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The Prevention of Childhood Anxiety in Socioeconomically Disadvantaged Communities: A Universal School- Based Trial

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Introduction: literature review

Anxiety disorders are consistently cited as the most common type of childhood psychological disorder (Beidel, 1991; Costello *et al*, 2005; Essau *et al*, 2000; Kashani & Orvaschel, 1988). The prevalence rates most recently reported range between 4% and 25% (Boyd *et al*, 2000; Neil & Christensen, 2009; Tomb & Hunter, 2004), with up to 28.8% of children developing an anxiety disorder during their lifetime (Kesslet *et al*, 2005). Given the magnitude of this issue, research efforts have prioritised the development of interventions for

childhood anxiety, at both individual and group levels, with promising results. Despite ongoing refinement and evaluations of such interventions, however, the fact remains that most children with anxiety disorders do not receive the treatment they require (Esser *et al*, 1990; Hirschfeld *et al*, 1997; Olfson *et al*, 2003; Sawyer *et al*, 2000), while many others will terminate therapy prematurely (Kazdin, 1996).

Socio-economic disadvantage is a well-known risk factor for childhood psychopathology; children from poor families are more likely to experience a range of emotional and behavioural problems (Sawyer *et al*, 2001). Population-based research demonstrates that children of families below the poverty line are three times as likely to meet criteria for any psychological

A B S T R A C T

This study is the first to examine the efficacy of the FRIENDS for Life program, a school-based, universal prevention program for childhood anxiety, when delivered exclusively to school-children from socio-economically disadvantaged communities. Participants (N = 963) were children from Grades 5, 6 and 7 attending one of three public primary schools in Brisbane, Australia. Participants from all three schools completed a teacher-led intervention, delivered during regular classroom time within one school term. Participants completed measures assessing

anxiety and depressive symptomatology, self-esteem, coping skills and psychosocial difficulties at pre, post and 12-month follow-up. Self-report data revealed significant decreases in both anxiety and depressive symptomatology at post-intervention which were maintained at follow-up. Significant reductions in peer problems and conduct problems, along with significant improvements in self-esteem and the use of coping strategies, were also noted over time. Clinical implications of the findings are discussed, along with limitations and directions for future research.

disorder, and for every individual diagnosis except tic disorder (Costello *et al*, 1996). More recently Xue and colleagues (2005) found that rates of childhood internalising difficulties were significantly higher in communities of low socio-economic status (SES) than in medium and high SES communities. Longitudinal research has found that low income predicted internalising problems in children as young as five years (Bor *et al*, 1997), while female adolescents whose families lived in poverty for the first five years of their lives have been found to experience greater symptoms of anxiety and depression (Spence *et al*, 2002).

Despite the robust inverse relationship between SES and emotional/behavioural problems, the use of mental health services in socio-economically disadvantaged communities does not reflect the increased prevalence of difficulties. Rather, children with more serious emotional/behavioural problems from such communities are not only less likely to receive treatment (Kazdin & Mazurick, 1994; Kazdin & Wassell, 1999; Misfud & Rapee, 2005; Snell-Johns *et al*, 2004), but also more likely to disengage from treatment prematurely (Gonzales, 2005; Harrison *et al*, 2004; Kazdin *et al*, 1997). Researchers have identified many barriers to use of mental health services facing poor families, which may account for these trends (Buckner & Bassuk, 1997; Koroloff *et al*, 1996; Owens *et al*, 2002). Such barriers include low social support, lack of transport and child care options, competing financial priorities (food or accommodation, for example), parental stressors, perceptions of mental illness and treatment, lack of knowledge about how to access services and overburdened service providers.

Given the significant barriers facing disadvantaged families, researchers have focused on school-based intervention to address rising rates of childhood emotional/behavioural problems. The school is an ideal access point to large numbers of children simultaneously, while affording an excellent milieu for population-based delivery of effective interventions (Misfud & Rapee, 2005). School-based intervention, particularly when delivered in a universal format, effectively neutralises many pragmatic and perceptual barriers to accessing community-based mental health services. Universal prevention involves the treatment of an entire population of individuals, which affords all children the opportunity to learn and develop skills designed to prevent and treat anxiety, regardless of risk or diagnostic status.

Research into universal school-based anxiety prevention has surged over the past decade, yielding largely promising results (Neil & Christensen, 2009).

