UNIVERSITY OF SOUTHAMPTON

FACULTY OF SOCIAL AND HUMAN SCIENCES

Investigating the effectiveness of universally implemented interventions to reduce anxiety and promote resilience in childhood

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ABSTRACT

FACULTY OF SOCIAL AND HUMAN SCIENCES
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'INVESTIGATING THE EFFECTIVNESS OF UNIVERSALLY IMPLEMENTED INTERVENTIONS TO REDUCE ANXIETY AND PROMOTE RESILIENCE IN CHILDHOOD'

by Sophie Louise Adams

Theoretical perspectives on risk and resilience are important in understanding anxiety in children and adolescents, and the development of intervention approaches. A systematic review of the literature was conducted using a manual search and electronic databases PsychInfo, Medline, Embase and Web of Science. Key research studies evaluated universal school-based interventions aimed at reducing anxiety and depression, including those with active, passive or no control groups, and with participants aged 3 – 17 years old. The results indicated that universal interventions, delivered by teachers or mental health professionals, can be effective in reducing anxiety, with a small mean effect size (d = 0.23). Most programmes were brief (i.e., 8 - 10 weeks) and targeted children > 9 years old. Implications for future research include the inclusion of younger populations, multiple informants for outcome measures, and a theory based approach to understanding the factors associated with positive change.

The empirical study explored the impact of a universal cognitive behavioural programme for young children in reducing anxiety (and associated behaviours), improving attention and peer relationships. The study also looked at whether attentional control (AC) was important in understanding change. Sixty children (aged 4 – 5 years) attending a mainstream school received the 12-week intervention. Children completed a computer task to assess AC and completed a sociometric status measure before and after the intervention. Teachers completed measures to assess children's anxiety and peer relationships. The results showed that anxiety reduced (p <.05), and peer problems and pro-social behaviour improved (p < .001) following the intervention. AC also improved (p <.05), and this change was associated with an increased number of reciprocal friendships. The findings add to the literature on the effectiveness of universal interventions in reducing internalising difficulties, and offer some insight into the factors involved in understanding positive outcomes.

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Declaration of Authorship

I, SOPHIE LOUISE ADAMS, declare that the thesis entitled

'Investigating the effectiveness of universally implemented interventions to reduce anxiety and promote resilience in childhood'

and the work presented in the thesis are both my own, and have been generated by me as the result of my own original research. I confirm that:

- this work was done wholly or mainly while in candidature for a research degree at this University;
- where any part of this thesis has previously been submitted for a degree or any other qualification at this University or any other institution, this has been clearly stated;
- where I have consulted the published work of others, this is always clearly attributed;
- where I have quoted from the work of others, the source is always given. With the exception of such quotations, this thesis is entirely my own work;
- I have acknowledged all main sources of help;
- where the thesis is based on work done by myself jointly with others, I have made clear exactly what was done by others and what I have contributed myself;
- none of this work has been published before submission.

Signed: ……..

Date:…….

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Abbreviations

α = Cronbach's Alpha

AC = Attentional Control

ANOVA = Analysis of Variance

ANT = Attention Network Task

BI = Behavioural Inhibition

BIQ = Behavioural Inhibition Questionnaire

CBT = Cognitive Behavioural Therapy

d = Cohen's measure of sample effect size

EC = Effortful control

F = *F* distribution, Fisher's *F* ratio

M = Mean

Mdn = Median

n = Number of participants

NA = Negative affect

p = Probability

r = Estimate of the Pearson product-moment correlation coefficient

RT = Response time

SD = Standard Deviation

SDQ = Strengths and Difficulties Questionnaire

t = Student's t distribution (computed value of t-test)

T1 = Time 1

T2 = Time 2

z = A standardized score

ε = Measure of strength of relationship in analysis of variance

V = Pillai-Bartlett multivariate trace criterion

X^2 = The chi-square distribution

Chapter 1: Can school based universally implemented interventions reduce anxiety and promote resilience in childhood and adolescence?

A national survey of the mental health of children and young people in Great Britain revealed that one in ten children aged between 5 and 16 had a mental health disorder, with around 4% being clinically diagnosed with an emotional disorder characterised as anxiety or depression (Green, McGinnity, Meltzer, Ford & Goodman, 2005). Some studies suggest that children as young as 3 years old can display signs of clinical anxiety (Dadds & Roth, 2008). Furthermore, some researchers have argued that cases can go undiagnosed due to the internalising nature of symptoms, which can be easily overlooked (Tomb & Hunter, 2004; Barrett & Pahl, 2006). Anxiety disorders can take on a chronic life course (Costello, Egger, & Angold, 2005), and are associated with a range of negative outcomes, including an increased risk of developing depression, academic underachievement, difficulties with relationships, unemployment (Farrell & Barrett, 2007), school absenteeism (Wood et al., 2012), and substance abuse (Goodwin et al., 2002). Such difficulties place a large financial burden on society, for example, in terms of welfare assistance, lower productivity, and pressure on mental health services to deliver costly treatments (Donovan & Spence, 2000).

Within developmental psychopathology, the study of anxiety is conceptualised in a risk and resilience framework. A risk factor is defined as any condition or circumstance (environmental or genetic) that places an individual at increased risk of developing a psychopathology (Jenson & Fraser, 2006). Resilience refers to the ability to achieve positive psychological adaptation despite experiencing significant adversity (Masten & Powell, 2003). Resiliency is sometimes defined in terms of protective factors that mitigate the impact of risk factors, and foster positive psychological adjustment. Key theoretical frameworks emphasise risk and protective factors that interact over time and over multiple contexts to predict developmental outcome (e.g., Luthar, Cicchetti & Becker, 2000). In particular, three broad levels have been identified from early research (e.g., Garmezy, 1985; Werner & Smith, 1992) as exerting protective mechanisms for children at risk, including child, family, and community factors.

Child factors include internal characteristics such as agreeable personality and temperament traits, positive self-concept, high self-efficacy, good coping skills, intelligence and related cognitive abilities including attention and interpersonal problem solving skills (e.g., Cowen, Wyman, Work & Parker, 1990; Werner, 1990; Luthar, 1991). At the family level, resilience is most consistently associated with secure early

attachments with caregivers and positive parent-child interactions characterised by sensitive or responsive parenting including affection and boundary setting (Luthar & Zelazo, 2003). Within the wider community, including school and the surrounding neighbourhood, positive relationships with peers and supportive adults have been highlighted as protective factors that impact directly on the child (e.g., Masten, 2007; Wolkow & Ferguson, 2001). For example, opportunities to interact with pro-social peers have been found to increase positive emotionality and decrease negative emotionality in preschool interactions (Fabes, Hanish, Martin, Ross & Reesing, 2012). Conversely, there is some evidence that social withdrawal and anxiety can lead to peer rejection, which also serves to reinforce anxiety (Verduin & Kendal, 2008). A further distinction is made between proximal and distal systems in relation to the child's environment (Luthar et al., 2000). Proximal factors consist of those that impact directly on the child, and include home, school, and peer systems. Distal factors are conceptualised as those that impact indirectly on the child such as socio-economic status, the media, and culture. For example, children from families with low socio-economic status are more likely to be exposed to family stress associated with unstable employment and strains on resources (distal factors), which have been found to lead to increased feelings of anger and depression (proximal factors) (Bradley & Corwyn, 2002).

Theoretical frameworks and empirical research suggest that some risk factors are related to anxiety in general, while others are related to specific types of anxiety disorders (Donovan & Spence, 2000). For example, some evidence suggests that gender is a specific risk factor for social phobia, which places females at increased risk (e.g., Essau, Contradt & Petermann, 1999). Other risk factors, for example, negative emotionality, are not specific to anxiety and are relevant to a range of mental health outcomes (Shaw, Keenan, Vondra, Delliquadri & Giovannelli, 1997). This notion is defined as multifinality, which states that the same risk may have differential developmental outcomes depending on the particular environmental and individual factors that are present. In contrast, equifinality refers to the notion that there can be multiple pathways to a disorder, with different combinations of risk factors leading to the same outcome (Greenberg, 2006). For example, the development of social anxiety has been found to stem from a range of temperamental, parental, and cognitive risk factors (Ollendick & Hirshfeld-Becker, 2002).

The extent to which a risk factor influences development can also vary depending on its timing (e.g., stage of a child's development), and its relationship or interaction with other individual or contextual risk factors. For example, evidence consistently links the temperament trait behavioural inhibition (BI) in early childhood as a risk factor for the

development of anxiety (e.g., Pahl, Barrett & Gullo, 2012). However, it has been suggested that BI is less likely to lead to anxiety if the child has good self-regulatory skills, such as the ability to control emotional and behavioural reactions. This may be developed in part by exposure to responsive care giving, for example, mothers who teach their children adaptive regulatory skills (Degnan & Fox, 2007*).*

In order to identify developmental pathways to anxiety, recent studies have begun to utilise longitudinal designs, aiming to understand the development and stability of anxiety, as well as potential factors that place individuals at increased risk. For example, Mian, Wainwright, Briggs-Gowan and Carter (2011) examined the interactive effects of known risk factors for anxiety at the child level (behavioural inhibition and negative emotionality), maternal level (maternal anxiety), and family/community level (socio-demographic factors and violence exposure). In support of ecological theories, maternal and community level factors were significantly associated with child symptoms and temperament in early childhood, with these child risk factors moderating contextual risks. Further, child symptoms and temperament were the strongest predictors of anxiety at school age, indicating that child variables may be particularly important risk factors for the development of anxiety.

In another longitudinal study, Duchesne, Larose, Vitaro and Tremblay (2010) examined the trajectories of anxiety in children from the age of 6 to 12 years old. The outcomes indicated key behavioural characteristics that predicted an anxious trajectory, including inattention, hyperactivity, and low pro-social behaviour towards peers. In addition, the likelihood of hyperactive children being in a high risk group for developing anxiety was greater for those whose mothers showed little affective warmth. This finding highlights the interactive nature of child and environmental factors (i.e., parent variables), which combine to predict developmental pathways. Such findings are important in planning interventions that target both parental and child factors.

Consistent with the risk and resilience framework, models of anxiety development in childhood typically integrate biological, psychological, social and cultural factors to understand how such processes interact to contribute to, or protect against, the development of an anxiety disorder (Spence & Donovan, 2000). Vasey and Dadds (2001) transactional model, for example, integrated the aetiology of anxiety into four key elements; predisposing factors; pathways of onset; maintaining influences; and ameliorating influences. Factors considered to predispose a person to anxiety consist of biological (genetic and temperamental risk), family (insecure attachment), and individual

(cognitive biases and emotion regulation deficit) factors. The two major pathways to onset are either through cumulative risk, whereby the effects of a number of predisposing risks increase over time, or due to the effects of a specific, traumatic event (e.g., loss or bereavement). The five key maintaining factors in this model are avoidance, limited social and/or academic competence, cognitive biases (i.e., tendency to perceive ambiguous situations as threatening), negative experiences, and overprotective parental responses. Finally, awareness of these factors enables the identification of ameliorative efforts that may be targeted through prevention and intervention strategies.

Implications for Prevention

Prevention intervention occurs prior to the onset of a clinical disorder, and aims to reduce the occurrence of new cases of that disorder by preventing entry to, or progression along, the pathway from mild symptoms to severe disorder (Spence, 2001). The Institute of Medicine (1994) defined three types of preventive intervention: universal, selective, and indicated.

Some researchers have argued that all children can benefit from the skills taught in interventions to promote positive mental health and wellbeing (e.g., Wells, Barlow & Stewart Brown, 2003; Durlak, Weissberg, Dymnicki, Taylor & Schellinger, 2011). This argument has led to an increase in the use of universal interventions, which are delivered to all children regardless of individual risk, with the aim of increasing resilience. In comparison, selective prevention programmes target children and adolescents who are not yet showing symptoms, but are considered to be at risk of developing psychopathology because they are exposed to factors known to place them at increased risk. This approach aims to reduce vulnerability factors, whilst also promoting protective factors (Greenberg et al., 2003). Support for such targeted intervention comes from studies demonstrating that the effects of mental health and resilience interventions are greater for those from poor, urban environments than for those from middle class backgrounds (Luthar & Cicchetti, 2000). This suggests that those most at risk benefit the most. Conversely, indicated interventions are delivered to those who are already showing symptoms of a disorder. With respect to anxiety, individuals who are identified for inclusion in these interventions are often required to score above a threshold level on measures of anxiety symptoms (Lau & Rapee, 2011).

Universally implemented interventions are appealing due to the non-stigmatising nature, and ability to reach a wide range of children and adolescents with differing levels of risk for psychopathology, who may not otherwise access support from a mental health

professional, or who may be missed due to difficulties related to screening and attrition (Farrell & Barrett, 2007). Given evidence which suggests that many risk and protective factors may be applicable to a broad range of disorders, universal prevention programmes have the potential to impact on multiple difficulties (Greenberg, Domitrovich, & Bumbarger, 2001). Some researchers have suggested that universal interventions may be particularly suited to anxiety prevention. Unlike other disorders, it is argued that a certain level of anxiety is a normative response to life stressors, and thus all children are likely to benefit from learning skills to manage anxiety (Fisak, Richard & Mann, 2011).

The need for prevention programmes is increasingly recognised given the early onset, prevalence, and costly impact of anxiety disorders to society. Unlike treatment, which frequently occurs in clinical settings, the majority of prevention interventions have been carried out in school settings. Schools have been identified as important contexts for the delivery of mental health prevention programmes to children and young people. The school setting offers access to large numbers of children and young people who might not otherwise receive interventions (Neil & Christensen, 2009). Given the amount of time that children spend at school, it is one of the most proximal influences within their environment (Mychailyszyn, Brodman, Read & Kendall, 2012), and therefore has the potential to impact significantly on the development of resilience. In addition, many of the difficulties that children and adolescents' encounter, occur within the school context, and developing adaptive skills within this context may provide greater opportunities for generalisation and mastery of key skills for effective development (Mychailyszy et al).

Several recent reviews have been conducted to investigate the impact of prevention programmes on anxiety (e.g., Mychailyszy et al., 2012; Fisak et al., 2011; Teubert & Pinquart, 2011; Nehmy, 2010; Neil & Christensen, 2009; Neil & Christensen, 2007). In the majority of these reviews, both anxiety, and depression prevention programmes are included due to their overlapping symptoms and co-morbidity (Kendall & Watson, 1989). Specifically, evidence indicates that anxiety often precedes the development of depression (e.g., Schneier, 2007), and therefore reducing the incidence of anxiety should also have preventative implications for depression. When compared to selective and indicated programmes, universal interventions are frequently found to have small effect sizes (e.g., Mychailyszy et al). However, in a meta-analysis of anxiety prevention programmes, Fisak et al reported no significant differences between universal and more targeted programmes, suggesting that effect sizes for universal interventions may be larger for anxiety, than for other types of disorder.

Preventive interventions vary in the age at which they are delivered, and given evidence that risk factors can have a differential impact at different ages, some types may be more effective at particular ages (Spence & Donovan, 2000). For example, it is argued that parental warmth and attachment are particularly critical during the first few years of life, and thus prevention efforts should be targeted towards parenting style in a child's early years (e.g., Dadds & Roth, 2008). Such interventions can have an indirect impact on the child by positively changing their environment. Interventions also vary in the extent to which they focus on reducing the onset of a specific disorder or whether they target resilience more broadly, for example, to increase social and emotional competence. Furthermore, the extent to which programmes focus on developing child resilience, versus parental or other factors (e.g., community initiatives) varies. At the child level, the majority of prevention programmes for anxiety and depression aim to teach children and adolescents adaptive cognitive and behavioural skills, such as problem solving and coping strategies (e.g., Barrett & Turner 2001; Lock & Barrett, 2003). These are proposed to reduce the likelihood that a young person will develop psychopathology, such as anxiety or depression (Spence & Shortt, 2007). Consistent with eco-systemic theories, it is generally acknowledged that comprehensive programmes targeting both child factors and wider environmental factors, including working with parents, have the greatest impact (Greenberg et al., 2001).

Another factor that may influence effectiveness is whether programmes are delivered by school personnel or by psychologists. Evidence regarding the impact of teacher implemented versus psychologist led programmes is mixed. A systematic review by Franklin, Kim, Ryan, Kelly & Montgomery (2012) found no differences between teacher-implemented or other personnel on the impact of school mental health interventions. Some evidence indicates that effects are lower for teacher-implemented anxiety prevention programmes, compared to those delivered by psychologists or other mental health professionals (Neil & Christensen, 2009). However, a similar review by Mychailyszy et al (2012) found no significant differences between teacher and other personnel led anxiety prevention interventions.

The key processes that lead to reductions in anxiety are not well understood (Felder, Zvolensky & Schmidt, 2004). Assessing additional factors that can potentially moderate (e.g., gender, age, or duration of intervention) or mediate outcomes (e.g., temperament or attention skills) is therefore an important goal in prevention research. Neil and Christensen (2009) focused specifically on anxiety programmes delivered in the school setting; however they reported only the effectiveness of programmes to reduce

anxiety. Further, to the author's knowledge, no systematic review has been carried out solely on universally implemented anxiety prevention programmes. Despite the appeal and justification for preventative interventions, there has been limited investigation into the quality of research studies which aim to evaluate the impact of prevention programmes.

Aims of Current Review

The aim of the current paper was to provide a systematic review of the effectiveness of school based, universally implemented interventions to prevent and reduce the development of anxiety. Given the costs of implementing interventions, and the need to effectively address anxiety issues, this review will be important in providing a critical overview of the current evidence base. Few previous reviews have considered the efficacy of study designs, and the extent to which widespread dissemination to school settings is supported is unclear. Unlike previous reviews, the current paper also includes studies of universal interventions conducted directly with preschoolers in pre-school settings. The direct impact on children within this age group is less well known, with studies of children of this age more frequently targeting parents. However, theoretically, developmentally tailored programmes which target young children may be an ideal stage for prevention efforts (Rapee, Kennedy, Edwards, Ingram & Sweeney, 2005). The current review further aims to explore the impact of prevention programmes on broader outcomes associated with psychopathology and resilience, as well as moderating and mediating factors that may be linked to changes in outcomes. A clearer understanding of the mechanisms that lead to change is needed to enhance prevention efforts to reduce anxiety in children and young people.

Method

Data Sources and Search Strategy

Searches were conducted in four electronic databases: PsychInfo (via Ebsco: 1983-2013), Medline (via Ebsco; 1979 – 2012); Embase (via Ovid; 1980-2012) and Web of Science (1970-2012) between October 2012 and December 2012. The search terms used were: “school” OR “school-based”; “universal intervention” OR “prevention” OR “early intervention” OR “program”; “anxiety” OR “worry” OR “internalizing difficulties OR “psychopathology”; “mental health” OR “resilience” OR “social and emotional”; “childhood” OR “children” OR “adolescence”. Different combinations of the search terms were explored using AND. The search terms included related keywords generated in the thesaurus from each database. Further records were identified by conducting a manual search of the reference lists from the publications that were eligible for inclusion in the review. An initial list of 905 records was retrieved though the search engines. Titles and abstracts were scanned for relevance in accordance with the pre-defined inclusion and exclusion criteria, leading to the exclusion of 868. Full text was retrieved for 51 publications, and of these, 33 were deemed to meet criteria for inclusion in the current literature review. Three of these publications were follow-up papers to other included studies. A flow diagram of the search process is shown in figure A. The excluded studies, and reasons are provided in appendix B.

Inclusion and Exclusion Criteria

Participants. Studies were included if participants were < 18 years old. Studies were selected where all participants in a group had been recruited regardless of individual risk status. Studies were excluded if participants were targeted on the basis of displaying symptoms of anxiety.

Study design. Randomised controlled trials (RCTs; placebo, active or waitlist control), quasi-experimental designs, crossover designs, open trials, pilot studies and feasibility studies were eligible for inclusion. Studies were included regardless of whether they included an active control, passive (waitlist control or no intervention) or no control group.

Type of intervention and context. The intervention was eligible for inclusion if it was implemented universally (i.e., to all children regardless of risk), and if it was delivered in the school setting, including pre-school. Therefore, interventions conducted in a clinical

or any other setting were excluded. Interventions were included if they targeted functions and skills related to the prevention of anxiety. This included, but was not limited to, Cognitive Behavioural Therapy. Interventions carried out in any country were included.

Outcome variables and analysis. Studies were eligible for inclusion if they measured internalising psychopathology (anxiety and depression) as a primary or secondary outcome. Additional variables associated with building resilience (e.g., measures of social skills) were also reported where they were available. Studies were excluded if there were no reported outcome variables related to anxiety. Studies were also excluded if there was no evidence of a group-based statistical analysis. Studies were eligible for inclusion if they contained a between group (intervention vs. control) and/or within group (pre vs. post intervention) analysis of the main outcome variables.

Publication requirements. Empirical studies were only eligible for inclusion in the review if they were written in English and published in an academic or professional journal. Therefore, unpublished work including dissertations and studies reported in books, abstracts, conference proceedings and review articles were excluded.

Data Extraction and Quality Assessment

The data extracted from the final set of studies included a description of the key elements of the study (sample, design, intervention, and outcome measures) to allow for a quality and relevance appraisal of the assessments included in the study, and the key results in relation to the study design (see table C1; Appendix C). Studies are organised by intervention group, and presented in chronologically descending order within these groups. The focus was primarily on group differences (i.e., analyses of group means). Where available, the impact on clinical or diagnostic status was also reported. Due to the large variation in sample sizes, it was considered appropriate to calculate effect sizes. The present study used the standardised mean difference (SMD) to calculate the size of the intervention effect on anxiety reduction in each study. This was achieved by subtracting the mean of the control group from the mean of the intervention group, divided by the pooled standard deviation. In addition, effect sizes for high risk sub-groups were calculated. In the three studies that did not have a control group, the correlation between the two means (pre and post) was also calculated, correcting for dependence between means and enabling direct comparison with between group effect sizes (Morris & DeShon, 2002). All calculated effect sizes were represented in the form of Cohen's d (Cohen, 1988).

Quality assessment of each study was undertaken using a checklist devised by Downs and Black (1998), which was designed to assess the methodological quality of randomised and non-randomised studies of health care interventions. This checklist was used as a guide to produce a descriptive summary of the overall quality of studies. Booth, Papaioannou & Sutton (2012) cautioned against the use of numerical scoring systems, questioning its usefulness in understanding the validity of research findings. In particular, it is possible that some studies may gain equally high scores overall, but the flaws may be more serious in one study than another, thus leading to inaccurate judgements of quality. Study quality was described in terms of a) reporting, b) external validity, c) internal validity, d) confounding bias, and e) power.

