Effects of the FRIENDS for Life Program on Anxiety, School Functioning, and Social Functioning

Candice Kavanagh, B.Sc., BST, B.Ed., OCT

A Thesis Submitted to the Faculty of Graduate and Postdoctoral Studies

University of Ottawa March 2014

In partial fulfillment of the requirements for the degree of Master of Arts in Educational Counselling

Thesis Supervisor: Dr. Diana Koszycki

Committee: Dr. Barry Schneider and Dr. Cameron Montgomery

Abstract

The aim of the current pilot trial was to evaluate the effects of the group-based FRIENDS for Life (FFL) program on school and social functioning in children with elevated levels of anxiety. Participants were 15 children aged eight to 12 identified by their parents as experiencing elevated levels of anxiety. Children attended six two-hour sessions of the FFL program and completed measures of anxiety, school functioning, and social functioning at pre- and post-treatment. Results indicated nonsignificant reductions from pre- to post-treatment in both child- and parent-report anxiety with large and medium effect sizes, respectively. Working memory scores increased significantly and there was a trend toward a significant increase in academic performance; large within group effects were found for both increases. The increase in academic functioning scores was significant with a moderate effect size only for child-report scores. A significant improvement with a large effect size was found for child-report peer relations scores and significant decreases were found for parent-report asocial behaviour and relational aggression scores, both with moderate effect sizes. Overall, children in this study demonstrated improvements in anxiety, school functioning, and social functioning. While reduction in anxiety is the primary focus of the FFL program additional benefits include improvements in school and social functioning. Though results are encouraging it is important to note that this was an uncontrolled pilot study with a small sample size. Thus results should be interpreted with caution. Nevertheless, the generally positive findings of this trial suggest a larger controlled trial is warranted. If these findings are replicated in a larger trial, the FFL may be a cost-effective, easily implemented, and versatile anxiety prevention program that can help change the trajectory of anxious children's school and social functioning.

Acknowledgements

First and foremost, I would like to thank my husband Philippe for his love, patience, and encouragement throughout this process. We have shared both exciting new beginnings and very emotional endings over the past few years, and I couldn't imagine experiencing any of them without him. I am grateful to my family for their never-ending love and support.

Many thanks also go out my friends for their support and encouragement throughout this process. They are truly generous, as they have been willing to donate their time to drive around the city putting up what felt like hundreds of recruitment posters for me. Without their help I might still be trying to recruit participants.

I owe a great deal of gratitude to my thesis supervisor, Dr. Diana Koszycki, for her insight and support during each stage of my thesis. I have appreciated her patience as well as the opportunity she has given me to learn about research and to reach an important personal goal. I would also like to thank Dr. Barry Schneider and Dr. Cameron Montgomery, members of my committee, for their input and suggestions for the completion of my thesis.

Finally, I would like to thank the children and parents who participated in this study. Without their cooperation and participation, research would not be possible.

Table of Contents

List of Tables

Tables of Demographic Data

Tables of Anxiety Data

Tables of School Functioning Data

Tables of Social Functioning Data

Tables of Additional Exploratory Analyses

List of Figures

List of Appendices

Literature Review

Epidemiology of Childhood Anxiety Disorders

Anxiety disorders are a collection of psychological conditions that are characterized by the presence of excessive fear and anxiety and maladaptive behavioural patterns (American Psychiatric Association, 2013). Separation anxiety, generalized anxiety disorder (GAD), social anxiety disorder (SAD), selective mutism, panic disorder, agoraphobia, and specific phobias fall under the umbrella term anxiety disorders according to the recent edition of the *Diagnostic and Statistical Manual of Mental Disorders* published in 2013 (5th ed.; *DSM–5*; American Psychiatric Association, 2013). Although obsessive compulsive disorder, post-traumatic stress disorder and acute stress disorder were classified as anxiety disorders in previous editions of *DSM* (e.g., 4th ed., text rev.; *DSM-IV-TR*; American Psychiatric Association, 2000), in the *DSM-V* they are now classified under two new diagnostic categories, including Obsessive Compulsive and Related Disorders and Trauma and Stress Related Disorders, respectively.

Anxiety disorders are one of the most common psychiatric conditions in children and adolescents (Merikangas, Nakamura, & Kessler, 2009) occurring in 1.9% to 10.0% percent of the general population of youth (Briggs-Gowan, Horwitz, Schwab-Stone, Leventhal, & Leaf, 2000; Costello et al., 1996; Faravelli, Lo Sauro, Castellini, Ricca, & Pallanti, 2009; Ford, Goodman, & Meltzer, 2003; Shaffer, Fisher, Dulcan, & Davies, 1996). The current-point prevalence of specific anxiety disorders is 1.2-3.6% for separation anxiety disorder, 1.0-2.8% for specific phobias, .3-2.3% for social anxiety disorder (SAD), .5-2.6% for generalized anxiety disorder (GAD; formerly overanxious disorder), .14% for panic disorder, and .71% for selective mutism (Bergman, Piacentini, & McCracken, 2002; Briggs-Gowan et al., 2000; Faravelli et al., 2009; Ford et al., 2003; Shaffer et al., 1996). Among clinical samples, prevalence rates are 14.4-32.9%

for separation anxiety disorder, 5.5-19.7% for specific phobia, 14.9-17.8% for SAD, 13.3-28.7% for GAD, 2.7-9.6% for panic disorder, and .11% for selective mutism (Carlson, Kratochwill, & Johnston, 1994; Langer, Wood, Bergman, & Piacentini, 2010; Last, Perrin, Hersen, & Kazdin, 1992; Last, Strauss, & Francis, 1987).

Age-of-onset data suggest individual anxiety disorders have different ages of onset. The age of onset of separation anxiety disorder and some specific phobias (e.g. animal, blood, dental, blood-injection, thunderstorm) usually occur before the age of 12 years (Becker et al., 2007; Beesdo, Knappe, & Pine, 2009; Essau, Aihara, Petermann, & Al Wiswasi, 2001; Kessler et al., 2005). The onset of generalized anxiety disorder has been reported to occur at about 10 years of age (Keller et al., 1992). Late childhood and throughout adolescence is when social phobia generally emerges (Beesdo et al., 2007; Beesdo et al., 2009; Kessler et al., 2005). GAD, panic disorder, and agoraphobia all usually emerge during late adolescence and early adulthood (Beesdo et al., 2009; de Graaf, Bijl, Spijker, Beekman, & Vollebergh, 2003).

Epidemiological studies have found that anxiety disorders are more prevalent in girls than boys and this difference is consistent across all ages (Beesdo et al., 2009; Cartwright-Hatton et al., 2006; Ford et al., 2003; Merikangas et al., 2009; Sugawara et al., 1999). Rates of anxiety disorders increase for boys and girls throughout childhood and adolescence, although the rise in rates is much more gradual for boys than girls. For girls, the rate of anxiety disorders sharply increases after the age of five and peaks in adolescence, during which time females are two to three times more likely than males to be diagnosed with a current or past history of an anxiety disorder (Beesdo et al., 2009; Lewinsohn, Gotlib, Lewinsohn, Seeley, & Allen, 1998; Merikangas et al., 2009; Zahn-Waxler, Shirtcliff, & Marceau, 2008).

Anxiety problems during childhood or adolescence have been considered transitory and were thought to dissipate with age (Cartwright-Hatton et al., 2006). Evidence now suggests that pathological anxiety in childhood tends to be chronic and persists into adolescence and adulthood (Cartwright-Hatton et al., 2006; Costello, Mustillo, Erkanli, Keeler, & Angold, 2003; Pine, Cohen, Gurley, Brook, & Ma, 1998). Anxiety disorders in childhood may increase the risk for other psychiatric disorders including depressive disorders, conduct disorders, eating disorders, attention-deficit hyperactivity disorder, and substance use disorders (Bittner et al., 2007; Cole et al., 1998; Barrett et al., 2006; Liang et al., 2011; Shapira & Courbasson, 2011).

Etiology of Childhood Anxiety Disorders

The etiology of anxiety disorders in children is complex and multifaceted, and although we may not have a comprehensive understanding of its origin and development at this time, research has shown that a number of factors are contributory, including genetics, environmental factors, learning processes, attachment, cognitive factors, temperament, and neurobiological factors (Rapee, Schniering, & Hudson, 2009).

Genetic factors. There is substantial evidence that anxiety disorders aggregate in families (Hettema, Neale, & Kendler, 2001), with first-degree relatives having a two-to-fourfold greater risk of developing pathological anxiety than low risk controls (Black and Udhe, 1995; Fyer, Mannuzza, Chapman, Martin, & Klein, 1995). Top-down studies indicate that children of parents with an anxiety disorder are four times more likely to meet diagnostic criteria for an anxiety disorder than children of healthy control parents (Micco et al., 2009). Risk for an anxiety disorder is also twice as high in children of parents with other psychiatric diagnoses compared to control children (Micco et al., 2009). Bottom-up studies also demonstrate that parents of children with anxiety disorders are far more likely to have a history of anxiety disorders than parents of

control children (Lieb et al., 2000; Rapee et al., 2009; Rosenbaum et al., 1992). Twin studies have shown that a major source of familial risk is genetic, with heritability estimates of about 20-40% (Hettema et al., 2001; Rapee et al., 2009; Smoller, Block, & Young, 2009).

Specific genes associated with risk for developing an anxiety disorder have not been definitively identified as anxiety disorders are genetically complex disorders and likely involve the interaction of multiple genes, each with small effects (Gregory & Eley, 2007; Smoller et al., 2009). Several candidate genes have been associated with specific anxiety disorders, such as the serotonin 2A receptor 5HT2AR, catechol-*O*-methyltransferase (COMT), cholecystokinin-B receptor (CCKBR), neuropeptide S receptor gene, transmembrane protein 132D, and the dopamine receptor DRD4 2-repeat allele with panic disorder, the "short" allele of the promoter length polymorphism (5HTTLPR) with social phobia, a haplotype of rs2710102 and rs694808 in CNTNAP2 with selective mutism and rs2710102 with social anxiety (Sakolsky, McCracken, & Nurmi, 2012; Stein et al., 2011), and the T941G single nucleotide polymorphism (SNP) in the monoamine oxidase A (MAOA) gene with generalized anxiety disorder though some results are preliminary and in nearly every case nonreplications have been found (Tadic et al., 2003; Smoller et al., 2009; Hamilton et al., 2000; Maron, Hettema, & Shlik, 2010; Sakolsky et al., 2012). Further research on the molecular genetics of anxiety disorders is needed to gain a clearer picture of their genetic basis.

Environmental factors. While there is considerable evidence of a genetic basis for anxiety disorders, genetics alone cannot entirely explain their etiology. Most experts agree that susceptibility to an anxiety disorder is the result of an interaction between genetic influences and environmental risk factors. Research has demonstrated a link between parenting style and child

anxiety disorders, though the cross-sectional design of these studies makes conclusions regarding directionality of relationships difficult (Wood, McLeod, Sigman, Hwang, & Chu, 2003).

Parental control/overprotection, characterized by excessive regulation of and involvement in children's routines and activities and dissuasion of independent problem solving, is an environmental risk factor that has been linked to child anxiety in some (Bögels & Brechman-Toussaint, 2006; McLeod, Wood, & Weisz, 2007; Rapee et al., 2009) but not all (Ginsburg, Grover, & Ialongo, 2004; Koszycki et al., 2012; McClure, Brennan, Hammen, & Le Brocque, 2001; Turner, Beidel, Roberson-Nay, & Tervo, 2003) studies. Clinically anxious mothers are critical and catastrophizing in their interactions with their children and less granting of autonomy than non-anxious mothers (Moore, Whaley, & Sigman, 2004; Siqueland, Kendall, & Steinberg, 1996; Turner et al., 2003; Whaley, Pinto, & Sigman, 1999). However, maternal *behaviour* during parent-child interactions has been found to predict current child anxiety status even more so than maternal psychopathology (Whaley et al., 1999). Child anxiety status is the greatest predictor of maternal granting of autonomy behaviour and mothers of anxious children are more overinvolved, overprotective, and non-objective than mothers of non-anxious children, regardless of their own anxiety status (Gar & Hudson, 2008; Hudson & Rapee, 2001; Whaley et al., 1999). Chorpita and Barlow (1998) suggest that early experiences of diminished personal control may create a psychological vulnerability for anxiety in children, making them more likely to interpret subsequent events as out of their control.

Learning theories. Classical conditioning and operant learning are hypothesized to play a role in the development and maintenance of fear and anxiety. Classical conditioning of fear was first examined by Watson and Rayner (1920) in their experiments with Little Albert, who was conditioned to fear a neutral stimulus through its pairing with an aversive stimulus. This

early model of conditioning was criticized as being too simplistic, as it did not explain the development of phobic disorders in individuals with no traumatic conditioning experiences and how not all people with the same learning experience develop pathological anxiety (Mineka & Oehlberg, 2008). More complex modern theories of learning suggest that the development of anxiety disorders involves multiple types of learning, such as social and vicarious learning (Mineka & Oehlberg, 2008). Social learning theory posits that the modelling of certain behaviours contributes to the onset and maintenance of anxiety (Wood & McLeod, 2008). A child may learn anxious behaviours through the observation of others (usually parents) responding to specific stimuli in an anxious manner (Gerull & Rapee, 2002). Children as young as 15 months of age have demonstrated expressions of fear toward neutral stimuli after observing their mothers' negative reactions (Gerull & Rapee, 2002).

The development of anxiety may also be influenced by negative reinforcement, a process in which an aversive stimulus is removed following a behaviour, thus increasing the likelihood of the behaviour occurring again (Wood & McLeod, 2008). In a child with an anxiety disorder, the avoidance of feared situations prevents the experience of fear or anxiety from occurring and produces a sense of relief. Avoidance of feared situations eventually becomes the child's primary response, even in the absence of threat, and this response limits opportunities to develop or practice coping skills necessary to manage fearful and anxious feelings (Wood & McLeod, 2008).

Attachment theories. Attachment theory may also provide an explanation for childhood anxiety disorders. This theory suggests there is an evolutionary, biologically based system that promotes caregiver proximity to the child in order to protect the child from danger (Bögels, & Brechman-Toussaint, 2006; Bowlby, 1989; Colonnesi et al., 2011). The way the caregiver

responds to a child's attachment needs fosters the child's sense of security or insecurity and impacts how the child views social relationships later in life (Bögels & Brechman-Toussaint, 2006; Colonnesi et al., 2011). Securely attached children use their caregiver attachment as a secure base and are more comfortable exploring their environment and engaging in relationships with other (Bowlby, 1989; Colonnesi et al., 2011). Conversely, children with insecure attachments perceive their caregivers to be indifferent. They are unable to elicit caregiver proximity when distressed and see the world as unsafe to explore (Colonnesi et al., 2011). An association between insecure attachment and childhood anxiety disorders has been found in several studies (e.g., Warren, Huston, Egeland, & Sroufe, 1997; Shamir-Essakow, Ungerer, & Rapee, 2005). In a longitudinal study by Warren and colleagues (1997) infants with anxious and resistant attachments had a twofold greater risk of developing more diagnoses of childhood anxiety disorders than securely attached infants.

Cognitive factors. Cognitive factors are also thought to play a role in the development and maintenance of anxiety disorders. Research has shown that youth with anxiety disorders have a bias toward attending to threatening stimuli (Vasey, Daleiden, Williams, & Brown, 1995; Vasey, El-Hag, & Daleiden, 1996), interpret ambiguous situations as threatening, are preoccupied with anxiety-inducing thoughts, and catastrophize and focus on negative outcomes (Eisen, Brien, Bowers, & Strudler, 2001). This cognitive style of anxious children may be explained by the attentional control theory, which posits that anxiety interferes with cognitive performance through a decrease of attention paid to the task at hand, and an increase in attention toward anxiety-inducing stimuli (Eysenck, Derakshan, Santos, & Calvo, 2007). Specifically, "the experience of anxiety involves having various task-irrelevant thoughts (e.g., self-preoccupation; worry), and that these task-irrelevant thoughts affect performance by reducing the amount of

attention available to be allocated to a central ongoing task" (Derakshan & Eysenck, 2009, p.169). Clinically anxious children report more negative cognitions and predict a greater likelihood of negative events and greater negative cost associated with specific events than non-anxious peers (Bögels & Zigterman, 2000; Magnusdottir & Smari, 1999). Not only do children with anxiety disorders overestimate the likelihood of danger and threat, but they also underestimate their ability to cope with danger (Bögels & Zigterman, 2000).

Childhood temperament. A shy, inhibited, or withdrawn temperament has also been found to confer risk for childhood anxiety (Rapee et al., 2009). Children with this trait, often called behavioural inhibition (BI), tend to become distressed when faced with new situations, take longer to approach or communicate with unfamiliar people, and remain close to parents or those with whom they feel safe (Manassis & Bradley, 1994; Rapee et al., 2009). BI in childhood is associated with right frontal EEG asymmetry. Specifically, children who react negatively to separation from caregivers and to novelty show greater activation in this brain region, suggesting greater cortical arousal (Fox, Calkins, & Bell, 1994; Kagan & Snidman, 1999). Therefore, children with BI are physiologically more reactive to novel, unfamiliar situations, likely due to lower thresholds of excitability of brain structures purported to be involved in fear and arousal (Garcia Coll, Kagan, & Reznick, 1984; Kagan, Reznick, Clarke, Snidman, & Garcia-Coll, 1984; Kagan, Reznick, & Snidman, 1987; Kagan, Reznick, Snidman, Gibbons, & Johnson, 1988; Kagan, Snidman, Zentner, & Peterson, 1999). Longitudinal studies have shown that children who remain consistently inhibited throughout childhood have higher rates of anxiety disorders than uninhibited children (e.g. Biederman et al., 1992).

Neurobiological factors. Anxiety disorders have been linked with activity in the amygdala and prefrontal cortex (Gorman, Kent, Sullivan, & Coplan, 2000). This amygdala

hypersensitivity and selective response has been demonstrated using functional magnetic resonance imaging when presenting images of facial displays of aversive emotions to individuals with social phobia and generalized anxiety disorder, though it is not yet clear if it is a result of deficient habituation or a more drastic response to emotional faces (McClure et al., 2007; Pine, 1999). Increased amygdala activation has been linked to greater separation anxiety symptoms, though these results are preliminary and need to be replicated (Balckford & Pine, 2012). Hippocampal formation may also be involved in some aspects of anxiety as it may mediate one's response to complicated fear stimuli, however, it is likely involved through its interactions with the amygdala-based circuits (Pine, 1999). Alterations in neurotransmitters, including serotonin, norepinephrine and dopmanine, and dysregulation of the hypothalamic pituitary adrenal axis, have also been implicated in the etiology of childhood anxiety disorders (Martin, Ressler, Binder, & Nemeroff, 2010).

Research on Anxiety and School Functioning

Research on the effects of anxiety on school functioning in children indicates that anxiety is negatively associated with academic achievement (Mazzone et al., 2007). Internalizing symptoms predict declines in school attendance and anxiety disorders are associated with premature withdrawal from school (Suldo, Thalji, & Ferron, 2011; Van Ameringen, Mancini, & Farvolden, 2003). Cole, Martin, Peeke, Seroczynski, and Fier (1999) conducted a longitudinal study in which they assessed children's over- and underestimation of academic competence in relation to anxiety. They found a strong negative correlation between the underestimation of academic competence and self-reported anxiety symptoms. Cole et al. (1999) also found a gender difference in reported academic competence, with boys overestimating and girls underestimating their academic competence. However, this was largely explained by individual

differences in self-reported anxiety. Children with anxiety disorders experience more somatic complaints than their non-anxious peers and frequency of somatic complaints uniquely predicts diminished academic performance (Hughes, Lourea-Waddell, & Kendall, 2008). Mychailyszyn, Mendez, and Kendall (2010) found that mothers of non-anxious children rated their children as performing better in school than mothers of children with anxiety disorders. Moreover, teachers indicated that students who do not meet criteria for anxiety disorders were, "working significantly harder, learning significantly better, doing significantly better academically, and being significantly happier than children diagnosed with anxiety disorders," (Mychailyszyn et al., 2010, p. 113).

Anxious students experience poorer grades in several areas of curriculum, such as literacy, mathematics, science, and social studies (Duchesne, Vitaro, Larose, & Tremblay, 2008; Nelson et al., 2004; Scruggs & Mastropieri, 1986). Children with emotional and behavioural disorders perform as low as one or more standard deviation below their normally achieving classmates (Scruggs & Mastropieri, 1986). Teacher-reported anxiety level in Kindergarten students has been shown to significantly and positively predict first-grade achievement in math and language (Normandeau & Guay, 1998).

One study reported that first-grade students in the top quartile of anxiety were almost eight times more likely to be in the lowest quartile of reading achievement and nearly three times more likely to fall into the lowest quartile in math achievement by the spring of the same school year (Ialongo, Edelsohn, Werthamer-Larsson, Crockett, & Kellam, 1994). In a follow-up study, first-grade anxious symptoms were found to significantly predict fifth-grade anxious symptoms and adaptive functioning (Ialongo, Edelsohn, Werthamer-Larsson, Crockett, & Kellam, 1995). Specifically, children in the top third of anxious symptoms in the fall of first grade were

approximately ten times more likely to be in the bottom third of achievement in the spring of fifth grade. However the authors note that this may not be a direct contribution, but rather that first-grade anxious symptoms contribute to fifth-grade anxious symptoms, which in turn, lead to diminished academic achievement (Ialongo et al., 1995). Girls' fifth-grade achievement significantly predicted fifth-grade anxiety such that girls in the bottom third of achievement were more than twice as likely to be in the top third of anxiety in fifth grade (Ialongo et al., 1995).

Grover, Ginsburg, and Ialongo (2007) conducted a seven-year follow-up study assessing psychosocial outcomes of anxious first graders and reported that early anxiety symptoms affect both concurrent and long-term academic functioning. First-grade children identified as being anxious by their teacher were almost three times more likely than their non-anxious counterparts to score in the bottom third of standardized reading and mathematics tests, however, no similar significant associations were found for chid- or parent-identified anxious children (Grover et al., 2007). When assessed in the eighth grade, teacher-identified anxious youth were found to be about three times more likely than their non-anxious peers to be in the bottom third of reading achievement and more than twice as likely to be in the bottom third of mathematics achievement (Grover et al., 2007).

A study examining a model of bi-directional influences of anxiety and reading achievement showed that fluency performance negatively predicted separation anxiety symptoms and decoding performance positively predicted harm avoidance symptoms (Grills-Taquechel, Fletcher, Vaughn, & Stuebing, 2012). Grills-Taquechel et al. (2012) suggest this is because children reporting greater harm avoidance symptoms generally have a greater desire to do things "exactly right" and obey others (Grills-Taquechel et al., 2012). Since the children were told by

an adult to "read as best you can," they paid more attention to their decoding while reading and thus performed better (Grills-Taquechel et al., 2012).

Galla and Wood (2012) found that anxiety negatively predicted performance on a procedural and problem-solving math assessment for students scoring one standard deviation below the mean on a measure of emotional self-efficacy. These results indicated that emotional self-efficacy assists in managing the negative effects of anxiety. Anxiety-related declines on math test performance were not found for children with high levels of self-efficacy, indicating that confidence in one's own ability to cope and regulate anxious emotions can serve to protect one from the negative impact of anxiety on performance (Galla & Wood, 2012).

Owens, Stevenson, Hadwin, and Norgate (2012) found that higher levels of anxiety were significantly associated with lower academic performance on a standardized test of mathematics, English, and science. They indicated that anxiety is associated with increased worry about test-taking (Owens et al., 2012). This worry interferes with complex working memory, leading to lowered test performance (Owens et al., 2012). Additional research has demonstrated a significant link between working memory and school performance (e.g. Aronen, Vuontela, Steenari, Salmi, & Carlson, 2005; Bull, Espy, & Wiebe, 2008; Gathercole & Pickering, 2000). Working memory has been found to specifically predict achievement in math and English (Andersson, 2008; Bull et al., 2008; St Clair-Thompson & Gathercole, 2006). Zheng, Swanson, and Marcoulides (2011) found that although basic skills can offset some influence of working memory, all three working memory components, central executive, phonological loop, and visual-spatial sketchpad, predict mathematical word problem-solving accuracy in children.

Evidence for the relationship between anxiety, working memory, and school performance, supports the implementation of school-based interventions for anxiety as they may

improve academic performance in children (Owens et al., 2012). It has been suggested that interventions focus on the cognitive component of anxiety and worry as this contributes most to disruptions in working memory processes that are necessary in successfully completing academic tasks (Owens et al., 2012).

Research on Anxiety and Social Functioning

Social competence and academic achievement have been shown to influence each other over time (Welsh, Parke, Widaman, & O'Neil, 2001). Grover et al. (2007) found that children identified as being anxious by their teacher in the first grade were almost 12 times more likely than non-anxious peers to be rated as low in social acceptance by their teachers. Children who self-identified as being anxious in the first grade were found to be more than three times more likely than non-anxious children to be rated by their parents as low in social acceptance in the eighth grade (Grover et al., 2007). Children identified by their teachers as lacking acceptance from their peers demonstrated poorer academic outcomes (Flook, Repetti, & Ullman, 2005). Further, lack of peer acceptance predicted both a concurrent and pervasive decline in academic performance measured over three years (Flook et al., 2005).

Ialongo et al. (1994) found that children in the top quartile of aggression in the fall of first grade were more than twice as likely as other children to be in the highest quartile of anxiety in the spring. Moreover, most first-grade children in the upper quartile of concentration problems (often a problem with anxiety), as well as the upper quartile of aggression, were rated by their teachers as urgently needing educational and/or mental health services.

Students with low psychopathology and high subjective well-being have better reading skills, school attendance, academic self-perceptions, academic related goals, social support from classmates and parents, self-perceived physical health, and fewer social problems (Suldo &

Shaffer, 2008). Grade point average (GPA) has been shown to decline at a significantly faster rate for students with psychopathology than unaffected students, whereas GPA is comparable in symptomatic students with average to high levels of subjective well-being and students without clinical levels of psychopathology (Suldo et al., 2011). These findings lend support to the idea that programs for children that promote well-being and resiliency can help with both psychopathology and school functioning.

Treatment of Childhood Anxiety Disorders

The mainstays of treatment for childhood anxiety disorders are medication and psychological interventions (Connolly, Suarez, & Sylvester, 2011). Though some children with severe symptoms and marked functional impairment may require pharmacologic treatment, many children are effectively treated using psychological intervention alone (Connolly et al., 2011). Among the psychological interventions, there is consensus that cognitive-behavioural therapy (CBT) is the treatment of choice for children and youth with anxiety disorders (Compton et al., 2004; Connolly et al., 2011; Cohen, Deblinger, Mannarino, & Steer, 2004; King, Heyne, & Ollendick, 2005; Ollendick & King, 1998; Öst, Svensson, Hellström, & Lindwall, 2001). CBT has been shown to be as effective as pharmacotherapy, although the combination of CBT and medication yields the best results (Walkup et al., 2008).

CBT conceptualizes anxiety as having physiological, behavioural, and psychological components. Therapy addresses these components by educating the child about the nature of anxiety, teaching strategies to reduce autonomic arousal and anxiety-provoking cognitions, and encouraging exposure to feared situations (Albano & Kendall, 2002; Kendall, 1994). When used to treat anxiety, CBT works to modify maladaptive thoughts and change behaviour to promote habituation to anxiety producing stimuli and extinguish excessive fears (Compton et al., 2004).

The cognitive component of CBT focuses on identifying negative, unhelpful thoughts and expectations, then learning to challenge them through cognitive restructuring and changing self-talk (Connolly et al., 2011). Graduated exposure is used to help children become desensitized to anxiety-provoking stimuli and positive reinforcement of children's efforts is important to increase their self-confidence and encourage continuation of exposure trials (Connolly et al., 2011).

Prevention of Anxiety Disorders in Children

While early identification and treatment of childhood anxiety is critical, mental health professionals and researchers also emphasize the importance of prevention of childhood anxiety (Kessler et al., 2005; Waddell, McEwan, Peters, Hua, & Garland, 2007; Woodward & Fergusson, 2001). Preventive interventions that teach children effective coping strategies for dealing with anxiety improve mental well-being, whether through the prevention of the onset of a disorder or a reduction in severity of anxiety symptoms (Hirshfeld-Becker & Biederman, 2002). A recent meta-analysis of prevention research concluded that these programs produce significant positive effects, even if effects are statistically small (Teubert & Pinquart, 2011).

Currently, prevention programs are classified based on the extent to which an individual is at risk for a specific disorder or symptom. *Indicated* interventions target individuals who do not meet diagnostic criteria for a disorder, but who exhibit symptoms of a disorder (e.g. social skills training for children with early behavioural problems; Feldner, Zvolensky, & Schmidt, 2004; Greenberg, Domitrovich, & Bumbarger, 2001). *Selective* interventions target those who are at genetic or environmental risk for developing a disorder in the future (e.g. support groups for children who have suffered losses/traumas; Feldner et al., 2004; Greenberg et al., 2001). *Universal* interventions are given to an entire population, without considering any particular

susceptibility for a disorder or presence of anxiety symptoms (e.g. school-based programs to enhance achievement; Feldner et al., 2004). Each of these types of group-based preventive interventions may be delivered in school settings.

