discussion itself that produced the change in response.

The findings of this study have important implications for school-based programs designed to increase children’s resilience to emotional problems, as structured peer group activities have the advantage of fostering social competence within the classroom. The most important finding from this study is that peer discussion does influence children’s cognition and avoidance behaviour. Therefore psychosocial intervention programs involving peers who model and encourage proactive behaviours, such as speaking about thoughts and feelings, problem solving, helping, sharing, turn taking, speaking positively and respecting others,
being honest and cooperating, has the advantage of not only normalising emotional problems but increasing children’s communication and social skills.

Given the age and gender effects found in the current sample, grade 6 children may be potentially more vulnerable to negative peer interaction than grade 9 children, whilst grade 9 appeared to benefit the greatest from positive peer interaction. Boys were more likely to perceive ambiguous situations as threatening and to chose maladaptive coping responses. These findings suggest all children, but particularly younger children and boys may benefit from positive peer group activities. The more opportunities children have to work in structured peer groups, the more opportunities children have to learn to resolve conflict, participate in conversation, hear new ideas, develop social skills, learn about emotions and learn the rules of social interaction. Hence, the use of structured peer group activities has the potential to enhance the process component of intervention programs aimed at increasing children’s coping skills.

As the first study of its kind to examine age differences in threat interpretation and response plans these preliminary results have potentially important implications for future research in the preventive intervention of child anxiety. Overall, findings provided preliminary evidence of the potential role of peers in either increasing risk for children in grade 6, or as a protective factor proving support for adolescents in grade 9. The next question was to determine the age at which universal school-based preventive intervention would be most effective in reducing risk by building youngsters resilience to anxiety problems. Specifically, by examining the changes in children’s anxiety, depression and coping skills. Study two will be discussed in the following chapter.
CHAPTER SIX

STUDY TWO: DEVELOPMENTAL DIFFERENCES IN AN UNIVERSAL PREVENTIVE INTERVENTION FOR CHILD ANXIETY USING THE FRIENDS PROGRAM

Preventive intervention has emerged as a vital step forward in clinical research following data indicating anxiety disorders are among the most common forms of psychopathology in youngsters (Kashani & Orvaschel, 1990; Mattison, 1992). Several risk and protective factors associated with childhood anxiety disorders have been identified, along with effective treatment protocols (Kendall, 1994; Howard & Kendall, 1996; Barrett et al., 1996, 1998, 1999; Silverman et al., 1999a, 1999b), as prerequisites to the development of preventive programs for child anxiety problems (Spence, 2001).

School-based programs are gaining recognition as the most practical and efficient method of reducing the prevalence of anxiety disorders within the community (Costello, 1989; Department of Health and Human Services, 1991). School-based programs generally fall under three main intervention types (Gordon, 1987): Universal (involving all members of a population), selective (focusing on a subgroup at high risk), or indicated (targeting those with subclinical symptoms).

Universal school-based preventive interventions are considered to involve many psychosocial benefits and increase the utilisation of psychological services by broadening access for a wider youth population (Adelman & Taylor, 1999), as the majority of children with anxiety disorders do not attend any agency for treatment (Tuma, 1989; Zubrick et al., 1997). Moreover, anxious children are typically undetected by teachers because these children are usually academically motivated, function independently and behave appropriately in the classroom (Wentzel &
Asher, 1995). Also, large numbers of youngsters with psychological, emotional, behavioural and/or social difficulties present a serious problem to schools. Consequently, another advantage of school-based programs is the potential reduction of psychosocial difficulties within the classroom and the promotion of learning and healthy development in children and adolescents.

Empirical support has been demonstrated for the efficacy of the FRIENDS cognitive behavioural intervention as a school-based program for child anxiety (Barrett & Turner, 2001; Barrett et al., in press; Dadds et al., 1997, 1999; Lowry-Webster et al., 2001, 2003). These empirical studies indicate that the cognitive behavioural strategies involved in FRIENDS program are effective in modifying risk characteristics such as an avoidant coping style and negative interpretations of events, and in promoting protective factors such as family and peer support.

In addition, classroom-based interventions such as the FRIENDS program have the additional advantage of utilising structured peer group activities which have the potential to increase intervention effectiveness through the process of enhancing children’s resilience to emotional problems by building social competence within the classroom. Structured peer group activities also foster positive peer interactions and peer learning of proactive coping and social skills. However, whilst research findings on universal preventive intervention are encouraging, a number of developmental and methodological considerations have yet to be addressed.

The assessment of developmental factors in the efficacy of intervention outcome is an important issue in preventive intervention research. Developmental factors have been shown as significantly influences in the accurate assessment and treatment outcome for a number of psychological, social and behavioural problems
in youngsters (Eyberg, Schmann, & Rey, 1998). With the exception of the preliminary study conducted by Barrett et al. (in press) the majority of research to date has been based on a single group of children of various ages ranging from 7 to 14 years. Intervention studies targeting young anxious-withdrawn or shy children have been found to be ineffective (LaFreniere and Capuano, 1997; Roth, 2000). In contrast, there is some evidence to suggest (Barrett & Turner, 2001; Barrett et al., in press) that preventive intervention in late childhood may yield greater success in reducing anxiety symptoms and preventing the development and onset of anxiety disorders in youth. The current study investigates the effects of preventive intervention at different stages in development in order to confirm the age at which children benefit the most from school-based prevention programs.

Furthermore, exploration of children’s coping responses would enhance our understanding of the effectiveness of intervention protocols. As discussed in chapter two, coping skills are an important protective factor in the development of child anxiety (Spence, 2001), although researchers have yet to measure intervention effects on children’s coping style. Spence (2001) states that the type of responses children use to cope with stressful experiences largely determines the level of fear, anxiety and distress they experience. Examination of changes in children’s coping responses prior to and following intervention is important in understanding the strategies children employ to manage difficult situations. The current study examines the effects of the FRIENDS intervention in enhancing children’s coping skills at two different developmental ages.

Whether gender is a predictor of intervention outcome also remains unclear, as studies that have examined gender differences in anxiety yield different results. In their universal intervention study, Barrett & Turner (2001) found females aged
between 10 to 12 years reported greater levels of anxiety at pre-intervention and post-intervention intervals compared to males. However, the universal train-the-trainer study conducted by Lowry-Webster et al. (2001, 2003) reported non-significant gender differences in anxiety at post-intervention and 12-month follow-up. Similar findings were shown in the QEIP (Dadds et al., 1997, 1999), although gender (female) was reported to be one predictor of treatment outcome at 2-year follow-up. In order to examine age and gender variations in children’s anxiety over time, and to establish which children may benefit the most from early intervention, the current study compares the intervention effects at different ages and across gender.

A final methodological consideration is that universal preventive intervention research has been based on children’s self-reported changes in anxiety or diagnostic status using the same data set; no studies have incorporated a multi-method approach inclusive of questionnaires and diagnostic interview at each time point.

The present study aims to extend on previous research (Barrett et al., in press) and address the aforementioned issues. The current study involves a longitudinal multi-method design to examine the effects of a universal school-based cognitive behavioural intervention for child anxiety at two developmental levels, and to investigate the role of gender and coping style in the prevention of child anxiety. This study involved five specific objectives:

The first objective was to examine the effects of a universal preventive intervention by comparing changes in anxiety between children who had received the FRIENDS intervention program and those allocated to a monitoring group. As research suggests anxiety as a risk factor to depression (Cole et al., 1998), we were
interested in changes in both children’s level of anxiety over time and as well as changes in symptoms of depression. The specific aims were to compare self-reported anxiety and depression between an intervention group and a monitoring group at post-intervention and 12-month follow up intervals. It was hypothesised that the intervention group would be associated with greater reductions in self-reported anxiety than the children in a monitoring group would.

The second objective was to compare the effects of the universal intervention on anxiety and depression between children at two developmental levels, to determine the age group at which children would benefit the most from a preventive intervention. In order to answer this question, children in grade 6 at primary school and adolescents in grade 9 in secondary school were to be compared on self-reported anxiety and depression at pre-intervention, post-intervention and 12-month follow-up time intervals.

The third objective was to examine the effects of the preventive intervention in reducing anxiety in children with severe symptoms identified ‘at risk’ of developing an anxiety disorder. It was hypothesised that children ‘at risk’ in the intervention group would evidence greater reductions in anxiety and changes in diagnostic status at post-intervention and 12-month follow-up intervals in comparison to children ‘at risk’ in the monitoring group.

A fourth objective was to compare the effects of the universal intervention on children’s coping responses. The aim was to examine changes in children’s coping style (proactive versus avoidant strategies) between the intervention and monitoring groups in different age groups. In order to explore this question, grade 6 primary school children and grade 9 secondary school adolescents were to be
compared on a self-report measure of coping style at pre-intervention, post-intervention and 12-month follow-up time intervals.

The final objective was to examine gender differences in the effects of the universal intervention on anxiety and depression and coping strategies. In order to answer this question, females and males were to be compared on self-reported anxiety, depression and coping strategies at pre-intervention, post-intervention and 12-month follow-up time intervals.

Method

Participants

Data for this study was collected over a period of two consecutive years. As the study was focused upon investigating age differences, it was considered desirable to obtain relatively homogeneous age groups within each of the participating grade levels. Age restrictions were therefore imposed, and students falling outside of these age restrictions, or students who failed to provide information pertaining to their age, were excluded from the study. Following these exclusions, participants were 977 children aged 9 to 16 years in grade 6 and grade 9.

Measures

At pre-intervention, post-intervention, and 12-month follow-up intervals, all participants in both the intervention and monitoring groups completed a battery of self-report questionnaires (Appendix B) in their classroom within regular school hours. The psychometric properties for these measures are reported in chapter one. Participants were assured of confidentiality and that they may withdraw from the research at any time. All questionnaire items were read aloud to children. Children
with high levels of anxiety on the self-report measures were administered a standardised diagnostic interview to assess for DSM-IV disorders. These materials are detailed below:

*The Spence Child Anxiety Scale (SCAS; Spence, 1998).* The details of the SCAS are provided in study one. This measure was selected due to its ability to reliably discriminate clinically anxious children from non-anxious controls, provide information as to the specific anxiety diagnoses, and because the scale was normed on an Australian population. The clinical cut-off for this scale is 42.48 (Spence, 1994).