Results

Sample Characteristics

Studies included children and young people aged from 3 to 17 years old. The majority of studies had roughly equal numbers of males and females, with the exception of one study, which was all female. The majority of the studies were conducted in Australia (n = 14). The remaining studies were conducted in the United Kingdom (n = 4), Canada (n = 3), Northern Italy (n = 2), Germany (n = 1), Netherlands (n = 1), Finland (n = 1), Norway (n = 1), Northern Spain (n = 1), Sweden (n = 1), United States (n = 1), South Africa (n = 1), Chile (n = 1), and Israel (n = 1). Participant numbers ranged from 46 to 7741 participants. Studies represented a range of socio-demographic areas. Ethnicity was inconsistently reported. The most common ages of participants in studies were > 9 years (n = 24).

Study Design

Seventeen studies were RCTs using an active intervention control (usual school curriculum) or waitlist control group. Five studies were randomised trials in which the experimental groups were compared to an attention placebo control group, including one study which also included a non-intervention control group. The most common method of randomisation was at the school level (n = 15), followed by the class level (n = 3), individual level (n= 2) and one at a county level (Aune & Styles, 2009). A further seven studies used a quasi-experimental design in which participants were assigned to the experimental or control group in a non-random manner, and four studies were conducted with no control group. There were five single blind studies (test administrator only), with the remaining studies being either unblinded or not reported. All the included studies used at least two time points (pre and post intervention), with the exception of three studies, which were follow-up designs of pre-post design studies. Follow-up time points ranged from 3 months to 3 years. The majority of the studies (n = 21), included at least one follow-up time point, with 12 months being the most common (n = 9).

Interventions

Content. The majority of the interventions utilised a Cognitive Behavioural Therapy (CBT) framework (n = 27). Of these, just under half implemented the FRIENDS for Life programme (FRIENDS; Barrett, Lowry-Webster & Turner, 2000) (n=12) and one used a downward extension of the programme (Fun FRIENDS; Barrett, 2007) designed for use

with young children. The primary aim of the FRIENDS programme is to prevent and reduce the onset of anxiety and depression by promoting social-emotional skills. Activities included relaxation exercises, cognitive re-structuring, attentional training, and identifying family and peer support networks. The primary aims of the other CBT based interventions varied from depression prevention (n = 4), anxiety and depression prevention (n = 2), reducing and preventing social anxiety (n = 1) and stress management (n = 2). One depression prevention intervention (the Resourceful Adolescent Program; RAP) also included elements of interpersonal psychotherapy (Harnett & Dadds, 2004), and one stress management intervention (Keogh, Bond & Flaxman, 2006), included attention-directing activities (i.e., shifting attention away from self-defeating thoughts and worries through didactic and experiential learning). The second stress-management intervention combined CBT with principles from information processing theory to include active learning, opportunities to link new information to existing knowledge, and setting challenging but achievable goals (Kraag, Breukelen, Kok & Hosman, 2009). Two studies (Tomba et al., 2010; Ruini et al., 2009) aimed to explore the differential impact of an intervention to promote wellbeing (WBT) versus an intervention to reduce distress through anxiety management training (AM). Both types of intervention included CBT principles of cognitive re-structuring, however, the WBT intervention focused on additional dimensions of wellbeing (e.g., increasing autonomy) and positive emotion, in contrast to the control of negative emotions (e.g., through relaxation, breathing control and self-talk) focused on in the AM intervention.

The remaining interventions, which included anxiety reduction as a secondary aim, utilised psycho-education and problem solving skills to promote social-emotional skills and reduce behaviour or emotional problems (Domitrovich, Cortes & Greenberg, 2007); information based methods to promote self-esteem and a positive body image (Ghaderi, Mårtensson & Schwan, 2007) or to increase anti-bullying attitudes (Williford et al., 2012); positive communication and social interaction (Garaigordobil, 2004); psycho-education and skills training including mediation, art therapy and narrative techniques (Berger, Pat-Horenczyk & Gelkopf, 2007). One study employed a physical activity program (Bonhauser et al., 2005).

Of the studies that included active control groups, activities included listening to a story (Miller et al., 2011[b]), health education lessons (Roberts et al., 2010), a placebo attention Anxiety Management programme (Ruini et al., 2009; Tomba et al., 2010) and school curriculum tutorial activities (Garaigordobil, 2004).

Delivery. Ten of the interventions reported were delivered by psychologists, seventeen by teachers (one jointly with a school counsellor), and three by health professionals (school nurse or mental health worker). The amount of training school personnel received averaged between one and two days (approximately 6 hours per day). One intervention (MoodGYM) was conducted online, and teachers acted as facilitators to support implementation.

The majority of the interventions consisted of 8 to 10 sessions, delivered weekly, and with each session lasting between 20 minutes and 2 hours, with the median length being one hour. In one study (Aune & Styles, 2009); the intervention was delivered directly to children on one day over three consecutive, 45 minute sessions. Eight studies also included additional booster sessions. All but one of these was provided as part of the FRIENDS programme, where two, one hour booster sessions were provided one and three months after the intervention. Based on teacher and child evaluation after the regular intervention, Kraag et al (2005) also provided an additional five weekly, one hour booster sessions. Additional parent sessions were included in nine of the studies, with number of sessions ranging from 1 to 4 (median = 3).

Measures. Eleven of the included studies used measures limited to assessing reductions in the target behaviour (i.e., anxious and depressive symptomology). Anxiety was included as a primary outcome measure in twenty five studies. The most common outcome measures of anxiety were based on self-report (child only) using the Spence Children's Anxiety Scale (SCAS; Spence, 1997) and the Revised Children's Manifest Anxiety Scale (RCMAS; Reynolds & Richmond, 1978). Other self-report measures included the Multi-dimensional Anxiety Scale for Children (MASC; March, 1997; n = 4), Screen for Child Anxiety Related Emotional Disorders (SCARED; Birmaher et al., 1997; n = 1), Social Phobia and Anxiety Inventory for Children (SPAIC; Beidel et al., 1995; n = 2), State-Trait Anxiety Inventory for Children (STAIC; Spielberger, Edwards, Lushene & Montuori, 1990; n = 2), and the Revised Test Anxiety Scale (RTAS; Benson & Bandalos, 1992; n = 1). Only two studies utilised parent or teacher reports, with Pahl and Barrett (2010) using the Parental Anxiety Scale (PAS; Spence, Rapee, McDonald & Ingram, 2001), and Miller et al 2011[b] using the teacher and parent versions of the Behavioural Assessment System for Children (BASC; Reynolds & Kamphaus, 1992). Three studies also utilised clinician interviews (Lowry-Webster et al., 2001; Lock & Barrett, 2003; Sheffield et al., 2006).

The majority of studies also measured self-reported depression (n = 16), with the Children's Depression Inventory (CDI; Kovacs, 1985) being the most common measure (n = 11). The remaining studies used the Short Mood and Feelings Questionnaire (SMFQ; Angold et al., 1995), Short Depression Inventory for Children (SDIC), Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977), Becks Depression Inventory (BDI; Beck, Steer & Brown, 1996), Revised Child Anxiety and Depression Scale (RCADS; Chorpita, Yim, Moffitt, Umemoto & Francis, 2000), Reynolds Adolescent Depression Scale (RADS; Reynolds, 1987), and Hospital Anxiety and Depression Scale (HADS; Bjelland, Dahl, Haug & Neckelmann, 2002).

In addition to psychopathology, some studies also included additional measures related to risk or resilience, including social skills (n = 6), coping skills (n = 5), attributions and dysfunctional cognitive thoughts (n = 5), self-esteem (n= 5), psychological wellbeing (n = 2), perfectionism (n = 1), family cohesion (n = 1), empathy and self-concept (n = 1). Three studies included measures hypothesised to mediate the intervention effects on anxiety, including stressful life events and bullying (Aune & Styles, 2009), verbal ability (Domitrovich et al), and dysfunctional beliefs and motivation (Keogh et al., 2006).

Outcomes

Universal effects. Significant group differences were found in fourteen (/27) studies with an attention control group (n = 3) or passive control group (n = 11), with the intervention group reporting greater reductions in anxiety at post-intervention (n = 9), follow-up (n = 3) or both (n = 3). In 4 out of 8 studies that included a follow-up analysis, significant group differences favouring the intervention group at post-intervention were maintained at 6 (Calear et al., 2010; Tomba et al., 2010) and 12 month follow up (Lowry-Webster et al., 2003; Lock & Barrett, 2003). In a longitudinal follow up of Lock & Barrett's study by Barrett et al (2006), gains were maintained at 24 month follow up for females only. There were no differences by 36 months.

All of the studies included some form of statistical analysis to interpret their findings. Overall effect sizes at post-intervention ranged from -0.23 to 0.96, with a mean effect size of 0.23. Only 4 of 28 effect sizes were negative (Barrett et al., 2005; Ruini et al., 2009; Tomba et al., 2010; Miller et al., 2011[b]), whereby outcomes favoured the control group (i.e., the control group had lower mean anxiety scores at post-test compared to the intervention group). The FRIENDS programme in particular yielded larger effect sizes overall than the other programmes at post-intervention, ranging from 0.18 to 0.62. Effect

sizes for repeated measures studies, with no control groups (n = 3) ranged from 0.21 to 0.34

The mean effect size for interventions with significant group differences at post-intervention was 0.26 (n = 13[1]), compared to 0.13 for studies that found non-significant group differences (n = 12), and 0.26 for designs with no control group (n= 3). Eighteen papers reported follow up statistics. Effect sizes at follow up ranged from 0.01 to 0.69, with a mean effect size of 0.25.

Over half of the studies that found significant differences in anxiety (n = 9) were delivered by teachers, yielding effect sizes between 0.02 to 0.96 (mean 0.36). Of these, four were CBT based programmes, one of which was an online format. A further six teacher implemented studies, five of which were CBT based, found non-significant group differences in anxiety reduction over time. All but one of the significant effects was based on pupil self-report, and the one teacher report was by the same teacher that delivered the intervention (Domitrovich et al., 2007). Effect sizes for interventions delivered by mental health professionals ranged from -0.08 to 0.40 (mean 0.25).

High risk group analyses. Sixteen studies also conducted separate analyses of the effects of universal interventions on high risk groups using changes in diagnostic status of anxiety. Five papers provided enough data to calculate effect sizes for high risk groups, two of which it was only possible to calculate within group effect size (Stallard et al., 2007; Miller et al., 2011[a]), and three between group effect sizes (Lock & Barrett, 2003; Lowry-Webster, 2001; Barrett et al., 2005). Effect sizes ranged from -0.21 to 1.30 at post intervention (n = 5) and -0.10 to 1.05 at follow-up (n = 4), indicating that universal interventions can be effective for high risk groups, and that effects are maintained over time.

In a review of depression prevention programmes, Horowitz and Garber (2006) argued for the need to distinguish between true prevention effects and treatment effects, whereby the former is judged to have occurred when there is no increase or diminished symptoms/diagnoses in the intervention group, compared to an increase in symptoms or diagnosis in the control group. Three studies demonstrated a true prevention effect for anxiety in at risk groups (Lowry-Webster, 2001; Lowry-Webster et al., 2003; Barrett et al., 2006). In a longitudinal follow-up of Lock & Barrett (2003), Barrett et al found a significant prevention effect at 36 month follow up. Studies were more often able to demonstrate

[1] Excluding Berger et al (2007) to avoid bias due to large effect size (0.96)

treatment effects (n = 7), whereby the intervention group demonstrated significantly greater improvements compared to the control group (Garaigordobil, 2004; Berger et al., 2006; Calear et al., 2009; Aune & Styles, 2009; Stopa et al., 2010; Stallard et al., 2005; Stallard et al., 2007). The remaining studies found no significant difference in treatment response between high risk groups in the intervention and control conditions (Barrett & Turner, 2001; Barrett et al., 2005; Lock & Barrett, 2003; Miller et al., 2011[a], Miller et al., 2011[b]; Roberts, 2010).

Moderating and mediating variables. In one study (Kraag et al., 2009), the impact of the intervention on anxiety only became significant through a mediating effect of stress awareness, which refers to the participants' ability to recognise when they felt stressed. A further three studies examined mediational relationships, and found that anxiety was significantly mediated by a decrease in dysfunctional beliefs, which refer to negative cognitions e.g., "I am bad at taking tests" (Keogh et al., 2006); perfectionism (i.e., high standards and overly critical of one's performance; Essau et al., 2012) and avoidant coping (i.e., behavioural and cognitive avoidance of situations perceived as threatening; Essau et al); emotional problems and behavioural avoidance (Stopa et al., 2010).

Five studies also found a moderating effect of age on anxiety reduction. Of these, three studies found that younger children (9 – 10 years) reported significantly greater reductions in anxiety compared to older children (14 – 16 years) at all time points (Lock & Barrett, 2003; Barrett et al., 2006; Barrett et al., 2005). Berger et al (2007) also found greater reductions in the younger children (7 – 8 years) compared to older children (9 – 12 years). Conversely, Essau (2012) found that intervention effects for older children (11 – 12 years) were delayed, such that anxiety reduction was only significant at 6 and 12 month follow up. Other interventions were found to be effective for a broad range of ages (7 – 17 years). In two studies that used a pre-school population (3 – 6 years), findings were mildly positive, with one study finding significant reductions in social anxiety in a rural population (compared with an urban population) (Domitrovich et al., 2007), and the other reporting reductions in behavioural inhibition in the intervention group (Pahl & Barrett, 2010). In four studies, gender moderated the outcome where females reported greater reductions in overall anxiety, compared to males who also tended to report lower anxiety on baseline measures (Lock & Barrett, 2003; Barrett et al., 2006; Pahl & Barrett; Stopa et al., 2010; Tomba et al., 2010). One study (Stopa et al) found differential effects for males based on the social phobia sub-scale of the SCAS, with boys reporting greater reductions in social phobia. A further five studies reported no gender differences in relation to the impact of the intervention on overall anxiety reduction (Miller et al., 2011[a];

Miller et al., 2011[b]; Essau et al., 2012; Calear et al., 2009; Pattison & Lynd-Stevenson, 2001).

Intervention design. In over two thirds of the studies to find significant group differences, anxiety reduction was a primary aim of the intervention. However, within these studies, positive outcomes did not appear to be related to content, length of intervention or to type of control group or design (randomised or quasi-experimental). The majority of the studies to report significant group differences were based on interventions which included CBT principals (n = 9). The remaining studies were based on a social-emotional competence building curriculum (Garaigodobil, 2004; Domitrovich et al., 2007), physical exercise (Bonhauser et al., 2005), meditative techniques and art therapy (Berger et al., 2007). Ten interventions were considered short term, implemented weekly over a period of between 5 and 10 weeks, with the five FRIENDS programmes also including two additional booster sessions, and 2 – 4 parent sessions. The remaining interventions did not include booster or parent sessions. Three of the effective interventions were delivered over the course of an academic year.

Of twelve interventions that did not find significant group differences in anxiety reduction, ten used a CBT based curriculum. Six included anxiety reduction as a secondary aim of the intervention (Pattison & Lynd-Stevenson, 2001; Harnett & Dadds, 2004; Sheffield et al., 2006; Rooney et al., 2006; Ghaderi et al., 2007; Williford et al., 2012), two were non-randomised and had small sample sizes (Rose et al., 2009; Mostert & Loxten, 2008), which may have reduced the power to detect differences, and one relied on parent report of pupil anxiety only (Pahl & Barrett, 2010). Of the three remaining studies, two evaluated the FRIENDS programme with a Canadian population (Miller et al., 2011[a]; Miller et al., 2011[b]), and the other used a similar CBT based intervention in schools characterised as having pupils with low SES (Roberts et al., 2010). Comparing the FRIENDS studies that found significant group differences in anxiety reduction to those that didn't, revealed that those that didn't find significant differences had omitted the parental components (n = 4).

Broader outcomes. As well as measuring the effectiveness of interventions to reduce anxiety, several studies also examined the impact on a broader range of associated outcomes i.e., depression and associated resilience measures. The outcomes for depression were mixed. One study found significant group differences in reductions of depression scores for teacher implemented groups only (Barrett & Turner, 2001). Other studies found reductions in depression in the clinically anxious group only (Lowry-Webster

et al., 2001), for males only (Calear et al., 2009), at post – test only (Stopa et al., 2010), at follow-up only (Essau et al., 2012), or in younger grades only (Lock & Barrett, 2003; Barrett et al., 2005). At 24 and 36 month follow up there were no longer significant group differences (Barrett et al., 2006). All but one of these studies (Calear et al) used the FRIENDS programme. A further nine studies found no significant group differences for depression.

Of six studies to assess self-esteem, all but one (Harnett & Dadds) found significant improvements in self-esteem over time, and relative to control groups (n= 2). Four (/6) studies to examine the impact on social skills reported a significant improvement in social functioning, as measured through pupil self-report (Essau et al., 2012; Harnett & Dadds), teacher report (Pahl & Barrett et al., 2010), and parent and teacher report (Domitrovich et al., 2007). Five studies also reported a significant improvement in coping skills as measured by self-reported responses to stressful situations. These included decreases in cognitive and behavioural avoidance (Essau et al., 2012; Stopa et al., 2009; Lock & Barrett, 2003), and increases in assistance seeking and cognitive-behavioural problem solving (Lock & Barret et al).

Summary

Evaluations of universal preventative interventions have been conducted in a diverse range of countries, with a significant number stemming from Australia. Age ranges varied, with all but two studies including children between the ages of 9 and 17 years. Intervention content also varied, with the most common approach utilising CBT. Interventions were typically implemented weekly over a period of 8 – 10 weeks. The findings indicate that preventative universal interventions are most commonly associated with reductions in target behaviour i.e., anxiety, with just over half the studies reporting significant group differences favouring the intervention group. These effects were maintained in half the studies that included follow up data at 6 or 12 months. There is significant variability in effect sizes, ranging from -.23 to .96. These outcomes were just as likely in interventions delivered by teachers, compared to mental health professionals. Ten (/16) studies also demonstrated significant group differences for participants considered to be at high risk of developing an anxiety disorder, with outcomes favouring the intervention groups in terms of treatment and/or prevention. Studies have also begun to explore the mechanisms through which these changes occur, although the findings are inconsistent. There is evidence to suggest that anxiety prevention programmes may impact on a broader range of outcomes including self-esteem and social skills. However,

the conclusions drawn from these studies need to be viewed in light of methodological limitations. A quality assessment was undertaken in order to assess the validity of the findings on the basis of the quality of research designs.

Quality Assessment

Strengths and limitations of the included studies are discussed below, based on the five subscales from the quality assessment checklist.

Reporting. Studies generally provided clear descriptions of the aims or hypotheses, outcomes measures, interventions, principal confounders, main findings and estimates of variability (e.g., standard deviation). Approximately half of the studies provided only partial information on the characteristics of the participants. Similarly, only half reported actual probability values for main outcomes. With the exception of one study (Bonhauser et al., 2005), papers did not provide any information on attempts to measure adverse events that may be a consequence of the intervention. The characteristics of participants lost to follow up were inconsistently reported. Only six studies reported effect sizes.

External validity. Few studies (n = 11) reported how the sample was drawn, and therefore it was not possible to determine the representativeness of the sample. Similarly, the proportion of those asked who agreed to take part was inconsistently reported. Given that all the studies were school based, the staff, places, and facilities where participants received the intervention were considered to be representative of the treatment that the majority would receive.

Internal validity (bias). None of the studies reported attempts to blind participants to the intervention they had received, and a minority (n = 7) reported blinding those measuring the main outcomes of the intervention. The studies generally reported valid and reliable outcome measures. However, the majority of studies relied exclusively on self-report measures. In all studies, the period between intervention and outcome was the same for participants in intervention and control groups. Statistical tests used to assess the main outcomes were only partially appropriate, with many studies (n = 13) not reporting attempts to control for type 1 error when using multiple comparisons. Further, the majority of analyses were conducted at the individual level, when the unit of randomisation was the school or classroom level. Only half of the studies to employ this type of design examined the clustering effect of schools, which allows for a comparison of within school variability of participants to between school variability (Barrett et al., 2006; Berger et al., 2006; Roberts et al., 2010; Stopa et al., 2010; Kraag et al., 2009; Calear et al., 2009; Aune & Styles, 2009; Miller et al., 2011[a]; Miller et al., 2011[b]; Ghaderi et al., 2007; Sheffield et al., 2006). A further limitation was the assessment of compliance with the intervention. Compliance with the intervention was most frequently assessed using

self-report fidelity measures in the form of checklists completed by the programme implementers. Only three studies utilised independent observer ratings of programme adherence, such as direct observation of sessions, audio or video records, and four studies recorded student participation (e.g., absences). Therefore, it was often not possible to reliably determine the numbers of participants who may not have received the full intervention, potentially creating a bias towards the null hypothesis. Given the nature of universal, school-based interventions, it may be argued that the potential for non-compliance (i.e., drop-outs), is reduced (Spence, Sheffield & Donovan, 2003). However, some evidence indicates that difficulties associated with transferability from clinical to real-life contexts, for example, competing demands; reduce the implementation quality of the intervention (Durlak & Dupre, 2008).

Internal validity (confounding). The most common unit of randomisation was at the school level. Where studies reported randomising participants to intervention groups, the method of randomisation was rarely stated, and it was therefore difficult to determine whether true random allocation had occurred. Further, no studies reported concealing the randomised assignment from participants or staff. Participants in different intervention groups were recruited from the same broad populations, however they were only partially allocated accordingly, with comparison groups spread across different schools. Studies did not usually specify the time period over which participants were recruited. Numbers of participants lost to follow up were generally reported in studies; however steps taken to account for these losses were inconsistently reported. Covariates were generally used to control for potentially confounding pre-test differences (e.g., in anxiety levels). An intention to treat analysis was specified in few studies (n = 4) to account for missing data (Calear et al., 2009; Pahl & Barrett, 2010; Stallard et al., 2007; Bonhauser et al., 2005).

Power. Only four studies reported power calculations to determine sample size (Roberts et al., 2010; Kraag et al., 2009; Bonhauser et al., 2005; Calear et al., 2009).

Discussion

The current review explored the effectiveness of school based, universally implemented interventions to prevent and reduce the development of anxiety. Preventative interventions that aim to develop skills associated with positive psychological adjustment such as social skills, problem solving skills and coping strategies are argued to reduce the likelihood that children and young people will develop psychopathology, such as anxiety or depression (Spence & Shortt, 2007). The impact on broader outcomes associated with psychopathology and resilience, as well as moderating and mediating factors was also explored.

There has been considerable interest in the utility of universal preventative interventions in the school setting, and this has led to a significant number of evaluations targeting a broad range of ages. The majority of studies in the current review utilised an experimental or quasi-experimental design. Within efficacy research, RCTs are considered to be the gold standard. The use of RCTs in the current review was not uncommon, with the majority of studies randomising at the school level. This level of randomisation was considered appropriate given the universal nature of the interventions. Further, it avoids issues of spillover effects (Angelucci & Di Maro, 2010), which can arise if control conditions are present within the same school. The next most common approach was quasi-experimental, which was most often used due to difficulties with employing RCT designs as a result of ethical concerns about denying one group access to potentially effective treatment. The difficulties with using RCTs in school settings is frequently noted in reviews of community based studies (e.g., Flay et al., 2004). A further strength of the studies reviewed is the use of standardised assessments, with all studies using standardised measures to assess primary outcomes in relation to anxiety and depression.