Indicated interventions. Studies using school-based indicated interventions have demonstrated their effectiveness in reducing and preventing anxiety (Dadds, Spence, Holland, Barrett, & Laurens, 1997; Dadds et al., 1999; Gillham et al., 2006; Liddle & Macmillan, 2010). Dadds et al. (1997) conducted a controlled trial evaluating the effectiveness of an early intervention and prevention program for anxiety problems in children. Participants were children aged seven to 14 years deemed at risk for anxiety disorders through child and teacher reports of anxiety symptoms. A monitoring condition was used for the control group, and those in the intervention group received a CBT-based program called *The Coping Koala*. Although both the control and the intervention group demonstrated lower rates of anxiety disorders at endpoint, only the intervention group maintained these results at the six-month follow-up. Of the children in the intervention group who only had features of anxiety, rather than an anxiety disorder, only 16% progressed to clinical levels of anxiety. Significantly more children in the control group (54%) developed diagnosable levels of anxiety after six months. Dadds et al. (1999) found evidence for lasting reductions in and prevention of anxiety for the intervention group at two-year follow-up.

Liddle and Macmillan (2010) assessed the effectiveness of an indicated prevention, FRIENDS for Life (FFL), in reducing anxiety symptoms. Participants were students aged nine to 14 years nominated by teachers as demonstrating some signs of anxiety, low mood, or low self-esteem. Immediately after completion of the intervention students demonstrated significant

reductions in anxiety levels, as well as significant improvements in mood, self-esteem, and social skills, all of which were maintained four months post-treatment.

Selected interventions. Similarly, selective interventions have been efficacious in reducing and preventing anxiety (Balle & Tortella-Feliu, 2010; Berger, Pat-Horenczyk, & Gelkopf, 2007; Ginsburg, 2009; Malgady, Rogler, & Costantino, 1990). Balle and Tortella-Feliu (2010) assessed the effectiveness of a brief school-based selective prevention program for youth with high anxiety sensitivity, an early risk factor for anxiety disorders, but without a current diagnosis of an anxiety disorder. Students aged 11 to 17 were randomly assigned to either the prevention condition, which consisted of a cognitive-behavioural intervention largely based on the FFL program, or a waiting-list control condition. A third group of students deemed not at risk for anxiety disorders was also included for comparison as normal controls. Although participants in both the prevention and wait-list groups demonstrated a significant reduction in anxiety at post-test, only the prevention group maintained the effects at six-month follow-up. Anxiety symptoms of the participants in the wait-list condition tended to worsen over the six-month period, however, anxiety symptomatology of the prevention group was reduced to a point of being comparable to that of the normal control group.

Ginsburg (2009) also found evidence for prevention effects of a cognitive behavioural selective anxiety prevention intervention called the *Coping and Promoting Strength* (CAPS) program. Forty children and their anxiety-disordered parents were randomly assigned to either the CAPS program or a wait-list control condition. Children were considered at-risk due to their parents' anxiety disorder diagnoses. By one-year follow-up, 30% of the wait-list group, compared to 0% of the intervention group, met criteria for an anxiety disorder and only the intervention group children had significant reductions in reported levels of anxiety.

Universal interventions. Researchers have implemented universal preventive intervention programs in schools and shown promising evidence for their success in reducing anxiety (Aune & Stiles, 2009; Barrett & Turner, 2001; Barrett, Lock, & Farrell, 2005; Barrett et al., 2006; Kraag, Van Breukelen, Kok, & Hosman, 2009; Lowry-Webster, Barrett, & Dadds, 2001; Lowry-Webster, Barrett, & Lock, 2003). Universal interventions are a more cost-effective approach than individualized treatment and also avoid the stigmatization that may occur in individual or targeted interventions (Barrett & Turner, 2001; Briesch, Hargermoser Sanetti, & Briesch, 2010). The FFL program, a widely researched preventive intervention for anxiety, and studies assessing its efficacy are described below.

FRIENDS for Life

FFL is a CBT-based preventive intervention that uses social-emotional learning to prevent the onset of anxiety in children and youth (Barrett & Pahl, 2006). FFL is a manual-based program that targets and addresses thoughts and behaviours associated with anxiety through cognitive restructuring, and addresses the physiological symptoms of anxiety such as shallow breathing and increased heart rate by teaching children to identify and understand their own body's anxiety response (About anxiety and depression, n.d.; Briesch et al., 2010; Stallard, 2010). The program is based on the efficacious program *The Coping Cat,* used to individually treat anxious children, and modified to be presented in a group format with an added parent training and support component (Barrett & Pahl, 2006; Kendall, 1994). The 1991 version of the modified program was called *Coping Koala* and in 1998 *Coping Koala* was refined and expanded into two intervention programs: FRIENDS for Children (eight to 11 years) and FRIENDS for Youth (12 to 16 years; FRIENDS for Life, 2007). This expansion allowed for more age-specific approaches. Today, this evidence-based program is the only program the

World Health Organization supports as an effective anxiety prevention program for children and youth (Barrett & Pahl, 2006; Farrell & Barrett, 2007). It is appropriate for both school and clinic use and has demonstrated positive effects on anxiety up to 6 years after program completion (FRIENDS, n.d.).

FFL is a positively focused program that promotes self-esteem, problem-solving, and building positive relationships (FRIENDS, n.d.). Teachers and school counsellors may deliver it after completing an accredited teacher-training workshop (Barrett & Pahl, 2006). It consists of ten weekly sessions during which students participate in activities designed to help them learn how to deal with anxiety-inducing situations by replacing negative, worrying thoughts with positive, helpful thoughts (FRIENDS, n.d.; Stallard, 2010). Activities include large and small group work, workbook exercises, role-playing, games, and quizzes (Stallard, 2010).

The main themes of the program centre around the word 'friends.' The main principles taught within the program are to think of your body as a friend who provides you with clues about your anxious or worried feelings, to be a friend to yourself and look after your own body, to talk to your friends when you or they are in a difficult situation, and to be a friend to yourself by rewarding yourself when you have put in your best effort (Barrett & Pahl, 2006). Cognitive behavioural techniques are incorporated into the fundamental ideas behind the FFL program. Children are provided with psychoeducation about their feelings and taught to understand their body's physiological cues of anxiety and how to use relaxation skills to self-soothe (Barrett & Pahl, 2006). Cognitive restructuring is taught through discussion of positive self-talk and the replacement of unhelpful thoughts with more positive, helpful ones (Barrett & Pahl, 2006). An incremental approach to fear-inducing situations and goal achievement is encouraged, as well as rewarding oneself for effort (Barrett & Pahl, 2006). FFL also includes two booster sessions and a

session dedicated to relapse prevention and maintenance (Barrett & Pahl, 2006). Parents are invited to two psychoeducation sessions which encourage the facilitator, parents, siblings, and the children to work together toward the goal of developing better coping skills and confidence (Barrett & Pahl, 2006).

The FFL program has been widely researched and there is a great deal of evidence for its efficacy. Barrett and Turner (2001) randomly assigned 489 children to either a teacher-led FFL program, a psychologist-led FFL program, or a standard curriculum with a monitoring condition. Results indicated the FFL program was successful, as students in both teacher- and psychologist-led programs reported fewer anxiety symptoms than those in the standard curriculum condition post-intervention. Lowry-Webster and colleagues (2001) similarly found that the FFL program was superior to a wait-list control in decreasing self-rated anxiety in school children, with anxiety reduction being more robust in children with clinical levels of anxiety. Gains were maintained at 12-month follow-up for all children and those with high baseline levels of anxiety (Lowry-Webster et al., 2003). Among anxious children, 91.4% who received the FFL program compared to 74.8% in the control group were considered not at risk at 12-month follow-up. Additionally, more children in the control group progressed to at-risk status, or remained at risk, than did those in the intervention group (Lowry-Webster et al., 2003).

Stallard et al. (2005) evaluated a school-based trial of FFL in the United Kingdom. Significant reductions in anxiety and increases in self-esteem were found post-intervention. Children in the high-risk group, which comprised the 10% of children with the highest anxiety or lowest self-esteem scores, experienced significant reductions in anxiety level and 60% of these children positively changed their at-risk status.

Several other studies have found significant improvements in anxiety immediately after participation in the FFL program and up to 12-months post-intervention (e.g. Liddle & Macmillan, 2010; Stallard, Simpson, Anderson, & Goddard, 2008; Stallard, Simpson, Anderson, Hibbert, & Osborn, 2007). In a study conducted by Farrell, Barrett, and Claassens (2005), 73% of children with a diagnosis of an anxiety disorder no longer met criteria for a disorder after completion of the program. One study did not find statistically significant improvements in anxiety following the FFL program (Rose, Miller, & Martinez, 2009), however, another study reported that a reduction in children's anxiety only became statistically significant over time, at 4- and 6-month follow-up (Mostert & Loxton, 2008). Researchers have found a lack of significant reductions in anxiety in Aboriginal children following the FFL program (Miller et al., 2011), though inner-city African-American children with moderate anxiety problems and exposure to community violence (Cooley, Boyd, & Grados, 2004) and culturally diverse populations (former-Yugoslavian, Chinese, and mixed-ethnic; Barrett, Sonderegger, & Xenos, 2003) have demonstrated significant positive effects post-intervention.

A review of the FFL research base indicated that the program generally had a positive effect on child outcomes (Briesch et al., 2010). Studies using FFL as an indicated intervention demonstrated the most significant improvements, and for children diagnosed with anxiety the mean effect size was found to be within the range of effect sizes reported for individualized CBT (Briesch et al., 2010). The review also suggests that although the FFL program benefits all children through the teaching of coping skills, when time and other constraints prevent universal implementation, targeted intervention of children diagnosed with anxiety disorders would be the most beneficial (Briesch et al., 2010).

Study Rationale

Although available evidence suggests the FFL program is an effective school-based anxiety prevention program (e.g. Barrett & Pahl, 2006; Farrell & Barrett, 2007), little research to date has examined whether its anxiety reduction effects are also accompanied by improvement in academic performance. This is an important question to address given the significant link between anxiety and impaired school performance (e.g., Wood, 2006; Nelson et al., 2004).

A recent edition of Professionally Speaking, the magazine published by the Ontario College of Teachers, contained an article discussing mental health in Ontario Classrooms (McCullough, 2010). Dr. Darcy Santor of the University of Ottawa, and child and youth mental health scientist at the Children's Hospital of Eastern Ontario, indicated in the article that, "mental illness can seriously impair a child's success at school and the child's interaction with peers," (McCullough, 2010, p.40). He also states that "14 per cent of school dropouts can be attributed to psychiatric disorders, that kids with mental illness miss 40 per cent more school days than students without mental illness and that, depending on the disorder, 30 to 50 per cent underachieve" (McCullough, 2010, p.40).

Considering the unfavourable outlook for academic success for Ontario students with anxiety disorders, this study will examine whether a school-based anxiety prevention program not only reduces anxiety, but also improves school and social functioning. Demonstrating academic benefits of this program would indicate to educators that teacher-led preventive interventions could potentially improve attendance and reports of global academic achievement of schools (such as the Education Quality and Accountability Office test; EQAO), as well as free up the time of support staff and special education teachers so they may divide their time more appropriately in response to student need.

Schoenfeld and Janney's (2008) review of the literature concerning the identification and treatment of anxiety in students indicates that although school-based interventions are effective, success in reducing symptoms of anxiety is not enough for the school system to take notice. To be considered of great importance in school settings, anxiety prevention programs should also produce a concomitant increase in academic achievement (Schoenfeld & Janney, 2008). The present research is driven by the notion that although schools are concerned with the emotional well-being of their students, a greater emphasis is put on academic performance and success.

Study Objectives and Hypotheses

The goal of this study was to provide preliminary evidence for the efficacy of the group-based FFL program in improving school and social functioning, in addition to reducing students' anxiety. The following research questions were examined in the present study:

1. Will the FFL program reduce anxiety in anxious students?
2. Will the reduction in anxiety be paralleled by improved school and social functioning?

The hypotheses were twofold. Firstly, it was hypothesized that anxiety scores would decrease from baseline to post-treatment. Secondly, following the FFL program, it was predicted that school and social functioning would improve.

Method

Research Design

Initially it was intended that this study be comprised of a treatment group, a wait-list control, and a normal control group. Practical reasons limited our design to an open trial in which all anxious children received a condensed six-week FFL intervention. Child self-report of anxiety as well as social and school functioning were measured before and after the six-week intervention.

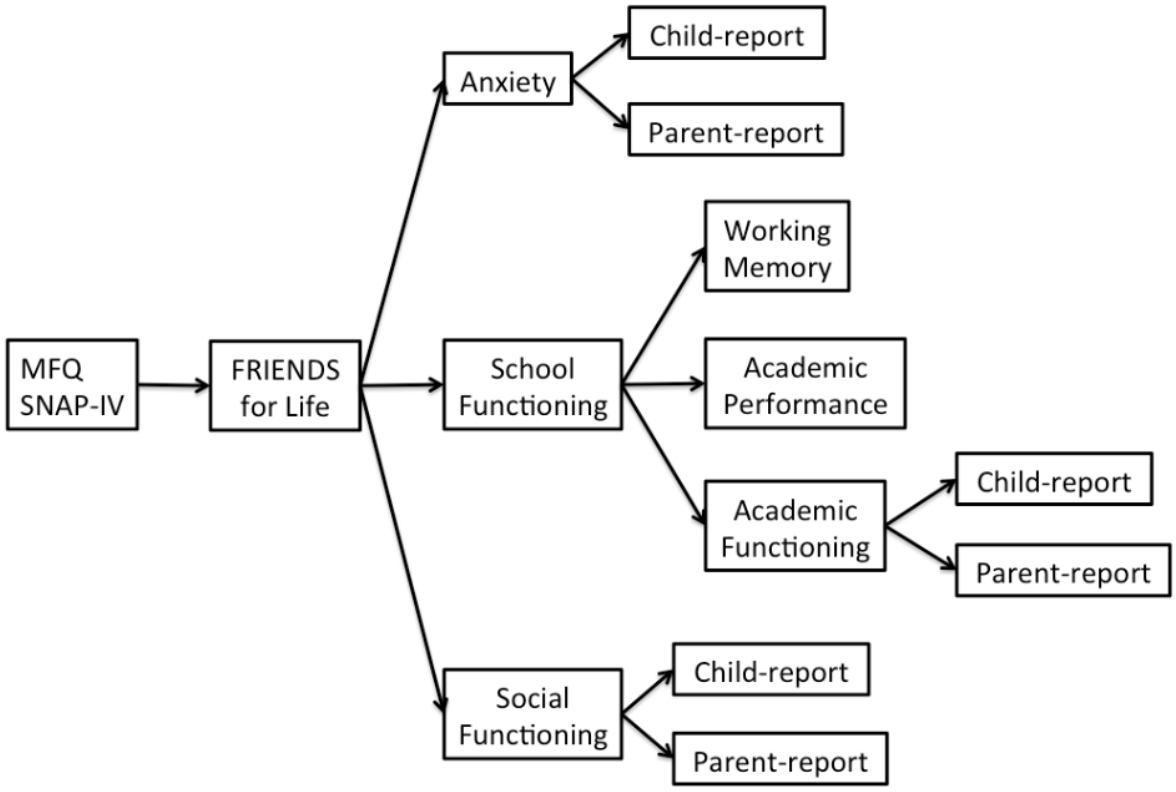

Figure 1. Theoretical framework of the study

Participants

Fifteen children between the ages of eight and 12 years who were identified by their parents, teachers, school support staff, or physician as experiencing elevated levels of anxiety participated in the study. To be eligible to participate, children were required to speak English, attend a mainstream school (i.e. not in a modified remedial program), and be able to attend six weekly sessions of the program.

Children were excluded from the study if they met criteria for an externalizing disorder based on scores from the Swanson, Nolan, and Pelham-IV (SNAP-IV; Swanson et al., 2001), if they were diagnosed with another psychiatric disorder other than anxiety, if they were currently

receiving psychotherapy for an anxiety disorder, if they were on anti-anxiety medication for which the dosage may change over the course of the study, or if they obtained a score of 32 or higher on the Mood and Feelings Questionnaire (MFQ; Costello & Angold, 1988). If a child's score on SCAS or MFQ revealed any condition that may warrant attention a registered psychologist would have assessed the child and discussed with the parent the need for a referral.

Measures

Measures for exclusion criteria. Two measures were used to assess whether children met exclusion criteria, the SNAP-IV and the MFQ.

Swanson, Nolan, and Pelham-IV. The 26-item MTA version of the SNAP-IV (Swanson et al., 2001) is a screening tool for emotional and behavioural concerns, which measures attention deficit hyperactivity disorder (ADHD) and oppositional defiant disorder (ODD) symptoms. Parents respond to items using a 4-point scale ranging from 0 (*not at all*) to 3 (*very much*). Average rating-per-item subscale scores are calculated for the inattention, hyperactivity/impulsivity, and opposition/defiance domains, and compared to 5% cut-off scores (Bussing et al., 2008). Internal consistency has been found to range from .84-.95 (Stevens, Quittner, & Abikoff, 1998; Tseng et al., 2012). The SNAP-IV has been shown to be valid and have statistically significant inter-rater reliability (Bussing et al., 2008).

Mood and Feelings Questionnaire. The child version of the Mood and Feelings Questionnaire (Costello & Angold, 1988) is a 33-item self-report measure of depressive symptoms for children eight to 18 years (Sund, Larsson, & Wichstrøm, 2001). It was designed as a screening tool for depression based on DSM-III-R criteria for Major Depressive Disorder (Wood, Kroll, Moore, & Harrington, 1995). Children rate the degree to which they experienced each symptom over the preceding two weeks on a 3-point Likert scale of *true, sometimes true,*

and *not true*. The MFQ has been found to have high internal consistency with Cronbach's alphas ranging from .91 to .95, and retest reliability has been reported to be high with intraclass correlation coefficients ranging from .78 to .84 (Daviss et al., 2006; Sund et al., 2001; Wood et al., 1995). The MFQ compares well with Beck's Depressive Inventory, the Child Behavior Checklist's Anxious/Depressed scale, the Children's Depressive Rating Scale-Revised, and the Depressive/anxious scale of the Youth Self Report (Daviss et al., 2006; Sund et al., 2001).

Mean scores of 36.9 were reported for children with major depression compared to 20.5 for non-depressed children (Wood et al., 1995) and have also been found to differ significantly across youth having major depressive episodes (MDE; score = 33), mood disorders not meeting criteria for current MDE (score = 24), and no mood disorder (score = 12; Daviss et al., 2006). Optimal cut-off scores for major depression have been suggested to be 27 and 29 (Wood et al., 1995; Daviss et al., 2006). Several studies support the validity of the MFQ as a depression screening measure (Daviss et al., 2006; Kent, Vostanis, & Feehan, 1997; Sund et al., 2001; Wood et al., 1995). One study indicated it could be used to measure remission, with a high diagnostic accuracy reported at AUC=.91 (Wood et al., 1995).

Anxiety measure. Child- and parent-report anxiety were measured using the respective Spence Children's Anxiety Scale.

Spence Children's Anxiety Scale. The Spence Children's Anxiety Scale (SCAS-C; Spence, 1997) consists of 44 items and assesses symptoms of anxiety in children aged eight to 15 years. Children respond to items using a 4-point scale (*never, sometimes, often,* and *always*) to indicate the frequency with which they experience each symptom (Barrett et al., 2005). Only the 38 anxiety questions are scored, with scores ranging from 0 to 144. The SCAS-C provides a total anxiety scores, as well as scores for the six subscales: Separation Anxiety, Social Phobia,

Obsessive-Compulsive, Panic/Agoraphobia, Physical Injury Fears, and Generalized Anxiety. The SCAS-C specifically assesses anxiety symptoms of children in the general population and has been shown to have high internal consistency, with Cronbach alphas ranging from .87 to .94 (Brown-Jacobsen, Wallace, & Whiteside, 2011; Delvecchio, Di Riso, Chessa, & Lis, 2010; Essau, Anastassiou-Hadjicharalambous, & Muñoz, 2011; Essau, Muris, & Ederer, 2002; Spence, 1997; Spence, 1998; Spence, Barrett, & Turner, 2003; Whiteside & Brown, 2008). Eight-week, twelve-week, and six-month test-retest reliability for the SCAS has been reported to be .94, .60, and .63, respectively (Essau et al., 2011; Spence, 1998; Spence et al., 2003). The SCAS has been found to correlate significantly with the Revised Children's Manifest Anxiety Scale, Columbia Impairment Scale, the anxious/depressed subscale of the Youth Self-Report, and the emotional subscale of the Strength and Difficulties Questionnaire (Essau et al., 2002; Essau et al., 2011).

The parent version of the SCAS (SCAS-P) is comprised of 39 items, one of which is open-ended and not scored. The parent version of the SCAS correspondingly assesses anxiety symptoms of their child using a 4-point Likert scale and the items closely reflect those of the child version. The SCAS-P also provides a total anxiety scores, as well as scores for the six subscales: Separation Anxiety, Social Phobia, Obsessive-Compulsive, Panic/Agoraphobia, Physical Injury Fears, and Generalized Anxiety. Internal consistency has been reported to be satisfactory to excellent, with Cronbach alphas ranging from .89 to .90 (Brown-Jacobsen et al., 2011; Nauta et al., 2004; Whiteside & Brown, 2008). Parent-child agreement ranges from .41 to .66 in children with anxiety disorders and from .23 to .60 in control children (Nauta et al., 2004). The SCAS-P is able to differentiate between children with anxiety disorders and non-anxious controls, as well as between anxiety disorders (Nauta et al., 2004; Whiteside & Brown, 2008).

School functioning measures. School functioning was comprised of three assessments: a digit span task to measure working memory; an assessment of reading, spelling, and arithmetic to measure school performance; and an assessment of child- and parent-report academic functioning.

Digit Span Task – Wechsler Intelligence Scale for Children – Fourth Edition. The Wechsler Intelligence Scale for Children – Fourth Edition (WISC-IV; Wechsler, 2003) assesses intelligence in children and adolescents aged 6 to 16. The present study used the digit span task, an assessment in the Working Memory Index (WMI), which is comprised of the Digit Span Forward (DSF) and Digit Span Backward (DSB) tasks. The WMI measures children's working memory by requiring them to temporarily retain and manipulate information in memory (Beal, 2004; Burns & O'Leary, 2004). In the DSF, the participant is asked to repeat numbers stated by the examiner exactly as they were stated. The participant is then asked to repeat, in reverse order, the numbers stated by the examiner for the DSB. WMI internal reliability has been reported at .92 (The Psychological Corporation, 2003). Test-retest reliability for the Digit Span is high, in the .80-.89 range (Strauss, Sherman, & Spreen, 2006).

Wide Range Achievement Test 3. The Wide Range Achievement Test 3 (WRAT-3) is an easy-to-use measure of academic achievement which assesses the abilities necessary for learning the basic skills of reading, spelling, and arithmetic in individuals aged 5 to 74 years (Dell, Harrold, & Dell, 2008; Knoop, 2004; Wilkinson, 1993). The WRAT-3 measures the skills necessary for performing academic tasks, such as decoding symbols, a skill necessary for learning to read (Knoop, 2004). Results from the assessment indicate the degree to which typical learners have mastered these basic academic skills (Knoop, 2004).

The WRAT-3 is a single-level test with two separate and equated alternate test forms (Blue and Tan) that may be used as pre- and post-tests, or together as a more comprehensive combined assessment (Knoop, 2004; Wilkinson, 1993). Alternate form reliability has been reported as .98 (Smith & Smith, 1998). Each subtest is administered according the *5/10* Rule, the basal/ceiling guideline of the WRAT-3 (Knoop, 2004). The *5* Rule refers to the minimum (basal) number of items that must be answered correctly on the second portion of the subtest before one can exclude the administration of the preliminary items of the first portion of the subtest (Dell et al., 2008). The *10* Rule refers to the termination of the test after 10 consecutive incorrect responses (Strauss et al., 2006). Test items are presented in ascending order of difficulty (Knoop, 2004). The WRAT-3 requires 15 to 30 minutes to administer (Knoop, 2004; Wilkinson, 1993).

The reading subtest of the WRAT-3 is comprised of letter reading and word reading sections. Only children seven years of age or younger or individuals failing to meet the basal scoring guidelines for the word reading subtest are administered the letter reading subtest. The letter reading section consists of 15 letters and the word reading section consists of 42 words (Dell et al., 2008, Knoop, 2004; Wilkinson, 1993). Reading scores are based on the number of correctly pronounced letters and/or words (Knoop, 2004).

The spelling subtest includes a letter writing section for children seven years and younger and those who do not meet the basal requirement for the spelling section. The spelling portion consists of 40 words, and spelling scores are based on the number of correctly written letters and correctly spelled words (Dell et al., 2008; Knoop, 2004).

The arithmetic subtest consists of the oral and written arithmetic components, which assess counting, reading number symbols, solving oral problems, and performing written computations (Wilkinson, 1993). Again, the oral arithmetic portion is only administered to

children seven years of age and under and those not meeting the basal guideline for the written component. This subtest must be completed without the assistance of a calculator and has a 15-minute time limit (Dell et al., 2008; Knoop, 2004).

The Wide Range Achievement Test has gone through several revisions since it was first published in 1936, though the WRAT-3 does not differ significantly in content from previous versions. Additionally, the sole change in format in the newer fourth edition is the addition of a sentence comprehension subtest and reading composite score (Wilkinson & Robertson, 2006). Composite achievement score reliability coefficients have been reported to range from .92 to .97 (Wilkinson, 1993; Yoo, Brown, & Luthar, 2009). Scores on the WRAT-3 correlated significantly with corresponding Wechsler Individual Achievement Test (WIAT) subtests (Smith & Smith, 1998). WRAT-3 reading subtest Pearson correlations were .79 and .63 for the basic reading and reading comprehension WIAT subscales (Smith & Smith, 1998). The spelling subtest correlation was .70 (Smith & Smith, 1998). The WRAT-3 arithmetic subtest correlated with WIAT mathematical reasoning and numerical operations at .53 and .59, respectively (Smith & Smith, 1998).

MacArthur Health and Behaviour Questionnaire. The original version of the MacArthur Health and Behaviour Questionnaire (HBQ; Boyce et al., 2002; Essex et al., 2002) was created to assess functioning and impairment in children aged 4 to 8 years (Ablow et al., 1999; Essex et al., 2002). The present study used the HBQ 2.1 which is designed for youth aged 9 to 18, though it may also be used for 8-year-old children if the items are read aloud to ensure adequate understanding. There are a total of 164 child-report HBQ items (HBQ-C). Children in the present study completed the 22 items in the school adaptation subscale. Each item consists of two statements and children choose the statement to which they relate the most and then rate the

degree to which they feel the statement is true of them, ranging from *sort of like me* to *really like me*. The parent-report HBQ (HBQ-P) is comprised of 124 items in total; 15 items from the parent-report school adaptation subscale were used in the present study. HBQ-P items in the school adaptation subscales are rated on a 3-point Likert-scale ranging from *not at all like* to *very much like* the child. Test-retest reliability for the HBQ has been reported as .75 to .95 at 7-10 day retest (Essex et al., 2002). School engagement and academic competence comprise the school adaptation subscale.

Social functioning measure. Child- and parent-report social functioning was measured using additional subscales of the HBQ-C and HBQ-P.

MacArthur Health and Behaviour Questionnaire. Children in the present study completed 52 items of the social adaptation, overt aggression, and relational aggression subscales of the HBQ-C. Parents completed 56 corresponding items on the HBQ-P. The social adaptation subscale is comprised of peer relations (peer acceptance/rejection and bullied by peers), prosocial behaviour, social withdrawal (asocial behaviour and social inhibition), and relational victimization.

Intervention Program

FRIENDS for Life. The FFL program normally consists of ten weekly sessions during which students participate in large and small group work, workbook exercises, role playing, games, and quizzes designed to help them learn how to deal with anxiety-inducing situations by replacing negative, worrying thoughts with positive, helpful thoughts (FRIENDS, n.d.; Stallard, 2010). The program includes two booster sessions and a session dedicated to relapse prevention and maintenance of skills learned during the program (Barrett & Pahl, 2006). Parents are invited to two psychoeducation sessions intended to help nurture a supportive atmosphere within the

family and to help family members become aware of their own strengths in order to use them to help one another deal with difficult situations (Barrett & Pahl, 2006).

The FFL program was adapted for the present study to best suit the needs of the parents and children participating. The ten sessions of the FFL program were condensed into six sessions, each two hours in duration including a break halfway through the session. No program material was omitted, with the exception of the later homework assignments. This change to only six sessions, as well as the offering of sessions at two different times (Saturday morning and Saturday afternoon) was made to help accommodate the busy schedules of children and their parents. If a child missed a session the facilitator arranged to meet with him or her before the next session to review the missed information with the child. Due to parents' availability, time constraints, and the purpose of this project, the relapse prevention and booster sessions and parent sessions were not offered, though the facilitator did communicate by telephone and e-mail with parents regarding questions or concerns.

The study investigator facilitated the FFL intervention. She is an Ontario Certified Teacher and Master's-level counselling student who completed the required full-day training program to administer the program. All sessions were audiotaped and three tapes were randomly selected and reviewed by the supervising psychologist to ensure fidelity with the study intervention.

Procedure

Recruitment. Participants were recruited through posters distributed throughout locations in the community frequented by children and parents, referrals from teachers and school support staff, and letters distributed to community organizations for children.

Assessment. Parents who contacted the researcher underwent an initial telephone pre-screen to determine if their child was protocol eligible. This 25-minute pre-screen elicited

information about the child's symptoms of anxiety, or lack thereof, and included the SNAP-IV to exclude children displaying externalizing behaviours including ADHD. Potentially eligible children were invited to the University of Ottawa for further assessment to confirm study eligibility. During this one-hour visit, the study was explained and written informed consent from the child's parent (or legal guardian) as well as child assent (Appendix B and C) were obtained. Children completed a depression measure to determine if they met exclusion criteria. The researcher read the assent form and the measures aloud for children to ensure their understanding.