*The Revised Children’s Manifest Anxiety Scale (RCMAS; Reynolds & Richmond, 1978).* The RCMAS is designed for use with youngsters aged 5 to 19 years. The scale consists of 37 questions, involving 28 items assessing a child’s generalised anxiety, and 9 items assessing social desirability (or potential for lying) to which children respond by indicating whether or not each item is true of them, and items are scored as either 1(true) or 0 (not true). The 28 anxiety questions can be summed to provide a total anxiety score and this was used in the current study.

*The Children’s Depression Inventory (CDI; Kovacs, 1985).* The CDI is the most commonly used self-report measure for depressive symptoms in children aged 7 to 17 years. The scale has 27 items dealing with sadness, self-blame, insomnia, loss of appetite, interpersonal relationships, and school adjustment. For each item, there are three response alternatives differing in severity and intensity. Respondents are asked to endorse the one alternative within each item that best applies to them during the past two weeks. Items are scored as 0, 1 or 2, depending on the level of symptom severity, with higher scores reflecting greater severity. The clinical cut off for the Children’s Depression Inventory is 18. The scale has demonstrated high

The Coping Scale for Children and Youth (Brodzinsky et al., 1992). The Coping Scale for Children and Youth is a 29 item self-report measure of coping behaviour or use with children aged from 10 to 15 years. The Coping Scale 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 endorse the frequency to which they have applied that coping strategy during the past few months using a 4-point scale ranging from Never (scored 1) to Very Often (scored 4). Each subscale is summed separately to provide a measure of coping; assistance seeking, cognitive-behavioural problem solving, cognitive avoidance, and behavioural avoidance strategies. The Coping Scale has shown good reliability and validity (Brodzinsky, et al, 1992).

Anxiety Disorder Interview Schedule for Children – IV (ADIS-C-IV; Silverman & Albano, 1994). The ADIS-C –IV is a structured interview designed to permit differential diagnosis according to the Diagnostic and Statistical Manual of Mental Disorders – Fourth Edition (DSM-IV, 1994), and to provide detailed information for functional analyses of the anxiety disorders. The ADIS-C-IV is designed for use with children age’s 6 to 17 years. For younger children, the interviewer may find it necessary to re-phase or repeat certain questions to ensure the child’s comprehension. The following problem areas can be diagnosed with the ADIS-C-IV: school refusal behaviour, separation anxiety disorder, social phobia, simple phobia, panic disorders, panic disorder with agoraphobia, agoraphobia
without history of panic disorder, generalised anxiety disorder, obsessive –
compulsive disorder, post-intervention traumatic stress disorder, dysthymia, major
depression, and attention deficit hyperactivity disorder.

Procedure

Intervention Group (FRIENDS). The cognitive behavioural intervention used
was the FRIENDS program (Barrett, Lowry-Webster & Turner, 2000a, 2000b),
which has shown to be effective in child, family and group format in the treatment
and early intervention of child anxiety disorders (for a comprehensive overview, see
Barrett, 1999). The FRIENDS program was based on the Coping Koala anxiety
treatment program (Barrett, Dadds & Rapee, 1991) and Kendall’s (1990) coping cat
anxiety treatment program. 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!

Group processes are used to help children learn positive strategies from each
other, and reinforce individual efforts and change. Group processes included
normalisation of anxiety experiences, group exposure through discussion and role-
plays of common threatening experiences, and peer learning through discussion of
success and difficulties.

In recognition of the developmental needs of children at different ages
(Kendall, 1994; Barrett, 2000), FRIENDS has two parallel forms: one for children (7
to ll years) and the other for youth (12 to 16 years). A total of 15 intervention groups
were run in the classroom. Grade 6 participants received the child version of
FRIENDS, and the grade 9 participants received the youth program. There were between 20 and 30 children in each group. Each session consisted of an outline of the current session, review of homework activities and specific strategies.

The FRIENDS program consists of 10 sessions, 45 to 60 minutes in duration, and two booster sessions, which are conducted one month and three months following completion of intervention. The booster sessions provide additional opportunities for children to practice the skills learned in the previous sessions and to facilitate the generalisation of these skills to help them cope with situations encountered in everyday life. The FRIENDS program has a group leaders’ manual that describes the activities that therapists need to implement in each session. Children work through a workbook and parents have a booklet detailing the strategies discussed in each parent session. The manuals permit flexible implementation to allow for family individuality and the needs of any specific group.

The FRIENDS program also incorporates a family skills component, consisting of four, 2-hour parent workshops with content matched to what the children’s sessions cover each week. Parents of participants in the intervention group were notified of the workshops by school newsletter and personal letter from the school. Firstly, parents were provided information on how to identify and deal appropriately with anxiety. Secondly, parents are trained in reinforcement strategies including praise and tangible rewards for gradually facing feared situations. Thirdly, parents are taught cognitive techniques to challenge unhelpful thoughts. Fourthly, parents receive brief training in communication, partner support and problem-solving skills. Finally, the development of a support maintenance network among parents was encouraged.
However, despite substantial efforts to advertise and recruit parents with the help of the school personnel, attendance to the workshops was particularly poor, involving an average of 10 parents per school. Consequently, we were unable to obtain enough data to analyse the affect of parent attendance on the outcome of the study.

**Intervention Integrity.** Either clinical masters trained psychologists or doctoral candidates conducted all intervention groups. These psychologists were trained extensively in the delivery of the FRIENDS program. To ensure all topics and sessions were delivered as designed each group facilitator completed the Program Integrity Checklist (Barrett, Lowry-Webster & Turner, 1999). This checklist a) lists session-by-session content areas, and b) ask trainers to rate the overall effectiveness of their implementation. The psychologists checked the items they felt they successfully completed during the implementation of each session, and provided overall likert ratings on a number of dimensions of group process skills (e.g. listening, including children, use of positive reinforcement, setting home tasks, implementation of group problem solving tasks, and completion of activities as outlined in the manual). In short this measure examines how effective psychologists felt they were in implementing the FRIENDS program. The integrity checks showed 88.8% to 95.6% concordance between session and manual content.

**The Monitoring Group.** Seven schools responded to a written invitation to participate in a longitudinal project investigating the onset, course, and prevention of symptoms of anxiety and depression in children and youth. The schools initially invited to participate were matched in pairs as closely as possible for geographic location, SES, and size of the student body. One school within each pair was
randomly assigned to receive a preventive intervention, and one school within each pair served as a monitoring control comparison to evaluate the effectiveness of the intervention. Three schools were assigned to the intervention group and four schools were assigned to the monitoring control group.

The procedure conducted with the monitoring group was concurrent with the procedure used with the intervention group. Parents were sent a letter inviting them to participate in a longitudinal project investigating the onset, course, and prevention of symptoms of anxiety and depression in children and youth. Parental consent for students’ participation in study was obtained via a letter sent home to parents, and assent was obtained from each of the students at the time the measures were completed. Parents and children were informed they could withdraw from the study at any time. All children in the monitoring groups were administered the aforementioned self-report inventories asking about symptoms of anxiety, depression and coping strategies in the classroom by the author of the thesis. Parents and children in the monitoring group completed all assessment measures at the same time intervals as the intervention groups.

Safety monitoring was conducted at post-intervention and 12-month follow-up intervals. The parents of children identified with high anxiety or depressive scores on either the SCAS (Spence, 1997), CDI (Kovacs, 1984), or ADIS (Silverman & Nelles, 1994) were informed by a letter if their child met a diagnosis rated at a clinical severity of four or more. Such families were referred for individual treatment for their child’s problems, and excluded from further follow-up assessment. Participants in the monitoring groups were provided the FRIENDS intervention program at the end of the study.
Results

Preliminary Analyses

Preliminary analyses identified violations of assumptions of statistical analysis. The data was screened for normality, linearity, missing cases and outliers using visual analysis of the box plots and scatter diagrams. Within each grade level, a small percentage of students (0.7.5% to 4.5%) had randomly missing data points throughout the questionnaires. As recommended by Tabachnick and Fidell (1996), given the random nature of this missing data, and the small number of students involved, these missing data points were substituted with the mean value for that question (mean values determined separately for each grade). Forty-one participants (4.7%) were excluded from analyses at this point as they were identified as outliers using Mahalanobis distance ($\chi^2(4) = 18.46, p < .001$), followed by manual screening to discriminate between participant response bias on questionnaires and extreme levels of anxiety and depression.

All dependant variables were positively skewed and logarithmic and square root transformations were performed as appropriate, although normality and linearity was significantly improved, there was minimal difference in the results of analyses. Multicollinearity was assessed using examination of the correlation matrix and bivariate correlation analysis. Results showed significant correlations ($p < .05$) between the anxiety and depression variables and coping subscales ranging from 0.58 to 0.76. As these correlations were lower than 0.90, all dependant measures were included in the analysis (Tabachnick & Fidell, 1996).

Homogeneity of variance-covariance matrices were found to be significant using Box’s M $p < .001$. These dependant variables were expected to be positively
skewed in a community population, and due to the large sample size, violations of assumptions were considered acceptable using Pillais Trace statistic at an alpha level of $p < .05$. Results are reported on the untransformed variables (Tabachnick & Fidell, 1996).

**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 SCAS. This was to enable analysis of the intervention effects for children with high anxiety, as children in the intervention group with low levels of anxiety at pre-treatment were expected to report marginal or no changes in anxiety at post-intervention and 12-month follow-up intervals. Thus the lack of change in their responses on the dependant 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 the clinical cut off score of 42.48 at pre-intervention, and participants were allocated to the ‘at risk’ group by scores higher than the clinical cut off score of 42.48 at pre-intervention. Table 6.1 shows the number and percentage of children ‘at risk’ at each time interval on the basis of their scores at pre-intervention, post-intervention and 12-month follow-up intervals.