How effective are school based universal interventions at preventing and reducing anxiety in children and adolescents?

This review provides some evidence that brief (i.e., 8 – 10 week) school based universal interventions can be effective in reducing anxiety symptoms among children and adolescents in the short term. In addition, the findings of this review suggest that universal interventions can provide effective treatment for sub-groups of children and young people considered to be at high risk of developing an anxiety disorder, with two thirds of the studies reporting significant reductions in anxiety within this group at post intervention or at 6 – 12 month follow up.

Given the universal nature of the interventions, even small effect sizes should be considered practically significant when applied at the population level. Effect sizes in the current study are broadly consistent with the findings from other reviews (e.g., Teubert & Pinquart, 2011; Mychailyszyn et al., 2012), ranging from small to medium at both post-test and follow up. However, maintenance effects were only apparent in half of the studies with follow-up data, with the other half returning to similar levels to the control group. With the exception of Barrett et al (2006), who included 24 and 36 month follow ups, there is little evidence for longer term follow ups, and thus determining the effectiveness of interventions in the long term is not possible from current research.

Where available, the effect sizes were found to be larger for high risk groups. Similar findings have been cited in previous reviews (e.g., Briesch, Hagermoser Sanetti & Briesch, 2010). These findings challenge views that the effects of universal interventions may be diluted, such that they do not impact on high risk groups. The results may not be surprising given that high risk groups have more potential to gain from the intervention due to having higher symptom levels, whereas those within the normal range to begin with are less likely to demonstrate clinical change (Fisak et al., 2011). In support, this review highlighted a number of studies where the sample scored largely within the normal range pre-intervention and failed to find significant group differences at post-intervention (e.g., Mostert & Loxten, 2008; Rose et al., 2009). However, high risk groups were most frequently defined using clinical cut-off points on questionnaires, rather than diagnostic interviews, which could miss significant findings for those with the highest need and arguably the most vulnerable group.

The current review included studies where anxiety reduction was a primary or a secondary aim, and a comparison of outcomes suggests that anxiety reduction is most likely in studies where this is the primary aim of the intervention. In support of this finding, a meta-analysis by Teubert and Pinquart (2011) found that effect sizes were higher for programmes where anxiety reduction was a primary rather than a secondary outcome. Similarly, Fisak et al (2011) found that the FRIENDS programme in particular had significantly larger effect sizes than other types of intervention. In the current review, 6 out of 10 studies that evaluated the FRIENDS programme found significant group differences, and in line with Fisak et al., effect sizes for the FRIENDS programme were generally higher than for other studies. However, a previously cited criticism in relation to studies of the FRIENDS programme is the failure to report adjustments for type 1 error and limited use of multi-level modelling (Briesch et al., 2010), which is required for cluster randomised designs (i.e., at the school level) to account for nested effects. Furthermore,

it is notable that only one of these studies that found significant group differences was conducted outside of Australia, and was not part of the programme developer's research group. Lyneham and Rapee (2011) suggested that greater experience and familiarity with the programme among developers could account for the larger effect sizes. It is argued that future independent research should be conducted to establish the validity and generalisability of findings.

Studies that found significant group differences where the intervention was implemented by teachers versus mental health professionals were in almost equal measure, indicating that teachers can effectively implement universal preventative interventions to reduce anxiety. This finding is consistent with that reported in a review by Neil and Christensen (2009). However, unlike Neil and Christensen's findings, mean effect sizes in the current review were slightly higher for teacher led interventions compared to mental health professionals. Only one study in the current review directly compared the effects of teacher-led versus psychologist led intervention (Barrett & Turner, 2001), and it is argued that future studies should aim control for these differences in order to further understand the differential outcomes.

Most moderator analyses measured the relationship between gender on anxiety reduction and age on anxiety reduction following intervention. There is some evidence that females benefit more than males from universal anxiety prevention interventions, with females reporting significantly greater reductions in anxiety in just under half of the studies that considered gender as a moderator. Furthermore, females were more likely to report higher levels of anxiety initially, suggesting that they may have more to gain from anxiety prevention programmes. Some research has suggested that females may be more likely than males to respond to the content of brief CBT interventions which is focused on emotions and interpersonal relationships (Brabban, Tai & Turkington, 2009). Further research is needed to establish the relationship between gender and response to interventions. In addition, studies often lacked detail in participant characteristics such as ethnicity. Therefore, the effectiveness of universal interventions for different cultural groups is unclear, and warrants further investigation.

Of the studies that considered age differences, there is some evidence that younger children benefit more from preventative interventions than older children, however only a handful of studies specifically examined this issue. Furthermore, the current review highlights that the majority of studies were conducted on children who were at least nine years old. Only two studies evaluated the effectiveness of a universal

programme on young children (i.e., pre-schoolers). While the findings were encouraging, the extent to which effectiveness is generalisable to this age group is unclear.

From a resiliency perspective, prevention programmes that aim to build protective factors, for example teaching coping skills prior to the onset of a psychopathology should be particularly effective (Fisak et al., 2011). Developmentally, preschool age children are becoming increasingly self-aware of themselves and others perceptions of them (Harter, 1988). Further, there is evidence to suggest that children's brains are particularly malleable at this age (Knudsen, Heckman, Cameron & Shonkoff, 2006), providing an ideal opportunity to develop adaptive coping skills aimed at preventing the development of negative views of the self, as a risk factor for anxiety (Hirshfeld-Becker & Biederman, 2002; Cartwright-Hatton, 2006). It is possible that the mixed findings for effectiveness in older children and adolescents could, in part, be explained by the possibility that children have already developed a set of cognitions that are more entrenched and require more than a brief, 10 week programme.

What are the additional outcomes associated with universal prevention interventions?

Many studies focused on reductions in target behaviour (i.e., anxiety reduction), and while it is promising that studies have started to consider the broader impact of related variables, these are often not formally tested as potential factors that mediate the effects of anxiety. For example, there is some evidence in the current review that anxiety prevention interventions have a positive effect on self-esteem and social skills, both of which have been found to be protective factors associated with resilience (e.g., Mann, Hosman, Schaalma & de Vries, 2004), but their impact on anxiety reduction was not formally explored.

Where mediating effects on anxiety have been explored, designs tend to lack a coherent theoretical framework. Further, studies have tended to rely on self-reports of changes in associated cognitions such as dysfunctional beliefs (e.g., Keogh, 2006), and decreased behavioural avoidance (e.g., Stopa et al., 2010), and rarely assessed the impact of these changes on functional behaviours that have been found to be associated with anxiety and resilience, for example, school attendance, achievement or increased friendships skills. Such research would further increase the social validity of findings, particularly if focused on school-relevant outcomes (Rones & Hoagwood, 2000).

Anxiety and depression are frequently assessed together when evaluating the impact of preventative interventions given the high rates of co-morbidity, and evidence to

suggest that anxiety precedes the onset of depression (Schneier, 2007). However, the majority of studies found no significant group differences in the reduction of depression over time, both where depression prevention was a primary and a secondary aim of the intervention. Therefore, the effectiveness of prevention intervention programmes to reduce depression is inconclusive.

Limitations of Current Differences across Studies

While it is encouraging that universal prevention programmes can show meaningful reductions in anxiety, just under half of the included studies with a control group design failed to find significant group differences at post-intervention or follow-up, and the processes that lead to more or less positive outcomes are unclear.

It is not clear whether particular aspects of intervention content are more important for producing the desired outcomes, as few studies explored this. In line with previous reviews (e.g., Neil & Christensen, 2009), CBT comprised the most common type of intervention, and two thirds of the studies utilised a CBT based programme. The majority of these used the FRIENDS programme, and interestingly, those that failed to detect significant group differences omitted the parent sessions. While there were other study differences which may also have impacted on outcomes, and no studies formally tested the impact of parent versus no parent sessions, the value of including additional parent components is consistent with evidence to suggest that multi-component programmes that target the ecology of the child are most effective (Rones & Hoadwood, 2000).

The finding that some studies of CBT based interventions failed to find significant results suggests that other factors are likely to be influencing outcomes aside from the content. The results of the current review highlighted that many studies were unable to account for changes in the intervention group arising from non-intervention specific effects of increased time and attention the participants received, due to a reliance on wait-listed or no-intervention (passive) control groups. Only six studies included attention placebo control groups, and of these, only half found significant group differences in the reduction of anxiety. Pattison and Lynd Stevenson (2001) was the only study to include active, passive and attention placebo control groups, and found no significant group differences on anxiety reduction over time. In addition, studies rarely reported the use of power calculations to determine sample sizes, increasing the possibility of making type II errors due to inadequate sample sizes (Ellis, 2010). Very few studies included measures other than participant self-report of anxiety symptoms. In addition, none of the reviewed studies reported blinding participants, their parents or teachers from their

experimental group allocation. Therefore, due to difficulties such as informant bias it is possible that reports of improvement were due to expected effects rather than any meaningful change. Further, there is some evidence to suggest that anxious children are more likely to report socially desirable responses on questionnaires (Dadds, Perrin & Yule, 1998).

An additional, important factor to consider when assessing the effectiveness of school based interventions is the fidelity of programmes (Flay et al., 2004). Treatment fidelity in the majority of studies whereby teachers implemented programmes was most frequently assessed using teacher self-reports. However, the validity of self-reports of implementation can be questioned (Durlak, 1998), and there were few independent inter-observer reliability checks. Furthermore, previous reviews have suggested non-intervention specific factors, such as delivery style and engagement of the participants, which may impact on the effectiveness of an intervention over and above content (Calear & Christensen, 2010; Neil & Christensen, 2009).

Similarly, in a review of school-based mental health interventions, Rones and Hoagwood (2000) found that factors within the wider school ecology, such as school ethos and leadership impacted on intervention outcome. Such factors were not explored in the studies in this review. This review highlighted a limitation across many studies where there was little information on the number of schools approached to take part that chose not to, and little information on the characteristics of schools that ultimately agreed to take part in the study. Therefore, it is possible that schools recruited differed in important variables such as ethos and leadership.

Strengths and Limitations of the Current Review

The current review adds to the literature in a number of ways. It explored solely the effectiveness of universal preventative interventions aimed at preventing or reducing anxiety. Furthermore, the current review is one of the first to include studies of interventions aimed directly at preschool age children, as well as school age. By excluding selected or indicated programmes, it was possible to examine the impact of universal interventions, with particular focus on factors that may be influencing outcomes, as well as an in-depth assessment of the quality of evidence. A detailed review of universal interventions is timely given their increasing appeal due to cost-effectiveness and potential to reach a wide range of children and young people. Furthermore, by adopting a systematic approach, an in-depth analysis of the methods used by studies to assess effectiveness and the pitfalls of different approaches can be identified, and used to inform areas for future research. In addition, the possibility of bias in the selection,

interpretation and analysis of studies is minimised through the use of explicit inclusion and exclusion criteria.

The present review also has limitations that may impact on the findings. Despite the specific focus on universal interventions, the review was necessarily broad in scope in order to allow for identification of strengths and limitations of research designs, and outcomes for different age groups and interventions. However, the heterogeneity and number of studies, limits in-depth discussion of each individual study. It is also difficult to draw conclusions about external validity when assessing the evidence base as a whole due to the heterogeneity across studies, for example, in terms of types of questionnaires used to assess outcomes, intervention content, and sample sizes. The decision to include studies that examined anxiety reduction as a secondary outcome also adds to the heterogeneity of outcomes, making it harder to determine the specific effects of anxiety programmes (Fisak et al., 2011). Given that few studies included in the current review reported effect sizes of interventions, the standardised mean difference (SMD) was calculated for each paper. The SMD is based on differences between intervention and control groups at a single point in time (e.g., post-assessment), and can be biased in studies with significant differences between group scores (standard deviations) at baseline. The current review may also susceptible to publication bias by only including published studies, in English. In addition, the review was conducted by a single author, which increases the risk of bias.

Conclusions and Implications for Future Research

CBT is established as an efficacious treatment for anxiety (Cartwright-Hatton, Roberts, Chitsabesan, Fothergill & Harrington, 2004), and the findings from this review suggest it to be a common and promising approach for universal preventative interventions for anxiety. The majority of interventions were brief (i.e., 8 – 10 weeks), and findings suggest that these can have positive effects by reducing anxiety in groups exposed to intervention, at least in the short term, and can be delivered effectively by teachers. However, the variables that influence effectiveness in real world settings are far from understood, and the conclusiveness of many of the studies were limited by methodological weaknesses, requiring caution in interpreting the findings. Furthermore, follow-up assessments were rarely conducted beyond 12 months. Previous research has indicated that the preventive impact of universal interventions may not be apparent until children go through a period of elevated risk (Gillham, Shatte & Reivich, 2001). Therefore, it would be useful for future research to incorporate long-term follow-ups over a number of years.

Achieving an acceptable balance between internal and external validity is a commonly cited challenge in effectiveness research with heterogeneous populations (Hoagwood, Hibbs, Brent & Jensen, 1995). By the nature of universal interventions, threats to internal validity are higher, for example controlling for a large range of confounding variables. Future studies should aim to randomise participants to control groups at the individual level, in order to control for confounding variables that are present at the classroom or school level. In addition, studies should include both passive and active control groups, as well as efforts to blind participants and researchers to group allocation.

It is also recommended that future studies explore theory based mechanisms of change, in order to develop understanding of the most important aspects of interventions. For example, theory and research suggest that individual differences in attention, temperament, and social skills are linked with internalising difficulties and anxiety (e.g., Fabes et al., 2012; Pahl et al., 2012; Degnan & Fox, 2007). However, the causal role of these variables remains underexplored. Including measures of these variables may help to unpick the processes by which interventions lead to reductions in anxiety. In addition, interventions would benefit from being able to demonstrate an impact on functional outcomes (i.e., meaningful changes in behaviour), which may be associated with reduced anxiety, for example changes in peer acceptance/increased friendships. Testing the relationships among these variables would further add to understanding of the interactive

nature of different combinations of risk and resilience factors related to the development of anxiety, and thus more targeted ways to intervene.

Finally, despite the broad range of ages, this review revealed an obvious gap with early intervention. Theory and principles of prevention reviewed in the introduction of this paper suggests that interventions may be most effective for this age group, as they are more malleable and open to learning new skills. Only one study has evaluated the impact of a cognitive-behavioural intervention delivered directly with children under 7 years old, and aimed primarily at preventing anxiety using an adaptation of the FRIENDS programme. While the evidence base for the FRIENDS programme is large, little is known about the effectiveness of the adapted version for young children. Further independent research, not conducted by programme developer, as well as questionnaire data from parents and teachers, in addition to self-report would provide a more comprehensive analysis of effectiveness.

Chapter 2: Investigating the impact of a universal cognitive behavioural programme on anxiety, attention and peer relationships in young children.

Clinical studies assessing prevalence rates of psychopathology among children and adolescents consistently report anxiety to be one of the earliest and most pervasive forms, with onset as early as three years old (Beesdo, Knappe & Pine, 2009; Dadds & Roth, 2008). Retrospective studies with adult populations have found that, if left untreated, anxiety can take on a chronic life course, and is associated with a range of negative outcomes including poor school attendance and academic achievement, substance abuse, difficulties with relationships, and unemployment (Farrell & Barrett, 2007; Wood et al., 2012; Goodwin et al., 2002). Furthermore, there is evidence to suggest that anxiety often precedes the onset of additional mental health difficulties, including depression (Schneier, 2007).

Several studies have found that many young people with anxiety do not receive treatment (Farrell & Barett, 2007), and others have shown that of those who do receive treatment, approximately a third either fails to respond or remits following treatment (e.g., Cartwright-Hatton et al., 2004). The knock-on social and economic costs to society, as well as the individual, have led policy makers to develop preventative approaches that aim to provide early intervention prior to the onset of a disorder. Three types of preventive intervention have been defined by the Institute of Medicine (1994): Universal, selective and indicated. Universal preventative interventions are delivered to whole groups of children regardless of individual risk for developing anxiety. Selective interventions are delivered to those who are considered to be at risk of developing anxiety, based on the presence of known risk factors. Finally, indicated interventions are delivered to those who are already showing signs of anxiety, but who do not yet meet the criteria for an anxiety disorder. All interventions aim to reduce or minimise the impact of risk factors and increase protective factors.

Proponents of universal interventions argue that their appeal lies in their non-stigmatising nature and ability to reach a wide range of children and adolescents (e.g., Farrell & Barrett, 2007). In particular, universal delivery avoids difficulties associated with selecting individuals for intervention, which can be subjective and leaves open the possibility of missing individuals who would be likely to benefit. The majority of evaluations of universal preventative interventions aimed at promoting resilience have been conducted in school settings due to the easily accessible populations of children and adolescents, who may not otherwise receive support (Neil & Christensen, 2009).

Furthermore, schools are characterised as learning environments, aimed at promoting mastery of new skills, and therefore provide a context for consolidating newly acquired skills and knowledge (Mychailyszyn et al., 2012). Mental health interventions in particular are seen as increasingly relevant to schools, in light of evidence to suggest that mental health difficulties such as anxiety are associated with absenteeism, and reduced academic achievement (e.g., Farrell & Barrett, 2007).

Principles from Cognitive Behavioural Therapy (CBT) are a common element of universal interventions that aim to prevent the development of anxiety disorders. CBT has been found to be efficacious as a treatment for anxiety in children (Ollendick & King, 1998; Cartwright-Hatton et al., 2004). There is some evidence that it may also be effective as an early intervention, with all children potentially benefitting from learning the skills and principles associated with CBT (Ginsburg & Becker, 2009). For example, the universal prevention programme, FRIENDS for Life, has shown to be effective in reducing anxiety in high risk groups (e.g., Briesch et al., 2010). However, the FRIENDS programme is designed for children over 8 years old, and many anxiety reduction programmes are frequently conducted with older children and adolescents over 9 years old. To be most effective, it is argued that preventative interventions should be targeted at even younger ages, when children's brains are particularly malleable (Knudson, Heckman, Cameron & Shonkoff, 2004), and maladaptive cognitions may not have fully developed (Hirshfeld-Becker & Biederman, 2002; Cartwright-Hatton, 2006).

Studies of anxiety prevention conducted with younger children typically aim to modify parental knowledge and behaviours in order to foster adaptive development in their children (e.g., Lefreniere & Capuano, 1997; Rapee, Kennedy, Edwards, Ingram & Sweeney, 2005; Dadds & Roth, 2008). Only one study has evaluated the impact of a universal intervention delivered directly with young children under the age of seven. In the first evaluation of a CBT-based intervention programme, entitled the Fun FRIENDS programme, Pahl and Barrett (2010) randomly assigned a total of 263 preschoolers from 9 preschools in Brisbane, Australia to either an intervention group or a waitlist control group. Fun FRIENDS is a downward extension of the FRIENDS programme, and aims to develop social and emotional competence, and effective coping skills associated with resilience, for example problem solving, through play-based and experiential learning activities (Pahl & Barrett, 2007). The results showed that 4 -6 year old children who received the intervention improved on teacher report scores of behavioural inhibition (i.e., shyness, fearfulness and withdrawal) and social and emotional strengths (i.e., behavioural

and emotional competencies) at post-intervention compared to those in a wait-list control group.

Despite these encouraging findings, current understanding of the mechanisms that lead to anxiety reduction is unclear, and researchers have argued for the need for greater theory based research to inform prevention efforts (e.g., Bienvenu & Ginsburg, 2007). A key theoretical framework underpinning all preventative approaches is based on the notion of resilience. Resilience refers to the ability to achieve psychological adaptation despite exposure to significant adverse experiences (Masten & Powell, 2003). Research on resilience has identified a range of risk and protective factors that interact over time and across contexts (i.e., between the child and their environment) to predict developmental outcomes. Theoretical frameworks of anxiety have proposed that anxiety develops as a result of an interaction between genetic factors (e.g., inhibited temperament), cognitive factors (e.g., biased attention to threat related stimuli) as well as environmental factors (e.g., relationships with parents and peers; Murray, Creswell & Cooper, 2009). These factors are argued to represent risk factors that interact to make a child more vulnerable to developing anxiety.

The role of temperament in the development of psychopathology has received considerable attention from researchers, and is thought to be an important risk factor for anxiety (Lonigan & Vasey, 2009). Behavioural inhibition (BI) constitutes a discrete category of temperament (Perez-Edgar & Fox, 2005), and is defined as the tendency to show behavioural restraint, vigilance and fearfulness when confronted with unfamiliar people or novel events (Kagan, Reznick & Snidman, 1988). Studies suggest that approximately 10 – 15% of children can be characterised as behaviourally inhibited, and that these traits are at least moderately stable from toddlerhood to middle childhood (Hirshfeld-Becker et al., 2008). A considerable body of evidence stemming from studies of parents with anxiety disorders, as well as longitudinal studies of children with BI, has found significant associations between BI and anxiety disorders, particularly social anxiety (e.g., Biederman et al., 2001; Hirshfeld et al., 2007; Schwartz, Snidman & Kagan, 1999; Battaglia et al., 1997).

One proposed mechanism through which BI leads to the development of anxiety is through the experience of negative affect (NA). Some researchers have argued that BI and NA represent distinct but overlapping constructs, for example, with shared characteristics of fearfulness and anxiety (e.g., Lonigan, Vasey, Phillips & Hazen, 2004). Observational studies indicate that infants who are high in BI experience greater levels of

NA in response to novelty (Fox, Henderson, Rubin, Calkins & Schmidt, 2001). Furthermore, information processing perspectives suggest that over time, the disposition to experience negative affect can lead to cognitive biases, such as biased attention to threat and increased risk of developing anxiety (e.g., Lonigan & Vasey, 2009).

One theoretical framework, which has sought to understand the association between temperament and the development of psychopathology is the psychobiological approach proposed by Rothbart and colleagues. Rothbart and Derryberry's (1981) model of temperament encompasses individual differences in reactive and regulative aspects of temperament, which are viewed as being constitutionally based, influenced by heredity, maturation and experience. The reactive component consists of two factors: NA and extroversion, whereas the regulative component consists of effortful control (EC). EC refers to the ability to inhibit a dominant response to perform a subdominant response (Rothbart & Rueda, 2005). Attentional control (AC), an important part of EC, refers to the flexible ability to focus attention on a task and to adaptively shift attention between tasks as necessary (Muris, van der Pennen, Sigmond & Mayer, 2008). The self-regulative aspect of AC is proposed to moderate anxious feelings through the ability to shift attention away from the source of distress (Fox, Henderson, Marshall, Nichols & Ghera, 2005).