Eligible children were asked to complete measures of anxiety, social and school functioning, working memory, and academic achievement, and were also given $10 from the supervising psychologist's research funds at the end of the visit. Parents of eligible children were asked to complete parent-report measures of their child's anxiety, as well as social and academic functioning at this visit. These measures were administered by the principal researcher.

Children eligible to participate in the FFL program attended six weekly sessions of the program held on Saturday mornings and/or afternoons at the University of Ottawa. Sessions were two hours in length and included a break so that children could use the washroom and have snacks. At the end of the study children were asked to complete the anxiety, social and academic functioning, working memory, and achievement measures a second time either at the university or in their home. Parents were asked to fill out the parent versions of the anxiety, and social and academic functioning questionnaires again. Of the 15 parent reports, 13 were completed by of the child's mothers alone and two were completed by the mother and father together at both pre- and post-treatment assessment.

Attrition

Every effort was made to keep participants in the study for the full six weeks. Barriers that affected attendance were discussed with the child and his/her parent and removed if possible. There were no children who missed more than one session and who did not review missed material with the facilitator at a later date. Two children completed baseline assessments but did not attend any FFL sessions and were dropped from the study. One participant chose to withdraw from the group after one session and she was asked to complete endpoint assessments following her decision.

Sample Size Calculation and Statistical Analyses

Sample size. Sample size calculation was based on data from a study by Liddle and Macmillan (2010), which evaluated the efficacy of FFL in anxious children. In this study the mean difference from baseline to post-treatment on the SCAS was 9.0 with a standard error of 3.296. Assuming a pre-post intervention difference of 9 points and a SD of 10.9, using Power and Precision (Borenstein, Rothstein, & Cohen, 2001), it was estimated that 14 participants would give us 90% power to detect a significant baseline to post-treatment difference. It was anticipated that this sample size would also be sufficient to detect an improvement in academic performance from pre-treatment to post-treatment. To account for an assumed 30% dropout rate, the aim was to recruit 17 children for the study.

Statistical analyses. Analyses were performed on the intent-to-treat sample. The normality of the distributions for outcome measures on these scales was assessed by visual inspection of histograms and normal probability plots. Academic and social functioning variables were found to contain outliers according to Tabachnik and Fidell (2001). Logarithmic and square root transformations were applied to normalized skewed variables, though the skewness of only

one variable was sufficiently corrected. As a result, non-parametric tests were used to conduct analyses of the academic and social functioning variables.

Paired-samples t-tests were used where possible to evaluate pre- to post-treatment changes in outcome measures. The Wilcoxon Signed Rank test, the non-parametric test equivalent to the paired t-test, was used when scores were not normally distributed.

Statistical significance is reported if $p \leq .05$ (two-tailed tests) and trends are also reported if $p \leq .10$ (two-tailed tests). Within-group effects sizes were calculated to examine the magnitude of change with the study intervention using the eta squared (η^2) statistic and cutoff values of .01 for a small effect, .06 for a moderate effect, and .14 for a large effect. Within-group effects sizes for non-parametric analyses were also calculated using the η^2 statistic and cutoff values of .1 for a small effect, .3 for a medium effect, and .5 for a large effect. As this was a pilot study with a small sample size no correction was made for multiple tests.

Exploratory analyses. Several exploratory analyses were conducted, including independent-samples t-tests to compare child- and parent-report SCAS scores at pre- and post-treatment to normative means. Additionally, Pearson's product-moment correlations were used to examine the concordance between child- and parent-report SCAS scores at baseline and post-treatment, as well as the relationship between baseline and post-treatment scores. Associations between WISC-IV and WRAT-3 scores at baseline and post-treatment were also analyzed using Pearson's product-moment correlations. Spearman's rho was used to conduct correlational analyses on HBQ measures at baseline and post-treatment due to the inability to sufficiently normalize skewed variables.

Since participants in this sample did not have diagnoses of anxiety disorders, and the magnitude of change in outcomes may depend on pre-treatment anxiety, for additional

exploratory analyses the sample was split dichotomously into children with higher versus lower self-reported levels of anxiety. Children with higher levels of anxiety may have scores closer to the clinical range and therefore possess greater room for change with the intervention, whereas those with lower levels of anxiety may have scores that more so reflect the normal population. In the present study, children with pre-treatment SCAS-C scores below the median of 31were considered to be in the low anxiety group (n = 7) and those above the median in the high anxiety group (n = 8). Paired-samples t-tests were conducted to examine change from pre- to post-treatment within each of these groups. Additional exploratory analyses included Pearson's product-moment correlations to examine the relationship between anxiety and the outcome measures (school functioning and social functioning) at pre- and post-treatment.

Results

Flow of Participants during the Trial

A consort diagram illustrating participation and attrition in the study is presented in Figure 1. Sixty-three parents contacted the researcher regarding the study. Of those parents, 58 completed the telephone pre-screening and five did not respond to the researcher's reply. Forty children were excluded from the study based on the telephone pre-screening, mostly due to elevated SNAP-IV (n = 8) scores or diagnosis of ADHD (n = 10), but also due to an inability to attend the sessions (n = 9), not meeting age requirements (n = 6), presence of another psychiatric diagnosis (n = 2), or lack of anxiety (n = 5). Of the potentially eligible 18 children, one child was too busy to attend the screening and therefore join the group. Seventeen children were screened for eligibility for participation and deemed to be eligible. Two children refused to attend any group sessions after screening.

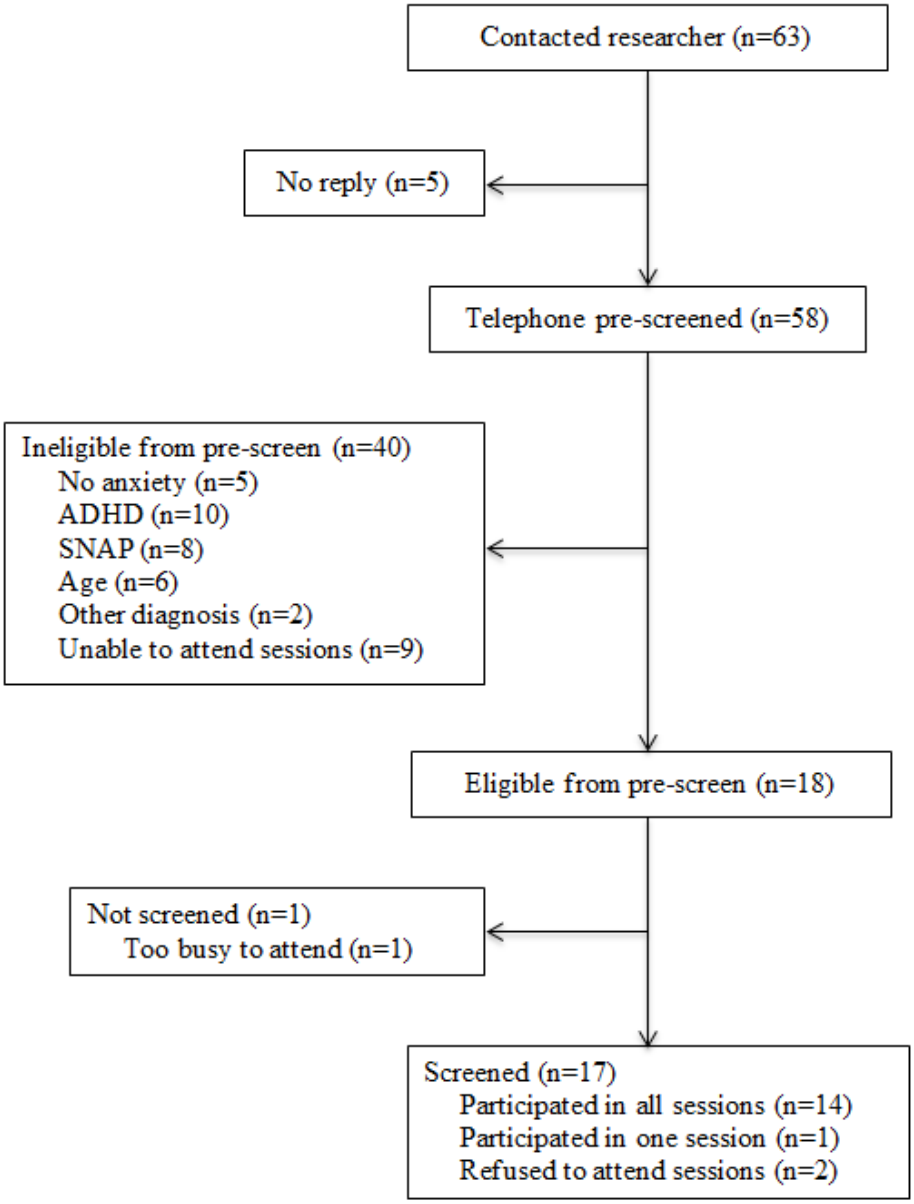

Figure 2. Flow of Participants During the Trial

Fifteen children received the study intervention. Their age ranged from eight to 12 years ($M = 9.47$, $SD = 1.51$) and 53% were female. Frequencies of age and gender are presented in Table 1. Three separate FFL groups were run, ranging in size from three to seven participants. Kruskall-Wallis tests revealed no significant differences across FFL groups (Group 1, $n = 5$, Group 2, $n = 3$, Group 3, $n = 7$) on age, χ^2 (2, $n = 15$) = 3.12, $p = .21$, gender, χ^2 (2, $n = 15$) = .57,

p = .75, and pre-treatment child χ^2 (2, n = 15) = 2.34, p = .31, and parent χ^2 (2, n = 15) = .52, p = .77 SCAS scores.

Of the 15 children who attended the group, 14 completed all sessions. One child did not continue with the group after the first session because it was a small group and the other children were much younger than she was. This child was included in the intent-to-treat sample.

Anxiety

Descriptive statistics for child and parent SCAS scores for the total sample and low and high anxiety subgroups are presented in Tables 2.1 to 2.6, as well as the paired t-test results, 95% Confidence Intervals (95% CI), and effect sizes. Descriptive statistics for child and parent report SCAS scores with published normative data are presented in Tables 2.7 to 2.9, along with the independent t-test results, 95% CI, and effect sizes.

Child-report. It was hypothesized that child report SCAS scores would decrease after completing the FFL program. As shown in Table 2.1, paired-samples t-tests revealed no significant change from pre- to post-treatment on SCAS-C total score (M = 35.87, SD = 15.93 versus M = 29.67, SD = 11.57), t (14) = 1.36, p = .20, although the effect size of η^2 = .12 indicated a moderate effect size. Analyses of specific symptoms showed a trend towards a decrease in scores for the subscales Separation Anxiety (M = 6.53, SD = 3.80 versus M = 5.00, SD = 3.02), t (14) = 1.88, p = .08, η^2 = .20 and Panic/Agoraphobia (M = 5.60, SD = 3.64 versus M = 3.53, SD = 2.97), t (14) = 1.95, p = .07, η^2 = .21. The effect sizes for these subscales indicated a large effect. Although changes in other subscales scores were not significant, moderate effect sizes were nevertheless observed for Social Phobia (η^2 = .07), Obsessive-Compulsive (η^2 = .12), and Generalized Anxiety (η^2 = .06). A nonsignificant large effect was

found for Physical Injury Fears (η^2 = .15). The moderate to large effect sizes suggest the lack of statistically significant change may be due to small sample size.

After conducting a median split, paired-samples t-tests revealed some significant changes in SCAS-C subscale scores for both low and high anxiety groups. As shown in Table 2.2, among children with lower levels of anxiety, total SCAS-C scores increased following the intervention, although the magnitude of change was small (η^2=.04) and not statistically significant (p >.05). With regard to SCAS-C subscales, four of six subscales scores increased following the intervention (Obsessive-Compulsive, Panic/Agoraphobia, Physical Injury Fear and Generalized Anxiety), with changes reaching statistical significance for the Generalized Anxiety subscale (*M* = 4.29, *SD* = 2.14 versus *M* = 6.57, *SD* = 2.94), *t* (6) = -2.49, *p* < .05, η2=.51. Effect sizes for the other subscales ranged from small (Social Phobia and Obsessive-Compulsive) to moderate (Physical Injury Fear). The only subscale that decreased following the intervention was Separation Anxiety, with a moderate effect size (η^2=.06).

In contrast to children with lower levels of anxiety, children with higher levels of anxiety showed a decrease in anxiety symptoms following the intervention. Decreases from pre- to post-treatment were statistically significant for the subscales Panic/Agoraphobia (*M* = 8.00, *SD* = 2.67 versus *M* = 4.00, *SD* = 2.14), *t* (6) = 2.65, *p* < .05, η^2=.50, and Physical Injury Fears (*M* = 6.25, *SD* = 2.49 versus *M* = 4.25, *SD* = 3.41), *t* (7) = 2.94, *p* < .05, η^2=.55, and approached significance for total SCAC-C scores *M* = 47.13, *SD* = 13.51 versus *M* = 33.75, *SD* = 10.94, *t* (7) = 1.90, *p* = .10, η^2 = .34, and the subscale Separation Anxiety (*M* = 8.00, *SD* = 4.66 versus *M* = 5.75, *SD* = 3.15), *t* (7) = 1.94, *p* = .09, η^2 =.35). Nonsignificant decreases with large effect sizes were also noted for the subscales Social Phobia (η^2 = .15) and Obsessive-Compulsive (η^2 = .26).

Parent-report. It was hypothesized that parent report of their child's anxiety would also decrease following the FFL program. As shown in Table 2.4, paired-samples t-tests revealed no significant change from pre- to post-treatment on SCAS-P total scores (M = 29.00, SD = 10.37 versus M = 24.93, SD = 8.83), t (14) = 1.63, p = .13, although the effect size of η^2 = .16 indicated the magnitude of change was large. Analyses of SCAS-P subscales revealed a significant decrease in Obsessive-Compulsive scores (M = 2.27, SD = 1.91 versus M = 1.67, SD = 1.23), t (14) = 2.20, $p < .05$, η^2 =.26, with a similar trend found for Social Phobia scores (M = 7.73, SD = 3.17 versus M = 6.33, SD = 3.18), t (14) = 1.77, p = .10, η^2 = .18. Nonsignificant changes with moderate effect sizes were also detected for the subscales Separation Anxiety (η^2 = .07), Physical Injury Fears (η^2 = .08), and Generalized Anxiety (η^2 = .10).

Analysis of parent report of anxiety in children with lower levels of anxiety yielded some interesting findings (Table 2.5). In contrast to SCAS-C scores, SCAS-P total and subscale scores decreased following the intervention. Pre- to post-treatment changes in the Obsessive-Compulsive subscale was statistically significant (M = 2.29, SD = 1.80 versus M = 1.43, SD = 1.13), t (6) = 2.52, $p < .05$, with a large effect size (η^2 =.51). Nonsignificant moderate effect sizes were found for total SCAS-P scores (η^2 = .09) and the subscales Social Phobia (η^2 = .10), Physical Injury Fears (η^2 = .09) and Generalized Anxiety (η^2 = .13).

For the high anxiety group (Table 2.6), no significant changes from pre- to post-treatment emerged for SCAS-P total or subscale scores, though effect sizes were large for total SCAS-P scores (η^2 = .26) and the social phobia subscale (η^2 = .29). Nonsignificant moderate effects sizes were also found for the subscales Separation Anxiety (η^2 = .10), Obsessive-Compulsive (η^2 = .10), Panic/Agoraphobia (η^2 = .06), Physical Injury Fears (η^2 = .08), and Generalized Anxiety (η^2 = .09).

Comparison with normative data. Independent-samples t-tests were conducted to compare child-report SCAS scores at pre- and post-treatment to normative means ("Normative Data," n.d.). At baseline, there was a significant difference in scores between study participants (M = 35.87, SD = 15.93) and norms (M = 27.38, SD = 16.50; t (4929) = 1.99, $p < .05$, although the magnitude of the difference was negligible ($\eta^2 = 0.0008$). At post-treatment, no significant differences emerged between study participants (M = 29.67, SD = 11.57) and the normative sample (M = 27.38, SD = 16.50; t (4929) = .54, p = .59, ($\eta^2 = 0.00006$). These findings indicate that participants' anxiety scores normalized after completing the FFL program.

Independent-samples t-tests were also used to compare parent-report SCAS scores with normative data obtained from parents of anxiety-disordered and normal control children (Nauta et al., 2004). Pre-treatment SCAS-P scores did not differ significantly between the study sample and anxiety-disordered norms (M = 29.00, SD = 10.37 versus M = 31.80, SD = 14.10; t (497) = .76, p = .45, $\eta^2 = 0.001$. There was a trend, however, for post-treatment SCAS-P scores to be lower in the study sample versus anxiety disordered norms (M = 24.93, SD = 8.83 versus (M = 31.80, SD = 14.10; t (497) = 1.87, p = .06, although the magnitude of the difference was very small ($\eta^2 = 0.007$). Compared to normal control norms, pre-treatment SCAS-P scores were higher in the study sample (M = 29.00, SD = 10.37 versus M = 14.20, SD = 9.70; t (274) = 5.73, $p < .0001$, with a moderate effect size ($\eta^2 = 0.11$). At post-treatment, SCAS-P scores remained higher in the study sample compared to normal control norms (M = 24.93, SD = 8.83 versus (M = 14.20, SD = 9.70; t (274) = 4.18, $p < .0001$, with a moderate effect size ($\eta^2 = 0.06$).

Correlational analyses for SCAS scores. Correlation matrices for child- and parent-report SCAS scores at pre- and post-treatment are presented in Tables 3.1 and 3.2. At baseline, there was a moderate positive correlation between parent-report panic/agoraphobia scores and

child-report social phobia scores, $r = .58$, $n = 15$, $p < .05$. At post-treatment, parent-report total anxiety scores were moderately and negatively correlated with child-report obsessive-compulsive scores, $r = -.52$, $n = 15$, $p < .05$. No other significant correlations were found between parent- and child-report anxiety at baseline or post-treatment.

School Functioning

Three measures were used to evaluate children's school functioning: WISC-IV digit span task (working memory), WRAT-3 reading, spelling, and arithmetic scales (academic performance), and academic functioning scale of the HBQ (comprised of school engagement and academic competence). Descriptive statistics for working memory and academic performance for the total sample and low and high anxiety groups are presented in Tables 4.1 to 4.3, as well as results of the paired t-tests, 95% CI, and effect sizes. Descriptive statistics for academic functioning scores for the total sample and low and high anxiety groups are presented in Tables 4.4, 4.5, and 4.6, as well as results of the Wilcoxon Signed Rank test and effect sizes.

Working memory. It was hypothesized that working memory scores would improve following participation in the FFL program. As shown in Table 4.1, paired-samples t-tests revealed a statistically significant increase in DSB scores from pre- ($M = 5.67$, $SD = 1.35$) to post-treatment ($M = 6.53$, $SD = 1.25$), $t\ (14) = -2.23$, $p < .05$. The effect size of $\eta^2 = .26$ indicated a large effect size. Digit span total scores also significantly increased from pre- ($M = 13.73$, $SD = 2.49$) to post-treatment, $t\ (14) = -2.13$, $p < .05$, also with a large effect size ($\eta^2 = .25$). No significant change from pre- to post-treatment was found for DSF scores, although a moderate effect size ($\eta^2 = .07$) was found.

After conducting the median split, no significant changes emerged for any WISC-IV scores for the low anxiety group, although nonsignificant large effect sizes were found for both

DSF (η^2 = .19) and DST (η^2 = .21) (Table 4.2). A moderate effect size was found for DSB scores (η^2 = .11). In the high anxiety group a significant increase from pre- to post-treatment was found for DSB scores (*M* = 5.50, *SD* = 1.20 versus *M* = 6.63, *SD* = 1.06), *t* (7) = 2.35, *p* < .05 (Table 4.3). The effect size of η^2 =.44 indicated a large effect size. A nonsignficant large effect size was also detected for DST scores (η^2 = .28).

Academic performance. It was hypothesized that academic performance scores would improve following the FFL program. As shown in Table 4.1, paired t-tests revealed a statistically significant increase in spelling scores from pre-treatment (*M* = 27.33, *SD* = 6.33) to post-treatment (*M* = 28.60, *SD* = 5.63), *t* (14) = -2.31, *p* < .05. The effect size of η^2 =.28 indicated a large effect size. A trend towards a significance increase in WRAT-3 total score was found (*M* = 89.00, *SD* = 15.71 versus *M* = 91.93, *SD* = 15.36), *t* (14) = -1.98, *p* = .07, with a large effect size (η^2=.22). Pre- to post-treatment changes in reading and arithmetic scores were not statistically significant, though a large effect size was found for reading scores (η^2 = .16).

After conducting the median split, paired-samples t-tests for the low anxiety group revealed a trend toward improved reading scores follow the FFL program (*M* = 36.86, *SD* = 5.82 versus *M* = 39.29, *SD* = 7.46), *t* (6) = -2.15, *p* = .08, η^2=.43, and WRAT-3 total scores (*M* = 93.86, *SD* = 18.58 versus *M* = 98.43, *SD* = 17.87), *t* (6) = -2.22, *p* = .07, η^2=.45 (Table 4.2). The large effect sizes indicated this improvement was important. A nonsignificant but large effect size was also found for spelling scores (η^2 = .22) and a moderate effect was found for arithmetic scores (η^2 = .11).

Paired-samples t-tests for the high anxiety group revealed no significant changes on any WRAT-3 scores, though there was a trend found for spelling scores to improve following the FFL program (*M* = 24.88, *SD* = 5.08 versus *M* = 26.25, *SD* = 4.27), *t* (7) = -1.88, *p* = .10, with a

large effect size (η^2 = .34) (Table 4.3). A nonsignificant moderate effect size was also found for WRAT-3 total scores (η^2 = .07).

Academic functioning. It was predicted that children's scores on the academic functioning composite, as well as academic competence and school engagement subscales, would improve after completing the FFL program.

Child-report. As shown in Table 4.4, the Wilcoxon Signed Rank test revealed that the FFL program significantly increased child self-report scores on the academic functioning composite from pre-treatment (*Md* = 4.43) to post-treatment (*Md* = 4.83), *z* = -2.67, *p* < .01, with a medium effect size (*r* = .49). A statistically significant increase from pre-treatment (*Md* = 4.08) to post-treatment (*Md* = 4.58) was also found for academic competence, *z* = -2.67, *p* < .01, with a medium effect size (*r* = .49). No significant change was found for school engagement following the FFL program, *z* = -1.37, *p* = .17.

After conducting the median split of high and low anxious children, the Wilcoxon Signed Rank test revealed statistically significant changes in child-report of academic functioning only for the high anxiety group (Table 4.5). Scores on the academic functioning composite improved from pre- to post-treatment, *Md* = 4.45 versus *Md* = 4.88, *z* = -2.10, *p* < .05, with a large effect size (*r* = .53), as did the academic competence subscale, *Md* = 3.96 versus *Md* = 4.54, z = -2.10, *p* < .05, with a large effect size (*r* = .53).

No significant changes were found in child-report scores for the low anxiety group (Table 4.6), though the increase in academic functioning composite scores from pre-treatment (Md = 3.88) to post-treatment (*Md* = 4.48) approached significance, *z* = -1.69, *p* = .09, with a medium effect size (*r* = .45). A nonsignificant medium effect size was also found for the academic competence subscale (*r* = .42).

Parent-report. The Wilcoxon Signed Rank test revealed that parents reported a statistically significant difference in their child's level of school engagement following the FFL program, *Md* = 2.80 versus *Md* = 3.10, z = -2.09, $p < .05$, with a medium effect size ($r = .38$). No other significant differences were found on the remaining academic subscales of the HBQ-P.

No statistically significant changes on parent-reported academic functioning scores were found when low and high anxiety groups were examined. In the high anxiety group, pre- to post-treatment changes in academic functioning composite scores approached significance, *Md* = 2.93 versus *Md* = 3.05, $z = -1.83$, $p = .07$, with a medium effect size (r=.46). A similar trend change emerged for the academic competence subscale, *Md* = 3.10 versus *Md* = 3.20, $z = -1.73$, $p = .08$, also with a medium effect size (r=.43). A nonsignificant medium effect size was also found for school engagement ($r = .35$). No significant treatment effects were detected for the low anxiety group, although a nonsignificant medium effect size was found for the school engagement subscale ($r = .39$).

Correlational analyses for school functioning measures. Examination of WISC-IV, WRAT-3, HBQ-C, and HBQ-P school functioning scores at pre- and post-treatment revealed several significant and strong associations. The correlations most pertinent to the research questions of the present study are described below. All school functioning correlations are presented in the matrices in Tables 5.1 and 5.2.

At pre-treatment DSF scores were negatively correlated with child-report school engagement, $r = -.56$, $n = 15$, $p < .05$, and positively correlated with parent-report academic competence, $r = .521$, $n = 15$, $p < .05$. WRAT-3 reading scores were positively associated with child-report academic functioning, $r = .52$, $n = 15$, $p < .05$, and academic competence, $r = .56$, $n = 15$, $p < .05$, as well as parent-report academic functioning, $r = .69$, $n = 15$, $p < .01$, and

academic competence, $r = .67$, $n = 15$, $p < .01$. WRAT-3 total scores were also positively correlated with parent-report academic functioning, $r = .57$, $n = 15$, $p < .05$, and academic competence, $r = .57$, $n = 15$, $p < .05$. Child-report academic functioning was positively correlated with parent-report academic functioning, $r = .57$, $n = 15$, $p < .05$, and school engagement, $r = .68$, $n = 15$, $p < .01$. Child- and parent-report school engagement were positively correlated, $r = .55$, $n = 15$, $p < .05$. Child-report academic competence was positively related to parent-report academic functioning, $r = .74$, $n = 15$, $p < .01$, school engagement, $r = .64$, $n = 15$, $p < .05$, and academic competence, $r = .57$, $n = 15$, $p < .05$.

At post-treatment, WRAT-3 reading scores were positively associated with DSF, $r = .53$, $n = 15$, $p < .05$, DSB, $r = .64$, $n = 15$, $p < .05$, and DST, $r = .66$, $n = 15$, $p < .01$ scores. DSB scores were also positively correlated with spelling, $r = .62$, $n = 15$, $p < .05$, arithmetic, $r = .57$, $n = 15$, $p < .05$, and total WRAT-3, $r = .66$, $n = 15$, $p < .01$ scores. Child-report academic functioning was positively associated with parent-report school engagement, $r = .56$, $n = 15$, $p < .05$, and child-report academic competence was positively correlated with parent-report academic functioning, $r = .57$, $n = 15$, $p < .05$, and school engagement, $r = .55$, $n = 15$, $p < .05$. Parent-report academic competence was positively associated with DSF, $r = .68$, $n = 15$, $p < .01$, DST, $r = .65$, $n = 15$, $p < .01$, and reading, $r = .55$, $n = 15$, $p < .05$.

Social Functioning

It was hypothesized that children's social functioning would improve following the FFL program. Specifically, it was predicted that prosocial behaviour and peer relations would improve, and that social withdrawal, relational victimization, relational aggression, and overt aggression would decrease. Descriptive statistics for child-report social functioning scores for the total sample and low and high anxiety subgroups are presented in Tables 6.1 to 6.3, as well as the

Wilcoxon Signed Rank test results and effect sizes. Descriptive statistics and results for parent-report data are presented in Tables 6.4 to 6.6.

Child-report. As shown in Table 6.1, the Wilcoxon Signed Rank test revealed a statistically significant improvement in child-reported peer relations from pre- to post-treatment, *Md* = 4.82 versus *Md* = 5.29,z = -2.98, p < .01, with a large effect size (r = .54). A statistically significant change in peer acceptance/rejection scores was also found, $z = -2.18$, $p < .05$, with a medium effect size ($r = .40$). The median score on the peer acceptance/rejection scale increased from pre-treatment (*Md* = 4.80) to post-treatment (*Md* = 5.20), indicating an increase in peer acceptance and decrease in rejection. There was also a statistically significant decrease in bullying following participation in the FFL program, $z = -2.32$, $p < .05$, with a medium effect size ($r = .42$). The median score on the bullied by peers subscale decreased from pre-treatment (*Md* = 2.14) to post-treatment (*Md* = 1.71). The decrease in relational victimization scores from pre-treatment (*Md* = 2.17) to post-treatment (*Md* = 2.00) approached significance, $z = -1.72$, $p = .09$, with a medium effect size ($r = .31$). There were no significant pre- to post-treatment changes on the remaining HBQ social functioning subscales.

After the median split, the Wilcoxon Signed Rank test revealed statistically significant changes in child-report social functioning scores only for the high anxiety group (Table 6.2). A significant increase was found in scores on the peer relations composite scale following participation in the FFL program, $z = -2.52$, $p < .01$, with a large effect size ($r = .63$). The median score on the peer relations composite increased from pre-treatment (*Md* = 4.84) to post-treatment (*Md* = 5.34). A significant increase was also found in scores on the peer acceptance/rejection subscale, $z = -2.54$, $p < .01$, with a large effect size ($r = .63$). The median score on the peer acceptance/rejection scale increased from pre-treatment (*Md* = 4.60) to post-treatment (*Md* =

5.40). Additionally, a significant decrease was found in scores on the relational victimization scale following participation in the FFL program, $z = -2.38$, $p < .05$, with a large effect size ($r = .59$). The median score on the relational victimization scale decreased from pre-treatment ($Md = 1.92$) to post-treatment ($Md = 1.42$), with a medium effect size found for the bullied by peers subscale ($r = .40$).