To examine the convergent validity of SCAS anxiety scores, a Pearson product moment correlational analysis was conducted. Scores on the SCAS were correlated with the RCMAS. Results showed a significant moderate positive correlation’s on pre-intervention anxiety scores ($r = .760$, $p > .001$), post-
intervention anxiety scores ($r = .560, p > .001$) and 12-month follow-up ($r = .716, p > .001$).

Chi square tests at pre-intervention revealed significant differences across grade $\chi^2(1) = 19.18, p > .001$, and gender $\chi^2(1) = 18.73, p > .001$. Results showed that the “at risk” group comprised of a greater number of grade 6 children and females. At pre-intervention, 47 (71.2%) of grade 6 children, compared to 19 (28.8%) of grade 9 students, and 50 (75.8%) females compared to 6 (24.2%) males were ‘at risk’ of an anxiety disorder.

Table 6.1

*Number and Percentage of Children ‘At Risk’ at Pre-Intervention, Post-Intervention and 12-Month Follow-up Intervals*

<table>
<thead>
<tr>
<th>Group</th>
<th>Assessment</th>
<th>Intervenion ($n = 442$)</th>
<th>Monitoring ($n = 295$)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Pre</td>
<td>Post</td>
</tr>
<tr>
<td>Grade 6</td>
<td>Gender</td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>19</td>
<td>10.8%</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>4</td>
<td>4.6%</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>9</td>
<td>11.97%</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>3</td>
<td>1.5%</td>
</tr>
<tr>
<td></td>
<td>Total %</td>
<td>35</td>
<td>4.7%</td>
</tr>
<tr>
<td>Grade 9</td>
<td>Gender</td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>17</td>
<td>9.7%</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>7</td>
<td>4.4%</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>5</td>
<td>2.6%</td>
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<tr>
<td></td>
<td>Male</td>
<td>2</td>
<td>1.0%</td>
</tr>
<tr>
<td></td>
<td>Total %</td>
<td>31</td>
<td>4.2%</td>
</tr>
</tbody>
</table>
Attrition Rates and Missing Data.

Patterns of missing data were examined to determine drop out and absenteeism rates in order to assess potential influences of these factors on intervention outcome at post-intervention and 12-month follow-up intervals. At post-intervention, 101 children were absent from school, 77 (8.8%) from the intervention group and 24 (2.7%) from the monitoring group. By the 12-month follow-up 95 children had withdrawn from the study. A significantly greater $\chi^2 (1, 100) = 40.64, p < .001$ number of children dropped out from the monitoring group ($n = 69, 72.6\%$) compared to the intervention group ($n = 26, 27.4\%$).

Chi square analysis revealed significant grade differences in the children who dropped out of the study $\chi^2 (1, 977) = 3.87, p < .05$, and were absent at post-intervention assessment $\chi^2 (1, 882) = 23.27, p < .001$. A greater number of grade 9 children ($n = 79, 78.2\%$), compared to grade 6 children ($n = 22, 21.8\%$) were absent at post-intervention assessment. A greater number of grade 9 children ($n = 63, 66.3\%$), compared to grade 6 children ($n = 32, 33.78\%$) dropped out of the study. Non significant effects were found for gender in the number of children absent at post-intervention $\chi^2 (1,877) = 2.54, \text{ns}$, or dropped out of the study $\chi^2 (1, 95) = 2.30, \text{ns}$.

Analysis of missing data indicates that a significantly larger percentage of children from the ‘at risk’ group ($n = 11, 11.6\%$) dropped out of the study $\chi^2 (1, 95) = 4.688, p < .05$ in the monitoring group compared to the intervention group ($n = 0$). By SPSS default, cases with missing scores at either post-intervention or at 12-month follow-up were excluded from the statistical analysis. This resulted in a final sample of 737 participants, 442 (60.0\%) in the intervention group and 295 (40.0\%)
in the monitoring group. This sample comprised of 336 (45.6%) grade 6 students
and 401 (54.4%) grade 9 students, 366 (49.7%) males and 371 (50.3%) females. Six
hundred and seventy one (91%) participants were in the ‘healthy’ group and 66 (9%)
were in the ‘at risk’ group.

*Universal Intervention Effects on Anxiety and Depression.*

To evaluate the effects of the FRIENDS program on children’s self-reported
anxiety and depression, a 2 (group: intervention v's monitoring) x 2 (grade: 6 v's 9) x
2 (gender: male v’s female) x 3 (time: pre-intervention v’s post-intervention v’s 12-
month follow-up) two tiered repeated measures multi variate analysis (MANOVA)
was conducted on the dependant variables (DV’s; SCAS, RCMAS and the CDI). The first analysis was conducted to examine intervention effects between gender, and the second analysis examined intervention effects between risk group (healthy v’s ‘at risk’).

Table 6.2 presents the means and standard deviations for the child anxiety
and depression self-report measures. Multivariate results using the Pillais Trace
statistic at a significance level of $p < .05$ and statistical power were as follows. A
significant within subject main effect was found for time Pillais $F (6,723) = 45.49, p
< .001, \eta^2 = .274$, indicating changes in self-reported anxiety and depression in
general. Significant between subjects main effects were shown for group Pillais $F
(3,726)= 8.07, p < .001, \eta^2 = .032$, grade Pillais $F (3, 726) = 20.28, p < .001, \eta^2 = .077$, gender Pillais $F (3, 726) = 17.48, p < .001, \eta^2 = .067$, and risk group Pillais $F
(3, 726) = 79.05, p < .001, \eta^2 = .246$.

Significant within subjects interactions were found for time x grade Pillais $F
(6,723) = 9.04, p < .001, \eta^2 = .018$, time x gender Pillais $F (6,723) = 3.92, p < .001,$
$\eta^2 = .010$, time x risk group Pillais $F(6,723) = 28.04, p < .001, \eta^2 = .189$, time x group x grade Pillais $F(6,723) = 3.55, p < .01, \eta^2 = .008$, time x group x gender Pillais $F(6,723) = 2.25, p < .05, \eta^2 = .005$, time x grade x gender Pillais $F(6,723) = 3.05, p < .01, \eta^2 = .007$, and time x grade x risk group Pillais $F(6,723) = 2.22, p < .05, \eta^2 = .020$. Significant between subjects interactions were found for group x grade Pillais $F(3,726) = 4.51, p < .01, \eta^2 = .018$, and grade x gender Pillais $F(3,726) = 2.84, p < .05, \eta^2 = .012$.

To investigate the impact of each main effect and interactions on the individual dependant variables (DV's) of anxiety and depression, a Roybargmann stepdown analysis was performed on the prioritized DV’s, at post-intervention and 12-month follow-up. An alpha rate of 0.016 was used to adjust for type 1 error (Tabachnick & Fidell, 1996). Significant correlations ($p > .001$) were found across the DV’s at each time interval. All DV’s were judged to be sufficiently reliable to warrant step down analysis. Homogeneity of regression was achieved for all components of the step down analysis. In stepdown analysis each DV was analysed, in turn, with the higher-priority DVs treated as covariates and with the highest priority DV tested in a univariate analysis of variance (ANOVA).

Group, Grade and Gender Differences in Anxiety and Depression.

Univariate analysis of the group effect revealed significant differences in RCMAS anxiety scores, stepdown $F(1,735) = 18.82, p < .016$, and SCAS anxiety scores $F(1,735) = 13.96, p < .016$, across the intervention and monitoring groups at post-intervention, with RCMAS making a unique contribution to predicting these differences. As shown in Table 6.2 both groups evidenced reductions in anxiety at
post-intervention, but reductions were greater in the intervention group compared to the monitoring group. This trend continued at 12-month follow-up with significant differences in RCMAS anxiety scores, stepdown $F(1, 735) = 9.14, p < .016$, SCAS anxiety scores $F(1, 735) = 7.41, p < .016$, and CDI scores $F(1, 735) = 8.21, p < .016$, with RCMAS making a unique contribution to predicting these differences. Children in the intervention group showed lower anxiety at post-intervention and 12-month follow-up intervals, and lower depression at 12-month follow-up than children in the monitoring group.

Univariate analysis of the grade effect revealed significant differences in SCAS anxiety scores, $F(1, 735) = 5.90, p < .016$, and CDI scores $F(1, 735) = 6.21, p < .016$ at post-intervention. Table 6.2 shows that the grade 6 children reported higher anxiety, and lower depression, compared to the grade 9 children. A unique contribution to predicting these differences was made by both the SCAS, stepdown $F(1, 735) = 16.43, p < .016$, and the CDI stepdown $F(1, 735) = 9.43, p < .016$. At 12-month follow-up, significant grade differences were found on the RCMAS, stepdown $F(1, 735) = 31.66, p < .016$, and the CDI $F(1, 735) = 43.50, p < .016$. A unique contribution to predicting these differences was made by the RCMAS and to a lesser extent the SCAS stepdown $F(1, 734) = 18.53, p < .016$. All children continued to show reductions in anxiety, however grade 6 children reported significantly lower anxiety and depression than grade 9 children.
Table 6.2

Means and Standard Deviations for the SCAS for Grade and Gender

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<tr>
<th>Group</th>
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<th>Post</th>
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Table 6.2 (continued)

*Mans and Standard Deviations for the RCMAS for Grade and Gender*

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Table 6.2 (continued)

*Means and Standard Deviations for the CDI for Grade and Gender*

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<th>Post M</th>
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<td>7.34</td>
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<td>7.13</td>
<td>8.63</td>
</tr>
<tr>
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<td>Monitoring Group Total</td>
<td>10.08</td>
<td>7.45</td>
<td>8.34</td>
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Univariate analysis of the main effect for gender revealed significant differences between females and males in SCAS anxiety scores, $F(1, 735) = 19.97$, $p < .016$ at post-intervention. The SCAS make a unique contribution to predicting these differences stepdown $F(1, 735) = 21.65$, $p < .016$. As table 6.2 outlines, females reported greater reductions in anxiety compared to males. At 12-month follow-up females continued to show significantly greater reductions in anxiety compared to males on the RCMAS, stepdown $F(1, 735) = 12.68$, $p < .016$, and the SCAS $F(1, 734) = 6.52$, $p < .016$. A unique contribution to predicting these differences was made by the RCMAS and to a lesser extent the CDI, stepdown $F(1, 735) = 13.84$, $p < .016$, and the SCAS stepdown $F(1, 735) = 6.52$, $p < .016$.