Research has supported the proposition that AC may be important in understanding anxiety onset in behaviourally inhibited children. In a longitudinal study, White, McDermott, Denegan, Henderson and Fox (2011), for example, assessed BI in 156 children at 24 months old using a laboratory inhibition paradigm, during which participants were presented with a series of unfamiliar stimuli and their reactions were coded. They found that high levels of BI at 24 months old (as indicated by latency to vocalise, latency to approach/touch, and time spent in close proximity to mother when introduced to unfamiliar stimuli) predicted high levels of anxiety at 48 months old, but only in children with low levels of AC (as assessed by ability to shift attention between rule sets on a laboratory assessment, and parental report of attention focusing and shifting).

As well as being important for regulating emotion, high levels of EC and voluntary control of attention is considered significant for the regulation of thoughts and behaviour more generally, with implications for social competence and peer relations (Eisenberg et al., 2009). Rueda et al (2010) proposed that the ability to inhibit reactive emotions (e.g., fear and distress) and exert voluntary control of attention enables children to respond flexibly and to adjust behaviour in social interactions more easily, therefore determining social adjustment. This is supported by empirical evidence, which has found an

association between high levels of EC and increased social-emotional competence in children (e.g., Fabes et al., 1999; Spinrad et al., 2006). In particular, there is evidence to suggest that AC moderates the association between initial temperament and social and emotional outcomes in development (White et al., 2011). For example, Pérez-Edgar et al (2010) found that adolescents who were behaviourally inhibited as young children showed a heightened attention bias to threat compared to non-inhibited adolescents. Moreover, the strength of association between early BI and adolescent social withdrawal was moderated by the magnitude of attention bias to threat, indicating that attentional processes play an important role in the development of anxious behaviours through intensifying early inhibited temperamental traits. Pérez-Edgar et al (2011) replicated this study on young children (aged 5 years) and similarly found that BI in toddlerhood was associated with social withdrawal at age 5, only in those who showed heightened attention bias to threat.

There is some evidence that the social withdrawal displayed by inhibited children undermines peer acceptance (Boivin, Hymel, & Bukowski, 1995). Sterry et al (2010) assessed the temperament, social behaviour and peer acceptance of 275 children aged 8 to 16 years, and found that parental reports of children's temperament was associated with social behaviour with their peers, as rated by classmates. In particular, less attentional focus (i.e., an aspect of attentional control relating to the ability to pay attention to a task and resist distractions) and flexibility (i.e., shifting attention in accordance to situation demands)was associated with greater sensitivity/isolation, as well as lower pro-social behaviours. In addition, less flexibility and greater sensitivity/isolation was associated with lower peer acceptance, as determined by lower social preference scores on a peer liking scale. These associations were stronger for younger (< 11 years) than for older children. Attentional focus in particular, related to social behaviours which were strongly correlated with peer acceptance (i.e., popularity/leadership, pro-social behaviour, and lower sensitive/isolated behaviour). Furthermore, this study found that the pathway linking attentional focus and peer acceptance differed by gender, so that the association was mediated by leadership/popularity and pro-social behaviour for boys, and sensitive/isolated behaviour for girls.

The association between inhibited temperament and peer acceptance has also been found in studies of young children. For example, in a longitudinal study, Nelson, Rubin and Fox (2005) observed 163 children at play in a laboratory setting at age 4 and at age 7, and coded children's behaviours. Solitary-passive withdrawal (i.e., preference for playing alone) and reticence (i.e., looking on at peers playing with no attempt to join in and

frequent periods of being unoccupied) were negatively related to observed peer acceptance at both 4 and 7 years old. Furthermore, the impact of solitary-passive withdrawal on self-perceptions of competence was found to be more negative for boys than for girls, further indicating that different types of social behaviour can have differential effects for boys and girls. This replicates findings of an earlier study by Coplan, Glavinski-Molina, Lagace-Seguin and Wichmann (2001), who also found that solitary-passive play among five year olds, was more strongly correlated with teacher-reported internalising difficulties for boys than for girls.

Another aspect of peer relations, friendship, has been highlighted as an important protective factor against psychopathology, promoting healthy psychological adjustment (Bukowski & Adams, 2005). Parker and Asher (1993) distinguished between peer acceptance and friendship, based on the finding that children with low general acceptance among peers can still have best friendships. Conversely, studies have shown that children who lack friendships are at risk of peer rejection, feelings of loneliness, delinquency, and increased psychopathology including social anxiety (e.g., La Greca & Harrison, 2005; Hawker & Boulton, 2000; Ladd & Troop-Gordon, 2003). However, the direction of effects is unclear, and research indicates that social isolation may be both a cause and a consequence of adjustment problems (Laursen, Bukowski, Aunola & Nurmi, 2007). In a longitudinal study examining the links between social isolation and adjustment difficulties, Laursen et al found that higher levels of social isolation at age 7 and 8 years predicted increases in internalising difficulties one year later, only in those children without friends, indicating that friendship may buffer the negative effects of social isolation.

Given research that has highlighted the role of attention as important in understanding the emergence of negative affect over time (e.g., White et al., 2011; Lonigan & Vasey, 2009; Lonigan et al., 2004), one mechanism by which CBT might decrease anxiety is via an increase in children's AC skills. Furthermore, evidence indicates that both anxiety and AC skills play a role in the development of peer relationships (e.g., Sterry et al., 2010; Nelson et al., 2005). As yet no studies have explored the impact of CBT in relation to AC and peer relationships. Evidence indicates that AC can be improved through training in typically developing children as young as 4 years old (Rueda, Rothbart, McCandliss, Saccomanno & Postner, 2005). Although not specifically targeting attention skills, it has been suggested that the types of instruction in CBT approaches are likely to impact on cognitive and behavioural regulation (McEvoy & Perrin, 2009). Early childhood represents a critical time when executive control functions are developing rapidly (Rueda et al., 2010) and the first significant friendships are forming

(Gleason, Gower, Hohmann, & Gleason, 2005), both of which have important implications for psychological adjustment. Therefore, it is important to evaluate the impact of early interventions in relation to these secondary outcomes.

Research Questions and Hypotheses

The present study aimed to explore the impact of a universal cognitive behavioural programme for young children (Barrett, 2007) on anxiety, and associated risk factors: BI and social adjustment. The primary aim focused on measuring change in anxiety symptoms following the intervention. The second aim was to consider the broader impact of the intervention, and specifically its impact on peer relationships. The third aim was to investigate the role of AC as a potential mechanism leading to changes in anxiety and peer relationships. The impact of developmental level and gender differences were also explored in relation to response to intervention, as well as on relationships between anxiety, BI, and peer relationships and AC.

It was hypothesised that teacher reported levels of participant's anxiety and BI would be correlated, and would decrease following the intervention. Furthermore, it was hypothesised that decreases in anxiety and BI would be associated with increases in teacher reported peer relationships and peer ratings of social acceptance and reciprocal friendships following the intervention. In relation to AC, it was hypothesised that AC would improve, and would be associated with improvements in anxiety and peer relationships.

Method

Participants

Sixty children from two reception classes in a mainstream school in a residential area of a town in the South of England took part in the intervention and the evaluation (33 female, 27 male, mean age = 60 months, SD = 3 months, range = 55 to 66 months). The majority of the participants were white British (94 %), and the total number of participants eligible for free school meals were below the national average (7.4 %). The school has an above average proportion of pupils with Special Educational Needs, with the majority of difficulties relating to social and emotional difficulties. Based on the Early Years Foundation Stage Profile (EYFSP; the statutory framework for monitoring the progress of children in the foundation stage curriculum), the percentage of children working securely within the Early Learning Goals for personal, social and emotional development (PSE) is below the national average, based on statistics produced by the government (DfE, 2012). Conversely, communication, language and literacy (CCL), and problem solving, reasoning and numeracy (PRN) is above average. Out of a combined total developmental level score of 117, the mean score for the current sample was 87.08 (see table 1). Power was calculated using G*Power version 3 (Faul, Erdfelder, Lang & Buchner, 2007). Assuming an effect at least as great as that of Stopa et al (2009), (d = 0.21), at least 141 participants were required to test a one tailed hypothesis, with 80% power and 5% significance level. The final sample was underpowered, with power to detect a small to moderate effect size reduced to .50.

Measures

Anxiety. The emotional symptoms scale of the teacher version of the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997) was used as a measure of anxiety. The SDQ is a 25 item questionnaire designed to measure emotional and behavioural wellbeing in children aged 4 – 16 years old. Each item consists of a 3-point Likert scale requiring respondents to rate ‘not true’, ‘somewhat true’ or ‘certainly true’. A total difficulties score, ranging from 0 – 40, is derived from the sum score of four subscales (emotional symptoms; conduct problems; hyperactivity/inattention; peer relationship problems). Although the whole questionnaire was completed by teachers (see appendix D), the current study focused on data from three subscales (emotional symptoms, peer problems and pro-social behaviour). The emotional symptoms scale (parent report) has been found to correlate highly with parent rated total anxiety scores (r = 0.73) on the Revised Children’s Manifest Anxiety Scale (Muris, Meesters & van den Berg, 2003). The

SDQ is widely used in screening for mental health problems and the teacher version has been shown to have good validity and satisfactory internal consistency with a Cronbach's alpha coefficient of .78 for the emotional symptoms scale (Goodman, 2001). Cronbach's alpha in the current study was found to be α.88 at first assessment and α.87 at second assessment.

The Behavioural Inhibition Questionnaire (BIQ; Bishop, Spence & McDonald, 2003) was developed for children aged 2 – 6 years old and has both parent and teacher versions. The teacher form was used in the current study and consists of 28 items, each with a 7-point Likert scale ranging from 'hardly ever' to 'almost always' (see appendix E). The items are divided into three domains; situational novelty, social novelty and physical challenge. Only the total BIQ score (range 28 – 196) was used in the current study and calculated by summing the items (including re-coded reversed scored items). The teacher form has been shown to have good internal consistency (α.97) and strong convergent validity (α.85) (Bishop et al., 2003). In the current study, a Cronbach's alpha of .93 was obtained at the first assessment point and, and α.97 at the second assessment point.

Peer relationships.

Teacher report. The peer problems and the pro-social scales of the SDQ were used to measure teacher report of peer relationships. Internal consistency for the peer problems scale has been found to be .70, and .84 for the pro-social behaviour scale (Goodman, 2001). It has been suggested that the inclusion of both strengths and difficulties increases the acceptability of the measure for use with populations where the majority are considered to be healthy (Smedje, Broman, Hetta, & von Knorring, 1999). Internal consistency for the pro-social scale in the current study was good (α = .87 pre-intervention and .85 post-intervention). Consistency for the peer problems scale was improved by removing one item (item 19), related to bullying (α =.73 pre-intervention and .61 post-intervention).

Child report. Peer sociometric nominations were used to assess peer acceptance and rejection as well as reciprocal friendships. Participants were shown pictures of their classmates and asked to name each child. Participants were given the photographs and asked to choose the three children they play with most and the three children they play with least in their class. Following methods used by Coie, Dodge & Coppotelli (1982), numbers of nominations received were standardised to create social preference scores (subtracting least liked nominations from most liked nominations) and social impact scores (the sum of most liked plus least liked nominations). These scores were then

standardised by class and summed to create five sociometric status categories (popular, rejected, neglected controversial, average). Popular children were those that received the highest number of positive nominations. Rejected children received few positive and many negative nominations. Neglected children received few positive or negative nominations. Controversial children received both positive and negative nominations in equal measure. The current study used two indices of sociometric status including reciprocal friendships (the number of mutual positive nominations). In addition, sociometric status was collapsed into two groups with popular and average children grouped as 'liked', and neglected, controversial and rejected as 'disliked'.

Sociometric nomination systems have been found to have good behavioural discrimination across status groups (Terry & Coie, 1991). More recently, Wu et al (2001) concluded that sociometric nominations were reliable (.79) when used with children aged 3 - 6 years old, using photographs of the children to aid identification of peers, and that temporal stability was relatively high (.77) over an 8-week period.

Attentional control. A variation of the Attention Network Test (ANT; Rueda et al., 2004[a]) was used in the current study, focusing particularly on the attention network. Conflict tasks are commonly used to measure AC (Rueda, Postner & Rothbart, 2005). AC is assessed by the participant's ability to shift from a situation where there is no conflict to one where conflict resolution is required, and by responding to subdominant stimuli over competing, dominant stimuli (Rueda, Postner, Rothbart & Davis-Stober, 2004[b]). A child version of the Arrow Flanker Task was developed for the current study and downloaded onto a laptop computer.

Participants were presented with rows of five symbols on a computer screen and instructed to identify the direction of the central arrow, highlighted in red, by pressing corresponding left or right buttons on the response box as quickly and accurately as possible. They were first shown index cards of the single rightward and leftward arrow, with equal signs either side (corresponding to the neutral condition) and were asked to demonstrate which button on the response box corresponded (i.e., was the same) with the arrows in each picture. A picture of a leftward and rightward arrow was placed above the corresponding left and right buttons. They were then told that sometimes the arrows would be alone, the way they had just seen, and sometimes there would be other arrows. They were instructed that in this case they should pay attention to the red arrow in the middle and press the button on the response box which showed the same arrow. The experimenter then showed the participants cue cards showing the stimuli in a congruent

configuration (central arrow pointing the same way as the flanker arrows either side) and an incongruent configuration (central arrow pointing the opposite direction to the flanker arrows either side), and asked them to demonstrate which button they should press to be the same as the red arrow in the middle. Once it was clear that the participants understood the instructions, they were presented first with a practice set, which consisted of 12 trials, which were either congruent, incongruent or neutral. Participants were allowed to have a maximum of three practices to familiarise with the task and only preceded once they had achieved correct answers for all the trials.

The experimental task consisted of three blocks, each consisting of 48 individual trials. The congruent, incongruent and neutral trials were presented in a random order. The total duration of each trial was set to a maximum of 5000ms. A pre-stimulus fixation point appeared for 1000ms. Participants viewed the screen from a distance of approximately 53cm. Each arrow was font size 90 (Ariel), and spaced approximately 3 mm apart. Participants were given 1 minute break after each block, and the overall task took around ten minutes for each child. No feedback was provided for correct or incorrect answers. Accuracy and response time were recorded. Preliminary analyses looked at reaction times (RTs) for each trial type; however, the focus of the analysis for this task was a conflict score. This score was calculated by subtracting median RT of the congruent items from median RT of the incongruent items. Higher conflict scores are indicative of greater interference (i.e., less ability to filter out distracting stimuli).

Variations of the ANT have been found to be effective in assessing the attentional networks of children aged 4 years and above (Rueda et al., 2004[a]). Using neuro-imaging research, the adult ANT has been shown to have good validity (MacLeod et al., 2010) and reasonable test-retest reliability (Fan et al., 2001). Data on the psychometric properties of the child version are limited. Rueda et al (2004[a]) examined test-retest reliability of the flanker task in children aged 6 – 10 years. Using split half reliability, RT (.94) and error rate (.93) were highly correlated.

Intervention integrity

To assess the implementation integrity, the class teacher delivering the programme was required to complete a weekly checklist stating approximately how many participants met the learning objectives for each session. Possible responses were ‘none’, ‘some’, ‘half’, ‘most’ or ‘all’. For example, in session two the class teacher would estimate how many ‘pupils can identify happy, angry, sad, and scared feelings’.

Procedure

Ethical approval was obtained from the University of Southampton Ethics Committee before commencing the research (see Appendix F). All schools who had received training to deliver Fun FRIENDS as part of their curriculum were approached through telephone, letter and email and asked to consider taking part in an evaluation of the programme. The purpose of the study was explained in full (see appendix G). Nine schools were contacted, and one school agreed to take part in the summer term evaluation. The most common reason given by schools who did not take part included logistical constraints, which meant that they would not be delivering the programme until the Autumn term. Two schools had also had a change of staff, which meant that delivery was no longer going to be possible. Upon agreement with the selected school, parental opt-out consent forms were sent out. The nature of the study, their right to withdraw and confidentiality of data was fully explained to the participants' parents in an information letter (see appendix H). Parents were informed that their child would be excluded from the evaluation component of the task if they chose to opt out. No parents opted out of the current study. In the 2 weeks prior to the commencement of the intervention, pre-measures were collected from teachers and participants. The class teachers completed paper copies of the SDQ and the BIQ for each participant. Participants completed the Flanker task and the sociometric survey measures individually in a quiet room with the researcher. It took approximately 15 – 20 minutes for each participant to complete these measures. This procedure was repeated at the end of the 12 week programme. The class teacher also completed a measure of implementation fidelity.

Intervention

The Fun FRIENDS programme (Barrett, 2007) is a universal preventative intervention that aims to promote resilience and prevent anxiety by building social-emotional skills in children aged 4 – 7 years. FRIENDS is an acronym for the main elements of the programme (F = feelings; R = relax; I = I can try; E = encourage; N = nurture; D = don't forget to be brave; S = stay happy). Through developmentally tailored activities incorporating play based, experiential learning children are taught cognitive behavioural strategies to manage challenging situations and to 'bounce back' from adverse events (Pahl & Barrett, 2007). Teachers are trained to deliver the program and reinforce the use of coping strategies in the classroom. Previous studies have found that teachers can effectively implement interventions for anxiety, as evidenced by significant reductions in symptoms (Neil & Christensen, 2009).

Fun FRIENDS is a downward extension of the FRIENDS for Life programme (Barrett, Lowry-Webster, & Turner, 2000). FRIENDS for life is endorsed as an effective intervention by the World Health Organisation (2004) following a number of studies that found it to be effective in reducing anxiety and emotional difficulties in children and adolescents aged 7 – 18 years old (e.g., Barrett, Farrell, Ollendick, & Dadds, 2006; Lock & Barrett, 2003; Lowry-Webster, Barrett, & Dadds, 2001; Lowry-Webster, Barrett, & Lock, 2003). The programme is delivered over 10 weekly sessions of 45 – 50 minutes each. The teacher is provided with a Fun FRIENDS facilitators manual (Barrett, 2007), which details goals, outcomes and activities for each session. The manual allows for some flexibility in implementation, so that the teacher can deliver activities from each session over different time slots if necessary, whilst still ensuring adherence to the learning objectives and delivering the sessions in chronological order. This flexibility was sometimes necessary due to timetabling constraints and needs of different groups within the classes. The manual also provides a parental guide and suggested home practice tasks.

Results

Approach to Analysis

The data was initially screened for the presence of outliers and violations of assumptions. A total of 10 outliers were found across all the variables (> 3 standard deviations away from the mean), and replaced with one more than the next highest number following procedures for dealing with outliers suggested by Field (2009). Emotional symptoms, peer problems and reciprocal friendships were found to violate assumptions of parametric tests, and were therefore analysed using non-parametric equivalents.

Cases with missing data were excluded from data analysis. In total, 23% of the sample did not complete post-intervention assessments. This attrition was most commonly due to participants being absent on the day of assessment (n = 2 at pre-assessment and n = 14 at post-assessment). Three participants had incomplete attention control measures due to failure to finish the test, and thus this data was excluded from analysis. For the main analyses, t-tests, ANOVAs, and non-parametric equivalents were conducted on the difference scores i.e., between pre and post intervention scores on each measure. Effect sizes were measured using Pearson's correlation coefficient (*r*) as suggested by Field (2010). This indicates the strength of relationship between two variables, ranging from a positive correlation (+1) to a negative correlation (-1). An effect size of .10 is considered to be small, .30 is considered to be medium and .50 or greater is a large effect size (Cohen, 1992). As well as exploring statistically significant change scores within the group, the researchers were also interested in evaluating the clinical significance of change from time 1 (T1) to time 2 (T2). Clinically significant change was calculated for the primary outcome measures (anxiety and BI) on the basis of reliable change (RC) index proposed by Jacobson and Truax (1991). The RC is calculated by subtracting the post treatment score from the pre treatment score, and dividing by the standard error of the differences.

Descriptive Analyses

Means, standard deviations, final sample sizes and main outcomes for sub-scale scores at pre and post intervention are summarised in Table 1. Mean scores for anxiety, teacher reported peer relationships and attention control improved from T1 to T2. Mean scores for child reported sociometric status and reciprocal friendships slightly decreased. Changes in risk status over time, based on SDQ sub-scales, are shown in Table 2. The percentage of participants in the typical range for emotional symptoms increased from 78% to 85%

from T1 to T2, with reductions in the borderline group accounting for this change. The number of participants within the abnormal range for emotional symptoms did not change over time. The percentage of participants falling within the typical range for peer problems increased by 20% from T1 to T2, with the largest changes occurring in participants who fell within the abnormal range at T1, who reduced from 27% to 10%. Pro-social behaviour also increased over time from 45% to 73% falling within the typical range at T2.

Table 1

Means and Standard Deviations for anxiety, behavioural difficulties, attention control and peer relationships at time 1 and time 2

	Time 1				Time 2				
Variable	*M*	*Range*	*SD*	*N*	*M*	*Range*	*SD*	*N*	*p*
Developmental profile score	87.08	59	11.63	60	-	-	-	-	-
Anxiety									
SDQ emotional difficulties	2.27	10	2.90	60	1.83	10	2.64	60	.026*
BI Total	94.94	149	44.68	37	78.06	116	30.41	34	.018*
Peer relationships									
SDQ peer problems	2.90	8	2.24	60	1.78	7	1.81	60	<.001**
SDQ pro-social	5.30	10	3.29	60	6.65	10	2.83	60	<.001**
Sociometric status	1.68	2	0.47	60	1.53	2	0.50	60	.078
Reciprocal friendships	1.27	3	1.09	60	1.03	3	0.99	60	.078
Attention control									
Conflict score	207.22	892	206.19	55	97.88	561	126.53	43	.006*

Note. SDQ = Teacher reported Strengths and Difficulties Questionnaire; BI = Teacher reported Behavioural Inhibition. *< .05, **<.001; Developmental profile score = Average total score on Early Years Foundation Stage Developmental Profile out of a total score of 117.

Table 2

Percentage of participants falling within typical, borderline and abnormal ranges for SDQ subscales emotional symptoms, peer problems and pro-social behaviour using provisional bandings provided by Goodman et al (1997).

	Time 1			Time 2		
SDQ sub-scale	Typical (%)	Borderline (%)	Abnormal (%)	Typical (%)	Borderline (%)	Abnormal (%)
Emotional Symptoms	47 (78)	5 (8)	8 (13)	51 (85)	1 (2)	8 (13)
Peer Problems	38 (63)	6 (10)	16 (27)	50 (83)	4 (7)	6 (10)
Pro-social Behaviour	27 (45)	11 (18)	22 (37)	44 (73)	1 (2)	15 (25)

Table 3 shows the correlations between the main variables in the study at T1. Pro-social scores within the borderline and abnormal ranges reflect low pro-social behaviour deemed to have negative effects. Teacher report of emotional symptoms was significantly correlated with overall BI. Teacher report of peer problems and pro-social behaviour were not significantly correlated. However, peer problems were negatively correlated with participant reported reciprocal friendships, indicating that as teacher reported peer problems increased, the number of reciprocal friendships reduced as reported by children. In addition, teacher reported pro-social behaviour was negatively correlated with participant reported sociometric status and positively correlated with number of reciprocal friendships.