Children with lower levels of anxiety (Table 6.2) showed a trend for a decrease from pre- to post-treatment on the bullied by peers scale, $Md = 2.43$ versus $Md = 2.14$, $z = -1.84$, $p = .07$, with a medium effect size ($r = .49$). A non-significant medium effect size was also found for the peer relations composite ($r = .36$).

Parent-report. The Wilcoxon Signed Rank test revealed a statistically significant decrease in parent-reported relational aggression scores following the FFL program, $z = -2.17$, $p < .05$, with a medium effect size ($r = .40$) (Table 6.4). The median score on the relational aggression scale decreased from pre-treatment ($Md = .14$) to post-treatment ($Md = .00$). A statistically significant decrease in the asocial behaviour subscale post-treatment was also found, $z = -2.13$, $p < .05$, with a medium effect size ($r = .39$). However the median score on the asocial scale remained the same from baseline to post-treatment ($Md = .33$). A trend toward significance was observed for the increase in peer relations scores from pre-treatment ($Md = 3.30$) to post-treatment ($Md = 3.70$), $z = -1.92$, $p = .06$, with a medium effect size ($r = .35$). A trend was also observed for the increase in peer acceptance/rejection scores from pre-treatment ($Md = 3.13$) to post-treatment ($Md = 3.63$), $z = -1.85$, $p = .06$, with a medium effect size ($r = .34$).

After conducting the median split, the Wilcoxon Signed Rank test for parent-report social functioning scores revealed significant differences only for the low anxiety group. A significant increase was found in scores on the peer relations composite scale following participation in the

FFL program, $z = -2.20$, $p < .05$, with a large effect size ($r = .59$). The median score on the peer relations scale increased from pre-treatment ($Md = 3.30$) to post-treatment ($Md = 3.70$). Peer acceptance/rejection scores also increased significantly, $z = -2.04$, $p < .05$, with a large effect size ($r = .55$). The median score on the peer acceptance/rejection scale increased from pre-treatment ($Md = 3.00$) to post-treatment ($Md = 3.63$). A significant decrease was found in scores on the relational aggression scale following participation in the FFL program, $z = -2.07$, $p < .05$, with a large effect size ($r = .55$). The median score on the relational aggression scale decreased from pre-treatment ($Md = .29$) to post-treatment ($Md = .00$). A nonsignificant medium effect size was found on the asocial behaviour subscale ($r = .37$). No significant changes were found for the high anxiety group (Table 6.6), though nonsignificant medium effect sizes were found for prosocial behaviour ($r = .34$), asocial behaviour ($r = .40$), and overt aggression ($r = .35$).

Correlational analyses for social functioning measure. Since many of the significant correlations found are what one would expect to find, such as the strong negative correlation between child-report prosocial behaviour and overt aggression, $r = -.78$, $n = 15$, $p < .01$, only concordance-based correlations are described herein. All social functioning correlations are presented in the matrices in Tables 7.1 and 7.2.

At pre-treatment, concordance between child- and parent-report social functioning was found for four of the ten variables. Significant positive correlations were found between child- and parent-report social withdrawal, $r = .61$, $n = 15$, $p < .05$, asocial behaviour, $r = .61$, $n = 15$, $p < .05$, social inhibition, $r = .54$, $n = 15$, $p < .05$, and relational victimization, $r = .52$, $n = 15$, $p < .05$. At post-treatment, positive associations were found between child- and parent-report social withdrawal, $r = .76$, $n = 15$, $p < .01$, social inhibition, $r = .69$, $n = 15$, $p < .01$, relational victimization, $r = .64$, $n = 15$, $p < .05$, and overt aggression, $r = .80$, $n = 15$, $p < .01$.

Correlational Analyses for Anxiety and Outcome Measures

The correlation matrix for anxiety and outcome measures at pre- and post-treatment are presented in Table 8.1 and Table 8.2, respectively. Examination of the associations between baseline child-report anxiety and school and social functioning outcome measures revealed no significant relationships, while parent-report anxiety at pre-treatment was significantly negatively correlated with baseline reading, $r = -.71$, $n = 15$, $p < .01$, spelling, $r = -.65$, $n = 15$, $p < .01$, arithmetic, $r = -.53$, $n = 15$, $p < .05$, WRAT-3 total scores, $r = -.68$, $n = 15$, $p < .01$, child-report academic functioning, $r = -.72$, $n = 15$, $p < .01$, and parent-report academic functioning, $r = -.57$, $n = 15$, $p < .05$. It was also significantly and negatively correlated with post-treatment reading, $r = -.66$, $n = 15$, $p < .01$, spelling, $r = -.61$, $n = 15$, $p < .05$, WRAT-3 total scores, $r = -.64$, $n = 15$, $p < .05$, DSB, $r = -.72$, $n = 15$, $p < .01$, DST, $r = -.57$, $n = 15$, $p < .01$, and child-report academic functioning, $r = -.57$, $n = 15$, $p < .05$.

Post-treatment child-report anxiety was significantly and positively correlated with pre-treatment child-report academic functioning, $r = .61$, $n = 15$, $p < .05$, and post-treatment child-report academic functioning, $r = .55$, $n = 15$, $p < .05$, and negatively correlated with post-treatment child-report overt aggression, $r = -.54$, $n = 15$, $p < .05$. Post-treatment parent-report anxiety was significantly and negatively correlated with post-treatment DSB, $r = -.52$, $n = 15$, $p < .05$, and DST scores, $r = -.55$, $n = 15$, $p < .05$.

Discussion

The purpose of the present study was to examine whether the FFL program would not only reduce anxiety in children, but also improve their school and social functioning. Providing evidence of academic benefit from this type of program would help support the argument that its implementation in the school system would be worthwhile to school boards. Schools often have

limited resources with which to hire support staff and therefore limited time to focus on students' well-being. Thus the primary focus in schools remains solely on academic pursuits. If a well-established manualized program delivered by classroom teachers could benefit students and schools alike by improving children's resiliency, social functioning, *and* school functioning, school boards and the Ministry of Education may be interested in providing it to students, resulting in better academic output and social relations between students and staff. The present study sought to address a question examined in few studies: would participation in an anxiety reduction program, such as FFL, not only reduce anxiety in children but also improve their school and social functioning?

Attrition

At the outset of the present study, and especially since recruitment was so difficult, attrition was of great concern. In the end the retention rate was excellent. Of the 15 children who attended an FFL session, only one dropped out. Moreover, this child indicated that she did not want to continue because of an age discrepancy with other participants in her group. Of the five children in that particular group, most were 8-9 years of age and this child was 12. She simply found that she did not connect with or relate to the other children and preferred to seek treatment individually.

Some children dropped out before or after screening, but with the exception of the previously mentioned 12-year-old, the program completion rate was excellent. Children were often nervous to participate in the program, but once they attended one or two sessions their anxiety dissipated and children became engaged in the intervention. As soon as the children had an opportunity to work in pairs or small groups and interact, they were more willingly share their personal experiences as examples for the exercises. To ensure children completed the program,

the facilitator remained flexible to the family's other commitments. Some children had scheduling conflicts for one or two sessions of the program, but all were able to make arrangements with the facilitator to review the material from the missed session prior to the next group. Moreover, parents were more than willing to review missed material with their children as well.

Anxiety

In the present study, it was hypothesized that child- and parent-report anxiety scores would decrease from baseline to post-treatment. As expected, SCAS scores for the total sample decreased after completion of the FFL program, although pre-to-post-treatment changes did not reach statistical significance. Nevertheless, the within-group effect size for the total scale score and subscale scores were moderate to large, suggesting the decrease was clinically important. Although qualitative data was not formally collected, anecdotal reports from parents indicated that the children were better prepared and able to deal with their anxious feelings. At post-treatment, parents indicated that their child utilized strategies they learned in the program whenever they felt anxious, resulting in reduced duration and intensity of anxiety. Nonetheless, the moderate to large effects found for changes in both child- and parent-report anxiety are noteworthy and the lack of statistically significant change may be due to the small sample size.

Although pre-to-post-treatment changes in anxiety scores were not statistically significant for the total sample, children in the high anxiety group demonstrated substantial improvements with very large effects in both self-report and parent-report anxiety scores. Given that the high anxiety group's self-report baseline anxiety scores were double those of the low anxiety group, thereby leaving a great deal of room for improvement, it was not surprising to find such a large reduction in self-report anxiety. Although the difference between parent-report anxiety scores for

the low and high anxiety groups was much smaller, parent-report anxiety scores for the high anxiety group at baseline were higher than those of the low anxiety group.

An unexpected finding of the study was that self-report anxiety scores for the low anxiety group increased slightly at post-treatment. It is possible that a floor effect occurred as low anxiety participants had much lower levels of anxiety to begin with, leaving less room for change. Regression to the mean is another likely explanation for this finding. In contrast to child-report of anxiety, there was a decrease in parent-report anxiety scores with a moderate effect size for the children in the low anxiety group. It has been suggested that there is a difference in how children and parents conceptualize and assess anxiety, which may explain the discrepancy in the direction of change in anxiety reported by children and parents (Nauta et al., 2004).

Unlike the current study, several researchers have found immediate and statistically significant improvements in anxiety after completion of the FFL program (Barrett, Sonderegger, & Sonderegger, 2001; Cooley et al., 2004; Dadds et al., 1997; Farrell et al., 2005; Liddle & Macmillan, 2010; Lowry-Webster et al., 2001; Stallard et al., 2005; Stallard et al., 2008). Farrell et al. (2005) even found that 73% of participants with anxiety disorders at baseline no longer met criteria for diagnosis post-intervention. On the other hand, other studies have found that anxiety levels do not decrease significantly immediately after participating in the FFL program, but that changes are more evident at follow-up. For example, the reduction in anxiety with the FFL program found by Mostert and Loxton (2008) did not become statistically significant until four- and six-months post-intervention. Miller et al. (2011) found similar results.

Some studies have found reductions in anxiety for control groups, such as a study by Barrett and colleagues (2005) in which anxiety was significantly decreased for participants in the moderate- and high-risk groups in both the FFL intervention and the control monitoring group.

However, the reductions in the control group were not as substantial as those in the FFL group (Barrett et al., 2005). Moreover, control group improvements were not maintained at 6-month follow-up in a study using the *Coping Koala* program, the original version of the FFL program (Dadds et al., 1997). Balle and Tortella-Feliu (2010) found that even though participants with high anxiety sensitivity (a risk factor for the development of anxiety disorders) in the adapted FFL-based program and the wait list control groups experienced reductions in anxiety immediately post-treatment, lasting reductions were only apparent for those in the intervention group at six-month follow up, and at that point their scores equalled those of normal controls. They suggest that the immediate reductions cannot be attributed to the intervention, but that there was a delayed effect to the preventive intervention (Balle & Tortella-Feliu, 2010).

Whether there was a delayed onset improvement or not, several studies have found evidence of prevention effects after completion of the FFL program (e.g. Barrett et al., 2006; Dadds et al., 1999; Lowry-Webster et al., 2003). Lowry-Webster et al. (2003) found that 85% of children with clinical levels of anxiety at baseline were diagnosis-free at 12-month follow-up, compared to only 31.2% of children in the control group. Barrett et al. (2006) found prevention effects at three years post-intervention. Although longitudinal data was not obtained for the present sample, if results of the present study are consistent with previous research, it is possible that both statistically significant and prevention effects might have been found at later time points.

Essau, Conradt, Sasagawa, and Ollendick (2012) found that younger children (9 to 10 years) experienced reductions in anxiety immediately following the intervention, while older children (11 to 12 years) only demonstrated these reductions at 6- and 12-month follow-up. Barrett et al. (2005) similarly found that younger sixth-grade children experienced greater

change in anxiety symptoms post-intervention than the older ninth-grade children. Essau et al. (2012) suggest that cognitive factors play a larger role in anxiety reduction for older children than younger children, hence they require additional opportunities post-intervention to utilize their new skills in real world situations to realize the treatment gains. Unfortunately, due to the small sample size the present study did not assess if age was an important moderator of treatment outcome.

Comparison of participants' self-report anxiety with published normative data ("Normative Data," n.d.) revealed that at baseline, participants' anxiety was significantly higher than norms. However, at post-treatment, participants' anxiety scores were comparable to normative data, indicating that anxiety scores normalized after participation in the FFL program. Comparison of parent-report of their child's anxiety with normative data published for anxious children and non-anxious controls yielded some interesting results. At baseline, study parent-report child anxiety scores were comparable to parent-report anxiety scores of the anxiety-disordered norms. However, at post-treatment, scores were lower than these norms. Further, compared to published norms for non-anxious children, study parent-report child anxiety scores were significantly higher at baseline and post-treatment than parent-report scores for non-anxious children. Although these analyses were exploratory and should be viewed with caution, results suggest that while parents still reported higher levels of child anxiety at both time points than did parents of non-anxious children, their scores were moving away from the anxiety-disordered norms and toward the control norms.

Correlational analyses revealed low concordance rates between child- and parent-report anxiety, both at baseline and post-treatment. Parents rated children as being less anxious than children rated themselves. This low parent-child agreement contradicts results from Whiteside

and Brown (2008) who found significant correlations between child- and parent-report SCAS scores. Whiteside and Brown (2008) also indicated that the means of their sample differed significantly from means of samples from two other studies on some SCAS subscales, although they attribute this to cultural differences in the samples assessed.

It appears that children's self-perception of anxiety differs from parent perception of their child's anxiety. Parent-child agreement is a prominent issue in clinical assessment with many different instruments (Nauta et al., 2004). The consensus is that parent-child agreement is generally low, though agreement between parent- and child-report is stronger when the child is younger, as well as for observable symptoms (Brown & Whiteside, 2008; Comer & Kendall, 2004; Grills & Ollendick, 2003; Klein, 1991; March, Parker, Sullivan, Stallings, & Conners, 1997). Nauta et al. (2004) suggested that this is because parents and children conceptualize anxiety differently and consequently do not assess the same underlying constructs.

School Functioning

The present study examined three aspects of school functioning: working memory, academic performance, and academic functioning.

Working memory. It was hypothesized that participants' working memory would improve post-intervention. Past research has shown that working memory is improved after specific training for working memory capacity. For example, Holmes, Gathercole, and Dunning (2009) found that children with low working memory who played a computer game-based adaptive training program for 35 minutes per day for at least 20 days during a five to seven week period demonstrated substantial and sustained gains in working memory at post-treatment. Six months after completing the training children also demonstrated improvement in math ability. Thorell, Lindqvist, Bergman Nutley, Bohlin, and Klingberg (2009) found that children as young

as preschool age demonstrated improvements after specific computerized working memory training. Although this type of intervention is shown to be effective in improving this executive skill, children may tire of repetitive problem solving working memory computer games (Thorell et al., 2009). It is possible that a program such as FFL that focuses on social-emotional learning and anxiety prevention through a variety of different activities might keep children more involved and engaged in the intervention. Diamond and Lee (2011) reviewed several different types of interventions to improve the executive functioning of children and suggest that interventions that also focus on emotional, social, or physical development may be more effective than interventions that focus specifically and exclusively on executive functioning.

Consistent with the study hypothesis, results of the present study revealed a marked improvement for the total sample in working memory as revealed by a significant increase in DSB and DST scores from pre- to post-treatment. DSF was the only WISC-IV scale that did not increase significantly, though DSF is more a measure of the storage capacity of the phonological loop (verbal short term memory), while the DSB is a better measure of working memory as it requires one to store and manipulate information before recall (Bull et al., 2008). This is an important finding, as the improvement in working memory was statistically significant even though the improvements in anxiety were not for the total sample.

When the sample was divided into high and low anxiety groups, the results were more pronounced. The low anxiety group demonstrated increases in all digit span scores with moderate to large effects, though none reached statistical significance. DSB and DST scores increased with large effect sizes for the high anxiety group, and the increase in DSB scores was statistically significant. However, the increase in DSB scores was nearly twice as large for the high anxiety group as the low anxiety group. Previous research has demonstrated links between

anxiety, working memory, and academic performance (e.g. Ashcraft & Kirk, 2001; Bull et al., 2008; Mazzone et al., 2007), such that anxiety causes disruptions of central executive processes which can lead to difficulties in learning and concentration and poorer school performance (Aronen et al., 2005; Ashcraft & Kirk, 2001; Owens et al., 2012). These findings, as well as those of the present study, support the idea that reducing anxiety can minimize the disruption of working memory processes and make available more cognitive resources necessary for learning (Ashcraft & Kirk, 2001; Owens et al., 2012).

The positive effect of the FFL program on indices of working memory is a promising finding as it suggests that children's working memory can be significantly improved with a preventive intervention that specifically targets anxiety reduction. Research has shown that other anxiety reduction and resiliency building programs, such as mindfulness awareness practices and the *Promoting Alternative Thinking Strategies* program, have a positive impact on children's executive functioning (Flook et al., 2010; Greenberg, 2006; Napoli, Krech, & Holley, 2005). Given the success of these interventions on various executive functions in children, further investigation of the additional benefits of the FFL program on executive functioning is warranted.

Anxiety and working memory. Research has demonstrated a negative association between anxiety and working memory (e.g. Aronen et al., 2005; Owens, Stevenson, Norgate, & Hadwin, 2008). In contrast to these findings, the current study found no significant association between anxiety and working memory at baseline. The reason for discrepant results is not clear, but may be attributed to differences in characteristics of the sample. The participants in the aforementioned studies were from school samples and therefore were not recruited based on the presence of higher than average levels of anxiety. It is possible that the presence of much higher

levels of anxiety in children in the present study had an impact on the relationship between working memory and school performance. In the present study, higher levels of anxiety may be the cause of the differences in strength of relationship between working memory and school performance at pre- and post-treatment.

Even though the sample size of the present study was too small to test for whether working memory mediates the relationship between anxiety and academic performance, other studies have identified working memory as an important mediator of this relationship. Owens et al. (2008) found that the relationship between trait anxiety and academic performance was significantly mediated by verbal working memory for math, quantitative, and nonverbal reasoning measures. Results found by Ashcraft and Kirk (2001) demonstrated that math anxiety disrupts working memory and central executive processes resulting in increased reaction time and errors. Furthermore, Shackman et al. (2006) found that the accuracy of spatial but not verbal working memory was selectively disrupted by threat-induced anxiety. The results supported the notion that anxiety causally mediates disruption, as they found that participants with high levels of behavioural inhibition did not only have more intense anxiety, but also exhibited relatively worse spatial working memory. Johnson and Gronlund (2009) found additional compelling results. They found that anxiety and working memory capacity interacted to affect performance on an auditory task so that individuals with low working memory capacity were particularly vulnerable to the disruptive effect of anxiety. Participants with high working memory capacity were protected against anxiety's interference.

Academic performance. Academic performance has been associated with several factors, such as self-regulation (e.g. Blair & Razza, 2007), prosocial behaviour (e.g. Caprara, Barbaranelli, Pastorelli, Bandura, & Zimbardo, 2000), socio-economic status (e.g. Sirin, 2005),

sleep (e.g. Curcio, Ferrara, & De Gennaro, 2006), breakfast consumption (e.g. Rampersaud, Pereira, Girard, Adams, & Metzl, 2005), aerobic exercise (e.g. Lees & Hopkins, 2013), and of course, anxiety (e.g. Hughes et al., 2008; Mazzone et al., 2007). However, despite the fact that there is a strong relationship between anxiety and academic development (Duchesne et al., 2008; Mazzone et al., 2007; Nelson et al., 2004; Scruggs & Mastropieri, 1986), few studies have examined the effects of an anxiety prevention program on academic performance. Wood (2006) provided children diagnosed with anxiety disorders with a CBT-based intervention and examined whether their reduction in anxiety would affect their school performance. He reported that the reduction in anxiety predicted improvements in parents' perceptions of children's school performance. A limitation of this study was the reliance on parents' perception of their child's academic performance rather than children's actual performance on measures of reading, spelling, and arithmetic.

The present study determined whether the FFL program would improve children's academic performance. As anticipated, academic performance improved overall, though spelling was the only subscale that improved significantly. Additionally, there was a trend toward significance in the increase in total WRAT-3 scores, suggesting that overall academic performance improved. Reading, spelling, and total scores all had large effect sizes while arithmetic did not. The lack of statistical significance for outcomes with large effects is likely due to small sample size. It is surprising that arithmetic scores did not increase as much as spelling and reading given the plethora of research surrounding math anxiety and performance (e.g. Ashcraft & Kirk, 2001; Ma, 1999; Ramirez, Gunderson, Levine, & Beilock, 2013). Math anxiety has been shown to decrease after a focused breathing exercise, acceptance and commitment therapy, and systematic desensitization (Brunyé et al., 2013; Zettle, 2003). It is

difficult to determine a causal relationship between the reduction in anxiety and the increase in academic performance from the present study since a control condition was not employed. Although the finding that the FFL program improves academic performance is encouraging, it is not possible to ascertain whether the improvement in academic performance can be attributed to the FFL program or simply the children's experience of continued school instruction.

That being said, examination of academic performance scores when comparing low anxiety and high anxiety groups yielded interesting results. The low anxiety group demonstrated much larger effects than the high anxiety group for all WRAT-3 subscale and total scores. The low anxiety group performed much better than the high anxiety group at both time points, and their increase in scores at post-treatment was also much greater. Given the strong link between anxiety and academic performance, the low anxiety group's higher baseline academic performance scores could be anticipated. However, since the high anxiety group demonstrated such a large effect in the reduction of anxiety, it was surprising that the change in academic performance for the high anxiety group was so small compared to that of the low anxiety group.

Anxiety and academic performance. There was no significant relationship between child-report anxiety and academic performance scores at baseline or post-treatment. This is contrary to past research demonstrating the negative association between child-report anxiety scores and reading and math achievement (Ialongo et al., 1994).

Results revealed significant negative correlations between parent-report anxiety and all measures of academic performance: reading, spelling, and total scores. There was no significant relationship between parent-report anxiety and academic performance at post-treatment. This finding indicates that there is a relationship between parent-report anxiety and academic performance when anxiety is high, but not when it is low.

These findings for parent-report anxiety may support the findings of Galla and Wood (2012). They found that confidence in one's ability to regulate negative emotions appears useful in managing the negative effects of anxiety since anxiety negatively predicted performance on a math test only for children with low levels of emotional self-efficacy. Students with high levels of emotional self-efficacy did not demonstrate anxiety-related decrements on the test performance. Perhaps the skills the children learned in the FFL program increased their emotional self-efficacy, which helped them to better manage their anxiety and avoid the negative impact it might have had on their performance.

Academic functioning. As expected, child- and parent-report academic functioning scores for the total sample improved from baseline to post-treatment with medium effect sizes. Of the two academic functioning subscales, child-report academic competence was the only one found to increase statistically significantly. Children in the present study reported high anxiety and low academic competence at baseline, and subsequently reported reduced anxiety and greater academic competence at post-treatment. This result is consistent with findings from Cole et al. (1999) who reported that children who underestimated their academic competence reported higher levels of anxiety.

As anticipated, child-report academic functioning improved for both the low anxiety and high anxiety groups, though the largest effects were found for academic competence scores for the high anxiety group, and therefore also on the academic functioning composite. This is not a surprising finding considering the content of the FFL program and what it targets. Children are taught to recognize unhelpful thoughts such as, "I'm the worst at math in my class." This type of thought could negatively affect children's perception of their academic competence. The FFL program teaches children to replace negative and self-critical thoughts with more helpful,

accurate thoughts such as, “Math is not my best subject, but I will try my best and remember that I am very good at reading and art.” Other studies have found that the FFL program improves children’s self-esteem and pessimistic “future outlook” (Barrett et al., 2003). Perhaps it is this change in outlook that affects participants’ academic competence scores, as it is a measure of how children compare their own abilities to those of their peers. It is possible that the FFL program targets not only anxiety but also confidence and self-efficacy.

With regard to parent-report scores for the total sample, the FFL program significantly improved parent ratings of their child’s school engagement. Similarly, Roeser, van der Wolf, and Strobel (2001) found that social-emotional functioning predicted students’ investment in school. Parent ratings of academic functioning also improved following the FFL program, although improvements were more evident in the children with higher levels of baseline anxiety. It is interesting that parent academic functioning ratings seem to contrast those of the children’s. School engagement was the only subscale to increase significantly, as opposed to academic competence as was found with the child-report measure. The school engagement scale assesses the parent’s perception of the child’s enthusiasm and eagerness, as well as distress and frustration, toward school. Perhaps since children were feeling more competent with regard to school, the parents observed the children demonstrating more willingness and less dissatisfaction toward school and perceived this to be an increase in engagement.

Anxiety and academic functioning. Child-report anxiety at post-treatment was significantly positively related to child-report academic functioning. It is possible that children who are more anxious are more diligent and display perfectionistic tendencies, and therefore still feel somewhat competent. However, previous research has demonstrated conflicting findings. Mychailyszyn et al. (2010) found that school functioning scores were significantly higher for

students without any diagnoses than for students diagnosed with SAD, social phobia, or GAD. Post-treatment child-report anxiety was also negatively associated with overt aggression. Consistent with results found by Cole et al. (1999), a negative association was present between parent-report anxiety and both parent- and child-report academic functioning and competence.

Correlational analyses for school functioning measures. Past research has demonstrated an association between working memory and achievement in several academic areas, such as English, mathematics, and science (Gathercole, Pickering, Knight, & Stegmann, 2004; St Clair Thompson & Gathercole, 2006). Additionally, academic success has been related to good working memory performance and students with deficits in working memory are reported to have lower levels of curriculum attainment and more academic, attentional, and behavioural difficulties at school (Aronen et al., 2005; Gathercole & Pickering, 2000).

Previous research has indicated a negative relationship between working memory and academic performance (e.g. Andersson, 2008; Aronen et al., 2005; Bull et al., 2008; St Clair-Thompson & Gathercole, 2006). In the present study it was found that at baseline, there were no significant correlations between WISC-IV and WRAT-3 scores, indicating that working memory and academic performance were not related. However, at post-treatment DSB scores were positively associated with all WRAT-3 subscales and total scores. This suggests that perhaps the link between working memory and academic achievement is weaker when anxiety is lower and stronger when anxiety is higher.

At post-treatment, reading scores were positively associated with all WISC-IV scores. This is consistent with findings that working memory is associated with reading (Daneman & Carpenter, 1980) and achievement in English (St Clair-Thompson & Gathercole, 2006) though the strength of the latter relationship has been found to diminish with age (Gathercole et al.,

2004). Gathercole et al. (2004) found a strong relationship between working memory and achievement in English for children at seven years of age, but that this correlation was no longer strong when assessed at 14 years of age. They concluded that even though effective acquisition of literacy skills was related to working memory scores, attainment of the more complex skills of comprehension and literature analysis was not related to working memory capacity (Gathercole et al., 2004).

At baseline, reading scores were significantly correlated with child- and parent-report academic functioning and academic competence. It is not surprising that reading and competence scores were related given the massive campaign to promote literacy in Ontario (Ontario Ministry of Education, 2011). Perhaps since schools are placing such a great emphasis on literacy skills many parents and children believe that children with excellent reading skills are the most competent students.

Social Functioning

It was hypothesized that children's social functioning would improve after completion of the FFL program. Results demonstrated an overall improvement in both child- and parent-report social functioning scores. The only statistically significant changes in child-report scores for the total sample were found for the peer relations composite. Children demonstrated higher peer acceptance and were less likely to be bullied by peers following the FFL program. There are a few possible explanations for this change. First, the skills children learned in the FFL program may have fostered greater awareness of how their perception of peer relationships may not be accurate (e.g. interpreting neutral social events as negative) and enabled children to view interactions as less negative or more positive. Secondly, the social-emotional learning component of the program may have improved children's social skills and improved how they interact with peers. Additionally, although not measured in the current study, the FFL program

has been shown to improve self-esteem (Barrett et al., 2003; Stallard et al., 2005). Plausibly, self-esteem improved in children in the present study, resulting in greater confidence in interacting with peers and decreased risk of being bullied. Child-report relational victimization was reduced with a medium effect, indicating that children participated less frequently in behaviours such as peer exclusion. The improvement in these areas of social functioning might indicate a shift in children's view of social interactions and that they have a better appreciation of how their behaviours might affect other children.

Parents reported significant decreases in asocial behaviour and relational aggression scores, with medium effects for the total sample. Medium effects were also found for the improvement in peer relations composite and peer acceptance/rejection scores. Given that parents felt their children's peer relations and acceptance improved, and that children reported feeling more accepted and less bullied, it is not surprising that parents also reported a decrease in asocial behaviour, as children would be more likely to attempt to engage with other children. A significant decrease in relational aggression was also found, which is demonstrative of improved social skills and functioning. Liddle and Macmillan (2010) also found an improvement in children's social skills upon completion of the FFL program.

As anticipated, child- and parent-report social functioning scores for the low anxiety group also improved overall. Medium effects were found for improvements in the child-report peer relations composite and bullied by peers scores, but effects for other subscales were small to non-existent. This is not surprising considering child-report social functioning scores of the low anxiety group were better than those of the high anxiety group at baseline and were closer to the norms. Furthermore, the low anxiety group demonstrated some significant improvements in parent-report social functioning, specifically with peer relations, peer acceptance/rejection, and

relational aggression, all with large effects. A medium effect was also found for the reduction in asocial behaviour.