Univariate analysis of the group x grade interaction showed non-significant effects from pre-intervention to post-intervention intervals between the grade 6 and grade 9 children on the RCMAS $F(1, 733) = 0.36$, ns, the SCAS $F(1, 733) = 2.00$, ns., and the CDI $F(1, 733) = 0.66$, ns. At 12-month follow-up group differences were found between the intervention and monitoring groups between grade 6 and 9 groups on the RCMAS, stepdown $F(1, 733) = 13.44$, $p < .016$, and the SCAS $F(1, 735) = 9.68$, $p < .016$, with the RCMAS making a unique contribution to predicting these differences. Table 6.2 shows that children in grade 6 in the intervention group reported greater reductions in anxiety scores compared to children in the monitoring group.

Univariate analysis of the group x gender interaction at post-intervention assessment revealed significant differences on the SCAS $F(1, 733) = 8.54$, $p < .016$, but not the RCMAS $F(1, 733) = 2.64$, ns, or the CDI $F(1, 733) = 0.037$, ns. Females in the intervention group showed greater reductions in anxiety scores compared to females in the monitoring group. However, at 12-month follow-up no
significant differences were found between females in either group on the SCAS $F(1, 733) = 0.071$, ns, the RCMAS $F(1, 733) = 3.09$, ns or the CDI $F(1, 733) = 0.32$, ns.

Univariate analyses of the grade x gender interaction revealed no significant differences, at an alpha level of 0.016, between grade 6 and grade 9 females and males at post-intervention on the RCMAS $F(1, 733) = .710$, ns, the SCAS $F(1, 733) = .079$, ns, or the CDI $F(1, 733) = 4.70$, ns. There were no significant effects found at 12-month follow-up on the RCMAS $F(1, 733) = 1.82$, ns, SCAS $F(1, 733) = .048$, ns, or and the CDI $F(1, 733) = 2.95$, ns.

Changes in ‘At Risk’ Status

Univariate analysis of the main effect for risk group revealed significant differences in RCMAS anxiety scores, stepdown $F(1, 735) = 62.29, p < .016$, SCAS anxiety scores $F(1, 735) = 145.54, p < .016$, and CDI $F(1, 735) = 52.73, p < .016$, between the ‘at risk’ and ‘healthy’ group at post-intervention. The SCAS made a unique contribution to predicting these differences. As seen in table 6.3, both the healthy and at risk groups evidenced reductions in anxiety at post-intervention, but as expected children in the ‘at risk’ group reported higher anxiety compared to children in the healthy group. Interestingly, children in the ‘at risk’ groups also reported higher levels of depression compared to the ‘healthy’ group. This trend continued at 12-month follow-up with the ‘at risk’ group reporting higher scores on the RCMAS stepdown $F(1, 735) = 46.13, p < .016$, SCAS stepdown $(1, 735) = 11.29, p < .016$, and CDI $F(1, 735) = 12.42, p < 0.16$. The RCMAS and the SCAS each made a unique contribution to predicting these differences.
Table 6.3

*Means and Standard Deviations for SCAS, RCMAS, and CDI across Risk Group*

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<td>Intervention</td>
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<td>Healthy</td>
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<tr>
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<tr>
<td></td>
<td>Monitoring</td>
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</tr>
<tr>
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Table 6.3 (continued)

Means and Standard Deviations for SCAS, RCMAS, and CDI Across Risk Group

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Univariate analysis of the grade x risk group interaction revealed no significant differences between the intervention group and monitoring group at post-intervention on the RCMAS $F(1, 733) = 0.74$, ns, the SCAS $F(1, 733) = 1.62$, ns, and the CDI $F(1, 733) = 0.31$, ns. There were no significant differences found at 12-month follow-up, on the RCMAS $F(1, 733) = .682$, ns, SCAS $F(1, 733) = .165$, ns, or and the CDI $F(1, 733) = 4.95$, ns.

Effects of Intervention on Diagnostic Status

Table 6.1 shows the number of children at ‘at risk’ of an anxiety disorder, based on scores on the SCAS. Children in the ‘at risk’ group were interviewed at post-intervention and 12-month follow-up intervals to examine the preventive
effects of the intervention program. Pre-intervention interviews were not conducted due to the short time frame within the school curriculum to allow for self-report administration, data entry and screening, before the intervention program was scheduled to commence. Table 6.4 shows descriptive data for the diagnostic status of children in the intervention and monitoring groups.

Chi Square analysis showed non-significant differences between the number of children in the intervention and monitoring groups who obtained a diagnosis at post-intervention $\chi^2(1, 48) = .42, \text{ ns}$ or 12-month follow-up $\chi^2(1, 27) = 1.784, \text{ ns}$.

There were no significant differences between the number of children who met criteria in grade 6 and grade 9 at post-intervention $\chi^2(1, 48) = 2.68, \text{ ns}$ or 12-month follow-up $\chi^2(1, 27) = .326, \text{ ns}$. No significant effects were found for gender at post-intervention $\chi^2(1, 48) = .43, \text{ ns}$, or at 12-month follow-up $\chi^2(1, 27) = .942, \text{ ns}$.
Table 6.4

**Number and Percentages of Children with DSM-IV Diagnoses**

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</thead>
<tbody>
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<td>Other diagnosis</td>
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<tr>
<td>Dysthymia</td>
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Universal Intervention Effects on Coping Style.

To evaluate the effects of the FRIENDS program on the self-report measure of coping style, a 2 (group: intervention v's monitoring) x 2 (grade: 6 v's 9) x 2 (gender: male v's female) x 3 (time: pre-intervention v's post-intervention v's 12-month follow-up) a two tiered repeated measures multivariate analysis (MANOVA) was conducted on each of the coping subscales. The first analysis was conducted to examine intervention effects between gender, and the second analysis examined intervention effects between the risk groups (healthy v’s ‘at risk’).

Table 6.5 presents the means and standard deviations for coping style subscales (assistance seeking, cognitive-behavioural problem solving, cognitive avoidance, and behavioural avoidance). Multivariate results using the Pillai’s Trace statistic at a significance level of $p < .05$ and statistical power are as follows. A significant within subject main effect was found for time Pillai’s $F(8,721) = 12.62, p < .001, \eta^2 = .123$, indicating changes in coping scores in general. Significant between subjects main effects were shown for group Pillai’s $F(4,725) = 3.87, p < .010, \eta^2 = .021$, grade Pillai’s $F(4,725) = 6.25, p < .001, \eta^2 = .033$, gender Pillai’s $F(4,725) = 17.08, p < .001, \eta^2 = .086$, and risk group Pillai’s $F(4,725) = 21.43, p < .001, \eta^2 = .106$.

Significant within subjects interactions were found for time x grade Pillai’s $F(8,721) = 15.39, p < .001, \eta^2 = .146$, time x gender Pillai’s $F(8,721) = 2.96, p < .010, \eta^2 = .032$, time x group x grade Pillai’s $F(8,721) = 4.09, p < .001, \eta = .043$, time x grade x gender Pillai’s $F(8,721) = 3.15, p < .01, \eta^2 = .034$. Significant between subjects interactions were found for group x gender Pillai’s $F(4,725) = 4.48, p < .001, \eta^2 = .024$, grade x gender Pillai’s $F(4,725) = 3.67, p < .010, \eta^2 = .020$, group x
grade x gender Pillais $F(4,725) = 4.89, p < .001, \eta^2 = .026,$ and grade x risk group
Pillais $F(4,725) = 2.75, p < .010, \eta^2 = .015.$

Table 6.5

Means and Standard Deviations for Coping Subscales for Grade and Gender

<table>
<thead>
<tr>
<th>COPING SUBSCALE</th>
<th>TIME</th>
<th>GROUP</th>
<th>Gender</th>
<th>M</th>
<th>SD</th>
<th>M</th>
<th>SD</th>
<th>M</th>
<th>SD</th>
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<td>Assistance Seeking</td>
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<td>5.77</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Male</td>
<td>4.83</td>
<td>1.91</td>
<td>5.06</td>
<td>1.83</td>
<td>4.77</td>
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<td>2.00</td>
<td>5.31</td>
<td>1.93</td>
<td>4.33</td>
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<td>2.08</td>
<td>5.83</td>
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<td></td>
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<td>4.72</td>
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<td></td>
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<td>Total</td>
<td>5.04</td>
<td>2.16</td>
<td>5.46</td>
<td>2.18</td>
<td>5.10</td>
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</tr>
<tr>
<td></td>
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<td>Overall</td>
<td>Total</td>
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<td>2.08</td>
<td>5.39</td>
<td>1.98</td>
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<tr>
<td>Monitoring (n = 295)</td>
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<td>5.13</td>
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<td>4.44</td>
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<tr>
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<td></td>
<td></td>
<td>Male</td>
<td>5.21</td>
<td>2.32</td>
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<td>4.16</td>
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<td>5.37</td>
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<td>5.45</td>
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<td>Overall</td>
<td>Total</td>
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<td>1.85</td>
<td>5.01</td>
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Table 6.5 (continued)

*Means and Standard Deviations for Coping Subscales for Grade and Gender*

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<th>Cognitive Behavioural Problem Solving</th>
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<tr>
<td>Grade</td>
<td>Gender</td>
</tr>
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<td>Female</td>
</tr>
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<td></td>
<td>Male</td>
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</tr>
<tr>
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<td>Female</td>
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<tr>
<td></td>
<td>Male</td>
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<tr>
<td></td>
<td>Total</td>
</tr>
<tr>
<td>Overall Total</td>
<td></td>
</tr>
<tr>
<td>Monitoring</td>
<td>(n = 295)</td>
</tr>
<tr>
<td></td>
<td>Female</td>
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<tr>
<td></td>
<td>Male</td>
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<td>Male</td>
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<tr>
<td></td>
<td>Total</td>
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<tr>
<td>Overall Total</td>
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Table 6.5 (continued)

Means and Standard Deviations for Coping Subscales for Grade and Gender

<table>
<thead>
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<th>Coping Subscale</th>
<th>Cognitive Avoidance</th>
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<td>Cognitive Avoidance</td>
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Table 6.5 (continued)

Means and Standard Deviations for Coping Subscales for Grade and Gender

<table>
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<th>Subscale</th>
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<tr>
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<tr>
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Note: The table continues with additional rows for Monitoring (n = 295) with similar data.
Follow-up Roybargmann stepdown analyses were conducted to examine the main effects and interactions at post-intervention and 12-month follow-up, with an alpha rate of 0.0125 to adjust for type 1 error (Tabachnick & Fidell, 1996). Significant correlations \( p > .001 \) were found across the DV’s at each time interval. All DV’s were judged to be sufficiently reliable to warrant step down analysis. Homogeneity of regression was achieved for all components of the step down analysis.