Emotional symptoms were significantly positively correlated with teacher reported peer problems, but not with pro-social behaviour. Total BI was not significantly correlated with peer problems or with pro-social behaviour. There was no significant association between anxiety or BI and child reports of sociometric status or number of reciprocal friendships. Developmental level (based on total score on the EYFSP) was significantly negatively correlated with peer problems and child reported sociometric status, and positively correlated with pro-social behaviour. Gender did not significantly correlate with any variables. AC was not significantly correlated with any variables at pre-intervention.

Table 3

Summary of correlations at time 1 between sample characteristics (gender and development), teacher report anxiety, peer relationships and pro-social behaviour, child report sociometric status and reciprocal friendships and attentional control

Variable	1	2	3	4	5	6	7	8	9
Sample characteristics									
1. Gender	1	-.10	-.24	.16	-.02	-.19	.10	-.10	-.04
2. Developmental profile		1	-.21	-.30	-.32*	.47**	.27*	.23	-.03
Anxiety									
3. SDQ emotional symptoms			1	.50**	.45**	-.10	-.09	-.11	.00
4. BI Total				1	.28	-.08	.13	.09	-.13
Peer relationships									
5. SDQ Peer problems					1	-.23	.06	-.39**	-.08
6. SDQ Pro-social behaviour						1	.27*	.27*	-.07
7. Sociometric status							1	.-.30*	.05
8. Reciprocal friendships								1	-.27$^{\#}$
Attentional control									
9. Conflict score									1

Note: SDQ = Strengths and Difficulties Questionnaire; BI = Behavioural Inhibition; $^{\#}p < .1$, $^{*}p < .05$, $^{**}p < .001$

Flanker task integrity

In order to check the validity of the Flanker test, the response times for each condition were explored using a repeated measures ANOVA for time (T1 and T2) by trial type (congruent, neutral and incongruent). This analysis showed that there was a main effect of time, with overall response times being significantly different between T1 and T2, $F(1, 42) = 12.17$, $p = <.01$. The mean response time for T1 was 1394.42ms and for T2 was 1209.10ms. There was a main effect of trial type, $F(1.27, 53.40) = 38.58$, $p < .01$ (Mauchly's test indicated that the assumption of sphericity had been violated for the main effect of trial type, $X^2 (2) = 34.91$, $p < .05$), and therefore multivariate tests are reported ($\varepsilon = .64$). Mean RTs for congruent, incongruent and neutral trials were 1257.14ms, 1414.57ms and 1233.58ms respectively. There was a significant interaction effect between trial type and time, $F(2, 84) = 6.73$, $p <.01$. To break down this interaction, contrasts were performed comparing all trial types between each time point. Mean RTs were significantly lower for all trial types at time 2 compared to time 1 (see table 4 and Figure 1). In addition, analyses within each time point showed that for both T1 and T2, RTs in congruent trials were significantly different compared to those for congruent and neutral trials. In addition RTs for congruent trials were significantly greater for those to neutral trials at T1; but this difference was not significant at T2; see Figure 1.

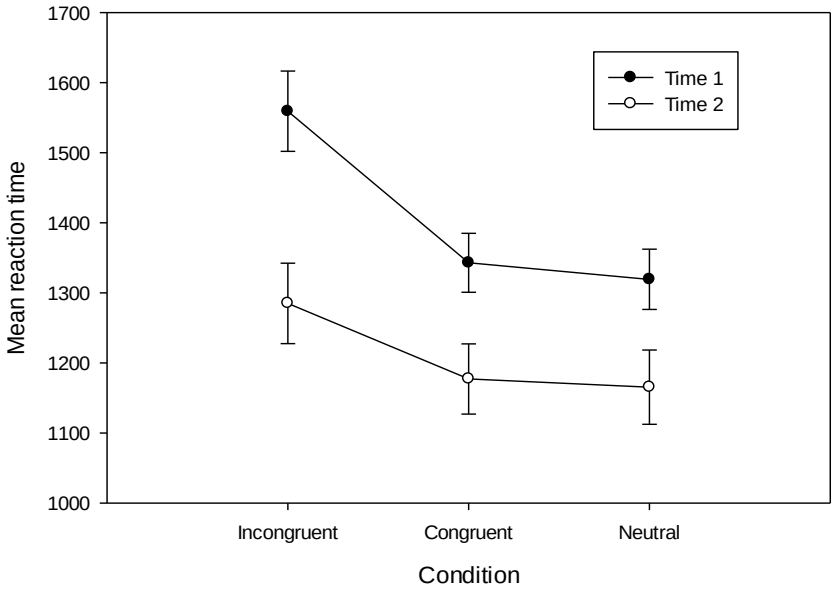


Figure 1. Graph to show mean reaction times for incongruent, congruent and neutral flanker conditions at time 1 and at time 2

Table 4: Contrast of time 1 with time 2 for trial types neutral, congruent, and incongruent

	Time 1		Time 2				
Trial Type	*M*	*SE*	*M*	*SE*	*t*(42)	*p*	*Pearson's r*
Neutral	1301.88	50.36	1165.28	52.99	2.57	.014*	.14
Congruent	1337.23	55.79	1177.05	50.09	3.19	<.01#	.20
Incongruent	1544.16	68.87	1284.98	57.54	3.91	<.001**	.27

*Note: **p<.001, *p<.05, #p<.01*

Change over Time

In order to explore the impact of the intervention on different variables over time, further analysis considered the difference in mean scores from pre (T1) to post (T2) intervention.

Primary outcomes.

Anxiety. Emotional symptoms were significantly lower at T2 (*Mdn* = 1.00) than at T1 (*Mdn* = 1.00), *Z* = - 2.23, *p* = .026, *r* = - .20. BI significantly decreased from T1 (*M* = 93.41, *SE* = 7.86) to T2 (M = 78.06, SE = 5.21), *t*(33) = 2.50, *p* = .018, *r* = .40 (see figure 2). Overall, one participant showed clinically significant deterioration in emotional symptoms (i.e., a meaningful increase in anxiety), and one participant showed clinically significant deterioration in BI (i.e., a meaningful increase in BI) from T1 to T2. The remaining participants showed no clinically significant change over time.

Secondary outcomes.

Peer relationships. On average, peer problems were significantly lower at T2 (*Mdn* = 1.00) than at T1 (*Mdn* = 3.00), *Z* = - 4.17, *p* < .001, *r* = -.38 (see figure 2). Participant scores in pro-social behaviour significantly increased from T1 (*M* = 5.30, SE = .42) to T2 (*M* = 6.66, SE = .36), *t*(59) = -3.72, *p* < .001, *r* = .44. There was a non-significant difference in number of reciprocal friendships at T2 (*Mdn* = 1.00) compared to T2 (*Mdn* = 1.00), Z = - 1.76, *p* > .05. Using McNemar's test, sociometric status also did not change significantly from T1 to T2, X^2(1, N = 60) = 5.29, p > .05.

Attentional control. Conflict scores on the flanker task were significantly lower at T2 (*M* =97.88, *SE* = 19.30), compared to T1 (*M* = 196.47, *SE* = 33.87), *t*(42) = 2.92, *p* = .006, *r* = .41.

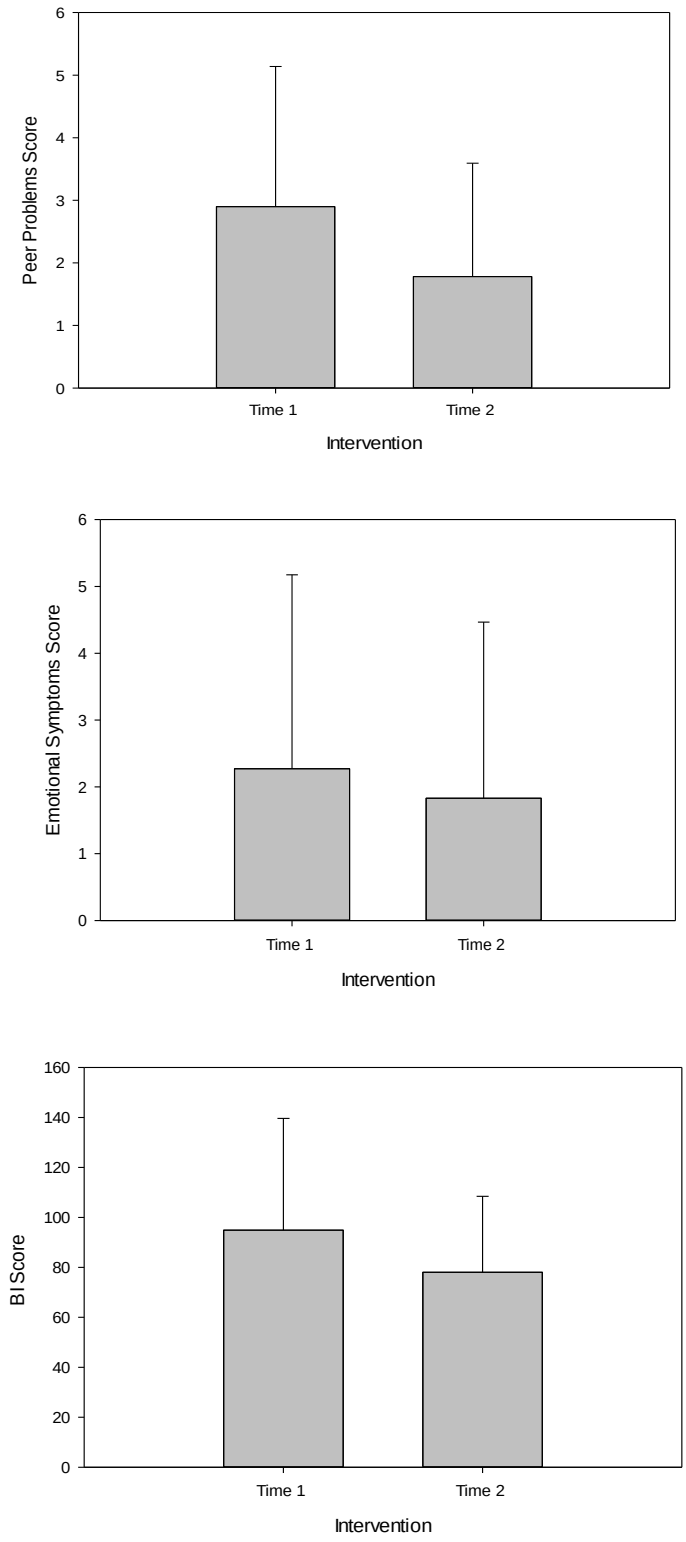


Figure 2. Mean teacher report scores for peer problems, emotional symptoms and BI at time 1 and at time 2

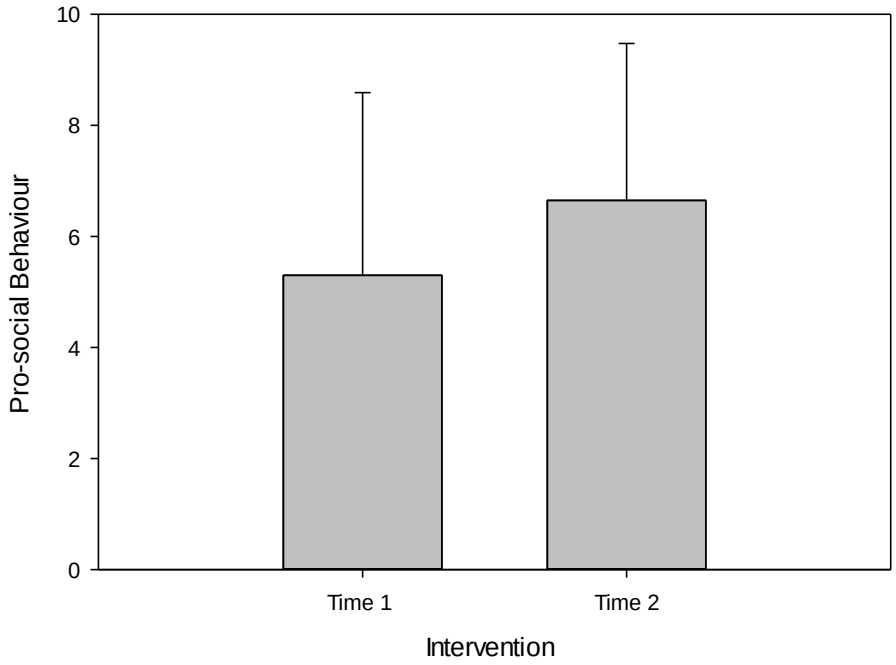


Figure 3. Mean teacher report scores for pro-social behaviour at time 1 and at time 2

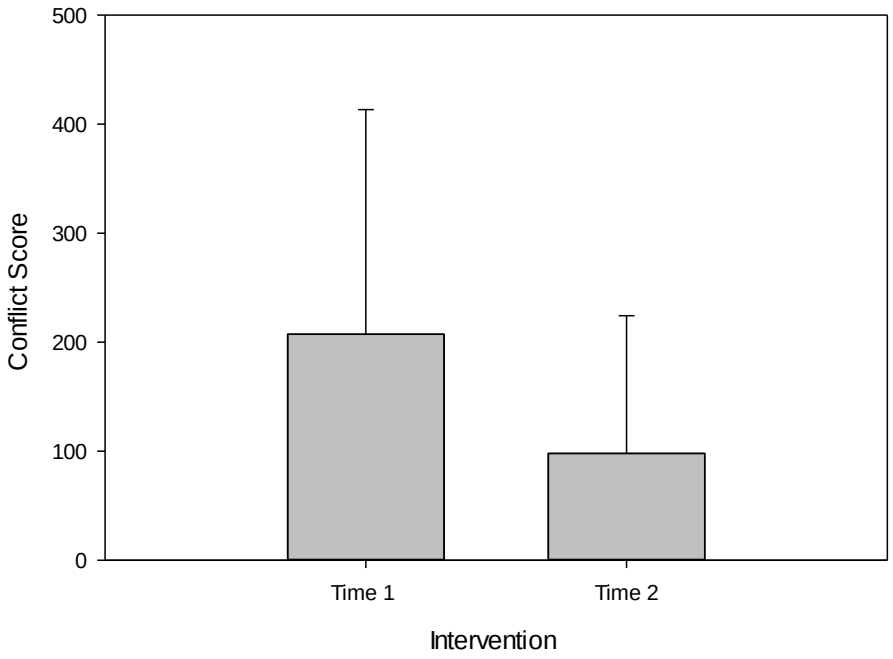


Figure 4. Mean conflict scores on flanker task at time 1 and at time 2

Understanding Change

In order to explore the factors associated with change over time in anxiety, further analysis considered the correlations between change scores from pre to post intervention (see Table 4). Change was calculated by subtracting T2 scores from T1 scores. Negative scores indicated a reduction (i.e., improvement) in emotional symptoms, BI, peer problems, and AC, and a decline in pro-social behaviour, sociometric status, and reciprocal friendships. Positive scores indicated an improvement in pro-social behaviour, sociometric status, and reciprocal friendships, and a worsening in emotional symptoms, BI, peer problems, and AC.

Change in emotional symptoms was significantly correlated with change in teacher reported peer problems, indicating that as anxiety reduces over time, this is associated with a positive change in teacher report of peer difficulties (see figure 3). A reduction in peer problems was associated with positive change in reciprocal friendships as reported by children. Furthermore, change in AC was negatively correlated with a change in the number of peer reported reciprocal friendships, indicating that as AC scores reduced (i.e., less interference), the number of reciprocal friendships increased (see figure 4). A change in AC was not associated with change in anxiety (emotional symptoms or BI).

Table 5

Summary of correlations between change scores in sample characteristics (gender and development), teacher report anxiety, peer relationships and pro-social behaviour, child report sociometric status and reciprocal friendships and attentional control

Variable	1	2	3	4	5	6	7	8	9
Sample characteristics									
1. Gender	1	-.10	.23	.11	-.11	-.10	.12	-.06	.01
2. Developmental profile		1	-.13	.03	.22	-.11	.01	.11	-.04
Anxiety									
3. SDQ emotional symptoms			1	.06	.36**	.04	.11	-.09	.03
4. BI Total				1	-.01	.03	.01	-.17	-.06
Peer relationships									
5. SDQ Peer problems					1	.15	-.08	-.32*	-.11
6. SDQ Pro-social behaviour						1	-.04	-.11	-.04
7. Sociometric status							1	.21	-.16
8. Reciprocal friendships								1	-.37*
Attentional control									
9. Conflict score									1

Note: SDQ = Strengths and Difficulties Questionnaire; BI = Behavioural Inhibition; $^{\#}p < .1$, $^{*}p < .05$, $^{**}p < .001$

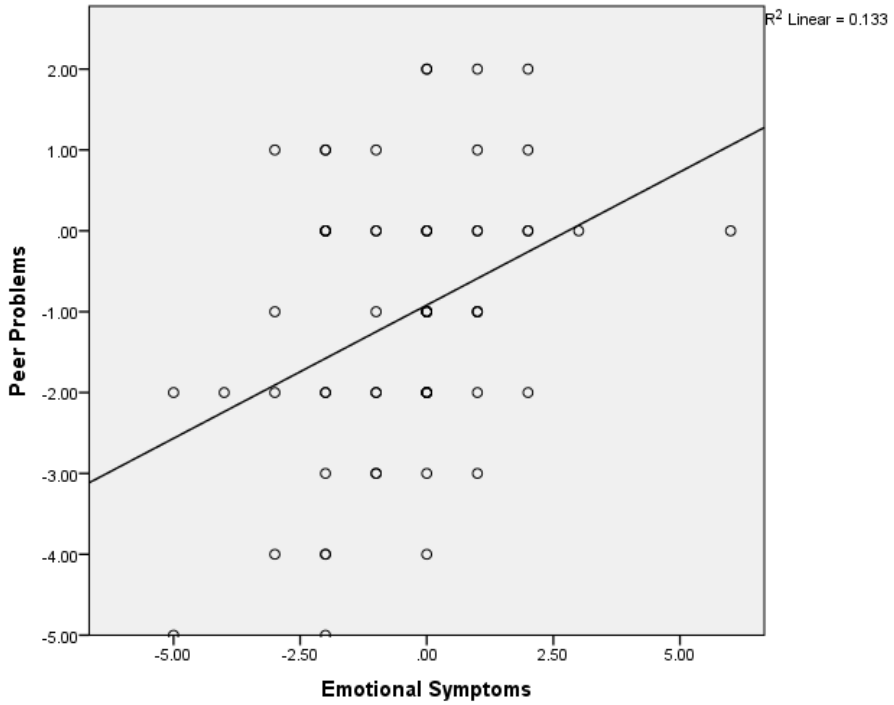


Figure 5. Scatter plot to show correlation between changes in emotional symptoms with change in peer problems

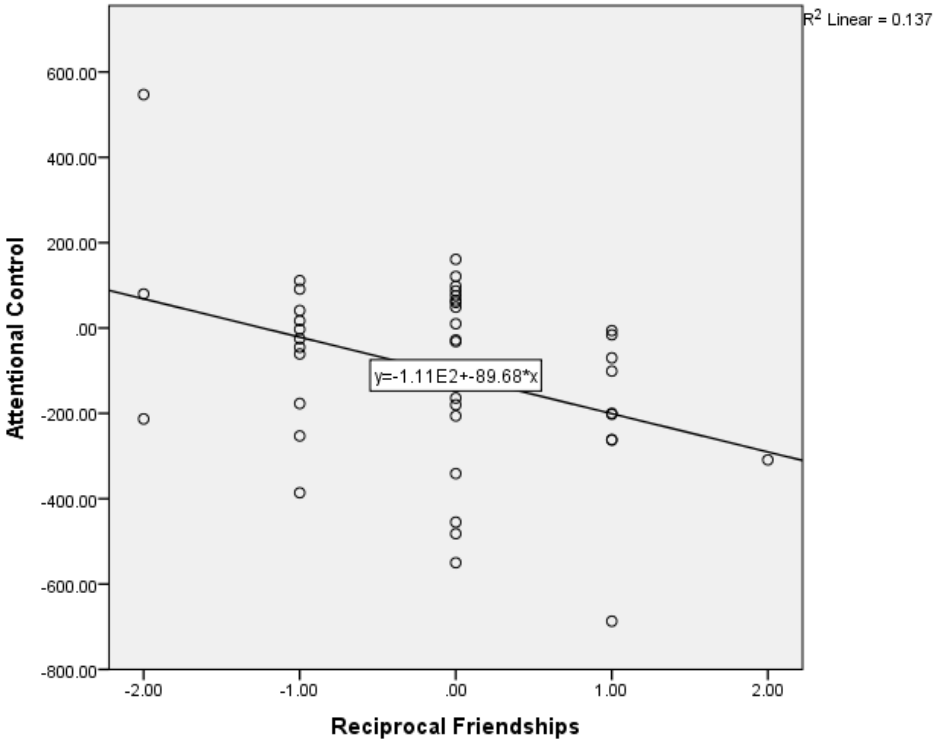


Figure 6. Scatter plot to show correlation between change in attentional control with change in number of reciprocal friendships

Discussion

The aim of the current study was to explore the effectiveness of a universal CBT intervention in reducing anxiety and promoting resilience in young children. Its objective was to extend previous research to understand more clearly factors associated with change in anxiety. The current findings show statistically significant reductions in anxiety (emotional symptoms and BI) following the Fun Friends programme. In addition, the results showed that teacher report of peer problems and pro-social behaviour improved from time 1 to time 2. There was no significant difference in child report of sociometric status or reciprocal friendships following the intervention. The secondary hypothesis was partially supported, with reductions in emotional symptoms being associated with a positive change in peer problems as reported by teachers. A reduction in teacher reported peer problems over time was negatively associated with a change in the number of reciprocal friendships as reported by children, so as peer problems reduced, reciprocal friendships increased. Importantly, AC improved over time and was significantly associated with a positive change in the number of reciprocal friendships, providing some support for the proposition that AC may be a significant factor in predicting social adjustment.

The finding that anxiety reduced following the universal implementation of the Fun Friends programme is consistent with previous findings (see Pahl and Barrett, 2010). In contrast to these previous findings that girls showed a greater reduction in anxiety and BI than boys, the current study did not find significant associations between gender and anxiety reduction. These mixed findings regarding gender are reflected in the wider literature on universal anxiety interventions, and further research is required to clarify these associations. The small effect size for anxiety reduction is consistent with previous evaluations of universal prevention interventions (e.g., Mychailyszyn et al., 2012). Inspection of clinical cut off points for the emotional symptoms scale revealed that the greatest change occurred in the borderline group. Conversely, those in the abnormal range did not change, suggesting that universal interventions may be less effective for those exhibiting the highest levels of anxiety. This is consistent with evidence to suggest that universal interventions may not be intensive enough for this group, who may need additional, targeted support (e.g., Teubert & Pinquart, 2011). In addition, the current study included a calculation of meaningful change, and found no clinically significant improvements in anxiety among participants. This indicates that despite statistically significant improvements in anxiety, the magnitude of effects did not lead to individual change from a dysfunctional to a functional population range . This may have been

impacted by the small sample size and reduced power to detect meaningful changes, or the nature of using a non-clinical sample.