Consistent with the hypothesis that social functioning would improve post-treatment, results demonstrated significant increases for the child-report peer relations composite and peer acceptance/rejection scores for the high anxiety group. There was also a significant decrease in relational victimization with large effects. A medium effect was also found for the reduction in bullied by peers scores. Interestingly, the improvements in social functioning scores for the high anxiety group were greater than those of the low anxiety group. The peer relations composite, peer acceptance/rejection, and relational victimization scores were all worse for children in the high anxiety group at baseline and better than those in the low anxiety group at post-treatment. Consistent with results found by Liddle and Macmillan (2010), it appears as though the FFL program had a major impact on the social functioning of the low anxiety group.

Contrary to expectations, the high anxiety group did not demonstrate any significant improvements in parent-report social functioning. Interestingly, the improvement in parent-report peer relations for the low anxiety group was much greater than that of the high anxiety group, however, scores for the high anxiety group were actually much higher at baseline than those of the low anxiety group.

Correlational analyses for the social functioning measure. Concordance between parent- and child-report social functioning scores was good for about 40% of scales both at baseline and post-treatment. The significant relationships between variables were consistent with the literature, such as a negative relationship between parent-report social withdrawal and peer acceptance/rejection (e.g. Stewart & Rubin, 1995) or a positive relationship between child-report social withdrawal and social inhibition (Calkins & Fox, 2002).

Anxiety and social functioning. Interestingly, there was only one significant correlation between child- or parent-report anxiety and the social functioning scores at baseline and post-treatment. Child-report anxiety was significantly and negatively associated with child-report overt aggression at post-treatment. This finding is not surprising considering the link between anxiety and a shy, inhibited, or withdrawn temperament (Rapee et al., 2009).

The lack of significant associations between anxiety and social functioning is quite surprising given the number of links found in previous research. For example, Grover et al. (2007) found that highly anxious children were significantly more likely to score lower in peer acceptance and higher in aggression, compared to low-anxious peers. Moreover, Liddle and Macmillan (2010) used an indicated prevention approach when providing the FFL program to children and results showed positive impacts on children's social skills. It is possible that for the present study a lack of statistical power contributed to the nonsignficance of the relationship between anxiety and social functioning, or perhaps there was not a large enough range of scores to find significant correlations.

Limitations

Although this pilot study showed some significant and noteworthy results, it is not without limitations. The first and most important limitation is the small sample size which decreased the study's power to find statistically significant intervention effects, limits confidence in the effect size estimates, and limits generalizability. A study with a larger sample size is needed to confirm these preliminary findings.

A second limitation of the study was the lack of a control condition. Without a control condition it is difficult to ascertain whether observed changes were due to the FFL program, to the passage of time, or to non-specific factors such as expectation for change, attention received

from the facilitator, and being a member of a group. Furthermore, it is possible that even though they were not directly targeted, the study may have directly impacted school and social functioning by developing children's academic and social skills, rather than changes in those areas being the result of reduced anxiety (Wood, 2006). Had a wait-list control group been feasible, it would have been possible to test the causal relations (Cowan & Cowan, 2002).

Third, the FFL program was designed to be delivered over a 10-week period. Although it is possible to attain positive results with brief interventions, the condensed six-week format of the study as a whole may have limited our ability to find additional or greater effects. Children in the present study had about two-thirds as much time as children in a 10-week program to learn the concepts and tools, practice using them, and to implement the new strategies into their everyday lives.

Fourth, the lack of parental psychoeducation sessions may be viewed as a limitation. Past research has indicated a benefit associated with family involvement in CBT-based programs (e.g. Barrett, Dadds, & Rapee, 1996). These psychoeducation sessions are intended to inform parents about the skills and strategies their children were learning and to help them gain awareness of how to capitalize on their own strengths to assist their children in difficult situations. Although parents were kept informed by e-mail and had their questions answered by the facilitator, due to the condensed nature of the intervention in the present study and an inability to find a session time conducive to at least the majority of parents' schedules, the psychoeducation sessions were not offered. Perhaps facilitators in future studies could create an online module for the psychoeducation session that parents could view at a convenient time at home.

Fifth, while parent report of their child's anxiety and school functioning was used to corroborate child-report data, detailed demographic information and parental anxiety status were

not obtained and the extent to which these factors may have moderated parent reports is unknown.

Sixth, post-treatment assessments were conducted within one week following program completion. As several studies report significant improvement at much later time points, such as 4- or 6-month follow-up, it is possible that more robust improvements would have emerge if follow-up assessments were obtained from children in the present study. Follow-up assessments would also confirm whether post-treatment gains that were observed are sustained over time.

Finally, due to limited resources the study investigator who facilitated the groups also administered the study questionnaires to participants raising concerns that this may have biased findings.

Future Studies

As a final recommendation it is suggested that future studies address the limitations of the present study in order to further investigate the question of whether the reduction in anxiety experienced after participation in the FFL program also results in improved school and social functioning. Recruitment through a school or community agency would likely result in a much larger sample size which would provide the additional statistical power necessary to include regressional analyses to examine the mediating effects of some variables. Conducting the program within the school system would also help ensure that attrition rates are low and attendance is fairly consistent.

Another suggestion for future research is to include the use of standardized measures of achievement used within the school system, such as report cards or EQAO scores, to assess academic performance. Including teacher report of school performance and functioning would provide an additional perspective on children's behaviour at school. Comparison of the effects of the FFL program with those of another CBT-based program, a relaxation program, or remedial

programs for academic subjects could provide some interested insight into the benefits that may or may not be specific to FFL. Finally, since there is a great deal of evidence for the preventive effects of the FFL program, it is recommended that longitudinal data be collected for anxiety measures. Longitudinal data of school and social functioning would also allow for the evaluation of any potential lasting effects of the program on these variables.

Implications

Despite having its limitations, there are several positive implications that arise from these precursory results. Firstly, and possibly the most salient for parents, is that children in the present study demonstrated overall improvements in all three areas measured: anxiety, school functioning, and social functioning, though not all of these findings were statistically significant. Parents showed interest in the present study because they felt their children were experiencing levels of anxiety that interfered with their functioning at home, at school, and in their relationships. Reducing the level of anxiety children experience will in turn alleviate a great deal of stress for parents surrounding anxiety-related issues at home and school.

Improvements in school and social functioning after completion of the FFL program has not been widely evaluated and this research will help to bring attention to these apparent secondary benefits of the program. This program also offers a particular benefit in terms of improving school performance. Remedial programs and assistance for underperforming children can be quite stigmatizing and may potentially be hazardous for children who are already at risk for anxiety and social isolation. Participating in a universally implemented FFL program would help these children develop healthy coping mechanisms for their anxiety and, in turn, result in improved school performance, all without any particular child being singled out from the rest. Moreover, programs designed to improve working memory are often computer-based and

repetitive, while the FFL program offers engaging activities that also let children practice their social skills.

The facilitator for the present study was an Ontario Certified Teacher and masters-level student in educational counselling. Past research has demonstrated that the FFL program can be facilitated successfully by teachers, psychologists, and school nurses, and the current study adds to this list. Prevalence rates of anxiety are high, the availability of treatment is limited, and the number of children who seek treatment and follow through with it is low. Although these results are preliminary and controlled studies are needed for confirmation, they suggest that FFL can be a cost-effective, easily implemented, and versatile anxiety prevention program that can help change the trajectory of children's school and social functioning.

References

Ablow, J.C., Measelle, J.R., Kraemer, H.C., Harrington, R., Luby, J., Smider, N., …Kupfer, D.J. (1999). The MacArthur Three-City Outcome Study: Evaluating multi-informant measures of young children's symptomatology. *Journal of the American Academy of Child & Adolescent Psychiatry, 38*(12), 1580-1590. doi:10.1097/00004583-199912000-00020

About anxiety and depression. (n.d.). Retrieved March 24, 2010, from http://www.friendsinfo.net/anxietydepress.html.

Albano, A.M., & Kendall, P.C. (2002). Cognitive behavioural therapy for children and adolescents with anxiety disorders: Clinical research advances. *International Review of Psychiatry, 14,* 129-134. doi:10.1080/0954026022013264 4

American Psychiatric Association. (2000). *Diagnostic and Statistical Manual of Mental Disorders* (4th ed., text rev.). Washington, DC: Author.

American Psychiatric Association. (2013). *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.). Arlington, VA: American Psychiatric Publishing.

Andersson, U. (2008). Working memory as a predictor of written arithmetical skills in children: The importance of central executive functions. *British Journal of Educational Psychology, 78,* 181-203. doi:10.1348/000709907X209854

Aronen, E.T., Vuontela, V., Steenari, M.R., Salmi, J., & Carlson, S. (2005). Working memory, psychiatric symptoms, and academic performance at school. *Neurobiology of Learning and Memory, 83,* 33-42. doi:10.1016/j.nlm.2004.06.010

Ashcraft, M.H., & Kirk, E.P. (2001). The relationships among working memory, math anxiety, and performance. *Journal of Experimental Psychology: General, 130*(2), 224-237. doi:10.1037//0096-3445.130.2.224

Aune, T., & Stiles, T.C. (2009). Universal-based prevention of syndromal and subsyndromal social anxiety: A randomized controlled trial. *Journal of Consulting and Clinical Psychology, 77*(5), 867-879. doi:10.1037/a0015813

Balle, M., & Tortella-Feliu, M. (2010). Efficacy of a brief school-based program for selective prevention of childhood anxiety. *Anxiety, Stress, & Coping, 23*(1), 71-85. doi:10.1080/10615800802590652

Barrett, P., & Turner, C., (2001). Prevention of anxiety symptoms in primary school children: Preliminary results from a universal school-based trial. *British Journal of Clinical Psychology, 40,* 399-410. doi:10.1348/014466501163887

Barrett, P.M. (2000). Treatment of childhood anxiety: Developmental aspects. *Clinical Psychology Review, 20*(4), 479-494. doi:10.1016/S0272-7358(99)00038-0

Barrett, P.M., & Pahl, K.M. (2006). School-based intervention: Examining a universal approach to anxiety management. *Australian Journal of Guidance and Counselling, 16*(1), 55-75. doi:10.1375/ajgc.16.1.55

Barrett, P.M., Dadds, M.R., & Rapee, R.M. (1996). Family treatment of childhood anxiety: A controlled trial. *Journal of Consulting and Clinical Psychology, 64*(2), 333-342. doi:10.1037/0022-006X.64.2.333

Barrett, P.M., Farrell, L.J., Ollendick, T.H., & Dadds, M. (2006). Long-term outcomes of an Australian universal prevention trial of anxiety and depression symptoms in children and

youth: An evaluation of the FRIENDS program. *Journal of Clinical Child and Adolescent Psychology, 35*(3), 403-411. doi:10.1207/s15374424jccp3503_5

Barrett, P.M., Lock, S., & Farrell, L.J. (2005). Developmental differences in universal preventive intervention for child anxiety. *Clinical Child Psychology and Psychiatry, 10*(4), 539-555. doi:10.1177/1359104505056317

Barrett, P.M., Sonderegger, R., & Sonderegger, N.L. (2001). Evaluation of an anxiety-prevention and positive-coping program (FRIENDS) for children and adolescents of non-English-speaking background. *Behaviour Change, 18*(2), 78-91. doi:10.1375/bech.18.2.78

Barrett, P.M., Sonderegger, R., & Xenos, S. (2003). Using FRIENDS to combat anxiety and adjustment problems among young migrants to Australia: A national trial. *Clinical Child Psychology and Psychiatry, 8*(2), 241-260. doi:10.1177/1359104503008002008

Beal, A.L. (2004). Test Review: Wechsler Intelligence Scale for Children, Fourth Edition. *Canadian Journal of School Psychology, 19,* 221-234. doi:10.1177/082957350401900112

Becker, E.S., Rinck, M., Türke, V., Kause, P., Goodwin, R., Neumer, S., & Margraf, J. (2007). Epidemiology of specific phobia subtypes: Findings from the Dresden Mental Health Study. *European Psychiatry, 22,* 69-74. doi:10.1016/j.eurpsy.2006.09.006

Beesdo, K., Bittner, A., Pine, D.S., Stein, M.B., Höfler, M., Lieb, R., & Wittchen, H-U. (2007). Incidence of social anxiety disorder and the consistent risk for secondary depression in the first three decades of life. *Archives of General Psychiatry, 64*(8), 903-912. doi:10.1001/archpsyc.64.8.903

Beesdo, K., Knappe, S., & Pine, D.S. (2009). Anxiety and anxiety disorders in children and adolescents: Developmental issues and implications for DSM-V. *Psychiatric Clinics of North America, 32*(3), 483-524. doi:10.1016/j.psc.2009.06.002

Berger, R., Pat-Horenczyk, R., & Gelkopf, M. (2007). School-based intervention for prevention and treatment of elementary-students' terror-related distress in Israel: A quasi-randomized controlled trial. *Journal of Traumatic Stress, 20*(4), 541-551. doi:10.1002/jts.20225

Bergman, R.L., Piacentini, J., & McCracken, J.T. (2002). Prevalence and description of selective mutism in a school-based sample. *Journal of the American Academy of Child and Adolescent Psychiatry, 41*(8), 938-946. doi:10.1097/00004583-200208000-00012

Biederman, J., Rosenbaum, J.F., Bolduc-Murphy, E.A., Faraone, S.V., Chaloff, J., Hirshfeld, D.R., & Kagan, J. (1993). A 3-year follow-up of children with and without behavioral inhibition. *Journal of the American Academy of Child and Adolescent Psychiatry, 32*(4), 814-821. doi:10.1097/00004583-199307000-00016

Bittner, A., Egger, H.L., Erkanli, A., Costello, E.J., Foley, D.L., & Angold, A. (2007). What do childhood anxiety disorders predict? *Journal of Child Psychology and Psychiatry, 48*(12), 1174-1183. doi:10.1111/j.1469-7610.2007.01812.x

Black, B., & Uhde, T.W. (1995). Psychiatric characteristics or children with selective mutism: A pilot study. *Journal of the American Academy of Child and Adolescent Psychiatry, 34*(7), 847-856.

Blackford, J.U., & Pine, D.S. (2012). Neural substrates of childhood anxiety disorders: A review of neuroimaging findings. *Child & Adolescent Psychiatric Clinics of North America, 21*(3), 501-525. doi:10.1016/j.chc.2012.05.002.

Blair, C., & Razza, R.P. (2007). Relating effortful control, executive function, and false belief understanding to emerging math and literacy ability in kindergarten. *Child Development, 78,* 647–663. doi: 10.1111/j.1467-8624.2007.01019.x

Bögels, S.M., & Brechman-Toussaint, M.L. (2006). Family issues in child anxiety: Attachment, family functioning, parental rearing and beliefs. *Clinical Psychology Review, 26,* 834-856. doi:10.1016/j.cpr.2005.08.001

Bögels, S.M., & Zigterman, D. (2000). Dysfunctional cognitions in children with social phobia, separation anxiety disorder, and generalized anxiety disorder. *Journal of Abnormal Child Psychology, 28*(2), 205-211. doi:10.1023/A:1005179032470

Borenstein, M., Rothstein, H., & Cohen, J. (2001). Power and Precision. Biostat Inc., Englewood, NJ.

Bowlby, J. (1989). The role of attachment in personality development and psychopathology. In S. Greenspan & G. Pollock (Eds.), *The course of life* (Vol. 1, pp. 229–270). Madison, WI: International Universities Press.

Boyce, W.T., Essex, M.J., Woodward, H.R., Measelle, J.R., Ablow, J.C., & Kupfer, D.J. (2002). The confluence of mental, physical, social, and academic difficulties in middle childhood. I. Exploring the 'head waters' of early life morbidities. *Journal of the American Academy of Child and Adolescent Psychiatry, 41,* 580–587. doi:10.1097/00004583-200205000-00016

Briesch, A.M., Hagermoser Sanetti, L.M., & Briesch, J.M. (2010). Reducing the prevalence of anxiety in children and adolescents: An evaluation of the evidence base for the FRIENDS for Life program. *School Mental Health, 2,* 155-165. doi:10.1007/s12310-010-9042-5

Briggs-Gowan, M.J., Horwitz, S.M., Schwab-Stone, M.E., Leventhal, J.M., & Leaf, P.J. (2000). Mental health in pediatric settings: Distribution of disorders and factors related to service use. *Journal of the American Academy of Child and Adolescent Psychiatry, 39,* 841-849. doi:10.1097/00004583-200007000-00012

Brown-Jacobsen, A.M., Wallace, D.P., & Whiteside, S.P.H. (2011). Multimethod, multi-informant agreement, and positive predictive value in the identification of child anxiety disorders using the SCAS and ADIS-C. *Assessment, 18*(3), 382-392. doi:10.1177/1073191110375792

Brunyé, T.T., Mahoney, C.R., Giles, G.E., Rapp, D.N., Taylor, H.A., & Kanarek, R.B. (2013). Learning to relax: Evaluating four brief interventions for overcoming the negative emotions accompanying math anxiety. *Learning and Individual Differences, 27,* 1-7. doi:10.1016/j.lindif.2013.06.008

Bull, R., Espy, K.A., & Wiebe, S.A. (2008). Short-term memory, working memory, and executive functioning in preschoolers: Longitudinal predictors of mathematical achievement at age 7 years. *Developmental Neuropsychology, 33*(3), 205-228. doi:10.1080/87565640801982312

Burns, T.G., & O'Leary, S.D. (2004). Wechsler Intelligence Scale for Children-IV: Test review. *Applied Neuropsychology, 11*(4), 233-236. doi:10.1207/s15324826an1104_11

Bussing, R., Fernandez, M., Harwood, M., Hou, W., Wilson Garvan, C., Eyberg, S.M., & Swanson, J.M. (2008). Parent and teacher SNAP-IV ratings of attention deficit hyperactivity disorder symptoms: Psychometric properties and normative ratings from a school district sample. *Assessment, 15*(3), 317-328. doi:10.1177/1073191107313888

Calkins, S.D., & Fox, N.A. (2002). Self-regulatory processes in early personality development: A multilevel approach to the study of childhood social withdrawal and aggression. *Development and Psychopathology, 14,* 477-498. doi:10.1017.S095457940200305X

Caprara, G.V., Barbaranelli, C., Pastorelli, C., Bandura, A., & Zimbardo, P.G. (2000). Prosocial foundations of children's academic achievement. *Psychological Science, 11(4),* 302-306. doi:10.1111/1467-9280.00260

Carlson, J.S., Kratochwill, T.R., & Johnston, H. (1994). Prevalence and treatment of selective mutism in clinical practice: A survey of child and adolescent psychiatrists. *Journal of Child and Adolescent Psychopharmacology, 4*(4), 281-291. doi:10.1089/cap.1994.4.281

Cartwright-Hatton, S., McNicol, K., & Doubleday, E. (2006). Anxiety in a neglected population: Prevalence of anxiety disorders in pre-adolescent children. *Clinical Psychology Review, 26,* 817-833. doi:10.1016/j.cpr.2005.12.002

Chorpita, B.F., & Barlow, D.H. (1998). The development of anxiety: The role of control in the early environment. *Psychological Bulletin, 124*(1), 3-21. doi:10.1037/0033-2909.124.1.3

Cohen, J.A., Deblinger, E., Mannarino, A.P., & Steer, R.A. (2004). A multisite, randomized controlled trial for children with sexual abuse-related PTSD symptoms. *Journal of the American Academy of Child and Adolescent Psychiatry, 43*(4), 393-402. doi:10.1097/01.chi.0000111364.94169.f9

Cole, D.A., Martin, J.M., Peeke, L.A., Seroczynski, A.D., & Fier, J. (1999). Children's over- and underestimation of academic competence: A longitudinal study of gender differences, depression, and anxiety. *Child Development, 70*(2), 459-473. doi:10.1111/1467-8624.00033

Cole, D.A., Peeke, L.G., Martin, J.M., Truglio, R., & Seroczynski, A.D. (1998). A longitudinal look at the relation between depression and anxiety in children and adolescents. *Journal of Consulting & Clinical Psychology, 66,* 451–460. doi:10.1037/0022-006X.66.3.451

Colonnesi, C., Draijer, E.M., Stams, G.J.J.M., Van der Bruggen, C.O., Bögels, S.M., & Noom, M.J. (2011). The relation between insecure attachment and child anxiety: A meta-analytic review. *Journal of Clinical Child & Adolescent Psychology, 40*(4), 630-645. doi:10.1080/15374416.2011.581623

Comer, J.S., & Kendall, P.C. (2004). A symptom-level examination of parent-child agreement in the diagnosis of anxious youths. *Journal of the American Academy of Child and Adolescent Psychiatry, 43*(7), 878-886. doi:10.1097/01.chi.0000125092.35109.c5

Compton, S.N., March, J.S., Brent, D., Albano, A.M., Weersing, V.R., & Curry, J. (2004). Cognitive-behavioral psychotherapy for anxiety and depressive disorders in children and adolescents: An evidence-based medicine review. *Journal of the American Academy of Child and Adolescent Psychiatry, 43*(8), 930-959. doi:10.1097/01.chi.0000127589.57468.bf

Connolly, S.D., Suarez, L., & Sylvester, C. (2011). Assessment and treatment of anxiety disorders in children and adolescents. *Current Psychiatry Reports, 13,* 99-110. doi:10.1007/s11920-010-0173-z

Cooley, M.R., Boyd, R.C., & Grados, J.J. (2004). Feasibility of an anxiety preventive intervention for community violence exposed African-American children. *The Journal of Primary Prevention, 25*(1), 105-123. doi:10.1023/B:JOPP.0000039941.85452.ea

Costello, E.J., & Angold, A. (1988). Scales to assess child and adolescent depression: Checklists, screens, and nets. *Journal of the American Academy of Child & Adolescent Psychiatry, 27*(6), 726-737. doi:10.1097/00004583-198811000-00011

Costello, E.J., & Angold, A.A. (1995). Epidemiology. In J.S. March (Ed.), *Anxiety disorders in children and adolescents* (pp. 109-124). New York: Guilford Press.

Costello, E.J., Angold, A., Burns, B., Stangl, D.K., Tweed, D.L., Erkanli, A., & Worthman, C.M. (1996). The Great Smoky Mountains Study of Youth: Goals, design, methods, and prevalence of DSM-III-R disorders. *Archives of General Psychiatry, 53,* 1129-1136. doi:10.1001/archpsyc.1996.01830120067012

Costello, E.J., Mustillo, S., Erkanli, A., Keeler, G., & Angold, A. (2003). Prevalence and development of psychiatric disorders in childhood and adolescence. *Archives of General Psychiatry, 60,* 837-844. doi:10.1001/archpsyc.60.8.837

Cowan, P. A., & Cowan, C. P. (2002). What an intervention design reveals about how parents affect their children's academic achievement and behavior problems. In J. G. Borkowski & S. L. Ramey (Eds.), Parenting and the child's world: Influences on academic, intellectual, and socialemotional development. Monographs in parenting (pp. 75–97). Mahwah, NJ: Erlbaum.

Curcio, G., Ferrara, M., & De Gennaro, L. (2006). Sleep loss, learning capacity and academic performance. *Sleep Medicine Reviews, 10,* 323-337. doi:10.1016/j.smrv.2005.11.001

Dadds, M.R., Holland, D.E., Laurens, K.R., Mullins, M., Barrett, P.M., & Spence, S.H. (1999). Early intervention and prevention of anxiety disorders in children: Results at 2-year follow-up. *Journal of Consulting and Clinical Psychology, 67*(1), 145-150. doi:10.1037/0022-006X.67.1.145

Dadds, M.R., Spence, S.H., Holland, D.E., Barrett, P.M., & Laurens, K.R. (1997). Prevention and early intervention for anxiety disorders: A controlled trial. *Journal of Consulting and Clinical Psychology, 65*(4), 627-635. doi:10.1037/0022-006X.65.4.627

Daneman, M., & Carpenter, P.A. (1980). Individual differences in working memory and reading. *Journal of Verbal Learning and Verbal Behavior, 19,* 450-466. doi:10.1016/S0022-5371(80)90312-6

Daviss, W.B., Birmaher, B., Melhem, N.A., Axelson, D.A., Michales, S.M., & Brent, D.A. (2006). Criterion validity of the Mood and Feelings Questionnaire for depressive episodes in clinic and non-clinic subjects. *Journal of Child Psychology and Psychiatry, 47*(9), 927-934. doi:10.1111/j.1469-7610.2006.01646.x

de Graaf, R., Bijl, R.V., Spijker, J., Beekman, A.T.F., & Vollebergh, W.A.M. (2003). Temporal sequencing of lifetime mood disorders in relation to comorbid anxiety and substance use disorders: Findings from the Netherlands Mental Health Survey and Incidence Study. *Social Psychiatry and Psychiatric Epidemiology, 38,* 1-11. doi:10.1007/s00127-003-0597-4

Dell, C.A., Harrold, B., & Dell, T. (2008). Test review: Wide Range Achievement Test – Fourth Edition. *Rehabilitation Counseling Bulletin, 52(1),* 57-60. doi:10.1177/0034355208320076

Delvecchio, E., Di Riso, D., Chessa, D., & Lis, A. (2010). The Spence Children's Anxiety Scale in Italian children aged 8-10. *Bollettino di Psicologia Applicata, 261,* 117-123.

Derakshan, N., & Eysenck, M.W. (2009). Anxiety, processing efficiency, and cognitive performance: New developments from attentional control theory. *European Psychologist, 14*(2), 168-176. doi:10.1027/1016-9040.14.2.168

Diamond, A., & Lee, K. (2011). Interventions shown to aid executive function development in children 4-12 years old. *Science, 333,* 959-964. doi:10.1126/science.1204529

Duchesne, S., Vitaro, F., Larose, S., & Tremblay, R.E. (2008). Trajectories of anxiety during elementary-school years and the prediction of high school noncompletion. *Journal of Youth and Adolescence, 37,* 1134-1146. doi:10.1007/s10964-007-9224-0

Eisen, A.R., Brien, L.K., Bowers, J., & Strudler, A. (2001). Separation anxiety disorder. In C.A. Essau, & F. Petermann (Eds.), *Anxiety disorders in children and adolescents* (pp. 111-141). East Sussex: Brunner-Routledge.

Essau, C.A., Aihara, F., Petermann, F., & Al Wiswasi, S. (2001). Specific phobia. In C.A. Essau, & F. Petermann (Eds.), *Anxiety disorders in children and adolescents* (pp. 193-217). East Sussex: Brunner-Routledge.

Essau, C.A., Anastassiou-Hadjicharalambous, X., & Muñoz, L.C. (2011). Psychometric properties of the Spence Children's Anxiety Scale (SCAS) in Cypriot children and adolescents. *Child Psychiatry and Human Development, 42,* 557-568. doi:10.1007/s10578-011-0232-7

Essau, C.A., Conradt, J., Sasagawa, S., & Ollendick, T.H. (2012). Prevention of anxiety symptoms in children: Results from a universal school-based trial. *Behavior Therapy, 43,* 450-464. doi:10.1016/j.beth.2011.08.003

Essau, C.A., Muris, P., & Ederer, E.M. (2002). Reliability and validity of the Spence Children's Anxiety Scale and the Screen for Child Anxiety Related Emotional Disorders in German children. *Journal of Behavior Therapy and Experimental Psychiatry, 33,* 1-18. doi:10.1016/S0005-7916(02)00005-8

Essex, M.J., Boyce, W.T., Goldstein, L.H., Armstrong, J.M., Kraemer, H.C., & Kupfer, D.J. (2002). The confluence of mental, physical, social, and academic difficulties in middle childhood. II. Developing the Macarthur Health and Behavior Questionnaire. *Journal of the American Academy of Child and Adolescent Psychiatry, 41,* 588–603. doi:10.1097/00004583-200205000-00017

Eysenck, M.W., Derakshan, N., Santos, R., & Calvo, M.G. (2007). Anxiety and cognitive performance: Attentional control theory. *Emotion, 7*(2), 336-353. doi:10.1037/1528-3542.7.2.336

Faravelli, C., Lo Sauro, C., Castellini, G., Ricca, V., & Pallanti, S. (2009). Prevalence and correlates of mental disorders in a school-survey sample. *Clinical Practice & Epidemiology in Mental Health, 5,* 1-8. doi:10.2174/1745017900905010001

Farrell, L.J., & Barrett, P.M. (2007). Prevention of childhood emotional disorders: Reducing the burden of suffering associated with anxiety and depression. *Child and Adolescent Mental Health, 12*(2), 58-65. doi:10.1111/j.1475-3588.2006.00430.x

Farrell, L.J., Barrett, P.M., & Claassens, S. (2005). Community trial of an evidence-based anxiety intervention for children and adolescents (the FRIENDS program): A pilot study. *Behaviour Change, 22*(4), 236-248. doi:10.1375/bech.22.4.236

Feldner, M.T., Zvolensky, M.J., & Schmidt, N.B. (2004). Prevention of anxiety psychopathology: A critical review of the empirical literature. *Clinical Psychology: Science and Practice, 11,* 405-424. doi:10.1093/clipsy/bph098

Flook, L., Repetti, R.L., & Ullman, J.B. (2005). Classroom social experiences as predictors of academic performance. *Developmental Psychology, 41*(2), 319-327. doi:10.1037/0012-1649.41.2.319

Flook, L., Smalley, S.L., Kitil, M.J., Galla, B.M., Kaiser-Greenland, S., Locke, J., …Kasari, C. (2010). Effects of mindful awareness practices on executive functions in elementary school children. *Journal of Applied School Psychology, 26,* 70-95. doi:10.1080/15377900903379125

Ford, T., Goodman, R., & Meltzer, H. (2003). The British child and adolescent mental health survey 1999: The prevalence of DSM-IV disorders. *Journal of the American Academy of Child and Adolescent Psychiatry, 42*(10), 1203-1211. doi:10.1097/01.chi.0000081820.25107.ae

Fox, N.A., Calkins, S.D., & Bell, M.A. (1994). Neural plasticity and development in the first two years of life: Evidence from cognitive and socioemotional domains of research. *Development and Psychopathology, 6,* 677-696. doi:10.1017/S0954579400004739

FRIENDS for Life. (2007). *Introduction to FRIENDS.* Retrieved March 26, 2010 from http://www.friendsinfo.net/downloads/FRIENDSintrobooklet.pdf.