Univariate analysis of the group effect revealed significant differences between the intervention and monitoring groups in behavioural avoidance stepdown \( F (1, 735) = 11.21, p < .0125 \), at post-intervention, and at 12-month follow-up assessment stepdown \( F (1, 735) = 8.24, p < .0125 \). As shown in table 6.5, children in the intervention group evidenced lower scores in behavioural avoidance compared to the children in the monitoring group. No differences were found between the intervention and monitoring groups in assistance seeking, cognitive-behavioural problem solving, or in cognitive avoidance.

Univariate analysis of the grade effect showed no differences between children in grade 6 and children in grade 9 on any of the coping response subscales at post-intervention. However, significant grade differences were found at 12-month follow-up in assistance seeking stepdown \( F (1, 734) = 41.83, p < .0125 \), cognitive-behavioural problem solving \( F (1, 734) = 71.01, p < .0125 \), and in behavioural avoidance \( F (1, 734) = 33.02, p < .0125 \). Assistance seeking, cognitive-behavioural problem solving stepdown \( F (1, 733) = 32.19, p < .05 \), and behavioural avoidance stepdown \( F (1, 731) = 19.17, p < .05 \) each made a unique contribution to predicting grade differences. Children in grade 9 reported higher levels of assistance seeking,
cognitive behavioural problem solving and behavioural avoidance in comparison to grade 6 children.

Univariate analysis of gender effect at post intervention revealed significant differences in assistance seeking stepdown $F(1, 735) = 12.56, p < .0125$, and in behavioural avoidance $F(1, 735) = 12.51, p < .0125$, but not in cognitive behavioural problem solving or cognitive avoidance. A unique contribution to predicting grade differences was made by assistance seeking, and to a lesser extent behavioural avoidance stepdown $F(1, 733) = 7.59, p < .05$. Results shown in table 6.5 indicate that females reported higher levels of assistance seeking and behavioural avoidance than males.

This trend continued at 12-month follow-up, with significant gender differences evident in assistance seeking stepdown $F(1, 734) = 50.55, p < .05$, and behavioural avoidance $F(1, 734) = 6.11, p < .05$, as well as cognitive-behavioural problem solving $F(1, 734) = 8.25, p < .0125$. A unique contribution to predicting grade differences was made by the assistance seeking subscale. The data suggests that females use greater assistance seeking, cognitive-behavioural problem solving, and behavioural avoidance than males when responding to stressful situations.

Univariate analysis of the risk group effect revealed significant differences in behavioural avoidance $F(1, 735) = 32.70, p < .0125$, at post-intervention, with behavioural avoidance stepdown $F(1, 732) = 28.36, p < .05$ making a unique contribution to predicting this difference. As expected children in the ‘at risk’ group evidenced higher scores ($M = 7.25, SD 4.15$) in behavioural avoidance compared to the children in the ‘healthy’ group ($M = 4.66, SD 3.41$). No differences were found between the risk groups on the assistance seeking, cognitive-behavioural problem solving, or in cognitive avoidance.
At 12-month follow-up, a significant difference was also found between the ‘at risk’ and ‘healthy’ groups in behavioural avoidance $F(1, 735) = 24.00, p < .0125$, and cognitive avoidance $F(1, 735) = 11.43, p < .0125$. Behavioural avoidance stepdown $F(1, 731) = 12.37, p < .05$, and to a lesser extent cognitive avoidance stepdown $F(1, 732) = 10.88, p < .05$, each made a unique contribution to predicting these differences. Children in the ‘at risk’ group evidenced higher scores in behavioural avoidance ($M = 5.85, SD 3.77$) and cognitive avoidance ($M = 12.01, SD 5.44$) compared to the children in the ‘healthy’ group (behavioural avoidance $M = 3.84, SD 3.09$, cognitive avoidance $M = 9.46, SD 5.84$). No differences were found between the risk groups on the assistance seeking and cognitive-behavioural problem solving.

Univariate analysis of the group x grade interaction showed significant differences in cognitive-behavioural problem solving $F(1, 733) = 9.60, p < .0125$, and behavioural avoidance $F(1, 733) = 6.28, p < .0125$ at post-intervention assessment. Assistance seeking stepdown $F(1, 733) = 6.20, p < .05$, cognitive-behavioural problem solving stepdown $F(1, 732) = 5.08, p < .05$, and cognitive avoidance stepdown $F(1, 731) = 4.50, p < .05$, each made a unique contribution to predicting these differences. As shown in Table 6.5, grade 9 children in the intervention group reported higher scores in cognitive-behavioural problem solving strategies, and less behavioural avoidance than grade 9 children in the monitoring group. However, no differences were found between group and grade on any of the coping strategies at 12-month follow-up.

Univariate analyses of the group x grade x risk group interaction and the grade x risk group interaction were conducted at post-intervention and 12-month assessment intervals. No significant differences were found, at an alpha level of
in assistance seeking, cognitive-behavioural problem solving, cognitive avoidance, or in behavioural avoidance coping strategies.

Univariate analysis of the group x gender interaction at post-intervention assessment revealed significant differences in cognitive-behavioural problem solving stepdown $F(1, 732) = 8.94, p < .05$, but not in assistance seeking, cognitive avoidance or behavioural avoidance. As indicated in table 6.5, females in the intervention group reported using more cognitive-behavioural problem solving strategies than females in the monitoring group. However, at 12-month follow-up this difference had disappeared as no differences were found between females and males across the intervention and monitoring groups on any of the coping subscales.

Univariate analysis of the group x grade x gender interaction at post-intervention assessment revealed significant differences in cognitive avoidance $F(1, 729) = 13.70, p < .0125$, and behavioural avoidance $F(1, 729) = 23.60, p < .0125$, but not in assistance seeking or cognitive-behavioural problem solving strategies. Behavioural avoidance $F(1, 726) = 13.58, p < .05$, and cognitive avoidance $F(1, 727) = 11.19, p < .05$, each made a unique contribution to predicting these differences. Males in grade 6 and females in grade 9 in the monitoring group reported greater cognitive and behavioural avoidance strategies than males and females in each grade in the intervention group. Although, at 12-month follow-up no significant differences were found in assistance seeking, cognitive-behavioural problem solving, cognitive avoidance, or in behavioural avoidance coping strategies.

Univariate analysis of the grade x gender interaction showed significant differences at post-intervention in cognitive-behavioural problem solving $F(1, 733) = 6.64, p < .0125$, and in cognitive avoidance $F(1, 733) = 7.23, p < .0125$, but not in assistance seeking or behavioural avoidance. Both cognitive avoidance stepdown $F$
(1, 731) = 7.59, $p < .05$, and cognitive-behavioural problem solving stepdown $F(1, 732) = 4.56, p < .05$, made a unique contribution to predicting these differences. Grade 9 females reported using more cognitive-behavioural problem solving compared to grade 6 females. Grade 6 and grade 9 males reported using more cognitive avoidance strategies compared to grade 6 and grade 9 females. These effects had disappeared by 12-month follow-up, with no differences found on any of the coping subscales.

Discussion

As one of the first prevention trials in the literature to compare the effects of a universal school-based cognitive behavioural intervention for child anxiety, depression and coping strategies across two different age groups, this study offers important findings. Overall results are encouraging in that a preventive effect was found indicating the FRIENDS program has the potential to reduce the number of children at risk of developing an anxiety disorder. The first objective was to examine the effects of the universal intervention on child anxiety and depression. The hypothesis that the intervention group would be associated with greater changes in self-reported anxiety than the monitoring group was supported. Participants in the study showed general reductions in anxiety across time regardless of intervention status. This finding is congruent with previous research (Last et al., 1996; Lowry-Webster et al., 2001, 2002) showing a tendency for children to report decreases in anxiety over time. However, in the present study reductions in anxiety were significantly greater for participants in the intervention group at post-intervention and 12-month follow-up intervals. This outcome differed slightly from the results of the preliminary longitudinal study conducted by Barrett et al. (in press) wherein
intervention effects only became apparent 12-months following the intervention. A possible explanation for this may be due to sampling effects in terms of the differences in the nature of the cohort of children recruited for each study.

The second objective was to examine the age group at which children will benefit the most from a universal intervention by comparing the effects of the program on anxiety and depression between children in grade 6 and adolescents in grade 9. Our findings suggest that earlier preventive intervention may yield greater success in reducing anxiety symptoms and preventing the development and onset of anxiety disorders in youth. Foremost, children in grade 6 (aged 9 to 10 years) reported significantly higher levels of anxiety prior to intervention and at post-intervention. However, the grade 6 group evidenced greater reductions in anxiety at 12-months after the intervention, as well as lower levels of depression across time compared to the grade 9 adolescents (aged 14 to 16 years). This result supports earlier findings (Lowry-Webster et al., 2001, 2003; Barrett & Turner, 2001; Barrett et al., in press) that suggested late childhood an optimal time for preventive intervention. Further examination of gender differences showed that females were more likely to be ‘at risk’ of an anxiety disorder, and report higher levels of anxiety than boys over time. Our data indicated that grade 6 females were most responsive to intervention program as they reported greater changes in anxiety compared to females in grade 9 and males across both grades.