In addition to exploring the impact of the intervention on anxiety reduction, the current study also sought to address secondary outcomes in relation to peer relationships, social adjustment and AC. While teachers reported positive changes in peer relationships over time in terms of a reduction in peer problems and an increase in pro-social behaviour, child reports of sociometric status and reciprocal friendships did not change significantly from time 1 to time 2, suggesting that they were relatively stable over this time period. The finding that sociometric status was largely stable over the 12 weeks from pre to post intervention is consistent with previous research by Wu et al (2011), who found high stability (.77) for sociometric ratings of 3 – 6 year old children over an 8 week period. Furthermore, they found only a moderate correlation between teacher and child ratings of peer popularity.

Previous studies have supported theoretical models that lowered AC is associated with increased BI and the development of anxiety (e.g., White et al., 2011; Fox et al., 2005). The current study did not find any relationship between teacher report of anxiety and AC. It is possible that this lack of effect is related to the method used to assess AC. For example, Muris, Mayer, van Lint and Hofman (2008) found a highly significant, medium sized correlation between AC and anxiety when based on self-reported AC (Attentional Control Scale for children), compared to a very small, non-significant correlation when based on a performance based measure of AC (Test of Everyday Attention for children) in children aged 9 – 13 years.

Considering associations between changes in key variables the results showed that a reduction in teacher report of emotional symptoms was also associated with a reduction in peer problems according to teacher report but not changes in child reported sociometric status or reciprocal friendships. Given that anxiety did not correlate with peer reports of liking or friendship, this finding is consistent with evidence which indicates that young children who are socially inhibited or high in negative affect are not actively rejected until middle childhood, when such behaviour becomes increasingly non-normative (Verduin & Kendall, 2008; Lauresen et al., 2007). Therefore, the discrepancy between teacher and child report suggests that although children may appear to be interacting more with their peers, they may be overlooked in peer nomination methods where the number of nominations are restricted to three per child. This is consistent with evidence to suggest that anxious or withdrawn children are more likely to be characterised as

neglected rather than rejected (e.g., Scharfstein, Alfano, Beidel and Wong, 2011; Ollendick, Weist, Borden, & Greene, 1992). Teacher and child report in the current study did concur in relation to the association between changes in peer problems and reciprocal friendships. This is notable given that teacher reports occurred independently of child ratings of friendships, and provides support for the validity of teacher perceptions of peer relationships.

In addition, change in anxiety following the intervention was not linked to change in AC. It is possible that some other mechanism other than AC accounted for the reduction in anxiety over this time period. Given the medium sized correlation between change in teacher reported peer problems and emotional symptoms, it is possible that an increase in interactions with peers leads to reductions in anxiety. Clear causal directions are difficult to establish in the absence of a control group, however, a bi-directional relationship between anxiety and peer relationships is recognised in the literature (e.g., Laurensen et al., 2007).

The association between a change in AC and reciprocal friendships is consistent with theory and research, which shows that self-regulation is a crucial factor in determining successful peer relationships (e.g., Fabes et al., 1999; Spinrad et al., 2006). Interestingly, change scores in AC were not associated with change scores in sociometric status. This is in line with evidence to suggest that there is considerable stability in pre-school peer reputations over time (Wu et al., 2011). Furthermore, the finding that AC and sociometric status were unrelated is inconsistent with Sterry et al's (2010) finding that attentional focus related to behaviours that were associated with lower peer acceptance. Given that the findings in Sterry et al's study related to older children (8 – 11 years), it is possible that AC becomes more salient as children mature. Evidence indicates that AC improves significantly through maturational processes between ages of 4 – 7 (Rueda et al., 2004).

Limitations

While this study revealed some interesting findings, and has strengths in relation to the use of both participant and teacher informants, there are a number of limitations which should be taken into account when interpreting the results. The most significant limitation was the lack of control group design that included a wait list or active control group. Therefore, it is not possible to determine whether the changes in primary and secondary outcomes were due to factors unrelated to the intervention, for example, developmental maturation or some other activity. Secondly, the sample size was small, with an attrition

rate of almost a quarter at time 2 due to school absences. In addition to natural attrition, incomplete data was received for the BIQ, which resulted in only half of the total data set providing information on BI at pre and post intervention. Therefore, the power to detect significance is reduced and the extent to which the findings can be generalised to the wider population is limited. Generalisation is further compromised due to the nature of the selection method, with the current sample based on a convenience sample rather than a randomly selected sample. The study sample had an elevated pattern of peer problems and pro-social behaviour difficulties, with approximately a third of the sample scoring in the abnormal range on these variables at time 1. This may have been a result of the mixed demographics in the school catchment area. Finally, there was no follow up in the current study, and it is possible that some effects do not become apparent for some time after the intervention (Neil & Christensen, 2009).

While it is encouraging that class teachers were able to successfully implement the Fun Friends intervention following training, the intervention was evaluated by the same class teachers, which could lead to informant bias based on reporting expected effects. While efforts were made to measure the fidelity of the intervention, this was also based on self-report. Independent observations of sessions would have strengthened the integrity of programme implementation. In addition, anxiety symptoms were inferred by class teachers, rather than based on child self-report. There is some evidence that internalising difficulties such as anxiety can overlooked (Tomb & Hunter, 2004), therefore, it is possible that perceptions of anxiety were inaccurate and under-identified. While the current study utilised standardised assessments with good reliability and validity, a more specific measure of anxiety may have strengthened the findings. The inclusion of parent reports may have further validated the effectiveness of the study. However, the reliability of parental reports has been questioned (e.g., Rapee, 2002), and previous research has highlighted difficulties associated with low parental returns (e.g., Pahl & Barrett, 2010).

Due to the small sample size, sociometric categories were collapsed into two categories (liked and disliked), rather than the five original categories (i.e., rejected, neglected, controversial, popular and average). Evidence indicates that rather than representing a homogenous group, those classified as neglected, controversial or rejected, represent distinct individual and behavioural characteristics (Gifford-Smith & Brownell, 2003). Therefore, treating them as one group (i.e., disliked) may have lost important information on response to intervention. A second limitation in relation to the friendship measure concerns the potential for confounding friendship and group processes by using the same measure to assess sociometric status and reciprocal

friendships (Gifford-Smith & Brownell). In addition, no data was collected on friendship quality. This may be important as there is some evidence to suggest that the friendships between anxious or withdrawn children are of lower quality than those of non-anxious controls (e.g., Rubin, Wojslawowicz, Rose-Krasnor, Booth-LaForce and Burgess, 2006). Rubin et al highlighted the value of gaining quantitative and qualitative information when considering risk and protective factors in relation to friendship. Furthermore, the measures used in the current study did not distinguish social anxiety from more generalised anxiety, which may have differential effects on peer relationships. For example, Scharfstein et al (2011) found that compared to children with social anxiety, children with generalised anxiety were as likely as non-anxious peers to have best friends, be rated as social-emotionally competent and participate in group activities.

Implications for Educational Psychologists

There is currently a significant emphasis from policy makers on the importance of mental health and wellbeing, with research demonstrating clear implications for learning, achievement and later adjustment (e.g., Farrell & Barrett, 2007; Wood et al., 2012; Goodwin et al., 2002). Educational Psychologists (EPs) are becoming increasingly involved in the selection, implementation and evaluation of preventative interventions designed to promote resilience and emotional wellbeing in children and young people. An important aspect of EP practice is the dissemination of evidence-based practices to schools and the wider community. Therefore, a clear understanding of the effectiveness of preventative interventions such as the Fun Friends programme is important.

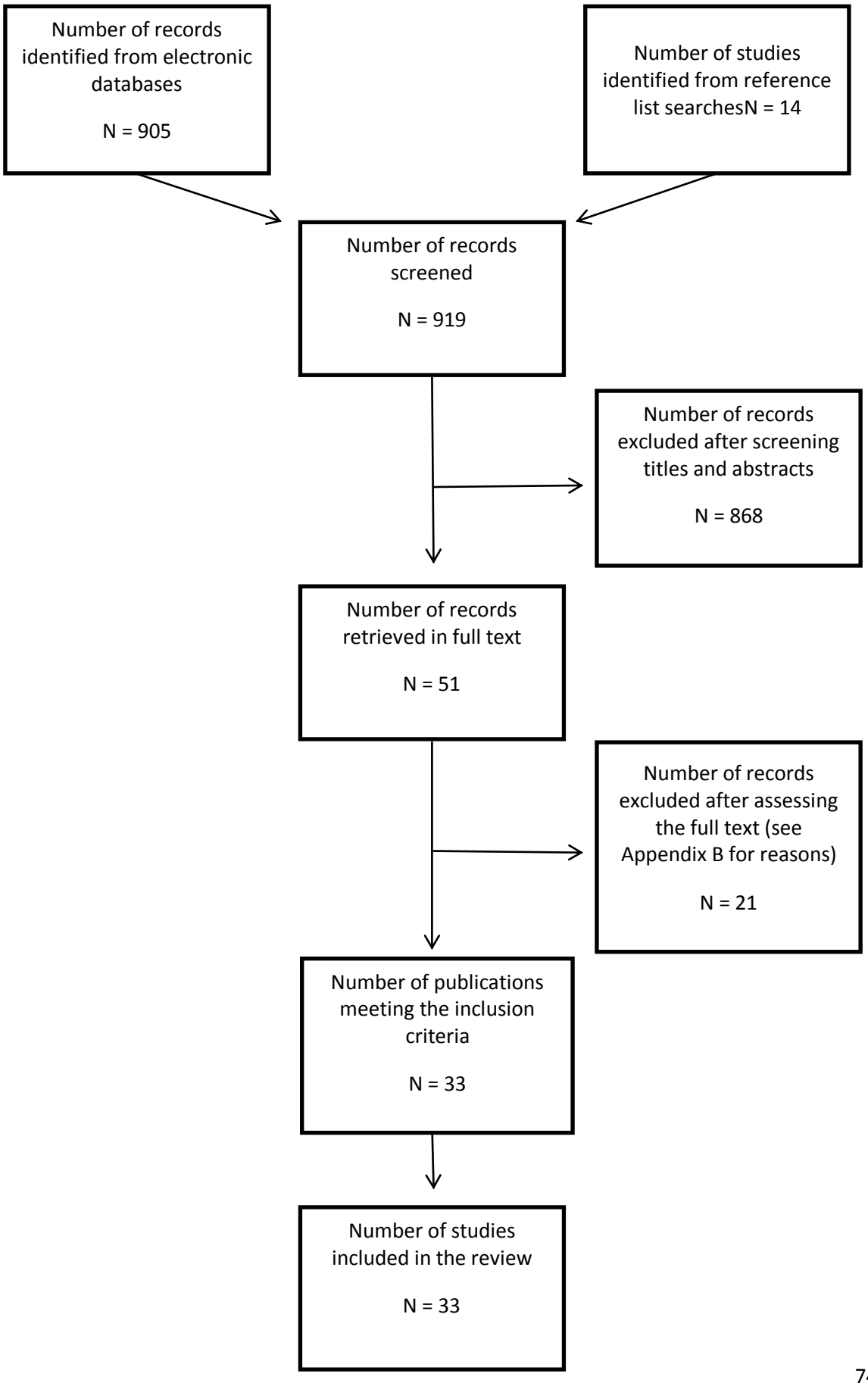
Due to the lack of a comparison group, the findings from the current study cannot conclusively claim that the intervention led to the observed reductions in anxiety and peer interactions. Further carefully designed research will be required to determine the impact of universal interventions with young children, and this is something that EPs may be well placed to implement. Nevertheless, the current findings highlight the role of AC on peer relationships. Given the associations found between anxiety and peer problems in the current study, and evidence to suggest that peer problems contribute to later internalising difficulties, it would seem prudent to intervene at this age to prevent difficulties emerging. EPs are in an ideal position to collaborate with school staff to plan interventions to promote self-regulation, social skills and resilience. The use of sociometric nominations with children may be a useful and valid way to identify children at risk of social exclusion and monitor the effectiveness of interventions to increase the social acceptance of children.

Summary

An exploration of the relationships between primary and secondary outcomes and reductions in internalising difficulties provides some insight into the potential factors involved in predicting positive outcomes (Stopa, Barrett & Golingi, 2010). This study aimed to explore the impact of a universal CBT intervention on anxiety as a primary outcome, and peer relationships as a secondary outcome. In addition, this study was the first to explore the role of AC as a potential mechanism leading to changes in anxiety following the intervention. The findings revealed that both anxiety and BI reduced following the intervention, providing further support for the effectiveness of universal interventions with young children under the age of 7 years. Improvements in teacher reported peer problems were also found in the current study. Changes in AC was unrelated to anxiety, but was associated with an increase in reciprocal friendships.

The findings of the current study add to the current literature base, and provide an impetus for future research to establish which aspects of the programme may be most effective in promoting resilience and reducing emotional difficulties in children. For example, further exploration of the aspects of CBT programmes which may support the development of AC, as well as the longitudinal associations between AC, social adjustment and gender. In addition, future research should explore the use of parent components and include parent reports of outcome measures. A key challenge will be to establish more effective ways to encourage parents to become involved in the delivery and evaluation of interventions. Studies should incorporate long term follow up to establish whether improvements in anxiety are maintained over time, as well as clarify the role of gender in responsiveness to intervention. Furthermore, studies should include larger sample sizes and matched control/comparison groups to determine the clinical effectiveness of universal interventions. Finally, it would be interesting avenue for future research to explore the relative impact of interventions on different types of anxiety, for example, generalised versus social anxiety. Studies rarely report the clinical significance of interventions. The current study highlights the importance of calculating and reporting meaningful change when statistically significant differences are found.

Appendix A: Flow diagram of Literature Review Process



Appendix B. List of Excluded Studies

Reference	**Rationale for exclusion**
Barrett, P.M., Moore, A.F., & Sonderegger, R. (2000). The Friends program for young Former-Yugoslavian refugees in Australia: A pilot study. *Behaviour Change, 17*, 124–133	Selected participants who were showing signs of anxiety (not universal)
Barrett, P. M., Sonderegger, R., & Sonderegger, S. L. (2001). Evaluation of an anxiety-prevention and positive-coping program (FRIENDS) for children and adolescents of non-English speaking backgrounds. *Behaviour Change, 18*, 78–91	Not universally implemented (targeted and selected individuals)
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*, 241–260	Not universally implemented (targeted and selected individuals)
Brackett, M.A., Rivers, S.E., Reyes, M.R., & Salovey, P. (2012). Enhancing academic performance and social and emotional competence with the RULER feeling words curriculum. *Learning and Individual Differences, 22*, 218 - 224	Did not specify anxiety as primary or secondary outcome measure (not differentiated from internalizing difficulties more generally)
Caldarella, P., Christensen, L., Kramer, T. J., & Kronmiller, K. (2009). Promoting social and emotional learning in second grade students: A study of the strong start curriculum. *Early Childhood Education Journal, 37*(1), 51–56. doi: 10.1007/s10643-009-0321-4	Did not specify anxiety as primary or secondary outcome measure
Cunningham, E.G.,, Brandon, C.M.,& Frydenberg, E. (2002). Enhancing Coping Resources in Early Adolescence Through a School-based Program Teaching Optimistic Thinking skills. *Anxiety, Stress & Coping: An International Journal, 15*(4), 369-381	Did not specify anxiety as primary or secondary outcome measure
Dadds, M. R., & Roth, J. H. (2008). Prevention of anxiety disorders: results of a universal trial with young children. *Journal of Child and Family Studies, 17*, 320–335	The intervention was aimed at parents. Children/adolescents did not receive intervention.
Essau, C. A, & Conradt, J. (2007). Friends: a program for the prevention of anxiety and depression. In: B*. Röhrle (Ed.), Prävention und Gesundheitsförderung für Kinder und Jugendliche. Tübingen: dgvt*	Not in English
Gunter, L., Caldarella, P., Korth, B.B., & Young, K.R. (2012) Promoting social and emotional learning in preschool students: A study of strong start pre-K. *Early Childhood Education Journal, 40*, 151 – 159	Did not specify anxiety as primary or secondary outcome measure

Kramer, T.J., Caldarella, P., Christensen, L., & Shatzer, R.H. (2010). Social and emotional learning in the kindergarten classroom: evaluation of the strong start curriculum. *Early Childhood Education Journal, 37*, 303 – 309	Did not specify anxiety as primary or secondary outcome measure
Lynch, K.B., Geller, S.R., & Schmidt, M.G. (2004). Multi-year evaluation of the effectiveness of a resilience-based prevention program for young children. *The Journal of Primary Prevention, 24* (3), 335 - 353	Did not include anxiety as a primary or secondary outcome measure
Merry, S., McDowell, H., Wild, C. J., Bir, J., & Cunliffe, R. (2004). A randomized placebo controlled trial of a school-based depression prevention program. *Journal of the American Academy of Child and Adolescent Psychiatry, 43,* 538–547	Did not include anxiety as a primary or secondary outcome measure
Sawyer, M. G., Harchak, T. F., Spence, S. H., Bond, L., Graetz, B., Kay, D., et al. (2010a). School-based prevention of depression: A 2-year follow-up of a randomized controlled trial of the beyond blue schools research initiative. *Journal of Adolescent Health, 47*(3), 297–304	Did not include anxiety as a primary or secondary outcome measure
Sawyer, M. G., Pfeiffer, S., Spence, S. H., Bond, L., Graetz, B., Kay, D., et al. (2010b). School-based prevention of depression: A randomised controlled study of the beyond blue schools research initiative. *Journal of Child Psychology and Psychiatry, 51*(2), 199–209	Did not include anxiety as a primary or secondary outcome measure
Schick, A., & Cierpka, M. (2003). Faustlos: evaluation of a curriculum to enhance social-emotional competence and prevent aggression in elementary schools. *Kindheit und Entwicklung, 12*, 100–110	Not in English
Shochet, I. M., Dadds, M. R., Holland, D., Whitefield, K., Harnett, P. H.,& Osgarby, S. M. (2001). The efficacy of a universal school-based program to prevent adolescent depression. *Journal of Clinical Child Psychology, 30,* 303–315	Did not include anxiety as a primary or secondary outcome measure
Spence, S. H., Sheffield, J. K., & Donovan, C. L. (2003). Preventing adolescent depression: An evaluation of the Problem Solving for Life program. *Journal of Consulting and Clinical Psychology, 71,* 3–13	Did not include anxiety as a primary or secondary outcome measure
Spence, S. H., Sheffield, J. K., & Donovan, C. L. (2005). Long-term outcome of a school-based, universal approach to prevention of	Did not include anxiety as a primary or secondary outcome measure

depression in adolescents. *Journal of Consulting and Clinical Psychology, 73,* 160–167	
Ştefan, A.C. & Miclea, M. (2012). Classroom effects of a hybrid universal and indicated prevention program for preschool children: A comparative analysis based on social and emotional competence screening. *Early Education & Development, 23(*3), 393-426	Did not specify anxiety as primary or secondary outcome measure
Swannell, S., Hand, M., & Martin, G. (2009). The effects of a universal mental health promotion programme on depressive symptoms and other difficulties in year eight high school students in Queensland, Australia. *School Mental Health, 1*(4), 229–239	Did not specify anxiety as primary or secondary outcome measure
Vujik, P., van Lier, P.A.C., Crijnen, A.A.M., & Huizink, A.C. (2007). Testing sex-specific pathways from peer victimization to anxiety and depression in early adolescents through a randomized intervention trial. *Journal of Affective Disorders, 100,* 221–226	Correlational study. Unable to assess impact of intervention on anxiety as no comparable pre/post measures

Appendix C. Included Papers Data Extraction

Table C1. Data extraction for papers included in literature review

Study	Design	Target sample	Intervention	Outcome Measures	Results (in relation to mental health measures)
FRIENDS					
Barrett and Turner (2001)	Random assignment to groups by school Two experimental groups, one non-intervention control group No follow up	***N*:** 489 ***Age range*:** 10-12 years ***Context:*** Schools in Metropolitan area of Brisbane, Australia	***Experimental group 1 (n = 107)*:** Psychologist- led intervention: FRIENDS for Life Programme. 10 x 75 min weekly sessions, 2 booster sessions , 4 parent sessions ***Experimental group 2 (n = 263)*:** Teacher-led intervention (as above) ***Control group (n = 137)*:** Standard curriculum (usual care)	***Risk measures*:** SCAS (self-reported symptoms of social phobia, separation anxiety, panic attack and agoraphobia) RCMAS (self-report assessing trait anxiety and social desirability) CDI (self-report assessing cognitive, affective and behavioural signs of depression)	***Impact on anxiety:*** a) Greater reductions in self-reported anxiety in EXP 1 and EXP 2 (SCAS)[1,5] b) Greater decrease in RCMAS scores in EXP 1 and EXP 2[1] c) Males reported lower SCAS and RCMAS scores than females at T1 and T2 ***Prevention effects:*** At risk groups (SCAS score > 42.48) were more likely to move in to healthy range (ns, low power) ***Additional outcomes:*** c) Significantly greater increase in CDI scores in EXP 2 compared to EXP 1 and control

Lowry-Webster et al., (2001) & Lowry-Webster et al., (2003)	Random assignment to groups by school Waitlist control group 12 month follow – up	***N*** **:** 594 ***Age range:*** 10-13 years ***Context:*** Catholic schools in Brisbane, Australia	***Experimental group (n = 392)*****:** Teacher-led (FRIENDS programme: 10 x 1hr weekly, 2 booster sessions, 3 parent sessions ***Waitlist control group (n =139)***	***Risk measures*****:** SCAS RCMAS CDI CBCL-R (parental report of child problem behaviours) ADIS-C (diagnostic interview schedule and clinical severity rating)	***Impact on anxiety:*** a)Greater reductions in self-reported anxiety for universal and high anxiety group (SCAS only)[1, 5, 6] ***Prevention effects:*** a) 75.3% of at-risk (SCAS score > 42.48) participants no longer reporting clinical symptoms post intervention, compared to 54.8% in control group who remained at risk at post intervention. b) At follow-up, 85% of at-risk children were diagnosis free, compared to 31.2% in control group. ***Additional outcomes:*** a) Reduction in CDI scores in the clinically anxious group only[5, 6] b) Age, group and level of anxiety were predictive of maintenance effects, with those who did not receive the intervention, those with higher levels of anxiety at T1 and aged 10 years old (compared to 12 years old) most likely to be at risk of anxiety disorder at T2 and T3.