FRIENDS. (n.d.). *The world's leading school-based anxiety prevention program.* Retrieved March 26, 2010 from http://www.friendsinfo.net/index.html.

Fyer, A.J., Mannuzza, S., Chapman, T.F., Martin, L.Y., & Klein, D.F. (1995). Specificity in familial aggregation of phobic disorders. *Archives of General Psychiatry, 52,* 564-573. doi:10.1001/archpsyc.1995.03950190046007

Galla, B.M., & Wood, J.J. (2012). Emotional self-efficacy moderates anxiety-related impairments in math performance in elementary school-age youth. *Personality and Individual Differences, 52,* 118-122. doi:10.1016/j.paid.2011.09.012

Gar, N.S., & Hudson, J.L. (2008). An examination of the interactions between mothers and children with anxiety disorders. *Behaviour Research and Therapy, 46,* 1266-1274. doi:10.1016/j.brat.2008.08.006

Garcia Coll, C., Kagan, J., & Reznick, J.S. (1984). Behavioral inhibition in young children. *Child Development, 55,* 1005-1019. doi:10.2307/1130152

Gathercole, S.E., & Pickering, S.J. (2000). Working memory deficits in children with low achievements in the national curriculum at 7 years of age. *British Journal of Educational Psychology, 70*, 177-194. doi:10.1348/000709900158047

Gathercole, S.E., Pickering, S.J., Knight, C., & Stegmann, Z. (2004). Working memory skills and educational attainment: Evidence from national curriculum assessments at 7 and 14 years of age. *Applied Cognitive Psychology, 18,* 1-16. doi:10.1002/acp.934

Gerull, F.C., & Rapee, R.M. (2002). Mother knows best: Effects of maternal modelling on the acquisition of fear and avoidance behaviour in toddlers. *Behaviour Research and Therapy, 40,* 279-287. doi:10.1016/S0005-7967(01)00013-4

Gillham, J.E., Reivich, K.J., Freres, D.R., Lascher, M., Litzinger, S., Shatté, A., & Seligman, M.E.P. (2006). School-based prevention of depression and anxiety symptoms in early adolescence: A pilot of a parent intervention component. *School Psychology Quarterly, 21*(3), 323-348. doi:10.1521/scpq.2006.21.3.323

Ginsburg, G.S. (2009). The child anxiety prevention study: Intervention model and primary outcomes. *Journal of Consulting and Clinical Psychology, 77*(3), 580-587. doi:10.1037/a0014486

Ginsburg, G.S., Grover, R.L., & Ialongo, N. (2004). Parenting behaviors among anxious and non-anxious mothers: Relation with concurrent and long-term child outcomes. *Child and Family Behavior Therapy, 26*(4), 23-41. doi:10.1300/J019v26n04_02

Gorman, J.M., Kent, J.M., Sullivan, G.M., & Coplan, J.D. (2000). Neuroanatomical hypothesis of panic disorder, revised. *The American Journal of Psychiatry, 157*(4), 493-505. doi:10.1176/appi.ajp.157.4.493

Greenberg, M.T. (2006). Promoting resilience in children and youth: Preventive interventions and their interface with neuroscience. *Annals of the New York Academy of Sciences, 1094,* 139-150. doi:10.1196/annals.1376.013

Greenberg, M.T., Domitrovich, C., & Bumbarger, B. (2001). The prevention of mental disorders in school-aged children: Current state of the field. *Prevention & Treatment, 4*(1), 1-62. doi:10.1037/1522-3736.4.1.41a

Gregory, A.M., & Eley, T.C. (2007). Genetic influences on anxiety in children: What we've learned and where we're heading. *Clinical Child and Family Psychology, 10*(3), 199-212. doi:10.1007/s10567-007-0022-8

Grills, A.E., & Ollendick, T.H. (2003). Multiple informant agreement and the Anxiety Disorders Interview Schedule for parents and children. *Journal of the American Academy of Child and Adolescent Psychiatry, 42*(1), 30-40. doi:10.1097/01.CHI.0000024899.60748.EE

Grills-Taquechel, A.E., Fletcher, J.M., Vaughn, S.R., & Stuebing, K.K. (2012). Anxiety and reading difficulties in early elementary school: Evidence for unidirectional- or bi-directional relations? *Child Psychiatry & Human Development, 43(1)*, 35-47. doi:10.1007/s10578-011-0246-1

Grover, R.L., Ginsburg, G.S., & Ialongo, N. (2007). Psychosocial outcomes of anxious first graders: A seven-year follow-up. *Depression and Anxiety, 24,* 410-420. doi:10.1002/da.20241

Hamilton, S.P., Haghighi, F., Heiman, G.A., Klein, D.F., Hodge, S.E., Fyer, A.J., …Knowles, J.A. (2000). Investigation of dopamine receptor (DRD4) and dopamine transporter (DAT) polymorphisms for genetic linkage or association to panic disorder. *American Journal of Medical Genetics (Neuropsychiatric Genetics), 96,* 324-330. doi:10.1002/1096-8628(20000612)96:3<324::AID-AJMG18>3.0.CO;2-W

Hettema, J.M., Neale, M.C., & Kendler, K.S. (2001). A review and meta-analysis of the genetic epidemiology of anxiety disorders. *American Journal of Psychiatry, 158,* 1568-1578. doi:10.1176/appi.ajp.158.10.1568

Hirshfeld-Becker, D.R., & Biederman, J. (2002). Rationale and principles for early intervention with young children at risk for anxiety disorders. *Clinical Child and Family Psychology Review, 5*(3), 161-172. doi:10.1023/A:1019687531040

Holmes, J., Gathercole, S.E., & Dunning, D.L. (2009). Adaptive training leads to sustained enhancement of poor working memory in children. *Developmental Science, 12*(4), F1-7. doi: 10.1111/j.1467-7687.2009.00848.x

Hudson, J.L., & Rapee, R.M. (2001). Parent-child interactions and anxiety disorders: An observational study. *Behaviour Research and Therapy, 39,* 1141-1427. doi:10.1016/S0005-7967(00)00107-8

Hughes, A.A., Lourea-Waddell, B., & Kendall, P.C. (2008). Somatic complaints in children with anxiety disorders and their unique prediction of poorer academic performance. *Child Psychiatry and Human Development, 39,* 311-220. doi:10.1007/s10578-007-0082-5

Ialongo, N., Edelsohn, G., Werthamer-Larrson, L., Crockett, L., & Kellam, S. (1994). The significance of self-reported anxious symptoms in first-grade children. *Journal of Abnormal Child Psychology, 22*(4), 441-455. doi:10.1007/BF02168084

Ialongo, N., Edelsohn, G., Werthamer-Larsson, L., Crockett, L., & Kellam, S. (1995). The significance of self-reported anxious symptoms in first grade children: Prediction to anxious symptoms and adaptive functioning in fifth grade. *The Journal of Child Psychology and Psychiatry, 36*(3), 427-437. doi:10.1111/j.1469-7610.1995.tb01300.x

Johnson, D.R., & Gronlund, S.D. (2009). Individuals lower in working memory capacity are particularly vulnerable to anxiety's disruptive effect on performance. *Anxiety, Stress, & Coping, 2,* 201-213. doi:10.1080/10615800802291277

Kagan, J., & Snidman, N. (1999). Early childhood predictors of adult anxiety disorders. *Biological Psychiatry, 46,* 1536-1541. doi:10.1016/S0006-3223(99)00137-7

Kagan, J., Reznick, J.S., & Snidman, N. (1987). The physiology and psychology of behavioural inhibition in children. *Child Development, 58,* 1459-1473. doi:10.2307/1130685

Kagan, J., Reznick, J.S., Clarke, C., Snidman, N., & Garcia-Coll, C. (1984). Behavioral inhibition to the unfamiliar. *Child Development, 55,* 2212-2225. doi:10.2307/1129793

Kagan, J., Reznick, J.S., Snidman, N., Gibbons, J., & Johnson, M.O. (1988). Childhood derivatives of inhibition and lack of inhibition to the unfamiliar. *Child Development, 59,* 1580-1589. doi:10.2307/1130672

Kagan, J., Snidman, N., Zentner, M., & Peterson, E. (1999). Infant temperament and anxious symptoms in school age children. *Development and Psychopathology, 11,* 209-224. doi:10.1017/S0954579499002023

Keller, M.B., Lavori, P.W., Wunder, J., Beardslee, W.R., Schwartz, C.E., & Roth, J. (1992). Chronic course of anxiety disorders in children and adolescents. *Journal of the American Academy of Child and Adolescent Psychiatry, 31*(4), 595-599. doi:10.1097/00004583-199207000-00003

Kendall, P.C. (1994). Treating anxiety disorders in children: Results of a randomized clinical trial. *Journal of Consulting and Clinical Psychology, 62*(1), 100-110. doi:10.1037/0022-006X.62.1.100

Kent, L., Vostanis, P., & Feehan, C. (1997). Detection of major and minor depression in children and adolescents: Evaluation of the Mood and Feelings Questionnaire. *Journal of Child Psychology and Psychiatry, 38*(5), 565-573. doi:10.1111/j.1469-7610.1997.tb01543.x

Kessler, R.C., Berglund, B., Demler, O., Jin, R., Merikangas, K.R., & Walters, E.E. (2005). Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey replication. *Archives of General Psychiatry, 62,* 593-602. doi:10.1001/archpsyc.62.6.593

King, N.J., Heyne, D., & Ollendick, T.H. (2005). Cognitive-behavioral treatments for anxiety and phobic disorders in children and adolescents: A review. *Behavioral Disorders, 30*(3), 241-257.

Klein, R.G. (1991). Parent-child agreement in clinical assessment of anxiety and other psychopathology: A review. *Journal of Anxiety Disorders, 5*(2), 187-198. doi:10.1016/0887-6185(91)90028-R

Knoop, A. (2004). Test review: Wide Range Achievement Test 3rd edition. *Rehabilitation Counseling Bulletin, 47(3),* 184-185. doi:10.1177/00343552040470030801

Koszycki, D., Bilodeau, C., Zwanger, P., Schneider, B.H., Flament, M.F., & Bradwejn, J. (2013). Parental bonds in children at high and low familial risk for panic disorder. *Child Psychiatry and Human Development, 44,* 278-289. doi:10.1007/s10578-012-0324-z

Kraag, G., Van Breukelen, G.J.P., Kok, G., & Hosman, C. (2009). 'Learn Young, Learn Fair,' a stress management program for fifth and sixth graders: Longitudinal results from an experimental study. *Journal of Child Psychology and Psychiatry, 50*(9), 1185-1195. doi:10.1111/j.1469-7610.2009.02088.x

Langer, D.A., Wood, J.J., Bergman, R.L., & Piacentini, J.C. (2010). A multitrait-multimethod analysis of the construct validity of child anxiety disorders in a clinical sample. *Child Psychiatry and Human Development, 41,* 549-561. doi:10.1007/s10578-010-0187-0

Last, C.G., Perrin, S., Hersen, M., & Kazdin, A.E. (1992). DSM-III-R anxiety disorders in children: Sociodemographic and clinical characteristics. *Journal of the American Academy of Child and Adolescent Psychiatry, 31,* 1070-1076. doi:10.1097/00004583-199211000-00012

Last, C.G., Strauss, C.C., & Francis, G. (1987). Comorbidity among childhood anxiety disorders. *The Journal of Nervous and Mental Disease, 175*(12), 726-730. doi:10.1097/00005053-198712000-00004

Lees, C., & Hopkins, J. (2013). Effect of aerobic exercise on cognition, academic achievement, and psychosocial function in children: A systematic review of randomized control trials. *Preventing Chronic Disease, 10,* 1-8. doi:10.5888/pcd10.130010

Lewinsohn, P.M., Gotlib, I.H., Lewinsohn, M., Seeley, J.R., & Allen, N.B. (1998). Gender differences in anxiety disorders and anxiety symptoms in adolescents. *Journal of Abnormal Psychology, 107*(1), 109-117. doi:10.1037/0021-843X.107.1.109

Liang, W., Chikritzhs, T., & Lenton, S. (2011). Affective disorders and anxiety disorders predict the risk of drug harmful use and dependence. *Addiction, 106*(6), 1126-1134. doi:10.1111/j.1360-0443.2011.03362.x

Liddle, I., & Macmillan, S. (2010). Evaluating the FRIENDS programme in a Scottish setting. *Educational Psychology in Practice, 26*(1), 53-67. doi:10.1080/02667360903522785

Lieb, R., Wittchen, H-U., Hofler, M., Fuetsch, M., Stein, M.B., & Merikangas, K.R. (2000). Parental psychopathology, parenting styles, and the risk of social phobia in offspring: A prospective-longitudinal community study. *Archives of General Psychiatry, 57*(9), 859-866. doi:10.1001/archpsyc.57.9.859

Livingston, R., Taylor, J.L., & Crawford, S.L. (1988). A study of somatic complaints and psychiatric diagnosis in children. *Journal of the American Academy of Child and Adolescent Psychiatry, 27,* 185-187. doi:10.1097/00004583-198803000-00009

Lowry-Webster, H.M., Barrett, P.M., & Dadds, M.R. (2001). A universal prevention trial of anxiety and depressive symptomatology in childhood: Preliminary data from an Australian study. *Behaviour Change, 18*(1), 36-50. doi:10.1375/bech.18.1.36

Lowry-Webster, H.M., Barrett, P.M., & Lock, S. (2003). A universal prevention trial of anxiety symptomology during childhood: Results at 1-year follow-up. *Behaviour Change, 20*(1), 25-43. doi:10.1375/bech.20.1.25.24843

Ma, X. (1999). A meta-analysis of the relationship between anxiety toward mathematics and achievement in mathematics. *Journal for Research in Mathematics Education, 30*(5), 520-540. doi:10.2307/749772

Magnusdottir, I., & Smari, J. (1999). Social anxiety in adolescents and appraisal of negative events: Specificity or generality of bias? *Behavioural and Cognitive Psychotherapy, 27,* 223-230.

Malgady, R.G., Rogler, L.H., & Costantino, G. (1990). Hero/heroine modelling for Puerto Rican adolescents: A preventive mental health intervention. *Journal of Consulting and Clinical Psychology, 58*(4), 469-474. doi:10.1037/0022-006X.58.4.469

Manassis, K., & Bradley, S.J. (1994). The development of childhood anxiety disorders: Toward an integrated model. *Journal of Applied Developmental Psychology, 15,* 345-366. doi:10.1016/0193-3973(94)90037-X

March, J.S., Parker, J.D.A., Sullivan, K., Stallings, P., & Conners, C.K. (1997). The Multidimensional Anxiety Scale for Children (MASC): Factor structure, reliability, and validity. *Journal of the American Academy of Child and Adolescent Psychiatry, 36*(4), 554-565. doi:10.1097/00004583-199704000-00019

Maron, E., Hettema, J.M., & Shlik, J. (2010). Advances in molecular genetics of panic disorder. *Molecular Psychiatry, 15,* 681-701. doi:10.1038/mp.2009.145

Martin, E.I., Ressler, K.J., Binder, E., & Nemeroff, C.B. (2010). The neurobiology of anxiety disorders: Brain imaging, genetics, and psychoneuroendocrinology. *Clinics in Laboratory Medicine, 30,* 865-891. doi:10.1016/j.psc.2009.05.004

Mazzone, L., Ducci, F., Scoto, M.C., Passaniti, E., Genitori D'Arrigo, V., & Vitiello, B. (2007). The role of anxiety symptoms in school performance in a community sample of children and adolescents. *BMC Public Health, 7,* 347-352. doi:10.1186/1471-2458-7-347

McClure, E.B., Brennan, P.A., Hammen, C., & Le Brocque, R.M. (2001). Parental anxiety disorders, child anxiety disorders, and the perceived parent-child relationship in an

Australian high-risk sample. *Journal of Abnormal Child Psychology, 29*(1), 1-10. doi:10.1023/A:1005260311313

McClure, E.B., Monk, C.S., Nelson, E.E., Parrish, J.M., Adler, A., Blair, R.J.R., …Pine, D.S. (2007). Abnormal attention modulation of fear circuit function in pediatric generalized anxiety disorder. *Archives of General Psychiatry, 64,* 97-103. doi:10.1001/archpsyc.64.1.97

McCullough, M. (2010, December). Support for healthy minds: Mental illness a huge concern in Ontario classrooms. *Professionally Speaking,* 38-43.

McLeod, B.D., Wood, J.J., & Weisz, J.R. (2007). Examining the association between parenting and childhood anxiety: A meta-analysis. *Clinical Psychology Review, 27,* 155-172. doi:10.1016/j.cpr.2006.09.002

Merikangas, K.R., Nakamura, E.F., & Kessler, R.C. (2009). Epidemiology of mental disorders in children and adolescents. *Dialogues in Clinical Neuroscience, 11*(1), 7-20.

Micco, J.A., Henin, A., Mick, E., Kim, S., Hopkins, C.A., Biederman, J., & Hirshfeld-Becker, D.R. (2009). Anxiety and depressive disorders in offspring at high risk for anxiety: A meta-analysis. *Journal of Anxiety Disorders, 23,* 1158-1164. doi:10.1016/j.janxdis.2009.07.021

Miller, L.D., Laye-Gindhu, A., Bennett, J.L., Liu, Y., Gold, S., March, J.S.,… Waechtler, V.E. (2011). An effectiveness study of a culturally enriched school-based CBT anxiety prevention program. *Journal of Clinical Child & Adolescent Psychology, 40*(4), 618-629. doi:10.1080/15374416.2011.581619

Mineka, S., & Oehlberg, K. (2008). The relevance of recent developments in classical conditioning to understanding the etiology and maintenance of anxiety disorders. *Acta Psychologica, 127,* 567-580. doi:10.1016/j.actpsy.2007.11.007

Moore, P.S., Whaley, S.E., & Sigman, M. (2004). Interactions between mothers and children: Impacts of maternal and child anxiety. *Journal of Abnormal Psychology, 113(3),* 471-476. doi:10.1037/0021-843X.113.3.471

Mostert, J., & Loxton, H. (2008). Exploring the effectiveness of the FRIENDS program in reducing anxiety symptoms among South African children. *Behaviour Change, 25*(2), 85-96. doi:10.1375/bech.25.2.85

Mychailyszyn, M.P., Mendez, J.L., & Kendall, P.C. (2010). School functioning in youth with and without anxiety disorders: Comparisons by diagnosis and comorbidity. *School Psychology Review, 39*(1), 106-121.

Napoli, M., Krech, P.R., Holley, L.C. (2005). Mindfulness training for elementary school students: The attention academy. *Journal of Applied School Psychology, 21*(1), 99-125. doi:10.1300/J008v21n01_05

Nauta, M.H., Scholing, A., Rapee, R.M., Abbott, M., Spence, S.H., & Waters, A. (2004). A parent-report measure of children's anxiety: Psychometric properties and comparison with child-report in a clinic and normal sample. *Behaviour Research and Therapy, 42,* 813-839. doi:10.1016/S0005-7967(03)00200-6

Nelson, J.R., Benner, G.J., Lane, K., & Smith, B.W. (2004). Academic achievement of K-12 students with emotional and behavioral disorders. *Exceptional Children, 71*(1), 59-73.

Normandeau, S., & Guay, F. (1998). Preschool behavior and first-grade school achievement: The mediational role of cognitive self-control. *Journal of Educational Psychology, 90*(1), 111-121. doi:10.1037/0022-0663.90.1.111

Normative data. (n.d.). Retrieved on December 12, 2013, from www.scaswebsite.com/index.php?p=1_8.

Ollendick, T.H., & King, N.J. (1998). Empirically supported treatments for children with phobic and anxiety disorders: Current status. *Journal of Clinical Child Psychology, 27*(2), 156-167. doi:10.1207/s15374424jccp2702_3

Ontario Ministry of Education. (2011). Literacy and Numeracy Strategy. Retrieved on February 3, 2014, from: http://www.edu.gov.on.ca/eng/literacynumeracy/

Öst, L-G., Svensson, L., Hellström, K., & Lindwall, R. (2001). One-session treatment of specific phobias in youths: A randomized clinical trial. *Journal of Consulting and Clinical Psychology, 69*(5), 814-824. doi:10.1037/0022-006X.69.5.814

Owens, M., Stevenson, J., Hadwin, J.A., & Norgate, R. (2012). Anxiety and depression in academic performance: An exploration of the mediating factors of worry and working memory. *School Psychology International, 33*(4), 433-449. doi:10.1177/0143034311427433

Owens, M., Stevenson, J., Norgate, R., & Hadwin, J.A. (2008). Processing efficiency theory in children: Working memory as a mediator between trait anxiety and academic performance. *Anxiety, Stress, & Coping, 21*(4), 417-430. doi:10.1080/10615800701847823

Pine, D.S. (1999). Pathophysiology of childhood anxiety disorders. *Biological Psychiatry, 46,* 1555-1566. doi:10.1016/S0006-3223(99)00115-8

Pine, D.S., Cohen, P., Gurley, D., Brook, J., & Ma, Y. (1998). The risk for early-adulthood anxiety and depressive disorders in adolescents with anxiety and depressive disorders. *Archives of General Psychiatry, 55,* 56-64. doi:10.1016/S0006-3223(99)00115-8

Ramirez, G., Gunderson, E.A., Levine, S.C., & Beilock, S.L. (2013). Math anxiety, working memory, and math achievement in early elementary school. *Journal of Cognition and Development, 14*(2), 187-202. doi:10.1080/15248372.2012.664593

Rampersaud, G.C., Pereira, M.A., Girard, B.L., Adams, J., & Metzl, J.D. (2005). Breakfast habits, nutritional status, body weight, and academic performance in children and adolescents. *Journal of the American Dietetic Association, 105,* 743-760. doi:10.1016/j.jada.2005.02.007

Rapee, R.M., Schniering, C.A., & Hudson, J.L. (2009). Anxiety disorders during childhood and adolescence: Origins and treatment. *Annual Review of Clinical Psychology, 5,* 311-341. doi:10.1146/annurev.clinpsy.032408.153628

Roeser, R.W., van der Wolf, K., & Strobel, K.R. (2001). On the relation between social-emotional and school functioning during early adolescence: Preliminary findings from Dutch and American samples. *Journal of School Psychology, 39*(2), 111-139. doi:10.1016/S0022-4405(01)00060-7

Rose, H., Miller, L., & Martinez, Y. (2009). "FRIENDS for Life": The results of a resilience-building anxiety-prevention program in a Canadian elementary school. *Professional School Counseling, 12*(6), 400-407. doi:10.5330/PSC.n.2010-12.400

Rosenbaum, J.F., Biederman, J., Bolduc, E.A., Hirshfeld, D.R., Faraone, S.V., & Kagan, J. (1992). Comorbidity of parental anxiety disorders as risk for childhood-onset anxiety in inhibited children. *American Journal of Psychiatry, 149,* 475-481.

Sakolsky, D.J., McCracken, J.T., & Nurmi, E.L. (2012). Genetics of pediatric anxiety disorders. *Child and Adolescent Psychiatric Clinics of North America, 21,* 479-500. doi:10.1016/j.chc.2012.05.010

Schoenfeld, N.A., & Janney, D.M. (2008). Identification and treatment of anxiety in students with emotional or behavioral disorders: A review of the literature. *Education and Treatment of Children, 31*(4), 583-610. doi:10.1353/etc.0.0034

Scruggs, T.E., & Mastropieri, M.A. (1986). Academic characteristics of behaviorally disordered and learning disabled students. *Behavioral Disorders, 11,* 184-190.

Shackman, A.J., Sarinopoulos, I., Maxwel, J.S., Pizzagalli, D.A., Lavric, A., & Davidson, R.J. (2006). Anxiety selectively disrupts visuospatial working memory. *Emotion, 6*(1), 40-61. doi:10.1037/1528-3542.6.1.40

Shaffer, D., Fisher, P., Dulca, M.K., & Davies, M. (1996). The NIMH Diagnostic Interview Schedule for Children Version 2.3 (DISC 2.3): Description, acceptability, prevalence rates, and performance in the MECA study. *Journal of the American Academy of Child and Adolescent Psychiatry, 35,* 865-877. doi:10.1097/00004583-199607000-00012

Shamir-Essakow, G., Ungerer, J.A., & Rapee, R.M. (2005). Attachment, behavioral inhibition, and anxiety in preschool children. *Journal of Abnormal Child Psychology, 33*(2), 131-143. doi:10.1007/s10802-005-1822-2

Shapira, L.B., & Courbasson, C.M. (2011). Depression and anxiety: Predictors of eating disorder symptoms and substance addiction severity. *Mental Health and Substance Use, 4*(3), 222-238. doi:10.1080/17523281.2011.578074

Siqueland, L., Kendall, P.C., & Steinberg, L. (1996). Anxiety in children: Perceived family environments and observed family interaction. *Journal of Clinical Child Psychology, 25*(2), 225-237. doi:10.1207/s15374424jccp2502_12

Sirin, S.R. (2005). Socioeconomic status and academic achievement: A meta-analytic review of research. *Review of Educational Research, 75(3),* 417-453. doi:10.3102/00346543075003417

Smith, T.D., & Smith, B.L. (1998). Relationship between the Wide Range Achievement Test 3 and the Wechsler Individual Achievement Test. *Psychological Reports, 83,* 963-967. doi:10.2466/PR0.83.7.963-967

Smoller, J.W., Block, S.R., & Young, M.M. (2009). Genetics of anxiety disorders: The complex road from DSM to DNA. *Depression and Anxiety, 26,* 965-975. doi:10.1002/da.20623

Spence, S.H. (1997). Structure of anxiety symptoms among children: A confirmatory factor-analytic study. *Journal of Abnormal Psychology, 106*(2), 280-297. doi:10.1037/0021-843X.106.2.280

Spence, S.H. (1998). A measure of anxiety symptoms among children. *Behaviour Research and Therapy, 36,* 545-566. doi:10.1016/S0005-7967(98)00034-5

Spence, S.H., Barrett, P.M., & Turner, C.M. (2003). Psychometric properties of the Spence Children's Anxiety Scale with young adolescents. *Anxiety Disorders, 17,* 605-625. doi:10.1016/S0887-6185(02)00236-0

St Clair-Thompson, H.L., & Gathercole, S.E. (2006). Executive functions and achievements in school: Shifting, updating, inhibition, and working memory. *The Quarterly Journal of Experimental Psychology, 59*(4), 745-759. doi:10.1080/17470210500162854

Stallard, P. (2010). Mental health prevention in UK classrooms: The FRIENDS anxiety prevention programme. *Emotional and Behavioural Difficulties, 15*(1), 23-35. doi:10.1080/13632750903512381

Stallard, P., Simpson, N., Anderson, S., & Goddard, M. (2008). The FRIENDS emotional health prevention programme: 12 month follow-up of a universal UK school based trial. *European Child and Adolescent Psychiatry, 17,* 283-289. doi:10.1080/13632750903512381

Stallard, P., Simpson, N., Anderson, S., Carter, T., Osborn, C., & Bush, S. (2005). An evaluation of the FRIENDS programme: A cognitive behaviour therapy intervention to promote emotional resilience. *Archives of Disease in Childhood, 90,* 1016-1019. doi:10.1136/adc.2004.068163

Stallard, P., Simpson, N., Anderson, S., Hibbert, S., & Osborn, C. (2007). The FRIENDS emotional health programme: Initial findings from a school-based project. *Child and Adolescent Mental Health, 12*(1), 32-37. doi:10.1111/j.1475-3588.2006.00421.x

Stein, M.B., Yang, B., Chavira, D.A., Hitchcock, C.A., Sung, S.C., Shipon-Blum, E., & Gelernter, J. (2011). A common genetic variant in the neurexin superfamily member CNTNAP2 is associated with increased risk for selective mutism and social anxiety-related traits. *Biological Psychiatry, 69,* 825-831. doi:10.1016/j.biopsych.2010.11.008

Stevens, J., Quittner, A.L., & Abikoff, H. (1998). Factors influencing elementary school teachers' ratings of ADHD and ODD behaviors. *Journal of Clinical Child Psychology, 27*(4), 406-414. doi:10.1207/s15374424jccp2704_4

Stewart, S.L., & Rubin, K.H. (1995). The social problem-solving skills of anxious-withdrawn children. *Development and Psychopathology, 7*(2), 323-336.

Strauss, E., Sherman, E.M.S., & Spreen, O. (2006). *A compendium of neuropsychological tests: Administration, norms, and commentary.* New York, NY: Oxford.

Sugawara, M., Mukai, T., Kitamura, T., Toda, M.A., Shima, S., Tomoda, A., …Ando, A. (1999). Psychiatric disorders among Japanese children. *Journal of the American Academy of Child and Adolescent Psychiatry, 38*(4), 444-452. doi:10.1097/00004583-199904000-00018

Suldo, S., Thalji, A., & Ferron, J. (2011). Longitudinal academic outcomes predicted by early adolescents' subjective well-being, psychopathology, and mental health status yielded from a dual factor model. *The Journal of Positive Psychology, 6*(1), 17-30. doi:10.1080/17439760.2010.536774

Suldo, S.M., & Shaffer, E.J. (2008). Looking beyond psychopathology: The dual-factor model of mental health in youth. *School Psychology Review, 37*(1), 52-68.