The third objective was to examine the effects of the FRIENDS program in reducing symptoms of anxiety in children identified ‘at risk’ of developing an anxiety disorder. The results of our study did not support the hypothesis that children ‘at risk’ in the intervention group would evidence greater reductions in anxiety than children ‘at risk’ in the monitoring group. In the current study,
children ‘at risk’ in both the intervention and monitoring groups reported significant reductions in anxiety over time. Further, there were no differences found between the intervention and monitoring group in changes in diagnostic status. These findings contradict previous research (Lowry-Webster et al., 2001, 2003; Dadds et al., 1999; Barrett et al., in press). A possible explanation for the non-significant differences found between the risk groups is that a large number of children were absent at post-assessment or withdrew from the study. Of the children who dropped out, significantly more children within the monitoring group were those ‘at risk’ of anxiety at pre-intervention. The missing data from the ‘at risk’ children in the monitoring group make interpretation of results difficult.

As studies suggest a relationship between anxiety and depression (Cole et al., 1998), we were also interested in the effects of the intervention on reducing symptoms of depression. Our data showed reductions in symptoms of depression, however this effect did not become apparent until 12-month after the intervention. This result was incongruent with findings of the previous preliminary study conducted by Barrett et al. (in press) whereby no differences were found in depressive symptoms at either time interval. However, similar putative delays in intervention effects were found in the Queensland Early Intervention Project (Dadds et al., 1999) and consistent with results of a prevention trial for depression (Jaycox, Reivich, Gillham & Seligman, 1994). Again, a possible explanation for difference in results may be due to varied characteristics of the cohort of children recruited for present study.

In the present study, children ‘at risk’ of an anxiety disorder also reported higher levels of depression at each time interval compared to the children in the healthy group. Lowry-Webster et al. (2001, 2003) reported similar findings,
whereby children ‘at risk’ in the monitoring group reported significantly more depressive symptoms than children ‘at risk’ in the intervention group. Although in the current study, these children did not meet diagnostic criteria for depression, results indicate that children with high anxiety may be vulnerable to developing depressive symptoms over time. Consequently, our data provides support for previous research suggesting a developmental trajectory wherein anxiety in early childhood precedes depression in adolescence (Cole et al., 1998). Overall, findings of this study suggest that children in grade 6 aged between 9 and 10 years and females were more responsive to the FRIENDS program than adolescents and males.

A final aim 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 (behavioural avoidance, cognitive avoidance) children use to manage difficult experiences. The intervention program was effective in reducing children’s behavioural avoidance, and thus increasing children ability to confront situations they experience as stressful. This is an important outcome as in the current study children ‘at risk’ reported using both behavioural avoidance and cognitive avoidance strategies more than children in the healthy range. Moreover, avoidance of anxiety provoking situations is known to be a maintaining factor in anxiety disorders. Similarly, previous research with anxious adults and children has suggests that avoidance of difficult experiences increases anxiety (Donovan & Spence, 2000).

The program was immediately effective in increasing cognitive-behavioural problem solving strategies in females and adolescents in grade 9, and in reducing cognitive and behavioural avoidance in grade 6 children. Males in grade 6 and
females in grade 9 in the intervention group reported less cognitive and behavioural avoidance strategies in comparison to children in the monitoring group. Unfortunately, these effects had disappeared by 12-month follow-up, which may suggest that without ongoing intervention or support children may revert back to previous habits of coping.

In relation to the specific effects of the FRIENDS intervention for anxiety and depression, grade 6 females appeared to be the most responsive to the program as they reported the greatest reductions in anxiety and depression over time. Analysis of the coping strategies employed by participants suggest that children in grade 6 were less likely to physically avoid stressful situations, whilst the grade 9 adolescents were more likely to use problem solving strategies when confronted with a difficult situations. This finding suggests that the exposure (step plan) component of the FRIENDS program may have greater effects for children in late childhood, whilst the problem solving component of the FRIENDS for youth program may have greater benefit for adolescents.

As one of the first universal prevention studies of its kind in the literature, it is important to emphasise inherent issues in conducting school-based clinical research trials, the limitations of this study, and how future research might address them. A primary consideration lies in the research empirical design involving comparison between intervention and monitoring 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 that may account for results such as history, maturation, selection and testing procedures (Kazdin & Weisz, 1998). However, limitations of this experimental design evident in the present study include the cost effectiveness of longitudinal research, the
ethical concerns regarding delaying intervention for the monitoring group resulting in participants dropping out, absenteeism on the day of post-intervention and 12-month assessment, and nonspecific effects such as participants seeking medical, alternative or additional treatment. These factors may have impacted on intervention outcome.

The findings of this study must be viewed with caution. We experienced similar problems as in previous research (Barrett et al., in press; Roth, 2000), with a large percentage of children dropping out of the study or absent at post-intervention intervals, which inevitably limits the validity of our results. Particularly, the post-intervention assessment data from the participants ‘at risk’ of an anxiety disorder in the monitoring group at pre-intervention would have provided a more accurate indication of intervention effects.

Another possible methodological limitation pertains to the accuracy of cut-off score used in this study. Although the Spence Children’s Anxiety Scale has shown good convergent validity with other anxiety measures (Barrett et al., in press; Muris et al., 2000; Spence, 1994, 1997, 1998). No convergent data for the cut off score has been published to date. Further research examining the accuracy of the SCAS cut-off score would increase the external validity of our findings.

A further limitation of our study was that statistical analysis based on children self-reported anxiety and depression. The question of degree of accuracy of children’s self-report measures is widely documented in the literature. It is generally recommended that multiple sources be used to assess childhood anxiety. This study did not use parental or teacher measures of children’s functioning, thus to increase the external validity of findings, future research would benefit from examining data from multiple sources.
Preventive intervention research is in its early stages and seems to show promise. However, it is also important to note the inherent challenges of conducting large-scale longitudinal research within the school setting. Initial participant recruitment was successful due to the co-operation and assistance of school principals and personnel. However research demands involving organisation and administration of assessment and intervention to a large number of classes of children was particularly demanding both on school and project resources. Factors such as changes to timetabling, holidays, public holidays, absenteeism due to illness, exams, school excursions, impacted on project implementation and subsequent intervention outcome. Additional factors involved classroom dynamics, student characteristics, and the facilitators’ ability to maximise the therapeutic process within the classroom setting. Particular issues involved measures of confidentiality, disclosure, and behaviour management of externalising students.

A final point, most disappointing was the poor attendance at parent workshops, which further may have contributed to the intervention effects. Further research attention is required to investigate methods of engaging parents in school-based activities. The theoretical and applied implications of the present work and directions for future research will be discussed in the next chapter.
CHAPTER SEVEN
GENERAL DISCUSSION

The studies presented in this thesis sought to investigate a number of specific developmental factors that may influence the efficacy of preventive intervention for child anxiety disorders. In this chapter the major findings of the two empirical studies will be briefly reviewed and integrated with the literature discussed in earlier chapters to show how the current research has advanced knowledge in this area. Next, the theoretical and applied implications of the present work will be discussed. Finally, a conclusion about the preventive intervention of anxiety disorders in children will be presented.

The first objective of this research was to add to the literature on risk and protective mechanisms by investigating the role of peer interaction in the development of child anxiety problems. Study one extended previous literature considerably by comparing the peer interaction of anxious children and adolescents. The developmental psychopathology of anxiety suggests that an interaction between individual and environmental risk factors that occur from birth onwards influence the developmental pathways to severe anxiety problems in childhood and adolescence (Vasey & Dadds, 2001). The development and maintenance of anxiety disorders are known to be influenced or mediated in part by cognitive processes and avoidant behaviours (e.g. Leitenberg et al., 1986; Kendall & Chansky, 1991; Vasey & Macleod, 2001). Several studies have shown that parental anxiety and behaviours involving conditioning and vicarious learning contribute to the ways children think and behaviour during hypothetical ambiguous anxiety-provoking situations (e.g. Barrett et al., 1996; Chorpita et al., 1996; Shortt et al., 2001a). Although, research has increased our knowledge of the link between parent-child interaction and
cognitive processing in the maintenance of anxiety in children (e.g. Barrett et al., 1996; Chorpita et al., 1996; Shortt et al., 2001a), little remained known about additional psychosocial factors that influence anxiety-related cognition in children. One such unexplored area of investigation was the potential effect of peer interaction on anxious children and adolescents’ thinking and behaviours.

As such, an important aspect of study one involved ascertaining the potential role of peers in influencing anxious children’s thoughts and behaviours at different developmental stages. Study one demonstrated that all children and adolescents, both anxious and healthy, might interpret hypothetical anxiety-provoking situations as threatening, and that anxious children are more likely to cope with these situations with avoidance. Age and gender differences were also found with the adolescent group, with males reporting significantly higher levels of threat interpretation and avoidant responses compared to the grade 6 children and females.

Study one also examined the effects of peer interaction on anxious children’s anxiety-related thoughts and behaviour. This study found that peer interaction did influence anxiety-related thoughts and behaviours in both children (grade 6) and adolescents (grade 9). These effects were positive for adolescents in that this group changed from threat interpretation and avoidant responses to non-threat interpretation and proactive responses following a discussion of the hypothetical ambiguous situations with their same aged peers. On the contrary, children in grade 6 appeared to be more vulnerable to peer influences. The effect of the peer discussion was found to be negative for the grade 6 group, with many of these children changing from non-threat interpretation and proactive responses to threat interpretation and avoidant responses.
As the first study of its kind to examine the effects of peer interaction on anxious children’s threat interpretation and response plans at different developmental stages, the findings of study one add to the growing body of research in the area of preventive intervention for child anxiety. The identification of risk and protective factors associated with childhood anxiety disorders and effective methods for reducing risk have been identified as prerequisites for effective preventive intervention for child anxiety (Donovan & Spence, 2000; Spence 2001). Previous research has demonstrated several risk factors that contribute to the development of childhood anxiety. These risk factors involve a genetic transmission (Tharpar & McGuffin, 1995, 1997), temperament (Kagan & Snidman, 1991; Kagan et al., 1989), heightened anxiety sensitivity (Silverman), parental anxiety (Last et al., 1991) and parenting characteristics (Hudson and Rapee, 2001; Rapee 1997), exposure to negative or stressful life events (Spence, 2001), an avoidant coping style (Compas, 1987, Compas et al., 2001), and a cognitive style characterised by pessimistic or threat-biased interpretations of events (Barrett et al., 1996).