Lock and Barrett (2003)	Random assignment to groups by school Waitlist control group 12 month follow – up	***N*** **:** 737 ***Age range:*** 9-16 years (grade 6 and grade 9) ***Context:*** Socio-economically diverse schools in Brisbane, Australia	***Experimental group (n =442)*****:** Psychologist-led (FRIENDS programme: 10 x 70 min weekly sessions, 2 booster sessions, 3 parent sessions ***Waitlist control group (n =295)***	***Risk measures*****:** SCAS RCMAS CDI Anxiety Disorders Interview Schedule for DSM-IV (based on clinician interview with child and parent) to assess total anxiety symptom counts and symptom severity ratings. ***Resilience measures:*** CSCY (self-reported responses to stressful situations; cognitive-behavioural problem solving, cognitive avoidance, behavioural avoidance and assistance seeking)	***Impact on anxiety:*** a) Greater reductions in SCAS and RCMAS scores[5, 6] (no differences by risk status) b) Greater reductions in self-reported anxiety in Grade 6 at T2 (SCAS) and T3 (RCMAS) compared to those in grade 9, and compared to control group (SCAS only)[6] c) Females reported greater reductions in anxiety at T2 (SCAS) and T3 (RCMAS) compared to males and on the SCAS compared to control group[5] ***Prevention effects:*** No significant effects for at-risk group (SCAS score > 42.48) ***Additional outcomes:*** a) Reduced CDI scores by group[6] and by grade (Grade 6) b) Reduction in behavioural avoidance[5,6]

Barrett et al., (2005)	Random assignment to groups by school Waitlist control 12 month follow-up	***N*** **:** 692 ***Age range:*** 9-16 years ***Context:*** Schools in Brisbane, Australia	***Experimental group (n =423)*****:** Psychologist-led (FRIENDS programme. Ten weekly sessions (45 – 60 mins), 2 parent and 2 booster sessions) ***Waitlist control group (n =269)***	***Risk measures*****:** SCAS CDI	***Impact on anxiety:*** a) Greater reductions in anxiety[6] b) Greater reductions in anxiety in Grade 6 compared to grade 9[5,6] c) Greater reductions in anxiety in moderate (scores of 23–31) and high risk groups (scores >32) in EXP and control group ***Additional outcomes:*** Greater reductions in depression in Grade 6 compared to grade 9[5,6]
Barrett et al., (2006)	Longitudinal design based on Lock and Barrett (2003) universal trial 24 & 36 month follow – up	***N*** **:** 669 ***Age range:*** 9-16 years ***Context:*** Schools in Brisbane, Australia	See Lock and Barrett (2003)	***Risk measures*****:** SCAS RCMAS CDI	***Impact on anxiety:*** a) Greater reductions in SCAS and RCMAS scores across time in grade 6 pupils only[6] b) Greater reductions in girls RCMAS scores in EXP group at 12 & 24 month follow-up[6] b) Anxiety for the intervention high risk group (score above which 10% of the normative sample scored) were stable over time, compared to a substantial increase in high-risk students in the control group c) ns outcomes for depression

Pahl & Barrett (2010)	Random assignment to groups by preschool Waitlist control group 12 month follow up (for intervention group only) Unblinded	***N:*** 263 ***Age range (mean):*** 4 – 6 years (4.56) ***Context:*** Brisbane, Australia	***Experimental group (N=134)*** Psychologist-led (FUN Friends program: 9 x 1hr weekly sessions, 3 parent sessions and weekly handouts) ***Waitlist control group (N=129)***	***Risk measures:*** PAS (parent report of child anxiety symptoms) BIQ (parent and teacher report of child behaviour inhibition) ***Resilience measures:*** BERS (parent and teacher report of child emotional and social strengths)	***Impact on anxiety:*** Decrease in anxiety scores regardless of group ***Additional outcomes:*** a) Larger decreases in teacher reports of behaviour inhibition[1] b) Larger increases in teacher reported social emotional strength[1] c) Girls in intervention group showed largest decrease in teacher reported BIQ, and teacher and parent reported BERS scores from T1 - T2 d) Decrease in behaviour inhibition and increase in social-emotional strength for girls only
Stallard et al., (2005)	One group pre-post design No control group No follow up	***N:*** 213 ***Age range:*** 9 – 10 years ***Context:*** Schools in Bath and Somerset, UK	School nurse-delivered (FRIENDS programme: 10 weeks)	***Risk measures***: SCAS ***Resilience measures:*** The Culture Free Self-esteem Questionnaire (self-reported general, social, academic, and parental self-esteem)	***Impact on anxiety:*** Reduction in anxiety[3] ***Prevention effects:*** 60% of 'high risk' group (total SCAS score cut-off of 60) decreased on anxiety scores ***Additional outcomes:*** Increase in self-esteem [3]

Stallard et al., (2007) & Stallard et al., (2008)	Pre/post using double pre-test (T1 & T2, T3) 12 month follow up (T4) No control group	***N:*** 106 (63 at 12-month follow up) ***Age range:*** 9 – 10 years ***Context:*** Schools in Bath and Somerset, UK	School nurse-delivered (FRIENDS programme: 10 weeks. One parent psycho-educational session prior to intervention)	***Risk measures*:** SCAS ***Resilience measures:*** The Culture Free Self-esteem Questionnaire	***Impact on anxiety:*** a) Reduction in self-reported anxiety, including for those at high risk (highest scoring 10% of children, >54) at pre-test[3], maintained at follow up ***Prevention effects:*** 15.8% scored within the clinical range at baseline compared with 5.3% at T4 ***Additional outcomes:*** Increases in self-esteem, including for those at high risk at pre-test[3], maintained at follow up
Mostert & Loxton (2008)*	Quasi-experimental Waitlist control 4 & 6 month follow up Independent test administrator	***N:*** 46 ***Age range (mean):*** 12 – 13 years (12.6) ***Context:*** Schools in South Africa	***Experimental group (n =25)*:** Psychologist-led (FRIENDS programme: 10 one hour sessions over 5 weeks with two sessions per week) ***Control group (n =21):*** Received intervention after experimental group	***Risk measures*:** SCAS	***Impact on anxiety:*** a) Reduction over time, significant for EXP group only at 4 and 6 month follow up[4] b) No between-group differences

Rose et al., (2009)	Quasi-experimental pre-post Waitlist control group No follow up	***N:*** 52 ***Age range:*** 8 – 9 years ***Context:*** Schools in Canada	***Experimental group (n =26)*:** Teacher-led (FRIENDS programme: 8 x 1hr weekly sessions) ***Waitlist control group (n =26)***	***Risk measures:*** MASC (self-reported symptoms of anxiety; harm avoidance, social anxiety, separation anxiety and physical symptoms)	***Impact on anxiety:*** a) Reductions in self-reported symptoms of anxiety (ns) for both groups b) No between group differences
Stopa et al., (2010)*	Pre/post design No control group 12 month follow up	***N:*** 963 ***Age range:*** 10 – 13 years ***Context:*** Schools in low SES area of Brisbane, Australia	Teacher-led (FRIENDS for Life anxiety prevention programme: 10 x weekly sessions. Two parent sessions)	***Risk measures:*** RCMAS SCAS SDQ CDI ***Resilience measures:*** CSCY SEI (self-report of general, home and school self-esteem)	***Impact on anxiety:*** a) Reductions in anxiety[3,2] b) Reductions in SCAS total score(girls) and SCAS social phobia scale (boys) c) Highest levels of anxiety at T1 had > reductions T2 ***Prevention effects:*** 21.9% of clinical levels of anxiety (> 42.48) at T1 reduced to 14.7% at T2 and 12% at T3 ***Additional outcomes:*** a) Decrease in CDI scores[3] b) Decrease in behavioural/ cognitive avoidance[3] c) Improvement in social self-esteem, peer and conduct problems [4]

Miller et al., (2011)[a]	RCT (Random assignment to groups by school) Waitlist control group 3 month follow up	***N:*** 533 ***Age range (mean):*** 7 – 13 years (9.77) ***Context:*** Western Canada	***Experimental group (n =269)*:** Teacher and school counsellor-led (FRIENDS programme, enriched for Aboriginal students. 10 x 9 weekly sessions, last two sessions combined) ***Waitlist control group (n =264)***	***Risk measures*:** MASC	***Impact on anxiety:*** a) Non-significant between group differences following intervention (anxiety reduced for both groups). b) Significantly reduced over time in those with elevated anxiety at T1 (T-score >65) c) No differences for gender or aboriginal status
Miller et al., (2011)[b]	Random assignment to groups by school Attention control group 17 month follow up	***N:*** 253 ***Age range (mean):*** 9 – 12 years (9.8) ***Context:*** Urban school districts in Canada	***Experimental group (n =141)*:** Teacher-led (FRIENDS programme delivered over 9 x 1hr weekly sessions). ***Attention control group (n =112):*** Listened to an adventure story in class over same time period. Received FRIENDS intervention after 9 weeks.	***Risk measures:*** MASC BASC (parent and teacher report of child behaviours and anxiety symptoms)	***Impact on anxiety:*** No significant group differences in anxiety over time. Both groups (including those with high anxiety symptoms: T-score> 65) decreased in anxiety over time. ***Additional outcomes:*** No differences by gender or age

Essau et al., (2012)	Random assignment to groups by school Non- intervention control group 6 month and 12 month follow up	***N:*** 638 ***Age range:*** 9 – 12 years ***Mean age:*** EXP: 10.72 CON: 11.08 ***Context:*** Urban and rural schools in Germany	***Experimental group (n =302)*:** Psychologist-led (FRIENDS programme for 10 x 1hr weekly sessions, 2 booster sessions, 4 additional parent sessions) C***ontrol group (n =336):*** Invited to take part in program 6 months after study	***Risk measures*:** SCAS RCADS (self-reported symptoms of depression) CAPS (self-report measure of self-oriented and socially prescribed perfectionism) ***Resilience measures:*** SSQ (self-report measure of social skills) CASAFS (self-report measure of social and adaptive functioning in areas of school performance, peer relationship, family relationship, and home duties/self-care) CSCY	***Impact on anxiety:*** a) Greater reductions in total anxiety scores[2] b) Intervention effects were immediate for the younger group and delayed for the older group (age as moderator) c) Perfectionism and avoidant coping mediated SCAS scores at T2, with lower levels of each associated with more treatment gains d) Marginal effect of parental participation with greater participation predictive of larger reductions in anxiety ***Additional outcomes:*** a) Improvement in CASAFS total scores[1] and school performance[6] b) Greater reductions in depressive symptoms[6] c) Reduction in perfectionism score[2] and less reported use of cognitive avoidant problem solving[2] d) No gender differences

Wellbeing Therapy					
Ruini et al., (2009)	Random assignment to groups by class Attention-placebo control group 6 month follow up	***N:*** 227 ***Age range:*** 13 – 14 years ***Mean age:*** 14.4 ***Context:*** High school in Northern Italy	***Experimental group (n =129)*:** Psychologist- led intervention (Well-Being Therapy, 6 x 2hr weekly sessions, includes elements of CBT) ***Control group (n =98):*** Psychologist -led intervention (Anxiety-Management, 2 hour weekly sessions for 6 weeks)	***Risk measures*:** SQ (self-report questionnaire measuring symptoms of distress and of wellbeing) RCMAS (self-report) ***Resilience measures:*** PWB (self-report assessing psychological well-being)	***Impact on anxiety:*** a) Improvement in SQ anxiety scale[2,4] (ES .36), SQ Somatization[2,3,4] and SQ Physical Well-Being[2, 3] b) Improvement in RCMAS physiological anxiety score in[3] (ES -.22) compared to increase in control group ***Additional outcomes:*** c) Improvement in personal wellbeing score for EXP group[3]
Tomba et al., (2010)	Random assignment to groups by class Attention-placebo control group 6 month follow-up	***N:*** 162 ***Age range:*** Not reported ***Mean age:*** 11.4 ***Context:*** Four middle schools in Northern Italy	***Experimental group 1 (n = 82)*:** Psychologist- led intervention (Well-Being Therapy, see Ruini et al 2009) ***Control group (n = 80)*:** Psychologist -led intervention (see Ruini et al., 2009)	***Risk measures:*** RCMAS SQ ***Resilience measures:*** PWB	***Impact on anxiety:*** a) Decrease in RCMAS worry score for control group[3,7] b) Decrease in RCMAS physiological anxiety [3] ***Additional outcomes:*** c) Increase in wellbeing SQ subscale, friendliness in EXP group compared to control, maintained at follow up d) Improvement in PWB autonomy score [7] e) Greater improvement in SQ somatization scores for females over time

Anxiety and depression prevention					
Roberts et al., (2010)*	RCT (random assignment to groups by school matched by SES and school size) Attention control group 6 & 12 month follow up Blind test administrators	***N:*** 496 ***Age range (mean):*** 11 – 13 years (11.9) ***Context:*** Schools in low SES Perth area, Australia	***Experimental group (n = 274)*:** Teacher-led (CBT based Aussie Optimism Program, 20 x 60 min sessions) ***Control group (n =222):*** 20 x health education lessons relating to self-management and interpersonal skills	***Risk measures:*** CDI RCMAS CASQ-R (self-reported attribution style for positive and negative events) CBCL (parental report of child internalizing and externalizing problems) ***Resilience measures:*** MESSY (self-report assessment of positive and negative social skills such as appropriate social skills and inappropriate assertiveness)	***Impact on anxiety:*** Reductions in RCMAS scores for both groups over time ***Additional outcomes:*** a) Decrease in internalizing difficulties (CBCL)[5] b)Reductions in CDI scores over time for both groups c) No sig differences on MESSY, CASQ-R or externalizing difficulties ***At risk groups:*** a) No differences in prevalence over time b) Significantly larger number of participants reporting high levels of internalizing difficulties at T2 in EXP group

Aune and Stiles (2009)	RCT (random assignment to groups by county) Non- intervention control group Pre and post measures (8 months after intervention)	***N:*** 1633 ***Age range (mean):*** 11- 14 years (12.6) ***Context:*** Schools from two counties in Norway	***Experimental group (n = 961)*** Psychologist-led Norwegian Universal Preventive Programme for Social Anxiety (NUPP-SA). Three consecutive 45 minute sessions, psycho-educative based on CBT principles. Additional parent and school personnel sessions delivered over 4 month period. ***Control group (n = 789)***	***Risk measures:*** SPAI-C (self-report measure of social and syndromal and subsyndromal levels of social anxiety) SCARED (self-reported symptoms of general anxiety, panic, separation anxiety, school refusal and social anxiety) SDQ SMFQ (brief screening assessment of depressive symptomatology) Stressful life events (self-reported life events selected from the Life Event Scale and the Life Events Checklist) Bullying (self-report of severity of bullying from three questionnaire items)	***Impact on anxiety:*** a) Reductions on SCARED scores[5](ES .21) b) Both groups scored lower on SPAI-C at T2 (ES .20) ***For at risk group*** (met criteria for syndromal social anxiety at T1): a) Lower scores on STAI-C (ES .83) and SCARED (ES .44) total scores[5] b) Lower scores on SCARED general anxiety symptoms only[5] c) Clinically significant reductions in anxiety (SPAI-C only)[5] ***Prevention effects:*** b) Significantly more participants shifted from syndromal to subsyndromal anxiety compared to controls ***Additional outcomes:*** a) No significant changes in SDQ or SMFQ scores for either group b) No significant impact of stressful life events or bullying on outcomes

Calear et al., (2009)	RCT (random allocation to groups by school, stratified by location and type) Waitlist control group 6-month follow up Unblinded	***N:*** 1477 ***Age range (mean):*** 12 – 17 years (14.3) ***Context:*** Public, private, rural and urban schools in Australia	***Experimental group (n =563)*:** Teacher-led (MoodGYM, internet based CBT program, designed to prevent/decrease anxiety and depression symptoms). Five modules delivered over 5 weekly sessions each consisting of 20 -40 minutes. ***Waitlist control group (n =914):*** Invited to receive intervention after follow up	***Risk measures:*** RCMAS CES – D (self-reported symptoms of depression)	***Impact on anxiety:*** a) Greater reductions in anxiety compared to control group, maintained a follow up [1, 5] ***Additional outcomes:*** a) Greater reductions in depressive symptoms for males only[1] b) Clinically significant difference for depression- significantly more males in control group developed clinical level of depression at T2 and T3.
Berger et al., (2007)*	Quasi-random assignment to groups by class Waitlist control group No follow up Blind test administrators	***N:*** 142 ***Age range:*** 7 – 12 years old ***Context:*** Israel	***Experimental group (n =70)*:** Teacher-led (Overshadowing the Threat of Terrorism program, 8 x 90 min weekly sessions. Included meditative practice, art therapy and narrative techniques) ***Waitlist control group (n =72)***	***Risk measures*:** SCARED A structured questionnaire including 58 questions was drawn from several questionnaires measuring objective and subjective exposure to terrorism, PTSD symptoms, functional impairment, somatic complaints	***Impact on anxiety:*** Reductions in generalized[5] and separation anxiety levels [1] ***Additional outcomes:*** a) Greater reductions in PTSD severity, separation anxiety and somatic complaints in younger classes (group x time x grade interaction) b) Significant treatment effects for PTSD c) Larger reductions in functional problems in boys (group x time x gender interaction)

Bonhouser et al., (2005)*	Quasi-experimental Control group No follow up	***N:*** 198 ***Age range:*** 15 years old ***Context:*** Chile	***Experimental group (n = 98)*** Teacher implemented, physical exercise intervention designed by teachers and students 4 units of 30 sessions Each unit delivered over 10 weeks, 3 x 90 min weekly ***Control group (n = 100):*** Standard exercise class 90 minute sessions, weekly	***Risk measures:*** HADS (self-reported anxiety and depression) ***Resilience measures:*** Tennessee Self-Concept Scale (self-report measure of self-esteem)	***Impact on anxiety:*** Significantly greater reductions in anxiety[5] ***Additional outcomes:*** Significantly greater increases in self-esteem compared to decrease in control[5] No significant effect for depression
Stress management					
Kraag et al., (2010)	RCT (Random assignment to groups by school) Waitlist control group 9 month follow up Blind test administrator	***N:*** 1467 ***Age range:*** Fifth and sixth grade ***Mean age:*** 10.3 ***Context:*** Netherlands	***Experimental group (n =797)*:** Teacher-led (Learn Young, Learn Fair program teaching stress awareness and coping skills using CBT and information processing principles. 8 x 1hr weekly, 5 booster sessions. ***Waitlist control group (n =848):*** Received intervention after follow up	***Risk measures:*** STAIC (self-reported symptoms of trait anxiety) SDIC (self-reported symptoms of depression) MUSIC (self-reported symptoms of physiological and psychological stress) ***Resilience measures:*** SPSI (self-reported problem solving skills; maladaptive coping, emotion focused coping and social support seeking)	***Impact on anxiety:*** Significant reduction at T2 after correcting for stress awareness ***Additional outcomes:*** a) Increase in stress awareness at T2[3,5,6] b) Group x time x ethnicity of father interaction for emotion-focused coping skills with a significantly larger effect of intervention for those with non-Dutch fathers at T2. c) Girls reported more stress, anxiety,depression than boys.

Keogh (2006)	Random allocation to group by individuals matched by intelligence and gender Non-intervention control group Pre/post design. No follow up Pupils not aware of specific hypotheses	***N:*** 160 ***Age range (mean):*** 15 – 16 years (15.6) ***Context:*** Secondary school in UK	***Experimental group (n =80)*:** Psychologist-led, stress management intervention for 10 x 1hr weekly sessions. Utilises CBT and Achievement Goal Theory. ***Control group (n =80):*** Usual care	***Risk measures*:** GHQ (self-report scale assessing general mental health) RTAS (self-reported measure of test anxiety including symptoms of tension, worry, bodily symptoms and test-irrelevant thinking) DAS (self-report scale assessing dysfunctional cognitive thoughts associated with depression and associated psychopathology) ***Resilience measures:*** Need for achievement scale (self-report motivation scale assessing experiences, evaluations and behavioural patterns related to work and learning) CAT (school records of participants cognitive reasoning scores) GCSE results	***Impact on anxiety:*** No significant main or interaction effects ***Additional outcomes:*** a) Reductions in mental ill health scores from T1 – T2[1] b) Lower levels of dysfunctional beliefs (ns)[1,5] c) Higher GCSE points[5] d) Higher level of motivation[5] ***Mediators:*** a) Reduced dysfunctional beliefs fully mediated improvements in mental ill health (GHQ scores became insignificant when controlling for DAS scores) b) Level of motivation fully mediated higher GCSE performance (higher GCSE performance became ns when controlling for motivation)

Social-emotional competence					
Ghaderi et al., (2005)	Quasi-experimental pre-post design Non-intervention control group No follow up	***N:*** 164 ***Age range:*** 11 years ***Context:*** Two schools in Sweden (one low SES, one high SES)	***Experimental group (n =not reported)*:** Teacher-led Everybody's Different Program (9 x 50 – 80 mins weekly, with additional home-based activities designed to improve body image by building self-esteem) ***Control group (n =not reported):*** One class at low SES school and two classes at high SES school	***Risk measures:*** MASC SCI (self-report measure of social and emotional impairment) CDI KWC (self-report measure of weight concern) ChEAT (self-reported eating attitudes and behaviours associated with eating disorders) ***Resilience measures:*** VAS (visual scales to assess satisfaction with weight, appearances of self and others)	***Impact on anxiety:*** No significant group or time x group interactions with both groups making positive but small changes over time on all variables. ***Additional outcomes:*** Girls reported significantly higher anxiety than boys both at T1 and at T2
Garaigordobil (2004)	Quasi-experimental pre-post design Attention control group No follow up Researchers were blind	***N:*** 174 ***Age range (mean):*** 12 – 14 years (12.9) ***Context:*** Northern Spain	***Experimental group (n =125)*:** Teacher- led intervention (promoting positive communication between peers in relation to emotional issues. Two hour weekly sessions throughout academic year) ***Control group (n =49):*** School curriculum group tutorial activities	***Risk measures*:** STAIC ***Resilience measures:*** Inventory of empathy assessment Self-Concept Scale Adjective check-list for assessing the image of classmates Questionnaire for the assessment of the ability to analyse feelings	***Impact on anxiety:*** a) Decrease in state and trait anxiety compared to increases in control group[1] b) Significant treatment effect (T) for those who showed high state-trait anxiety at T1 ***Additional outcomes:*** a) Increase in empathy skills versus slight decrease in control group[1] b) Greater increases in self-esteem/self-concept scores[1]