Sund, A.M., Larsson, B., & Wichstrøm, L. (2001). Depressive symptoms among young Norwegian adolescents as measured by The Mood and Feelings Questionnaire (MFQ). *European Child & Adolescent Psychiatry, 10,* 222-229. doi:10.1007/s007870170011

Swanson, J.M., Kraemer, H.C., Hinshaw, S.P., Arnold, L.E., Conners, C.K., Abikoff, H.B., …Wu, M. (2001). Clinical relevance of the primary findings of the MTA: Success rates based on severity of ADHD and ODD symptoms at the end of treatment. *Journal of the American Academy of Child and Adolescent Psychiatry, 40*(2), 168-179. doi:10.1097/00004583-200102000-00011

Tabachnick, B.G., & Fidell, L.S. (2001). *Using multivariate Statistics.* Needham Heights, MA: Allyn and Bacon.

Tadic, A., Rujescu, D., Szegedi, A., Giegling, I., Singer, P., Möller, H.-J., & Dahmen, N. (2003). Association of a MAOA gene variant with generalized anxiety disorder, but not with panic disorder or major depression. *American Journal of Medical Genetics Part B (Neuropsychiatric Genetics), 117*(B), 1-6. doi:10.1002/ajmg.b.10013

Teubert, D., & Pinquart, M. (2011). A meta-analytic review on the prevention of symptoms of anxiety in children and adolescents. *Journal of Anxiety Disorders, 25,* 1046-1059. doi:10.1016/j.janxdis.2011.07.001

The Psychological Corporation. (2003). *WISC-IV technical and interpretive manual.* San Antonio, TX: Author.

Thorell, L.B., Lindqvist, S., Bergman Nutley, S., Bohlin, G., & Klingberg, T. (2009). Training and transfer effects of executive functions in preschool children. *Developmental Science, 12*(1), 106-113. doi:10.1111/j.1467-7687.2008.00745.x

Tseng, W., Kawabata, Y., Shur-Fen Gau, S., Banny, A.M., Lingras, K.A., & Crick, N.R. (2012). Relations of inattention and hyperactivity/impulsivity to preadolescent peer functioning: The mediating roles of aggressive and prosocial behaviors. *Journal of Clinical Child & Adolescent Psychology, 41*(3), 275-287. doi:10.1080/15374416.2012.656556

Turner, S.M., Beidel, D.C., Roberson-Nay, R., & Tervo, K. (2003). Parenting behaviors in parents with anxiety disorders. *Behaviour Research and Therapy, 41,* 541-554. doi:10.1016/S0005-7967(02)00028-1

Van Ameringen, M., Mancini, C., & Farvolden, P. (2003). The impact of anxiety disorders on educational achievement. *Anxiety Disorders, 17,* 561-571. doi:10.1016/S0887-6185(02)00228-1

Vasey, M.W., Daleiden, E.L., Williams, L.L., & Brown, L.M. (1995). Biased attention in childhood anxiety disorders: A preliminary study. *Journal of Abnormal Child Psychology, 23*(2), 267-279. doi:10.1007/BF01447092

Vasey, M.W., El-Hag, N., & Daleiden, E.L. (1996). Anxiety and the processing of emotionally threatening stimuli: Distinctive patterns of selective attention among high- and low-test-anxious children. *Child Development, 67,* 1173-1185. doi:10.1111/j.1467-8624.1996.tb01789.x

Waddell, C., McEwan, K., Peters, R.D., Hua, J.M., & Garland, O. (2007). Preventing mental disorders in children: A public health priority. *Canadian Journal of Public Health, 98*(3), 174-178.

Walkup, J.T., Albano, A.M., Piacentini, J., Birmaher, B., Compton, S.N., Sherrill, J.T., …Kendall, P.C. (2008). Cognitive behavioural therapy, sertraline, or a combination in childhood anxiety. *The New England Journal of Medicine, 359*(26), 2753-2766. doi:10.1056/NEJMoa0804633

Warren, S.L., Huston, L., Egeland, B., & Sroufe, L.A. (1997). Child and adolescent anxiety disorders and early attachment. *Journal of the American Academy of Child and Adolescent Psychiatry, 36*(5), 637-644. doi:10.1097/00004583-199705000-00014

Watson, J.B., & Rayner, R. (1920). Conditioned emotional reactions. *Journal of Experimental Psychology, 3,* 1-14. doi:10.1037/h0069608

Wechsler, D. (2003). Wechsler Intelligence Scale for Children-Fourth Edition. San Antonio, TX: Harcourt.

Welsh, M., Parke, R.D., Widaman, K., & O'Neil, R. (2001). Linkages between children's social and academic competence: A longitudinal analysis. *Journal of School Psychology, 39*(6), 463-481. doi:10.1016/S0022-4405(01)00084-X

Whaley, S.E., Pinto, A., & Sigman, M. (1999). Characterizing interactions between anxious mothers and their children. *Journal of Consulting and Clinical Psychology, 67*(6), 826-836. doi:10.1037/0022-006X.67.6.826

Whiteside, S.P., & Brown, A.M. (2008). Exploring the utility of the Spence Children's Anxiety Scales parent- and child-report forms in a North American sample. *Journal of Anxiety Disorders, 22,* 1440-1446. doi:10.1016/j.janxdis.2008.02.006

Wilkinson, G. S., & Robertson, G.J. (2006). *Wide Range Achievement Test: Fourth Edition.* Lutz, FL: Psychological Assessment Resources.

Wilkinson, G.S. (1993). *WRAT3: Wide Range Achievement Test.* Wilmington, DA: Wide Range.

Wood, A., Kroll, L., Moore, A., & Harrington, R. (1995). Properties of the Mood and Feelings Questionnaire in adolescent psychiatric outpatients: A research note. *Journal of Child Psychology and Psychiatry, 36*(2), 327-334. doi:10.1111/j.1469-7610.1995.tb01828.x

Wood, J.J. (2006). Effect of anxiety reduction on children's school performance and social adjustment. *Developmental Psychology, 42*(2), 345-349. doi:10.1037/0012-1649.42.2.345

Wood, J.J., McLeod, B.D., Sigman, M., Hwang, W-C., & Chu, B.C. (2003). Parenting and childhood anxiety: Theory, empirical findings, and future directions. *Journal of Child Psychology and Psychiatry, 44*(1), 134-151. doi:10.1111/1469-7610.00106

Wood. J.J., & McLeod, B.D. (2008). *Child Anxiety Disorders.* New York, New York: W.W. Norton & Company.

Woodward, L.J., & Fergusson, D.M. (2001). Life course outcomes of young people with anxiety disorders in adolescence. *Journal of the American Academy of Child and Adolescent Psychiatry, 40*(9), 1086-1093. doi:10.1097/00004583-200109000-00018

Yoo, J.P., Brown, P.J., & Luthar, S.S. (2009). Children with co-occurring anxiety and externalizing disorders: Family risks and implications for competence. *American Journal of Orthopsychiatry, 79*(4), 532-540. doi:10.1037/a0017848

Zahn-Waxler, C., Shirtcliff, E.A., & Marceau, K. (2008). Disorders of childhood and adolescence: Gender and psychopathology. *Annual Review of Clinical Psychology, 4,* 275-303. doi:10.1146/annurev.clinpsy.3.022806.091358

Zettle, R.D. (2003). Acceptance and commitment therapy (ACT) vs. systematic desensitization in treatment of mathematics anxiety. *The Psychological Record, 53,* 197-215.

Zheng, X., Swanson, H.L., & Marcoulides, G.A. (2011). Working memory components as predictors of children's mathematical word problem solving. *Journal of Experimental Child Psychology, 110,* 481-498. doi:10.1016/j.jecp.2011.06.001

Tables

Table 1.1

Age and Gender of Participants

Age	Male (n = 7)	Female (n = 8)
8	4	2
9	2	0
10	1	2
11	0	2
12	0	2

Table 1.2

Age and Gender of Participants in Low and High Anxiety Groups

Age	Male	Female
Low Anxiety Group		
8	1	1
9	2	0
10	0	0
11	0	2
12	0	1
Total	3	4
High Anxiety Group		
8	3	1
9	0	0
10	1	2
11	0	0
12	0	1
Total	4	4

Table 2.1

Descriptive Statistics and Results of Paired-samples t-tests for Child-report Anxiety

	Baseline		Post-Treatment						95% CI		
Subscale	M	SD	M	SD	MD	SD	*t*(14)	*p*	LL	UL	η2
SepAnx	6.53	3.80	5.00	3.02	1.53	3.16	1.88	.08	-.22	3.28	.20
SocPho	6.20	3.43	4.93	3.35	1.27	4.91	1.00	.33	-1.45	3.98	.07
ObCom	6.53	4.27	5.20	3.86	1.33	3.68	1.40	.18	-.70	3.37	.12
PanicAgor	5.60	3.64	3.53	2.97	2.07	4.10	1.95	.07	-.20	4.34	.21
PhysInj	4.73	2.84	3.87	2.85	.87	2.10	1.60	.13	-.30	2.03	.15
GenAnx	6.27	3.22	7.13	2.67	-.87	3.54	-.95	.36	-2.83	1.10	.06
Total	35.87	15.93	29.67	11.57	6.20	17.66	1.36	.20	-3.58	15.98	.12

Note. CI = Confidence Interval; LL = lower limit, UL = upper limit; MD = mean difference; SepAnx = Separation anxiety; SocPho = Social phobia; ObCom = Obsessive-compulsive; PanicAgor = Panic/agoraphobia; PhysInj = Physical injury fears; GenAnx = Generalized anxiety; eta squared cutoff values are .01 = small effect, .06 = moderate effect, and .14 = large effect.

Table 2.2

Descriptive Statistics and Results of Paired-samples t-tests for Child-report Anxiety for Low Anxiety Group

	Baseline		Post-Treatment						95% CI		
Subscale	M	SD	M	SD	MD	SD	*t*(6)	*p*	LL	UL	η2
SepAnx	4.86	1.46	4.14	2.85	.71	3.04	.62	.56	-2.10	3.53	.06
SocPho	4.14	1.35	4.29	2.93	-.14	1.86	-.20	.85	-1.87	1.58	.01
ObCom	3.86	3.19	3.57	4.50	.29	3.20	.24	.82	-2.67	3.25	.01
PanicAgor	2.86	2.48	3.00	3.83	-.14	2.67	-.14	.89	-2.62	2.33	.00
PhysInj	3.00	2.24	3.43	2.23	-.43	1.51	-.75	.48	-1.83	.97	.09
GenAnx	4.29	2.14	6.57	2.94	-2.29	2.43	-2.49	.05*	-4.53	-.04	.51
Total	23.00	4.16	25.00	11.20	-2.00	10.85	-.49	.64	-12.03	8.03	.04

Note. CI = Confidence Interval; LL = lower limit, UL = upper limit; MD = mean difference; SepAnx = Separation anxiety; SocPho = Social phobia; ObCom = Obsessive-compulsive; PanicAgor = Panic/agoraphobia; PhysInj = Physical injury fears; GenAnx = Generalized anxiety; eta squared cutoff values are .01 = small effect, .06 = moderate effect, and .14 = large effect.

*$p < .05$.

Table 2.3

Descriptive Statistics and Results of Paired-samples t-tests for Child-report Anxiety for High Anxiety Group

	Baseline		Post-Treatment						95% CI		
Subscale	M	SD	M	SD	MD	SD	*t*(7)	*p*	LL	UL	η2
SepAnx	8.00	4.66	5.75	3.15	2.25	3.28	1.94	.09	-.50	5.00	.35
SocPho	8.00	3.74	5.50	3.78	2.50	6.44	1.10	.31	-2.88	7.88	.15
ObCom	8.88	3.80	6.63	2.72	2.25	4.03	1.58	.16	-1.12	5.62	.26
PanicAgor	8.00	2.67	4.00	2.14	4.00	4.28	2.65	.03*	.43	7.58	.50
PhysInj	6.25	2.49	4.25	3.41	2.00	1.93	2.94	.02*	.40	3.61	.55
GenAnx	8.00	3.07	7.63	2.50	.78	4.03	.26	.80	-3.00	3.75	.01
Total	47.13	13.51	33.75	10.94	13.38	19.91	1.90	.10	-3.27	30.02	.34

Note. CI = Confidence Interval; LL = lower limit, UL = upper limit; MD = mean difference; SepAnx = Separation anxiety; SocPho = Social phobia; ObCom = Obsessive-compulsive; PanicAgor = Panic/agoraphobia; PhysInj = Physical injury fears; GenAnx = Generalized anxiety; eta squared cutoff values are .01 = small effect, .06 = moderate effect, and .14 = large effect.

*$p < .05$.

Table 2.4

Descriptive Statistics and Results of Paired-samples t-tests for Parent-report Anxiety

	Baseline		Post-Treatment						95% CI		
Subscale	M	SD	M	SD	MD	SD	*t*(14)	*p*	LL	UL	η2
SepAnx	6.33	2.64	5.73	2.79	.60	2.32	1.00	.33	-.69	1.89	.07
SocPho	7.73	3.17	6.33	3.18	1.40	3.07	1.77	.10	-.30	3.10	.18
ObCom	2.27	1.91	1.67	1.23	.60	1.06	2.20	.05*	.02	1.19	.26
PanicAgor	2.60	2.47	2.53	2.07	.07	2.34	.11	.91	-1.23	1.37	.00
PhysInj	3.87	2.10	3.20	1.57	.67	2.32	1.11	.28	-.62	1.95	.08
GenAnx	6.20	2.24	5.47	2.07	.73	2.22	1.28	.22	-.50	1.96	.10
Total	29.00	10.37	24.93	8.83	4.07	9.68	1.63	.13	-1.30	9.43	.16

Note. CI = Confidence Interval; LL = lower limit, UL = upper limit; MD = mean difference; SepAnx = Separation anxiety; SocPho = Social phobia; ObCom = Obsessive-compulsive; PanicAgor = Panic/agoraphobia; PhysInj = Physical injury fears; GenAnx = Generalized anxiety; eta squared cutoff values are .01 = small effect, .06 = moderate effect, and .14 = large effect.

*$p < .05$.

Table 2.5

Descriptive Statistics and Results of Paired-samples t-tests for Parent-report Anxiety for Low Anxiety Group

	Baseline		Post-Treatment						95% CI		
Subscale	M	SD	M	SD	MD	SD	*t*(6)	*p*	LL	UL	η2
SepAnx	6.00	3.16	5.57	3.16	.43	2.37	.48	.65	-1.76	2.62	.04
SocPho	6.57	2.15	5.43	2.99	1.14	3.63	.83	.44	-2.21	4.50	.10
ObCom	2.29	1.80	1.43	1.13	.86	.90	2.52	.05*	.03	1.69	.51
PanicAgor	2.00	1.53	2.43	2.30	-.43	2.57	-.44	.68	-2.81	1.95	.03
PhysInj	3.71	2.75	3.00	1.73	.71	2.50	.76	.48	-1.60	3.02	.09
GenAnx	6.43	2.94	5.71	2.56	.71	1.98	.96	.38	-1.11	2.54	.13
Total	27.00	11.45	23.57	10.50	3.43	11.66	.78	.47	-7.36	14.21	.09

Note. CI = Confidence Interval; LL = lower limit, UL = upper limit; MD = mean difference; SepAnx = Separation anxiety; SocPho = Social phobia; ObCom = Obsessive-compulsive; PanicAgor = Panic/agoraphobia; PhysInj = Physical injury fears; GenAnx = Generalized anxiety; eta squared cutoff values are .01 = small effect, .06 = moderate effect, and .14 = large effect.

*$p < .05$.

Table 2.6

Descriptive Statistics and Results of Paired-samples t-tests for Parent-report Anxiety for High Anxiety Group

	Baseline		Post-Treatment						95% CI		
Subscale	M	SD	M	SD	MD	SD	*t*(6)	*p*	LL	UL	η2
SepAnx	6.63	2.26	5.88	2.64	.75	2.44	.87	.41	-1.29	2.79	.10
SocPho	8.75	3.69	7.13	3.31	1.63	2.72	1.69	.14	-.65	3.90	.29
ObCom	2.25	2.12	1.88	1.36	.38	1.19	.89	.40	-.62	1.37	.10
PanicAgor	3.13	3.09	2.63	2.00	.50	2.20	.64	.54	-1.34	2.34	.06
PhysInj	4.00	1.51	3.38	1.51	.63	2.33	.76	.47	-1.32	2.57	.08
GenAnx	6.00	1.60	5.25	1.67	.75	2.55	.83	.43	-1.38	2.88	.09
Total	30.75	9.77	26.13	7.61	4.63	8.38	1.56	.16	-2.38	11.63	.26

Note. CI = Confidence Interval; LL = lower limit, UL = upper limit; MD = mean difference; SepAnx = Separation anxiety; SocPho = Social phobia; ObCom = Obsessive-compulsive; PanicAgor = Panic/agoraphobia; PhysInj = Physical injury fears; GenAnx = Generalized anxiety; eta squared cutoff values are .01 = small effect, .06 = moderate effect, and .14 = large effect.

Table 2.7

Descriptive Statistics and Results of Independent-samples t-tests between Study Means and Norms for Child-report Anxiety

	Study		Norms						95% CI		
	M	SD	M	SD	MD	SED	*t*(4929)	*p*	LL	UL	η2
Baseline	35.87	15.93	27.38	16.50	8.49	4.27	1.99	.05*	0.11	16.87	.00
Post-treatment	29.67	11.57	27.38	16.50	2.29	4.26	.54	.59	-6.09	10.67	.00

Note. CI = Confidence Interval; LL = lower limit, UL = upper limit; MD = mean difference; SED = standard error of difference; eta squared cutoff values are .01 = small effect, .06 = moderate effect, and .14 = large effect.

*$p < .05$.

Table 2.8

Descriptive Statistics and Results of Independent-samples t-tests between Study Means and Anxiety-Disordered Norms for Parent-report Anxiety

	Study		Norms						95% CI		
	M	SD	M	SD	MD	SED	*t*(497)	*p*	LL	UL	η2
Baseline	29.00	10.37	31.80	14.10	-2.80	3.67	0.76	.45	-10.02	4.42	.00
Post-treatment	24.93	8.83	31.80	14.10	-6.87	3.67	1.87	.06	-14.07	.33	.01

Note. CI = Confidence Interval; LL = lower limit, UL = upper limit; MD = mean difference; SED = standard error of difference; eta squared cutoff values are .01 = small effect, .06 = moderate effect, and .14 = large effect.

Table 2.9

Descriptive Statistics and Results of Independent-samples t-tests between Study Means and Control Norms for Parent-report Anxiety

	Study		Norms						95% CI		
	M	SD	M	SD	MD	SED	*t*(274)	*p*	LL	UL	η2
Baseline	29.00	10.37	14.20	9.70	14.80	2.59	5.73	.0001***	9.71	19.89	.11
Post-treatment	24.93	8.83	14.20	9.70	10.73	2.56	4.18	.0001***	5.68	15.78	.06

Note. CI = Confidence Interval; LL = lower limit, UL = upper limit; MD = mean difference; SED = standard error of difference; eta squared cutoff values are .01 = small effect, .06 = moderate effect, and .14 = large effect.

****$p < .0001$.

Table 3.1

Pearson Correlation Matrix of Child- and Parent-report Anxiety Scores at Baseline

	Parent-report						
Child-report	SepAnx	SocPho	ObCom	PanicAgor	PhysInj	GenAnx	Total
SepAnx	.43	-.13	.49	.38	.15	.29	.34
SocPho	-.08	.31	.09	.58*	-.03	.26	.28
ObCom	.11	-.05	-.09	.08	-.21	-.17	-.07
PanicAgor	-.11	.05	-.12	.20	-.26	-.18	-.08
PhysInj	.18	.25	.09	.26	.29	-.16	.23
GenAnx	-.05	-.04	-.20	.32	-.19	.03	-.01
Total	.07	.05	.05	.38	-.09	-.02	.11

Note. SepAnx = Separation anxiety; SocPho = Social phobia; ObCom = Obsessive-compulsive; PanicAgor = Panic/agoraphobia; PhysInj = Physical injury fears; GenAnx = Generalized anxiety.

* $p < .05$.

Table 3.2

Pearson Correlation Matrix of Child- and Parent-report Anxiety Scores at Post-treatment

	Parent-report						
Child-report	SepAnx	SocPho	ObCom	PanicAgor	PhysInj	GenAnx	Total
SepAnx	-.07	-.05	-.02	.06	.06	.11	-.01
SocPho	-.14	.28	-.11	.18	.13	.41	.20
ObCom	-.49	-.30	-.36	-.36	-.11	-.48	-.52*
PanicAgor	-.14	.18	-.18	.47	-.27	.13	.09
PhysInj	.07	.01	-.14	-.01	.44	.11	.11
GenAnx	-.44	00	-.22	.36	-.14	.05	-.10
Total	-.34	.03	-.29	.15	.02	.03	-.09

Note. SepAnx = Separation anxiety; SocPho = Social phobia; ObCom = Obsessive-compulsive; PanicAgor = Panic/agoraphobia; PhysInj = Physical injury fears; GenAnx = Generalized anxiety.

* $p < .05$.

Table 4.1

Descriptive Statistics and Results of Paired-samples t-tests for Working Memory and Academic Performance Measures

	Baseline		Post-Treatment						95% CI		
Scale	M	SD	M	SD	MD	SD	*t*(14)	*p*	LL	UL	η2
WISC-IV											
DSF	8.07	1.83	8.40	1.96	-.33	1.23	-1.05	.31	-1.12	.35	.07
DSB	5.67	1.35	6.53	1.25	-.87	1.51	-2.23	.04*	-1.70	-.03	.26
DST	13.73	2.49	14.93	2.76	-1.20	2.18	-2.13	.05*	-2.41	.01	.25
WRAT-3											
Reading	35.13	4.67	36.27	6.25	-1.13	2.67	-1.65	.12	-2.61	.35	.16
Spelling	27.33	6.33	28.60	5.63	-1.27	2.12	-2.31	.04*	-2.44	-.09	.28
Arithmetic	26.53	5.98	27.07	4.68	-.53	3.72	-.56	.59	-2.59	1.53	.02
Total	89.00	15.71	91.93	15.36	-2.93	5.73	-1.98	.07	-6.10	.24	.22

Note. WISC-IV = Wechsler Intelligence Scale for Children, fourth edition; WRAT-3 = Wide Range Achievement Test 3; MD = mean difference; CI = Confidence Interval; LL = lower limit, UL = upper limit; DSF = Digit span forward; DSB = Digit span backward; DST = Digit span total; eta squared cutoff values are .01 = small effect, .06 = moderate effect, and .14 = large effect.

*$p < .05$.

Table 4.2

Descriptive Statistics and Results of Paired-samples t-tests for Working Memory and Academic Performance Measures for Low Anxiety Group

	Baseline		Post-Treatment						95% CI		
Scale	M	SD	M	SD	MD	SD	*t*(6)	*p*	LL	UL	η^2
WISC-IV											
DSF	8.43	1.62	9.00	1.62	-.57	1.27	-1.19	.28	-1.75	.61	.19
DSB	5.86	1.57	6.43	1.57	-.57	1.72	-.88	.41	-2.16	1.02	.11
DST	14.29	2.56	15.43	2.56	-1.14	2.41	-1.26	.26	-3.72	1.09	.21
WRAT-3											
Reading	36.86	5.82	39.29	7.46	-2.43	2.99	-2.15	.08	-5.20	.34	.43
Spelling	30.14	6.79	31.29	6.08	-1.14	2.34	-1.29	.24	-3.31	1.02	.22
Arithmetic	26.86	6.94	27.86	5.46	-1.00	3.11	-.85	.43	-3.88	1.88	.11
Total	93.86	18.58	98.43	17.87	-4.57	5.44	-2.22	.07	-9.61	.46	.45

Note. WISC-IV = Wechsler Intelligence Scale for Children, fourth edition; WRAT-3 = Wide Range Achievement Test 3; MD = mean difference; CI = Confidence Interval; LL = lower limit, UL = upper limit; DSF = Digit span forward; DSB = Digit span backward; DST = Digit span total; eta squared cutoff values are .01 = small effect, .06 = moderate effect, and .14 = large effect.

Table 4.3

Descriptive Statistics and Results of Paired-samples t-tests for Working Memory and Academic Performance Measures for High Anxiety Group

	Baseline		Post-Treatment						95% CI		
Scale	M	SD	M	SD	MD	SD	*t*(14)	*p*	LL	UL	η^2
WISC-IV											
DSF	7.75	2.05	7.88	2.36	-.13	1.25	-.28	.79	-1.17	.92	.01
DSB	5.50	1.20	6.63	1.06	-1.13	1.36	-2.35	.05*	-2.26	.01	.44
DST	13.25	2.49	14.50	2.98	-1.25	2.12	-1.67	.14	-3.02	.52	.28
WRAT-3											
Reading	33.63	3.02	33.63	3.66	.00	1.85	.00	1.00	-1.55	1.55	.00
Spelling	24.88	5.08	26.25	4.27	-1.38	2.07	-1.88	.10	-3.10	.35	.34
Arithmetic	26.25	5.47	26.38	4.14	-.13	4.36	-.08	.94	-3.77	3.52	.00
Total	84.75	12.38	86.25	10.91	-1.50	5.93	-.72	.50	-6.46	3.46	.07

Note. WISC-IV = Wechsler Intelligence Scale for Children, fourth edition; WRAT-3 = Wide Range Achievement Test 3; MD = mean difference; CI = Confidence Interval; LL = lower limit, UL = upper limit; DSF = Digit span forward; DSB = Digit span backward; DST = Digit span total; eta squared cutoff values are .01 = small effect, .06 = moderate effect, and .14 = large effect.

*$p < .05$.

Table 4.4

Descriptive Statistics and Results of Wilcoxon Signed Rank Tests for Academic Functioning Measure

	Baseline	Post-Treatment			
	Md	*Md*	*z*	*p*	*r*
Child-report					
Academic Functioning	4.43	4.83	-2.67	.01**	.49
School Engagement	4.50	4.80	-1.37	.17	.25
Academic Competence	4.08	4.58	-2.67	.01**	.49
Parent-report					
Academic Functioning	2.90	3.10	-1.61	.11	.29
School Engagement	2.80	3.10	-2.09	.04*	.38
Academic Competence	3.20	3.20	-.88	.38	.16

Note. Eta squared cutoff values are .1 = small effect, .3 = medium effect, and .5 = large effect.

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

Table 4.5

Descriptive Statistics and Results of Wilcoxon Signed Rank Tests for Academic Functioning Measure for Low Anxiety Group

	Baseline	Post-Treatment			
	Md	*Md*	*z*	*p*	*r*
Child-report					
Academic Functioning	3.88	4.48	-1.69	.09	.45
School Engagement	4.40	4.80	-.93	.35	.25
Academic Competence	4.08	4.67	-1.58	.12	.42
Parent-report					
Academic Functioning	2.80	3.10	-.63	.53	.17
School Engagement	2.40	2.80	-1.46	.14	.39
Academic Competence	3.20	3.40	-.71	.48	.19

Note. Eta squared cutoff values are .1 = small effect, .3 = medium effect, and .5 = large effect.

Table 4.6

Descriptive Statistics and Results of Wilcoxon Signed Rank Tests for Academic Functioning Measure for High Anxiety Group

	Baseline	Post-Treatment			
	Md	*Md*	*z*	*p*	*r*
Child-report					
Academic Functioning	4.45	4.88	-2.10	.04*	.53
School Engagement	4.60	4.55	-.99	.33	.25
Academic Competence	3.96	4.54	-2.10	.04*	.53
Parent-report					
Academic Functioning	2.93	3.05	-1.83	.07	.46
School Engagement	3.10	3.15	-1.41	.16	.35
Academic Competence	3.10	3.20	-1.73	.08	.43

Note. Eta squared cutoff values are .1 = small effect, .3 = medium effect, and .5 = large effect.

*$p < .05$.

Table 5.1

Pearson Correlation Matrix of School Functioning Scores at Baseline

	WISC-IV			WRAT-3				HBQ-C			HBQ-P		
	DSF	DSB	DST	Read	Spell	Arith	Total	AcaFun	SchEng	AcComp	AcaFun	SchEng	AcComp
WISC-IV													
DSF	–	.21	.85**	.41	.26	.37	.37	-.32	-.56*	.05	.33	-.08	.52*
DSB		–	.70**	.34	.37	.23	.34	.09	.12	.03	-.04	.01	-.06
DST			–	.48	.39	.39	.45	-.19	-.35	.05	.22	-.05	.35
WRAT-3													
Read				–	.81**	.80**	.92**	.52*	.36	.56*	.69**	.39	.67**
Spell					–	.75**	.93**	.43	.38	.37	.43	.18	.47
Arith						–	.92**	.29	.14	.38	.49	.29	.48
Total							–	.44	.32	.46	.57*	.30	.57*
HBQ-C													
AcaFun								–	.89**	.84**	.57*	.68**	.29
SchEng									–	.50	.28	.55*	-.02
AcComp										–	.74**	.64*	.57*
HBQ-P													
AcaFun											–	.74**	.86**
SchEng												–	.28
AcComp													–

Note. WISC-IV = Wechsler Intelligence Scale for Children – Fourth Edition; DSF = Digit span forward; DSB = Digit span backward; DST = Digit span total; WRAT-3 = Wide Range Achievement Test 3; Read = Reading; Spell = Spelling; Arith = Arithmetic; HBQ-C = MacArthur Health and Behaviour Questionnaire, Child-report; AcaFun = Academic functioning, SchEng = School engagement; AcComp = Academic competence; HBQ-P = MacArthur Health and Behaviour Questionnaire, Parent-report.