Previous research also suggested a range of protective factors reduce the impact of aversive circumstances and experiences. These protective factors include a proactive coping style (Lazarus & Folkman, 1985), positive problem solving skills (Compas, 1987, Compas et al., 2001) and family and peer support (Garmezy et al., 1984; Werner, 2000). Study one added to the literature on risk and protective factors, by demonstrating that children’s interaction with their peers influences their anxiety-related thoughts and behaviours.

Study one was particularly important as positive peer interaction is a potential protective factor in that peer relations are paramount in the development of childrens’ social competence, social skills and related psychosocial adjustment.
(Ladd et al., 1999; Parker et al., 1994). Furthermore, peer interaction often presents as one of the most common problems reported by anxious children and adolescents, and poor peer relationships can be considered a risk factor for the development and maintenance of anxiety problems (La Greca, 2001). The findings of study one suggest that peers may play a potentially important protective role in the developmental course of anxiety problems. These findings also contribute the research showing that peer involvement in psychosocial interventions maybe effective in increasing children’s social competence and reducing social anxiety (Morris et al., 1995; Beidel & Turner, 2000). Hence, the findings of study one have vital implications for the future development of school-based intervention programs; specifically those conducted in the classroom. Peers, as positive or negative role models, can have a strong influence on the way both children and adolescents think and how they behave in stressful situations. In terms of involving peers in programs designed to reduce risk and enhance resilience, it is important that these peers will need to be screened and/or trained to model and teach proactive coping in anxious children. Given that peer relationships contribute significantly to cognitive and social development in children and adolescents, their position for influencing the mental health of anxious youngsters in a positive direction is unmistakable.

Research in preventive intervention has progressed to examining the potential efficacy of indicated, selective and universal school-based programs in reducing the high prevalence of anxiety disorders within the community (Gordon, 1987). Study two sought to advance the current research on preventive intervention for child anxiety by establishing the age at which youngsters benefited the most from the FRIENDS program as a classroom-based universal intervention. To date, four empirical studies have demonstrated the effects of universal school-based
cognitive-behavioural intervention for child anxiety disorders. Lowry-Webster et al. (2001, 2003) demonstrated the effectiveness of a universal strategy for prevention of childhood anxiety. Lowry-Webster et al. (2001, 2003) trained classroom teachers to implement the FRIENDS program as part of the standard classroom curriculum. The intervention taught participants a variety of coping and problem-solving strategies to help them cope with, and manage anxiety. At post-intervention all children reported significant reductions in anxiety, although these decreases were significantly greater in the intervention group compared to the monitoring group. Further analysis of changes in risk status showed positive findings as 75.3% of the high risk children in the intervention group, were no longer at risk at post-intervention, compared to 54.8% of high-risk children in the monitoring group. The effects of the intervention were maintained at 12-month follow-up based on self-reports and diagnostic interviews (Lowry-Webster et al., 2003). Furthermore, age was found to be a strong risk factor, as children aged 10 years were most likely to be ‘at risk’ of an anxiety disorder.

Building on the findings of the research conducted by Lowry-Webster et al. (2001, 2003), Barrett & Turner (2001) also demonstrated the FRIENDS program was effective as a universal school-based intervention in significantly reducing anxiety symptoms in grade 6 children aged between 10 to 12 years. The assessment of developmental factors is an important issue in preventive intervention research, in terms of establishing the most optimal time for intervention. Barrett et al., (in press) provided preliminary evidence that early intervention in childhood was more effective than later intervention in adolescence. Barrett et al. compared the effects of a universal school-based cognitive behavioural preventive intervention for anxiety (the FRIENDS program) on self-reported anxiety and depression in children in
grade 6 and adolescents in grade 9. Results at post-intervention and 12-month follow-up intervals showed that children in grade 6 reported greater reductions of anxiety symptoms at post-intervention compared to adolescents in grade 9, while moderate and high-risk children reported the greatest reductions in anxiety at 12-month follow-up.

Study two in this thesis extended previous literature by comparing the effects on the FRIENDS program for children in grade 6 and adolescents in grade 9, on self-report measures of anxiety, depression and coping, as well as diagnostic status at post-intervention and 12-month follow-up. Study two found that all children evidenced reductions in anxiety over the two-year time period, with reductions in self-reported anxiety symptoms being significantly greater in the children and adolescents who completed the FRIENDS program, compared to the youngsters in the monitoring group. These findings confirm previous research that suggests anxiety symptoms decrease overtime, although children who participate in cognitive behavioural intervention show greater reductions in their anxiety symptoms (Barrett & Turner, 2001; Dadds et al., 1997, 1999; Last et al., 1996; Lowry-Webster et al., 2001, 2003).

The findings of study two add to the substantial body of research demonstrating that cognitive behavioural programs are effective in the intervention of childhood anxiety disorders (Barrett, 1998; Barrett, et al., 1996; Cobham et al., 1998; Kendall, 1994; Kendall & Southam-Gerow, 1996; Silverman et al., 1999a), and that treatment effects are maintained for up to 6 years (Barrett et al., 2001). These previous studies have shown that cognitive behavioural strategies are effective in modifying risk characteristics such as an avoidant coping style and
negative interpretations of events, and in promoting protective factors such as family and peer support.

There is also a strong rationale for pursuing a developmental approach to the preventive intervention of childhood anxiety disorders. For most children, fears and anxiety are a normal aspect of development, paralleling the age-related changes in biological, cognitive and social functioning that occur throughout childhood and adolescence (Gullone, 2000; Schniering et al., 2000). The developmental nature of child anxiety is further reflected in the observed prevalence rates for the specific anxiety disorders, which vary according to gender and age of the child (e.g. Spence et al., 2001). The findings of study two add substantially to the literature on child anxiety by empirically demonstrating developmental differences in anxiety, depression and coping in children and adolescents.

Study two demonstrated that children in grade 6 reported significantly higher levels of anxiety prior to the intervention and at post-intervention. However, the grade 6 children evidenced the greatest reductions in anxiety at the 12-month follow-up, as well as lower levels of depression across time, compared to the grade 9 adolescents. These findings confirm previous research that has implied late childhood as an optimal time for preventive intervention (Barrett & Turner, 2001; Barrett et al., in press; Lowry-Webster et al., 2001, 2003;). The current study also found females were more likely to be ‘at risk’ of an anxiety disorder and to report higher levels of anxiety than males over time. Grade 6 females were the most responsive to the FRIENDS program as they reported greater changes in anxiety compared to females in grade 9 and males across both grades.

Although all children in general, and to a greater extent those in the intervention group, reported significant reductions in anxiety over-time, two
unexpected findings of study two was that no effects were found for risk group of diagnostic group. Changes in self-reported anxiety did not differ between the ‘at risk’ and healthy children and adolescents, and there were no differences found between the intervention and monitoring group in changes in diagnostic status. These findings are inconsistent with previous research (Barrett et al., in press; Dadds et al., 1999; Lowry-Webster et al., 2001, 2003) and may be related to the large number of children absent at assessment or who dropped-out of the study. However, further research attention is clearly required with respect to the effects of the FRIENDS program as a universal school-based intervention in reducing anxiety symptoms in severe cases.

Study two also found that children ‘at risk’ of an anxiety disorder also reported significantly higher levels of depression. This findings is consistent with the findings reported by Lowry-Webster et al. (2001, 2003) and provides support for previous research suggesting a developmental trajectory wherein anxiety in early childhood precedes depression in adolescence (Cole et al., 1998). Hence, this finding contributes to the literature that suggests that for some children, anxiety symptoms may lead to the development of more severe symptoms, which often continue from childhood into adolescence and usually accumulate into the development of depression in late adolescence and adulthood (Cole et al., 1998).

The FRIENDS program was also effective in reducing depressive symptoms, although this effect was only observed at 12-month follow-up after the program. This result was inconsistent with findings of the preliminary study conducted by Barrett et al. (in press), although similar putative delays in intervention effects were found in selective intervention programs for anxiety (Dadds et al., 1999) and depression (Jaycox et al., 1994). Further research attention is clearly required with
respect to the effects of the FRIENDS program as a universal school-based intervention in reducing depressive symptoms in children and adolescents.

Finally, study two sought to advance the literature on preventive intervention for child anxiety as the first study to examine both developmental differences in children’s coping strategies, as well as the effects of the FRIENDS program on proactive and avoidant coping strategies in youngsters. Study two extended previous literature further by demonstrating that children ‘at risk’ reported using cognitive-behavioural avoidance strategies more than children in the healthy range did. This finding confirms previous research that children with internalising problems use more maladaptive coping responses compared to normal children (Lopez & Little, 1996; Sandler et al., 1994).

Study two also extended previous literature by demonstrating developmental differences in changes in children’s coping responses following participation in a preventive intervention for child anxiety. The FRIENDS program was effective in reducing behavioural avoidance in all children across time. Females and adolescents demonstrated significant increases in cognitive-behavioural problem-solving strategies, while children evidenced significant reductions in cognitive-behavioural avoidance. Moreover, male children and female adolescents in the intervention group were found to use fewer avoidance coping strategies in comparison to children in the monitoring group. As one of the first studies to directly measure changes in children’s coping strategies these findings add to current body of the research in child anxiety intervention. Although, further confirmatory research is clearly required with respect to the direct effects of preventive intervention in increasing proactive coping in children and adolescents.
The findings of study two add significantly to the growing body of research suggesting school-based universal CBT programs conducted in the classroom are an effective means of reducing anxiety and depressive symptoms, and enhancing coping in children and adolescents (Barrett and Turner, 2001; Barrett et al., in press; Lowry-Webster et al., 2001, 2003). The current work also extends research in the preventive intervention of anxiety disorders by demonstrating that late childhood is an optimal time for early intervention. Overall, findings of this study suggest that children in grade 6 aged between 9 and 10 years and all females were more responsive to the FRIENDS program than adolescents and males. It would certainly be interesting to follow up this study for 2 to 3 years to assess the sustained effects of the intervention.