Domitrovich et al.,(2007)	Randomized mixed block design(random allocation to groups by pre-school, matched by neighbourhood population density) Waitlist control group No follow up Parents blind to study design	***N:*** 246 ***Age range:*** 3 – 4 years ***Mean age*:** EXP: 4.20 W-CON: 4.36 ***Context:*** United States	***Experimental group (n = 10 schools)*** Head Start teacher-led (Preschool PATHS, social and emotional curriculum. Thirty lessons delivered weekly during "circle time" sessions over 9 months) ***Waitlist control group (n =10 schools)***	***Risk measures:*** Leiter-R Sustained Attention Subtest (child assessment of visual-spatial memory and attention) Inhibitory control (Day/Night task and adaptation of tapping task) PKBS (teacher and parent reports. Social Skills scale assessing Social Cooperation, Social Interaction and Social Independence; and Problem Behaviour scale, includes internalizing and externalizing subscales) ***Resilience measures:*** KEI (child assessment of receptive emotion vocabulary) ACES (child assessment of emotion expression knowledge: emotion accuracy and anger bias) DPI (child assessment of affective perspective-taking skills) HSCS (parent report of child's social and emotional skills) CST (behavioural assessment of response to common social problems) PPVT-III (assessment of receptive language/verbal ability)	***Impact on anxiety:*** Significant site x group interaction: reductions in teacher reports of child anxiety in rural area[5] ***Additional outcomes:*** a) Greater receptive emotion vocabulary and accuracy in identifying feelings [5] b) Increases in teacher reported social skills and parent reported social-emotional competence [5] c) lower levels of teacher reported social withdrawal[5] (ES .24) ***Moderators:*** Verbal ability moderated effects of intervention on Social Cooperation

Bullying prevention					
Williford et al., (2012)	Random assignment to groups by school Cross-lagged panel design Non-intervention control group	***N:*** 7,741 ***Age range (mean):*** (11.2) ***Context:*** Finland	***Experimental group (n =4,056)*** Teacher implemented, anti-bullying curriculum. 20 hours over academic year ***Control group (n = 3,685)***	***Risk measures:*** Fear of Negative Evaluation (self-report of social anxiety) Social Avoidance and Distress scales (self-report of social anxiety) BDI (self-report measure of depression) Peer nomination scale (peer-reported victimization) Perception of Peers Questionnaire (general beliefs about peers)	***Impact on anxiety:*** Larger decreases in EXP group (ns) ***Additional outcomes:*** Lower levels of victimization in EXP group Decline in positive peer perceptions greater for control group Ns group differences for depression Boys reported lower anxiety at all time points Reductions in victimization predicted reductions in anxiety
Depression prevention					
Rooney et al., (2006)*	Random assignment to groups by school Non-intervention control group Pre/post, 9 and 18 month follow up	***N:*** 136 ***Age range (mean):*** 8 – 9 years (9.08) ***Context:*** Low SES schools in Perth, Australia	***Experimental group (n =72)*:** Psychologist-led, CBT based Positive Thinking Program (PTP). 8 x 1hr weekly sessions. ***Control group (n =48):*** Regular health education	***Risk measures:*** CDI RCMAS CASQ DICA-IV (computerised psychiatric interview assessing major depressive disorder and dysthymia)	***Impact on anxiety:*** No significant group effects for anxiety; both decreased over time ***Additional outcomes:*** a) Less depressed (according to CDI reports) and more positive attributional style[5]

Sheffield et al., (2006)	RCT (Random allocation to group by school, stratified by urban/rural location, socioeconomic area, school type and gender mix) Non- intervention control group 12 month follow up (T1, T2, T3, T4) Unblinded	***N:*** 1226 ***Age range (mean):*** 14 – 15 years (14.3) ***Context:*** Australia	***Experimental group (n =621)*:** Teacher-led universal intervention (CBT based program incorporating cognitive restructuring and problem-solving skills training. 8 x 45 – 50 min weekly sessions) ***Control group (n =605):*** No intervention	***Risk measures:*** CDI CES-D BHS (self-report assessing feelings of hopelessness: negative expectations/attitudes regarding oneself or the future) ADIS-C LIFE (used alongside ADIS-C to identify episodes of depression over observation phase) SCAS YSR (externalising scale to assess self-reported aggressive and delinquent behaviour) SPSI-R CATS (self report assessing the frequency of negative automatic thoughts related to social threat and personal failure) National Survey of Mental Health and Well-Being (self-reported substance abuse) ***Resilience measures:*** CASAFS	***Impact on anxiety:*** a) General reduction in anxiety, depression and cognitive style over time regardless of intervention group b) No significant differences between groups for any outcome measures

Harnett & Dadds (2004)	Quasi-experimental Non- intervention control group Pre/post, 1 and 3 year follow up (T1/T2, T3, T4)	***N:*** 212 (100% female) ***Age range (mean):*** 12 – 16 years (13.6) ***Context:*** Brisbane, Australia	***Experimental group (n = 96):*** (Teacher-led universal RAP program aimed at preventing depression. 11 x 40 – 50 minute sessions utilising CBT and interpersonal psychotherapy) ***Control group (n =116):*** Usual care	***Risk measures*:** RADS (self-reported symptoms of depression) RCMAS ***Resilience measures:*** CBCL (Social competence scale) ACS (self-report of coping skills) FES (self-report assessment of family cohesion) HSPPA (self-report measure of self-esteem)	***Impact on anxiety:*** No group effects. Significant increase in RCMAS and RADS scores over time for both groups from T2 – T3. ***Additional outcomes:*** a) Higher social competence score)[5] b) Higher positive coping scores at T4[6] c) Significant effect of time for family conflict between T3 – T4 (increase), and an increase in negative coping strategies at all time points

Pattison and Lynd-Stevenson (2001)	Random allocation of individuals to group Attention & non-intervention control groups 8-month follow up	***N:*** 63 ***Age range (mean):*** 9 – 12 years (10.4) ***Context:*** School in a rural town in Australia	***Experimental group 1 (n = 16):*** Mental health worker-led (CBT based Penn Prevention Programme, 11 x 2 hr weekly sessions, cognitive and social components) ***Experimental group 2 (n = 16):*** As above but reversed (social component followed by cognitive component) ***Attention control group (n = 16):*** Researcher & teacher-led (Group activities focusing on environmental problems in the local area and adapted group activities from the Penn Programme designed to foster group identity) ***Passive control group (n = 18)***	***Risk measures:*** CDI SPAI-C ***Resilience measures:*** CTI-C (self-report measure of positive and negative cognitions) MESSY	***Impact on anxiety:*** No significant group differences on anxiety or the other variables measured ***Additional outcomes:*** No differences by gender or for those scoring high on any measures at T1

[1] Significant difference between groups in change scores from pre to post intervention (i.e., an interaction between group and time that favours the experimental group)

[2] Significant difference between groups in change scores from post intervention to follow-up (i.e., an interaction between group and time that favours the experimental group)

[3] Significant within-group improvement at post (vs. pre) intervention

[4] Significant within-group improvement at follow-up (vs. pre) intervention

[5] Significant between-group differences at post-test that favours the experimental group

[6] Significant between-group differences at follow up that favours the experimental group

[7] Significant within-group improvement at follow-up (vs. post) intervention

*Programmes that have been implemented universally (to whole populations of individuals, regardless of symptoms) but target at risk populations

ACES: Assessment of Children's Emotions Scales; **ACS:** Adolescent Coping Scale; **ADIS-C:** Anxiety Disorders Interview Schedule for Children; **BASC:** Behavioural Assessment System for Children**; BDI:** Becks Depression Inventory; **BERS:** Behavioural and Emotional Rating Scale; **BHS:** Beck Hopelessness Scale**; BIQ:** Behavioural Inhibition Questionnaire; **BRS:** Behaviour Rating Scale; **CAPS:** Child and Adolescent Perfectionism Scale; **CAT:** Cognitive Abilities Test; **CASAFS:** Child and Adolescent Social and Adaptive Functioning Scale; **CASQ:** Children's Attributional Questionnaire; **CATS:** Children's Automatic Thoughts Scale; **CBC-R:** Child Behaviour Checklist Revised; **CBCL:** Child Behaviour Checklist; **CDI:** Children's Depression Inventory; **CDRS-R:** Children's Depression Rating Scale – Revised; **CES-D:** Center for Epidemiological Studies Depression Scale; **ChEAT:** Children's Eating Attitudes Test; **CSCY:** Coping Scale for Children and Youth; **CST:** Challenging Situations Task; **CTI-C:** Cognitive Triad Inventory for Children; **DAS:** Dysfunctional Attitude Survey; **DICA-IV:** Diagnostic Interview for Children and Adolescents-Four; **DPI:** Denham Puppet Interview; **DSM-IV:** Diagnostic and Statistical Manual of Mental Disorders; **FES:** Family Environment Scale; **GHQ:** General Health Questionnaire; **HADS:** Hospital Anxiety Depression Scale; **HSCS:** Head Start Competence Scale; **HSPPA:** Harter Self-Perception Profile for Adolescents; **KEI:** Kusche Emotional Inventory; **KWC:** Killen Measure of Weight Concern; **LIFE:** Longitudinal Interval Follow-Up Evaluation; **MASC:** Multidimensional Anxiety Scale for Children; **MESSY:** Matson Evaluation of Social Skills with Youngsters; **MUSIC:** Maastricht University Stress Instrument for Children; **PARS:** Pediatric Anxiety Rating Scale; **PAS:** Preschool Anxiety Scale; **PKBS:** Preschool and Kindergarten Behaviour Scales; **PPVT-III:** Peabody Picture Vocabulary Test-Third Edition; **PWB:** Psychological Wellbeing Scales**; RADS:** Reynolds Adolescent Depression Scale; **RCADS:** Revised Child Anxiety and Depression Scale; **RCDS:** Reynolds Child Depression Scale; **RCMAS:** Revised Children's Manifest Anxiety Scale**; RTAS:** Revised Test Anxiety Scale; **SCARED:** Screen for Child Anxiety Related Emotional Disorders; **SCAS:** Spence Children's Anxiety Scale; **SCI:** Self-Concept Inventory; **SDIC:** Short Depression Inventory for Children; **SDQ:** Strengths and Difficulties Questionnaire; **SEI:** Self-Esteem Inventory**; SMFQ:** Short Mood and Feelings Questionnaire; **SPAI-C:** Social

Phobia and Anxiety Inventory for Children**; SPSI:** Social Problem Solving Inventory; **STAIC:** State-Trait Anxiety Inventory for Children; **SQ:** Symptom Questionnaire**; SSQ:** Social Skill Questionnaire; **VAS:** Visual Analog Scale; **YSL:** Youth Self-Report Form

Appendix D. Strengths and Difficulties Questionnaire

Strengths and Difficulties Questionnaire

For each item, please mark the box for Not True, Somewhat True or Certainly True. It would help us if you answered all items as best you can even if you are not absolutely certain or the item seems daft! Please give your answers on the basis of the child's behaviour over the last six months or this school year.

Child's Name ..... Male/Female

Date of Birth.....

	Not True	Somewhat True	Certainly True
Considerate of other people's feelings	☐	☐	☐
Restless, overactive, cannot stay still for long	☐	☐	☐
Often complains of headaches, stomach-aches or sickness	☐	☐	☐
Shares readily with other children (treats, toys, pencils etc.)	☐	☐	☐
Often has temper tantrums or hot tempers	☐	☐	☐
Rather solitary, tends to play alone	☐	☐	☐
Generally obedient, usually does what adults request	☐	☐	☐
Many worries, often seems worried	☐	☐	☐
Helpful if someone is hurt, upset or feeling ill	☐	☐	☐
Constantly fidgeting or squirming	☐	☐	☐
Has at least one good friend	☐	☐	☐
Often fights with other children or bullies them	☐	☐	☐
Often unhappy, down-hearted or tearful	☐	☐	☐
Generally liked by other children	☐	☐	☐
Easily distracted, concentration wanders	☐	☐	☐
Nervous or clingy in new situations, easily loses confidence	☐	☐	☐
Kind to younger children	☐	☐	☐
Often lies or cheats	☐	☐	☐
Picked on or bullied by other children	☐	☐	☐
Often volunteers to help others (parents, teachers, other children)	☐	☐	☐
Thinks things out before acting	☐	☐	☐
Steals from home, school or elsewhere	☐	☐	☐
Gets on better with adults than with other children	☐	☐	☐
Many fears, easily scared	☐	☐	☐
Sees tasks through to the end, good attention span	☐	☐	☐

Signature ..... Date .....

Parent/Teacher/Other (please specify:)

Thank you very much for your help

Appendix E. Behavioural Inhibition Questionnaire (Teacher Form)

The following statements describe children's behaviour in different situations. Each statement asks you to judge whether that behaviour occurs for this child "*hardly ever*", "*infrequently*", "*once in a while*", "*sometimes*", "*often*", "*very often*", or "*almost always*". Please circle the number "1" if the behaviour "*hardly ever*" occurs, the number "2" if it occurs "*infrequently*", etc. Try to make this judgement to the best of your ability, based on how you think this child compares with other children about the same age.

1 Hardly Ever	**2** Infrequently	**3** Once in a While	**4** Sometimes	**5** Often	**6** Very Often	**7** Almost Always

1.	Approaches new situations or activities very hesitantly	1	2	3	4	5	6	7
2.	Will happily approach a group of unfamiliar children to join in their play	1	2	3	4	5	6	7
3.	Is very quiet around new (adult) guests to our school	1	2	3	4	5	6	7
4.	Is cautious in activities that involve physical challenge (e.g.,, climbing, jumping from heights)	1	2	3	4	5	6	7
5.	Enjoys being the centre of attention	1	2	3	4	5	6	7
6.	Is comfortable asking other children to play	1	2	3	4	5	6	7
7.	Is shy when first meeting new children	1	2	3	4	5	6	7
8.	Happily separates from parent(s) when left in new situations for the first time (e.g.,, kindergarten, preschool, childcare)	1	2	3	4	5	6	7
9.	Is happy to perform in front of others (e.g.,, singing, dancing)	1	2	3	4	5	6	7
10.	Quickly adjusts to new situations (e.g.,, kindergarten, preschool, childcare	1	2	3	4	5	6	7
11.	Is reluctant to approach a group of unfamiliar children to ask to join in	1	2	3	4	5	6	7

Continued next page

1 Hardly Ever	**2** Infrequently	**3** Once in a While	**4** Sometimes	**5** Often	**6** Very Often	**7** Almost Always

12. Is confident in activities that involve physical challenge (e.g.,, climbing, jumping from heights)	1	2	3	4	5	6	7
13. Is independent	1	2	3	4	5	6	7
14. Seems comfortable in new situations	1	2	3	4	5	6	7
15. Is very talkative to adult strangers	1	2	3	4	5	6	7
16. Is hesitant to explore new play equipment	1	2	3	4	5	6	7
17. Gets upset at being left in new situations for the first time (e.g.,, kindergarten, preschool, childcare)	1	2	3	4	5	6	7
18. Is very friendly with children he or she has just met	1	2	3	4	5	6	7
19. Tends to watch other children, rather than join in their games	1	2	3	4	5	6	7
20. Dislikes being the centre of attention	1	2	3	4	5	6	7
21. Happily approaches new situations or activities	1	2	3	4	5	6	7
22. Is outgoing	1	2	3	4	5	6	7
23. Seems nervous or uncomfortable in new situations	1	2	3	4	5	6	7
24. Happily chats to new (adult) visitors to our school	1	2	3	4	5	6	7
25. Takes many days to adjust to new situations (e.g.,, kindergarten, preschool, childcare)	1	2	3	4	5	6	7
26. Is reluctant to perform in front of others (e.g.,, singing, dancing)	1	2	3	4	5	6	7
27. Happily explores new play equipment	1	2	3	4	5	6	7
28. Is very quiet with adult strangers	1	2	3	4	5	6	7

Appendix F. Approval from the Ethics Committee

UNIVERSITY OF Southampton

Miss Sophie Adams
School of Psychology
University of Southampton
University Road
Highfield
Southampton
SO17 1BJ

RGO Ref: 8501

21 March 2012

Dear Miss Adams

Project Title Investigating the Impact of a Universal Cognitive Behavioural Programme on Anxiety, Attention and Peer Relationships in Young Children

This is to confirm the University of Southampton is prepared to act as Research Sponsor for this study, and the work detailed in the protocol/study outline will be covered by the University of Southampton insurance programme.

As the sponsor's representative for the University this office is tasked with:

1. Ensuring the researcher has obtained the necessary approvals for the study
2. Monitoring the conduct of the study
3. Registering and resolving any complaints arising from the study

As the researcher you are responsible for the conduct of the study and you are expected to:

1. Ensure the study is conducted as described in the protocol/study outline approved by this office
2. Advise this office of any change to the protocol, methodology, study documents, research team, participant numbers or start/end date of the study
3. Report to this office as soon as possible any concern, complaint or adverse event arising from the study

Failure to do any of the above may invalidate the insurance agreement and/or affect sponsorship of your study i.e. suspension or even withdrawal.

On receipt of this letter you may commence your research but please be aware other approvals may be required by the host organisation if your research takes place outside the University. It is your responsibility to check with the host organisation and obtain the appropriate approvals before recruitment is underway in that location.

May I take this opportunity to wish you every success for your research.

Yours sincerely

Dr Martina Prude
Head of Research Governance

Tel: 023 8059 5058
email: rgoinfo@soton.ac.uk

Corporate Services, University of Southampton, Highfield Campus, Southampton SO17 1BJ United Kingdom
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Appendix G. Letter to Head teacher

X Primary School

Date:

Dear (name),

Re: 'Investigating the impact of a universal cognitive behavioural programme on emotional and behavioural wellbeing, attention and peer relationships in young children'

I am hoping to carry out a research project at x School as part of my doctoral training in Educational Psychology.

The project will look at the impact of the Fun FRIENDS programme (as delivered by the class teacher as part of the PSHE curriculum) on children's social behaviour, attention and friendships. In particular I would like to work with the approximately 60 Reception pupils. I intend to measure children's attention using a brief child friendly computer task designed to assess children's ability to ignore distraction and shift attention accordingly. I will measure children's friendships using a sociometric nomination method, which involves asking children to name three children they play with a lot and three children that they don't really play with. I also intend to measure social behaviour and emotional and behavioural wellbeing using teacher versions of the Behavioural Inhibition Questionnaire (BIQ; Bishop, Spence & McDonald 2003) and the Strengths and Difficulties Questionnaire (Goodman, 1997). I have attached a copy of the questionnaires, along with the proposed parent information sheet. The results will be compared with school assessment data to explore the effectiveness for children at different stages of development.

If you are agreeable, I propose obtaining parental consent using an opt-out procedure, whereby parents are asked to respond to the information letter only if they do not want their child to take part in this study. For this to be agreed, the University of Southampton Ethics Committee requires head teachers to provide confirmation that are happy with this procedure and are able and willing to deal with any parent queries or concerns that might arise.

If this is all acceptable I would be extremely grateful if you would send an e–mail to the Chair of the Ethics Committee via Sarah Boak (s.l.boak@soton.ac.uk) stating that:

I am happy to agree for Sophie Adams to use parental opt out for the research study on the impact of a universal cognitive behavioural programme on emotional and behavioural wellbeing, attention and peer relationships in young children and am willing to accept responsibility for any parental objections that may arise from the use of this procedure.

With many thanks and best wishes,

Sophie Adams

(signature)

School of Psychology
University of Southampton
Email: sa6g10@soton.ac.uk

Appendix H. Parent Letter and Opt-out Slip

Parent/Guardian

School address

Date:

Dear Parent/Guardian,

My name is Sophie and I am a trainee Educational Psychologist completing a doctorate in Educational Psychology at the University of Southampton. As part of my doctorate I am asked to complete a research project. My project considers the impact of sessions on feelings and friendships which are delivered by the class teacher as part of the PSHE curriculum. In particular I will be looking at the impact on children's emotional and behavioural wellbeing, attention and friendships at three time points (end of spring term, end of summer term and a follow up in Oct/Nov). I am writing to all the parents of pupils in reception to explain the evaluation that I wish to carry out.

I will ask the pupils to complete a short child friendly computer task which looks children's ability to shift attention and ignore distraction. I will also look at children's friendships within the class by asking each child to nominate three children that they play with a lot and three children that they don't really play with. I anticipate that this should take no longer than 20 minutes to complete. Pupils will be asked if they are happy to take part and will be made aware that they are free to stop at any time.

I will also ask the class teacher to complete two short questionnaires designed to assess social behaviour and emotional and behavioural wellbeing. School assessment data will also be collected to explore the effectiveness of the sessions for children at different stages of development.

All the information gathered will be strictly confidential and no names will be mentioned in the write up of this research. The data will be stored in a locked file and kept for ten years. It will not be made available for any other purposes.

A copy of the questionnaires will be available in the school office should you wish to see them. A summary of the results of this research will also be sent to the School once it is complete and will be available for you to view if you wish.

I hope that you will be happy for your child to assist me in this project. If you have any questions that are not answered in this letter please do not hesitate to contact my supervisor: Dr J.A.Hadwin (email jah7@soton.ac.uk; telephone 02380 592590).

If you are not happy for your child to take part in this research please return the slip below to the School Office on or before *16/03/12*. I hope to start meeting with the children from *19/03/12*.

Yours faithfully,

Sophie Adams

PARENT OPT-OUT FORM

Study title: What is the role of gender and academic self-concept on the educational achievement of secondary school students?

Researchers name: Sophie Adams

Study reference:

Ethics reference: *(to be completed once Ethics approval received)*

Please sign and return this form only if you **DO NOT** wish your child to participate in the study.

I **do not** give consent for my child to take part in this research project**.**

Name of parent/guardian (print)……

Your child's name and date of birth ……..

Signature of parent/guardian……Date……

If you have questions about your rights as a participant in this research, or if you feel that you have been placed at risk, you may contact the Chair of the Ethics Committee, Department of Psychology, University of Southampton, Southampton, SO17 1BJ.

Phone: 02380 598101

Appendix I. Participant Assent Form (to be read to each child)

My name is Sophie and I'm doing a project in your school. I want to learn about your lessons that you are having with your teacher about being brave.

I want to know if the lessons help you to learn and make friends at school.

I've got two activities for to do today. One is on the computer and one is a choosing activity with pictures of other children in your class. This is not a test. There are no right or wrong answers.

I will not show the answers that you give me to anybody else.

You can stop at any time if you want to, and I will take you back to class.

Do you have any questions?

Has somebody explained this project to you?

Yes No

Do you understand what this project is about?

Yes No

Have you asked all the questions you want?

Yes No

Have someone answered your questions in a way you understand?

Yes No

Do you understand it is okay to stop taking part at any time?

Yes No

If you have answered yes to all above questions,

Please sign your name to show you do want to take part

Name……Date……

THANK-YOU VERY MUCH!

Appendix J. Debriefing statement

Thank you for doing some activities for me today. This will help me learn about how your lessons help you learn and make friends at school.

I will not include your name. Your name will have a special code and nobody else will look at your answers.

If you have any more questions you can speak to your teacher.

Signature _____ Date _____

Sophie Adams

THANK-YOU

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