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

Table 5.2

Pearson Correlation Matrix of School Functioning Scores at Post-treatment

	WISC-IV			WRAT-3				HBQ-C			HBQ-P		
	DSF	DSB	DST	Read	Spell	Arith	Total	AcaFun	SchEng	AcComp	AcaFun	SchEng	AcComp
WISC-IV													
DSF	–	.46	.92**	.53*	.32	.29	.42	-.10	-.26	.16	.42	-.11	.68**
DSB		–	.78**	.64*	.62*	.57*	.66**	.19	.19	.08	.31	.10	.36
DST			–	.66**	.51	.46	.60*	.02	-.10	.15	.44	-.03	.65**
WRAT-3													
Read				–	.84**	.70**	.93**	.29	.31	.08	.40	.02	.55*
Spell					–	.82**	.96**	-.02	.16	-.22	.21	-.03	.32
Arith						–	.89**	-.14	.03	-.25	.25	-.08	.41
Total							–	.07	.19	-.12	.31	-.03	.47
HBQ-C													
AcaFun								–	.78**	.65**	.35	.56*	.07
SchEng									–	.02	-.02	.27	-.23
AcComp										–	.57*	.55*	.40
HBQ-P													
AcaFun											–	.74**	.87**
SchEng												–	.31
AcComp													–

Note. WISC-IV = Wechsler Intelligence Scale for Children – Fourth Edition; DSF = Digit span forward; DSB = Digit span backward; DST = Digit span total; WRAT-3 = Wide Range Achievement Test 3; Read = Reading; Spell = Spelling; Arith = Arithmetic; HBQ-C = MacArthur Health and Behaviour Questionnaire, Child-report; AcaFun = Academic functioning, SchEng = School engagement; AcComp = Academic competence; HBQ-P = MacArthur Health and Behaviour Questionnaire, Parent-report.
* $p < .05$. ** $p < .01$.

Table 6.1

Descriptive Statistics and Results of Wilcoxon Signed Rank Tests for Child-report Social Functioning

	Baseline	Post-Treatment			
	Md	*Md*	*z*	*p*	*r*
Peer Relations	4.82	5.29	-2.98	.00**	.54
Peer Acceptance/Rejection	4.80	5.20	-2.18	.03*	.40
Bullied by Peers	2.14	1.71	-2.32	.02*	.42
Prosocial Behaviour	5.22	5.22	-.70	.49	.13
Social Withdrawal	2.80	2.60	-1.16	.24	.21
Asocial Behaviour	1.60	1.40	-.72	.47	.13
Social Inhibition	4.00	4.00	-.43	.67	.08
Relational Victimization	2.17	2.00	-1.72	.09	.31
Relational Aggression	1.71	1.57	-.59	.55	.11
Overt Aggression	1.25	1.13	-.85	.39	.16

Note. Eta squared cutoff values are .1 = small effect, .3 = medium effect, and .5 = large effect.

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

Table 6.2

Descriptive Statistics and Results of Wilcoxon Signed Rank Tests for Child-report Social Functioning for Low Anxiety Group

	Baseline	Post-Treatment			
	Md	*Md*	*z*	*p*	*r*
Peer Relations	4.83	4.96	-1.36	.17	.36
Peer Acceptance/Rejection	5.00	5.20	-.28	.78	.07
Bullied by Peers	2.43	2.14	-1.84	.07	.49
Prosocial Behaviour	5.22	5.22	-.21	.83	.06
Social Withdrawal	2.50	2.40	-.63	.53	.17
Asocial Behaviour	1.20	2.00	-.18	.85	.05
Social Inhibition	3.60	3.00	-.43	.67	.11
Relational Victimization	2.17	2.17	.00	1.00	.00
Relational Aggression	1.43	1.57	-.53	.60	.14
Overt Aggression	1.25	1.25	-.14	.89	.04

Note. Eta squared cutoff values are .1 = small effect, .3 = medium effect, and .5 = large effect.

Table 6.3

Descriptive Statistics and Results of Wilcoxon Signed Rank Tests for Child-report Social Functioning for High Anxiety Group

	Baseline	Post-Treatment			
	Md	*Md*	*z*	*p*	*r*
Peer Relations	4.84	5.34	-2.52	.01**	.63
Peer Acceptance/Rejection	4.60	5.40	-2.54	.01**	.63
Bullied by Peers	1.93	1.36	-1.61	.11	.40
Prosocial Behaviour	5.28	5.06	-.42	.67	.11
Social Withdrawal	3.25	3.00	-.91	.36	.23
Asocial Behaviour	1.70	1.30	-.95	.34	.24
Social Inhibition	5.10	4.50	-.07	.94	.02
Relational Victimization	1.92	1.42	-2.38	.02*	.59
Relational Aggression	2.00	1.57	-.34	.75	.08
Overt Aggression	1.31	1.00	-.95	.34	.24

Note. Eta squared cutoff values are .1 = small effect, .3 = medium effect, and .5 = large effect.

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

Table 6.4

Descriptive Statistics and Results of Wilcoxon Signed Rank Tests for Parent-report Social Functioning

	Baseline	Post-Treatment			
	Md	*Md*	*z*	*p*	*r*
Peer Relations	3.30	3.70	-1.92	.06	.35
Peer Acceptance/Rejection	3.13	3.63	-1.85	.06	.34
Bullied by Peers	1.00	1.00	-.12	.91	.02
Prosocial Behaviour	1.70	1.80	-1.32	.19	.24
Social Withdrawal	.92	.67	-1.51	.13	.27
Asocial Behaviour	.33	.33	-2.13	.03*	.39
Social Inhibition	1.40	1.00	-.98	.33	.18
Relational Victimization	1.33	1.00	-.40	.69	.07
Relational Aggression	.14	.00	-2.17	.04*	.40
Overt Aggression	.00	.00	-.83	.41	.15

Note. Eta squared cutoff values are .1 = small effect, .3 = medium effect, and .5 = large effect.

*$p < .05$.

Table 6.5

Descriptive Statistics and Results of Wilcoxon Signed Rank Tests for Parent-report Social Functioning for Low Anxiety Group

	Baseline	Post-Treatment			
	Md	*Md*	*z*	*p*	*r*
Peer Relations	3.30	3.70	-2.20	.03*	.59
Peer Acceptance/Rejection	3.00	3.63	-2.04	.04*	.55
Bullied by Peers	1.40	1.20	-.28	.78	.07
Prosocial Behaviour	1.70	1.70	-.33	.74	.09
Social Withdrawal	.92	.58	-1.10	.27	.29
Asocial Behaviour	.33	.33	-1.40	.16	.37
Social Inhibition	1.20	1.00	-.74	.46	.20
Relational Victimization	1.50	1.33	-.14	.89	.04
Relational Aggression	.29	.00	-2.07	.04*	.55
Overt Aggression	.00	.00	-.27	.79	.07

Note. Eta squared cutoff values are .1 = small effect, .3 = medium effect, and .5 = large effect.

*$p < .05$.

Table 6.6

Descriptive Statistics and Results of Wilcoxon Signed Rank Tests for Parent-report Social Functioning for High Anxiety Group

	Baseline	Post-Treatment			
	Md	*Md*	*z*	*p*	*r*
Peer Relations	3.48	3.75	-.73	.46	.18
Peer Acceptance/Rejection	3.25	3.50	-.81	.42	.20
Bullied by Peers	1.00	1.00	-.37	.72	.09
Prosocial Behaviour	1.75	1.90	-1.37	.17	.34
Social Withdrawal	.93	.78	-1.05	.29	.26
Asocial Behaviour	.42	.25	-1.59	.11	.40
Social Inhibition	1.50	1.40	-.57	.57	.14
Relational Victimization	1.25	1.00	-.95	.34	.24
Relational Aggression	.07	.07	-.82	.41	.20
Overt Aggression	.00	.00	-1.41	.16	.35

Note. Eta squared cutoff values are .1 = small effect, .3 = medium effect, and .5 = large effect.

Table 7.1

Spearman Correlation Matrix of Child- and Parent-report Social Functioning Scores at Baseline

	Child-report										Parent-report									
	PR	PAR	BUL	PRO	SW	ASO	SI	RV	RA	OA	PR	PAR	BUL	PRO	SW	ASO	SI	RV	RA	OA
Child-report																				
PR	–	.81**	-.69**	.56*	-.24	-.53*	-.01	-.74**	-.19	-.64*	.38	.30	-.30	.41	-.37	-.30	-.34	-.28	-.28	-.45
PAR		–	-.20	.55*	-.48	-.68**	-.22	-.73**	-.23	-.61*	.30	.23	-.38	.37	-.65**	-.48	-.69**	-.33	-.25	-.12
BUL			–	-.14	-.18	.21	-.36	.35	.17	.22	-.19	-.07	.16	-.24	-.19	-.17	-.27	.08	.18	.51
PRO				–	-.41	-.23	-.39	-.53*	-.39	-.78**	.01	.08	.19	.41	-.25	-.29	-.21	.15	-.38	-.30
SW					–	.52*	.84**	.47	.12	.15	-.31	-.41	.12	-.24	.61*	.37	.62*	.28	-.07	.05
ASO						–	.01	.67**	.04	.24	-.20	-.13	.40	-.14	.66**	.61*	.40	.37	.12	.19
SI							–	.21	.05	.10	-.21	-.36	-.15	-.11	.33	.09	.54*	.12	-.13	-.08
RV								–	.12	.54*	-.52*	-.45	.41	-.28	.58*	.56*	.42	.52*	.43	.55*
RA									–	.43	-.02	.08	.03	-.63*	-.13	-.02	-.18	-.19	.47	.35
OA										–	-.05	-.02	-.06	-.44	.22	.28	.14	.02	.58*	.46
Parent-report																				
PR											–	.94**	-.72**	.51	-.58*	-.38	-.47	-.74**	-.28	-.53*
PAR												–	-.56*	.52	-.55*	-.38	-.45	-.58*	-.11	-.47
BUL													–	-.39	.63*	.46	.45	.83**	.28	.25
PRO														–	-.21	-.15	-.07	-.11	-.48	-.57*
SW															–	.82**	.82**	.66**	.07	.07
ASO																–	.46	.45	.03	.22
SI																	–	.54*	-.08	-.26
RV																		–	.28	.28
RA																			–	.65**
OA																				–

Note. PR = Peer relations; PAR = Peer acceptance/rejection; BUL = Bullied by peers; PRO = Prosocial behaviour; SW = Social withdrawal; ASO = Asocial behaviour; SI = Social inhibition; RV = Relational victimization; RA = Relational aggression; OA = Overt aggression.

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

Table 7.2

Spearman Correlation Matrix of Child- and Parent-report Social Functioning Scores at Post-treatment

	Child-report										Parent-report									
	PR	PAR	BUL	PRO	SW	ASO	SI	RV	RA	OA	PR	PAR	BUL	PRO	SW	ASO	SI	RV	RA	OA
Child-report																				
PR	–	.93**	-.78**	.60*	-.56*	-.75**	-.31	-.79**	-.48	-.28	.20	.40	-.08	.57*	-.38	-.42	-.15	-.55*	.02	-.42
PAR		–	-.57*	.65**	-.62*	-.74**	-.40	-.66**	-.43	-.23	.20	.42	.09	.63*	-.50	-.47	-.32	-.44	-.04	-.41
BUL			–	-.40	.22	.36	.09	.85**	.54*	.38	-.16	-.32	.20	-.24	-.01	.15	-.18	.68**	-.02	.48
PRO				–	-.48	-.34	-.42	-.48	-.67**	-.51	.17	.29	.08	.46	-.59*	-.52*	-.43	-.32	-.37	-.49
SW					–	.60*	.90**	.09	.14	-.03	-.40	-.51	.15	-.44	.76**	.57*	.64*	.30	.10	.11
ASO						–	.23	.37	.09	-.05	-.16	-.16	.14	-.60*	.36	.42	.15	.22	-.07	.11
SI							–	-.08	.13	-.08	-.29	-.43	.01	-.21	.67**	.39	.69**	.16	.09	-.01
RV								–	.56*	.39	-.28	-.42	.24	-.41	.04	.16	-.11	.64*	.02	.44
RA									–	.71**	-.30	-.39	.26	-.42	.13	.01	.03	.68**	.43	.73**
OA										–	-.16	-.21	.23	-.35	.33	.32	.12	.59*	.56*	.80**
Parent-report																				
PR											–	.91**	-.72**	.36	-.31	-.17	-.30	-.64*	-.20	-.33
PAR												–	-.51	.45	-.40	-.24	-.35	-.73**	-.18	-.46
BUL													–	-.12	.08	.09	-.03	.56*	.19	.17
PRO														–	-.38	-.24	-.26	-.49	-.29	-.45
SW															–	.82**	.84**	.19	.36	.26
ASO																–	.43	.10	.10	.24
SI																	–	.06	.34	.03
RV																		–	.45	.79**
RA																			–	.61*
OA																				–

Note. PR = Peer relations; PAR = Peer acceptance/rejection; BUL = Bullied by peers; PRO = Prosocial behaviour; SW = Social withdrawal; ASO = Asocial behaviour; SI = Social inhibition; RV = Relational victimization; RA = Relational aggression; OA = Overt aggression.

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

Table 8.1

Pearson Correlation Matrix of Anxiety and Outcome Measures at Baseline

	SCAS-C Total	SCAS-P Total
Baseline WISC-IV		
DSF	-.05	-.22
DSB	-.23	-.46
DST	-.16	-.41
Baseline WRAT-3		
Reading	-.16	-.71**
Spelling	-.34	-.65**
Arithmetic	.05	-.53*
Total	-.17	-.68**
Baseline HBQ-C		
AcaFun	-.12	-.72**
PrRel	.13	.22
Prosoc	.04	.29
SocWth	.01	.21
RelVict	-.09	-.10
RelAgg	.48	-.09
OvAgg	-.17	-.28
Baseline HBQ-P		
AcaFun	.22	-.57*
PrRel	.43	-.09
Prosoc	.07	.31
SocWth	-.17	.25
RelVict	-.43	.17
RelAgg	-.20	.03
OvAgg	-.18	-.51

Note. SCAS-C = Spence Children's Anxiety Scale, child-report; SCAS-P = Spence Children's Anxiety Scale, parent-report; HBQ-C = MacArthur Health and Behavior Questionnaire, child-report; HBQ-P = MacArthur Health and Behavior Questionnaire, parent-report; AcaFun = Academic functioning; SchEng = School engagement; AcComp = Academic competence; PrRel = Peer relations; PrAcRj = Peer acceptance/rejection; Bullied = Bullied by peers; Prosoc = Prosocial behavior; SocWth = Social withdrawal; Asoc = Asocial behavior; SocInh = Social inhibition; RelVict = Relational victimization; RelAgg = Relational aggression; OvAgg = Overt aggression.

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

Table 8.2

Pearson Correlation Matrix of Anxiety and Outcome Measures at Post-treatment

	SCAS-C Total	SCAS-P Total
Post-treatment WISC-IV		
DSF	-.27	-.45
DSB	.39	-.52*
DST	-.02	-.55*
Post-treatment WRAT-3		
Reading	.29	-.50
Spelling	.25	-.29
Arithmetic	.17	-.17
Total	.26	-.36
Post-treatment HBQ-C		
AcaFun	.55*	-.29
PrRel	.05	.26
Prosoc	.13	-.01
SocWth	-.03	-.02
RelVict	-.15	-.22
RelAgg	-.41	-.00
OvAgg	-.54*	.02
Post-treatment HBQ-P		
AcaFun	.31	-.32
PrRel	.34	.01
Prosoc	.10	.34
SocWth	-.24	.15
RelVict	-.25	-.02
RelAgg	-.22	.33
OvAgg	-.06	-.16

Note. SCAS-C = Spence Children's Anxiety Scale, child-report; SCAS-P = Spence Children's Anxiety Scale, parent-report; HBQ-C = MacArthur Health and Behavior Questionnaire, child-report; HBQ-P = MacArthur Health and Behavior Questionnaire, parent-report; AcaFun = Academic functioning; SchEng = School engagement; AcComp = Academic competence; PrRel = Peer relations; PrAcRj = Peer acceptance/rejection; Bullied = Bullied by peers; Prosoc = Prosocial behavior; SocWth = Social withdrawal; Asoc = Asocial behavior; SocInh = Social inhibition; RelVict = Relational victimization; RelAgg = Relational aggression; OvAgg = Overt aggression.

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

Appendix A

uOttawa

Is your child shy or anxious?
How does your child function in school?
Volunteers Needed for a Study on Anxiety and School Functioning

Research has shown that anxiety can lead to poor school functioning. The purpose of the study is to evaluate whether an intervention for anxiety called FRIENDS for Life improves school functioning, in addition to reducing students' anxiety. Children aged 8 to 12 years may be eligible to participate. This study will be conducted in English.

To learn more about this research, please e-mail Candice Kavanagh at uottawafriends@gmail.com

Anxiety and School Performance Study - Contact: Candice Kavanagh at uottawafriends@gmail.com

uOttawa

Votre enfant est timide ou anxieux? Comment fonctionne votre enfant à l'école?

Bénévoles recherchés pour une étude sur l'anxiété et le fonctionnement scolaire.

La recherche démontre que l'anxiété peut contribuer d'une façon négative au fonctionnement scolaire des enfants. Cette étude cherche à évaluer si le programme d'anxiété appelé « FRIENDS For Life » améliore le fonctionnement des enfants à l'école, en plus de réduire l'anxiété des élèves. Les enfants âgés de 8 à 12 ans peuvent être admissibles à participer.

Cette étude s'effectuera en anglais seulement.

Pour en savoir plus, s'il vous plaît communiquer par courriel avec Candice Kavanagh à l'adresse suivante : uottawafriends@gmail.com

Étude sur l'anxiété et le fonctionnement scolaire - uottawafriends@gmail.com

Étude sur l'anxiété et le fonctionnement scolaire - uottawafriends@gmail.com
Étude sur l'anxiété et le fonctionnement scolaire - uottawafriends@gmail.com
Étude sur l'anxiété et le fonctionnement scolaire - uottawafriends@gmail.com
Étude sur l'anxiété et le fonctionnement scolaire - uottawafriends@gmail.com
Étude sur l'anxiété et le fonctionnement scolaire - uottawafriends@gmail.com
Étude sur l'anxiété et le fonctionnement scolaire - uottawafriends@gmail.com
Étude sur l'anxiété et le fonctionnement scolaire - uottawafriends@gmail.com
Étude sur l'anxiété et le fonctionnement scolaire - uottawafriends@gmail.com
Étude sur l'anxiété et le fonctionnement scolaire - uottawafriends@gmail.com

Appendix B

uOttawa

Information and Consent to Participate in a Research Study (Parents)

Study Title: Effects of the FRIENDS for Life program on school functioning.

Investigators: Candice Kavanagh, OCT, M.A. Candidate, and Dr. Diana Koszycki

Your child is being invited to take part in a research study being conducted for a Master's thesis. Your permission as a parent or legal guardian and the agreement of your child will be required for him/her to participate in this study. The following information will describe what the study is about and what your child's and your participation will involve. Please read it carefully and feel free to ask anything you like about the study.

The purpose of the study:

The purpose of the study is to evaluate whether an intervention for anxiety called FRIENDS for Life improves school functioning, in addition to reducing students' anxiety. Children with symptoms of anxiety will participate in the FRIENDS for Life program, a group-based cognitive-behavioural program that promotes resiliency in anxious children through social-emotional learning. We will assess whether your child's anxiety decreases at the end of the program, and if their school functioning improves as well. Their scores will also be compared to the scores of children with low levels of anxiety to see if they are similar at the end of the intervention.

Things that will happen during the study:

Before your child participates in the study a researcher will interview you and your child to see if he/she is suitable for the study. Your child will be asked to fill out a questionnaire about depression. Based on the results from the telephone pre-screening and the questionnaire, you will be informed if your child is suitable for the study. If your child's scores are within the range of scores we are looking for, he or she will be invited to participate in the study. Anxious children will participate in the FRIENDS for Life group while non-anxious children will only be asked to fill out questionnaires.

If your child participates in the FRIENDS for Life group, he/she will attend six weekly sessions during which he/she will participate in large and small group work, workbook exercises, role-playing, games, and quizzes designed to promote resilience and prevent anxiety in children. These sessions will

be held on Saturday mornings and/or afternoons at the University of Ottawa. Most sessions will be two hours in length and include two breaks (so that children may use the washroom and have snacks).

If your child is participating in the group, you will be asked to provide a copy of your child's most recent report card to the first session of the program. This session will be three hours in length (rather than the usual 2 hours) so that we have time to fill out questionnaires before beginning the program. You will also be asked to fill out questionnaires about your child's anxiety, and social and school functioning. Your child will complete the child versions of the same questionnaires and complete a test that measures working memory/achievement. At the end of the program your child will be asked to fill out the anxiety, social and school functioning, and working memory/achievement questionnaires a second time. The last meeting will take about three hours to give the children time to fill out the questionnaires. You will be asked to fill out the anxiety, and social and school functioning questionnaires again at this session as well. You will also be asked to give the researcher a copy of your child's next report card.

A parent information session will be offered to provide parents with an overview of what the children are learning in the program.

Please note: These sessions will be audio recorded and heard by Dr. Koszycki so that she can ensure the facilitator is following the FRIENDS for Life program correctly.

If your child is not participating in the FRIENDS for Life program he/she will only be asked to fill out questionnaires. Your child will complete the anxiety, social and school functioning, and working memory/achievement questionnaires at the beginning of the study, and again approximately six weeks later.

Risks and benefits of the study:

None of the activities or questionnaires are dangerous. Some questions might be difficult to answer.

For children in the FRIENDS for Life program: Some children participating in the intervention might feel nervous during the activities, however, if they feel very nervous and uncomfortable and want to stop at any time, they may. Many children all over the world have participated in this program without any problems. Children who participate in the program often show an improvement in resilience and self-esteem, as well as a decrease in levels of anxiety. Apart from these effects, the receipt of a workbook will be the only other direct benefit to your family. However, we hope that studies like this one will help researchers gain evidence to show that this program improves school functioning, in addition to reducing students' anxiety.

Compensation for children all children participating in the study: Your child will receive $10 for completing some or all of the questionnaires at this screen visit. If your child is eligible to participate in the study, they will also receive $10 for completing questionnaires at the end of the study.

Confidentiality:

All the information we receive from you and your child will be kept confidential. Your child's name will not appear on any reports. Only members of our research team will have access to the information obtained during the study. He/she will be identified only by a coded number. **If your child participates**

in the FRIENDS for Life group, confidentiality cannot be maintained amongst group participants. Children will be referred to only by their first names. During the first session of the group, there will be instruction and discussion about confidentiality. Children will be informed that they may share their own thoughts and feelings with others (e.g. parents) but they may not disclose what others have shared during the group.

There are two exceptions for which the law says we must share information with others, even if you or your child do not agree. The exceptions are (1) if your child tells us that he/she is in danger of hurting himself/herself or somebody else, and (2) if your child tells us about any possible child abuse.

Data Collected

All information you provide is considered completely confidential. Your name will not be included or in any other way associated with the data collected in this study. The data, with identifying information removed, will be kept for a period of 5 years following completion of the research, after which it will be shredded. The data will be securely stored in the locked office of Candice Kavanagh.

Voluntary participation/right to withdraw:

Participation in this study is voluntary. Your child may refuse to participate or discontinue his/her participation in the study at any time. You may also decide to withdraw your own consent at any time.

Questions?

If you have any questions about this study you can call Candice Kavanagh or Dr. Diana Koszycki. If you have questions about your or your child's role as a research participant you may contact a Protocol Officer for Ethics in Research at the University of Ottawa.

If you have any questions regarding the ethical conduct of this study, you may contact the

Protocol Officer for Ethics in Research,
University of Ottawa, Tabaret Hall
550 Cumberland Street, Room 154, Ottawa, ON, K1N 6N5
Tel: (613) 562-5387
Email: ethics@uottawa.ca

Thank you for your interest in our research and for your assistance with this project.

CONSENT

NAME OF PARTICIPANT: _____

DATE OF BIRTH: _____

I have read all the information provided above. I voluntarily agree to allow my child to participate in this study. I am aware that my child or I may withdraw our consent at any time. I have received a copy of this signed form.

Parent or legal guardian:

Signature: _____

Date: _____

Name (print): _____

Person obtaining consent:

Signature: _____

Date: _____

Name (print): _____

Appendix C

uOttawa

Information and Assent to Participate in a Research Study

Study Title: Effects of the FRIENDS for Life program on school functioning.

Investigators: Candice Kavanagh, OCT, M.A. Candidate, and Dr. Diana Koszycki

We are asking you and other children to take part in a research study being conducted for a Master's thesis. This paper tells you about our research study. We want you to ask the researchers or your parents any questions that you have.

Why are we doing this study?

We want to learn how children's feelings affect how they do in school. We want to learn about the feelings you have and what school is like for you.

What will happen to me during the study?

If you decide to be in the study this is what will happen:

1. You would come for a visit at the University with your parent and we would have you fill out a questionnaire. This is how we find out if the study is a good fit for you. This part would last about 10 minutes. After this part, the researcher would tell you if it is still OK for you to be in the study.
2. If you were asked to join the study, you would complete some more questionnaires. This would take about one hour. Your parent would fill out some questionnaires at the same time as you. The children joining the study will be put into two groups.
3. Some children who join the study will participate in a group program with other children. We will meet at the University of Ottawa on Saturdays for six weeks. When we meet we will participate in activities that will help us learn about our feelings. These meetings will usually last about two hours and include two breaks. These sessions will be tape recorded so that the psychologist can make sure the group leader is teaching the program correctly. After the group program is over, we will meet one more time at the university or your home so that you can fill out the questionnaires one last time.
4. Some children who join the study will not participate in the group program. Instead, you will fill out some questionnaires at the beginning of the study and again six weeks later.

Compensation

You will receive $10 for completing some the questionnaires at this visit today. If you are asked to join the study, you will also receive $10 for completing questionnaires at the end of the study.

Will the study hurt?

None of the activities or questionnaires are dangerous. Some questions might be hard to answer. Sometimes you might feel nervous participating in the activities. If you feel very nervous and uncomfortable and want to stop at any time, that is OK.

Who will know I did the study?

The only people who will know you did the study are you, your parent, and the research staff. If you are in the group program, the other children that are there will know you are participating just like they are. We will only need to tell each other our first names when we are in the group. During the first session of the group, we will talk about the rules for sharing. You may share your own thoughts and feelings with others (like your parents) but you may not talk about what other children have shared during the group.

Normally we will not tell anyone else that you were in the study, but there are two exceptions to this rule. The law says we must share information with others, even if you do not want us to if (1) you tell us that you are in danger of hurting yourself or somebody else; or (2) if you tell us about any possible child abuse.

Do I have to be in the study?

You do not have to be in the study. You get to decide if you want to be in the study. You can say no or yes, and whatever you decide is OK. We will also ask your parents if they would like you to be in the study. Even if your parents want you to be in the study you can still say no. If you say yes, you can always say no later if you change your mind. No one will be upset if you say no. It is up to you.

Questions?

If you have any questions about this study you can call Candice Kavanagh or Dr. Diana Koszycki. If you have questions about what you do as a research participant you may call or write to a Protocol Officer for Ethics in Research at the University of Ottawa.

Protocol Officer for Ethics in Research,
University of Ottawa, Tabaret Hall
550 Cumberland Street, Room 154, Ottawa, ON, K1N 6N5
Tel: (613) 562-5387
Email: ethics@uottawa.ca

Thank you for your interest in this study and for your help.

ASSENT

NAME OF PARTICIPANT: _____

DATE OF BIRTH: _____

I have read this assent form. I was allowed to ask questions about joining this study. My questions have been answered and I now understand and know what I wanted to know. I understand that I am participating in this study on my own free will and that I can quit the study at any time. I have a copy of this signed form.

Signature: _____

Date: _____

Person obtaining assent:

Signature: _____

Date: _____

Name (print): _____

Appendix D

Shyness/Behavioural Inhibition

Does your child withdraw or feel uncomfortable when exposed to unfamiliar or new situations?	
Would you describe your child as shy, timid, or fearful?	

Social Anxiety

Does your child fear at least one social situation, such as recess, group activities such as birthday parties, or performance situations such as reading aloud in class?	
Does your child fear and avoid social interactions with schoolmates?	

Separation Anxiety

Does your child feel anxious when he/she is separated from you?	
Does your child refuse to go to school, camp, or a sleepover, and demand that someone stay with him/her at bedtime?	
Does your child worry that something bad will happen when he/she is apart from you?	
Is your child afraid to sleep alone or go to sleepovers?	

Worry

Does your child worry too much about a variety of things, such as grades, family issues, relationships with peers, and performance in sports?	
Does your child frequently complain of physical symptoms of anxiety, such as stomachaches, headaches, insomnia, blushing, or and elevated heart rate?	

Phobias

Is your child fearful of specific situations or objects, such as certain kinds of animals, heights, the dark, enclosed places, water, monsters, etc.?	

Obsessions/Compulsions

Does your child have to keep checking that he/she has done something “right”? (like the switch is off or the door is locked)	
Do bad or silly thoughts or pictures in your child’s head bother him/her?	
Does your child have to think certain thoughts or do certain things in just the right way to stop bad things from happening?	

Other Questions

Has someone told you that your child is anxious, like his/her teacher, a family member or friend, his/her doctor, or another person?	
Do you feel your child’s anxiety affects his/her functioning at school, at home, or relationships with peers and family members?	