Methodological factors need to be considered when interpreting the results of the current studies. As noted previously, anxiety, depression and coping strategies 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 relativity short time frame, the question of degree of accuracy of children’s self-report measures is widely documented in the literature. It is generally recommended that multiple sources be used to assess childhood anxiety. As a result the assessment methodology was not optimal. Clearly, this needs to be considered when interpreting the results of the current studies, and it would be of significant benefit to replicate the studies using parent and/or teacher measures of children’s functioning.

Despite these methodological limitations, the results of this research demonstrating the effects of universal school-based cognitive behavioural intervention for child anxiety are particularly important, given the research showing
that anxiety disorders figure among the most prevalent forms of child
psychopathology, with studies showing an estimated prevalence of 5% to 20%
(Essau et al, 2000a; Fergusson et al., 1993; Lewinsohn. 1993). Moreover, early
intervention can be considered very important because the majority of children with
anxiety disorders do not attend any agency for treatment (Tuma, 1989; Zubrick et
al., 1997) and for those who do seek professional help, treatment remains ineffective
for a significant proportion, with between 12 and 40% still meeting diagnostic
criteria for an anxiety disorder at the end of treatment (e.g., Barrett et al., 1996;
Kendall, 1994). Thus, treating children who are already experiencing significant
anxiety problems may not be the most effective or efficient means of reducing the
incidence of childhood anxiety in the general population, or for reducing the
suffering of children and families. School-based programs are gaining recognition as
the most practical and efficient method of reducing the prevalence of anxiety
disorders within the community (Costello, 1989; Department of Health and Human
Services, 1991). Therefore empirical examination of the potential effects of
universal school-based preventive intervention, which intervene prior to the
development of significant anxiety problems and target a wide range of children and
adolescents was an important area of investigation. Implications of these findings
will now be discussed.

Implications of the Findings for Psychological Practice

The findings of this research have some important implications for
psychological practice. Peer interactions were found to have a strong influence on
children’s thinking and behaviours during a structured experimental task. These
findings indicate that, given the time children and adolescents spend at school and in
the classroom, the real-life effects of youngsters’ interactions with their peers play a very important role in the development and maintenance of anxiety problems. Therefore, youngsters’ interactions with their peers may be a risk factor in childhood and a protective factor in adolescence in the developmental course of anxiety symptoms. This finding has some useful applications for preventive intervention, as there appears to an apparent need to specifically target the range of peer-related difficulties commonly reported by youngsters. Therefore, the efficacy of classroom-based intervention can be enhanced by reducing stress and related anxiety-symptoms and by building social competence in the school environment.

Developmental differences were found between children and adolescents in peer interaction, anxiety and coping strategies. These findings have important applications for the design and development of CBT program interventions for anxiety. Children in grade 6 were found to respond to most to the FRIENDS program in terms of reductions in anxiety and depressive symptoms, and of changes in their avoidant coping strategies. In comparison, adolescents in grade 9 were found to benefit the most from the peer interaction task, in terms of changes in cognitive-behavioural problem solving. These findings suggest that in the classroom, adolescents may benefit the most from structured small-group problem-solving activities that focus on a range of real-life peer-related problems, as opposed to individual activities. In comparison, children may benefit the most from real-life tasks that foster proactive coping skills.

With regard to universal preventive intervention, a primary concern is that participants may not receive the appropriate amount of exposure (intensity or duration) required to change the maladaptive pathway (Greenberg et al., 1999). The findings of the present research support the utility of universal intervention. The
results suggest that all children, regardless of risk status, demonstrated reductions in anxiety symptoms through a school-based universal preventive intervention. The intervention was found to have additional effects, as children further evidenced a reduction in depressive symptoms twelve months after the program. Therefore, universal intervention is potentially the most cost-effective program by targeting levels of both anxiety and depression.

It was also found that psychologists were able to successfully deliver a psychological intervention within a classroom although it was originally designed to be implemented in a clinical context. This has important implications for the delivery of mental health interventions. Apart from facilitating large numbers of children over a relatively short period of time (10 to 12 weeks), school-based programs can be conducted in remote locations which often have limited and adequate mental health facilities. Furthermore, school-based interventions can help to overcome many of the problems associated with clinical practice, such as the avoidance of long waiting lists, increasing access, and filling the gap between public and private services. Youngsters with mild to moderate symptoms of anxiety, at risk of an anxiety disorder, do not meet the criteria for public mental health’s services; school-based interventions are also less expense to implement than the high costs endured by attending a private psychologist. Therefore, classroom-based interventions that target all children appear to be a more cost-effective method of reducing the overall incidence of anxiety disorders within the community.

The current research has identified the classroom as an ideal setting for the implementation of effective cognitive-behavioural programs. Previous research has indicated that teachers (along with parents) often have difficulty in detecting children with anxiety problems because their internalising symptoms are less visible
compared to the aggressive symptoms that are typical of children with externalising disorders (Dadds et al., 1997). Teaching all children and adolescents cognitive-behavioural strategies in the classroom is potentially less confronting than a visit to the psychologists office, and is also an effective method of providing unidentified anxious children with the necessary coping skills required to manage their symptoms.

In terms of developmental timing, the results in this study demonstrate that late childhood is a more effective time for intervention compared to adolescence. This finding is consistent with a number of anxiety studies which have found prevention or intervention effective during middle childhood (Barrett, 1998; Barrett and Turner, 2001; Barrett et al., in press; Dadds et al., 1997, 1999; Lowry-Webster et al., 2001, 2003). There are development factors that may contribute to this finding. During early to middle childhood, youngsters experience changes in cognition and social development leading to a period of heightened empathy and abstract thinking, social interactions and friendships – cooperation and compromise. On the contrary, adolescence is marked by rapid physical growth, along with emotional and cognitive-social development. In addition to striving for independence and autonomy: adolescents’ often find the demands of high school and the academic curriculum add to this period of turmoil.

**Future Research Directions**

Further research investigating the role of peer interaction in the development of children’s thinking and behaviour is essential to both confirm the findings of study one and advance our knowledge in this area. Firstly, it is important to assess the range and types of real-life peer problems that anxious children and adolescents
find stressful. It is also important to establish the developmental differences in such real-life peer problems in order to formulate appropriate peer interaction tasks for future studies.

Secondly, further experimental studies examining anxious children’s peer interactions in a broad range of hypothetical and real-life situations would provide more information on the mechanisms through which these children cope with peer-related anxiety. Moreover, it seems important to compare the relationship between anxious children’s interactions with their peers with the interactions they have with their parents. Given that parents of anxious children have shown to be more controlling and over protective than the parents of non-anxious children, it seems important to determine whether children learn to reciprocate these behaviours with their peers.

With regard to school-based universal preventive intervention, future research is required to examine the potential benefits of implementing CBT programs over a longer duration, and the potential benefits of including a social skills component to specifically increase children’s social competence. While most CBT interventions have been developed in the clinical context and have been designed specifically to be brief and cost effective, longer-term programs conducted as part of the classroom curriculum may have additional benefits in terms of further enhancing social learning and fostering positive peer interactions.

Furthermore, future research investigating the effects of peers learning in school-based universal interventions would advance current knowledge of how to enhance program efficacy. Foremost, studies examining programs designed to train well-adjusted or popular peers as coaches, mentors or positive role models to their anxious peers are required. Research expanding on the work by Biedel et al. (2000)
and utilising peers as proactive role models in interventions targeting the prevention of anxiety in all children would be most beneficial.

An important problem experienced in the current study and previous school-based intervention is the relatively poor parental attendance at the family component of CBT programs. Given that parent interaction is a risk factor in the development of child anxiety disorders, and that including parents in CBT programs has been shown to be effective, further research is required to investigate methods of engaging parents in school-based activities.

Further research is also needed to determine the factors that contribute to optimal preventive intervention. Future studies investigating individual factors such as intelligence, children’s attendance to sessions, and completion of homework, as well as environmental factors such as school environment, psychologist or teacher characteristics, and classroom layout, would increase our knowledge in this area.

As mentioned before, long-term follow-up is essential. Greenberg et al. (2001) suggested that it might take time for prevention effects to emerge; consequently it is important to follow participants through a period of elevated risk for psychological difficulties. This is an important point, as several of the intervention studies with longer term follow-up have indeed reported increased prevention effects over time (Dadds et al., 1999; Gillham & Reivich, 1999). These intervention effects may have been overlooked had the research been completed at post-assessment or 6-month follow-up. Secondly, it is important to examine the duration of intervention effects. The longest study of prevention effects is three years for both anxiety disorders (Dadds et al., 1997) and depression (Gillham and Reivich, 1999). Therefore the results of the current study need to be followed up.
Conclusion

Research advances in the field of child anxiety suggest that optimal intervention requires participation from all members of the child’s social network, including school, peers and the family (Barrett, 1999). Results provide empirical evidence that children’s interaction with their peers influences anxiety-related thoughts and behaviours. Therefore peers may play an important role in future child anxiety intervention. School-based universal cognitive-behavioural programs are effective in enhancing children’s resilience to anxiety by increasing proactive coping skills. Over a 12-month period the FRIENDS program produced a significant reduction in levels of child anxiety. More importantly, late childhood appears to be a critical time, as children in the current study reported greater levels of anxiety, less depressive symptomatology and greater response to intervention compared to adolescents in secondary school. Overall, findings of this research outline the potentially important role of developmental factors in the effects of school-based intervention. Adolescents were found to cope with stressful situations more effectively than primary school children did, perhaps an indication of increases in social-cognitive abilities characteristic in this phase of development. Although a general trend was observed where levels of anxiety decreased over time, perhaps an indication of the transient nature of anxiety throughout childhood, the findings this research outline the potential benefits of universal school-based intervention for increasing all children’s resilience to the challenges inherent throughout the developmental trajectory.
References


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NOTE

Appendix A (Sample copy of ethical approval form) and Appendix B (Sample copies of assessment instruments) have been removed from the electronic copy of the thesis.

The assessment instruments removed are:

- Spence Child Anxiety Scale
- Revised Children’s Manifest Anxiety Scale
- Children’s Depression Inventory
- Coping Scale