While several intervention protocols have been researched, by and large the most extensively researched universal prevention program for childhood anxiety is the *FRIENDS for Life* program (Barrett, 2004), a brief cognitive-behavioural intervention for clinically anxious children. The word *FRIENDS* is an acronym for strategies taught in the intervention: F – *Feelings*; R – *Remember to relax*; I – *I can do it! I can try my best!*; E – *Explore solutions and coping step plans*; N – *Now reward yourself! You've done your best!*; D – *Don't forget to practise*; S – *Smile, stay calm for life!* The primary components of the program include relaxation, cognitive restructuring, attention training, graded exposure to anxiety-provoking situations, and problem-solving, which are facilitated by peer and family support (Barrett & Turner, 2004). *FRIENDS for Life* originated as the *Coping Koala* program (Barrett *et al*, 1996), an Australian adaptation of the USA-originated *Coping Cat* program (Kendall, 1990). While the program can be run individually, *FRIENDS* was originally designed as a group intervention which is suitable for use in a clinic or a school setting.

The first published research evaluating the *FRIENDS* program delivered as a universal intervention was conducted by Barrett and Turner (2001), who conducted the program with 489 children (aged 10 to 12 years) in 10 primary schools. Schools were allocated to one of three conditions: a psychologist-led intervention ($N = 188$), a teacher-led intervention ($N = 263$) and a standard curriculum with monitoring ($N = 137$). All teachers and psychologists who facilitated the intervention groups received intensive training. Participants in both intervention groups reported significantly fewer anxiety symptoms than in the monitoring condition. These results provided early support for the effectiveness of *FRIENDS* as a school-based universal prevention for anxiety and, importantly, established that the program was equally effective whether delivered by a psychologist or a teacher.

Subsequently, *FRIENDS* has been investigated in several other universal school-based studies. A later paper validated the effectiveness of the program, when delivered by classroom teachers, for an older cohort of children (aged 10 to 13 years). Results demonstrated significant decreases in anxiety and depressive symptoms, and changes in risk status for children identified as 'at-risk' for anxiety (Lowry-Webster *et al*, 2001). Longitudinal effects were investigated in a 12-month follow-up study (Lowry-Webster *et al*, 2003), with the positive gains maintained over time. A subsequent longitudinal study also demonstrated significant reductions in anxiety

symptoms up to 12 months post-intervention (Lock & Barrett, 2003), while also finding that treatment effects were greatest for children in late primary school. More recent research has also demonstrated that *FRIENDS* intervention effects are robust over time (Stallard *et al*, 2008), with positive benefits observed up to 36 months post-intervention (Barrett *et al*, 2006). This literature provides a strong evidence base for school-based universal prevention of anxiety, and validates the *FRIENDS* program as an effective intervention in this field.

While much research into school-based anxiety prevention has been undertaken during the past decade (see Neil & Christensen, 2009, for a review), research which exclusively evaluates such interventions in regions of socio-economic disadvantage is almost non-existent. To date, only three studies have focused **exclusively** on school-based prevention of childhood anxiety in disadvantaged communities. The first study evaluated a CBT intervention for anxiety delivered at the selective level of prevention (Misfud & Rapee, 2005). The study involved nine schools selected for their high concentration of socio-economically disadvantaged families (Misfud & Rapee, 2005), and 91 children (8 to 11 years) were selected for inclusion based on elevated anxiety symptoms. Children from five schools were allocated to the treatment condition, and those from the remaining four schools comprised the waiting-list control group. The intervention delivered was based on the school version of the *Cool Kids* program (Lyneham *et al*, 2003; Rapee *et al*, 2000), and included psychoeducation about anxiety, cognitive restructuring, exposure hierarchies for feared stimuli, social skills, assertiveness training and coping with teasing. The program was delivered in eight weekly sessions during normal school time, which were supplemented by two parent information sessions. At the conclusion of the program, participants in the intervention condition demonstrated significant decreases in anxiety symptoms relative to the waiting-list control group, on both self-report and teacher report measures, with positive gains maintained at four months follow-up.

The second study evaluated a brief, 5-session intervention for test anxiety with a sample of Grade 9 students from a single public school in New Orleans who had been exposed to Hurricane Katrina (Weems *et al*, 2009). Enrolments at the school were predominantly children from ethnic minority groups (primarily African-American), and typically from low-income families. From an initial sample of 94 students, 30 participants with elevated anxiety scores were selected to participate in the group intervention, which included

psychoeducation about the physiological, cognitive and behavioural aspects of anxiety, relaxation training and self-efficacy building activities, systematic desensitisation/exposure to anxiety, and generating rewards for positive progress. Results indicated that participants demonstrated significant decreases in test anxiety post-intervention and, promisingly, these participants also showed improvements in their GPAs (Grade Point Averages). Of particular note, however, was the finding that children in the intervention group also demonstrated significant decreases in post-traumatic stress symptoms following the intervention. This research provided evidence that meaningful reductions in trauma symptoms may be produced by non-trauma-specific anxiety interventions.

The most recent study was a randomised controlled trial evaluating a universal school-based program for anxiety with 496 children (aged 11 to 13 years) from disadvantaged schools (Roberts *et al*, 2010). Half the schools were randomly allocated to the intervention condition and the other half to a control condition. The intervention delivered was the *Aussie Optimism Program*, which includes two components: Social Life Skills (SLS; Roberts *et al*, 2003), designed to assist children with deficits in social skills and social problem solving, low social support and friendship difficulties, and Optimistic Thinking Skills (OTS; Roberts *et al*, 2003), which focuses on reducing negative cognitive elements such as pessimistic attribution style, negative self-perceptions and future expectations. The program was delivered by school teachers as a series of 60-minute lessons over a 20-week period. There were no significant differences in self-reported anxiety and depressive symptomatology between the intervention and control groups post-intervention, or at the 6-month or 18-month follow-up time points. By contrast, parents of children in the intervention group reported significant decreases in internalising symptoms post-treatment, relative to parents of children in the control condition. However, these between-group differences had disappeared by six-months follow-up, and there was no significant difference in parent-reported internalising symptoms between the intervention and control groups at 18 months post-intervention (Roberts *et al*, 2010). The results indicate that the intervention may have resulted in some improvements in child anxiety symptoms in the short term, but that it was largely ineffective in reducing childhood anxiety in the longer term.

While the above three studies successfully addressed a much neglected area of research, they are not without

limitations. The earlier studies employ a selective prevention model, rather than a universal prevention model, focusing on intervention in small-group format (Misfud & Rapee, 2005; Weems *et al*, 2009). While these studies yielded positive results, it is unfortunately not known whether a less concentrated ‘dosage’ of an intervention (such as delivered by universal prevention) is sufficient for disadvantaged populations, given the increased risk of more serious emotional/behavioural problems. The more recent study, which employed a universal prevention protocol, is undoubtedly more ambitious, but hampered by non-significant results (Roberts *et al*, 2010). Despite this, the parent-reported decreases in internalising symptoms provide impetus for future research. It must also be noted that this study evaluates an alternative intervention to the *FRIENDS for Life* program; a key point here is the authors’ acknowledgement that their chosen program lacked empirical evidence as an effective treatment for anxiety (Roberts *et al*, 2010). It remains to be seen, therefore, whether a more empirically validated program, such as *FRIENDS for Life*, might deliver the more consistent, predicted changes that the above research failed to demonstrate.

The above review of the literature on prevention of childhood anxiety in socioeconomically disadvantaged communities highlights several issues. First, prevention of childhood anxiety in disadvantaged schools is a significantly neglected field of research. Second, the results yielded by the few studies conducted in this field to date suggest that intervention in these populations **may** result in clinically significant decreases in anxiety, highlighting the need for future research. Third, future research evaluating an alternative, more extensively validated program for childhood anxiety is highly warranted.

The study

The current study is the first-ever evaluation of a universal school-based prevention program for childhood anxiety **exclusively** in disadvantaged schools, using the *FRIENDS for Life* program, an effective intervention for childhood anxiety that has been validated across all three levels of prevention (indicated, selective and universal). For the current study, it was predicted that anxiety symptoms would decrease from pre- to post-intervention and follow-up, based on child self-report measures. Similarly, it was predicted that reductions in depressive symptoms from pre- to post-treatment and follow-up would be revealed, based on child self-report measures.

Second, it was predicted that use of positive coping skills (assistance-seeking and cognitive-behavioural problem-solving) would increase from pre- to post-intervention and follow-up. Accordingly, it was predicted that use of maladaptive coping skills (cognitive avoidance and behavioural avoidance) would decrease from pre- to post-intervention and follow-up. It was also predicted that self-esteem (social self-esteem and school esteem) would increase from pre- to post-intervention and follow-up. Last, it was predicted that emotional problems, conduct problems, hyperactivity and inattention, and peer relationship problems would decrease from pre- to post-intervention and follow-up, and that pro-social behaviour would increase from pre- to post-intervention and follow-up.

Finally, the study examined predictors of outcome with regard to internalising symptoms post-intervention. Predictors included pre-intervention anxiety symptoms, positive coping skills (assistance-seeking and cognitive-behavioural problem-solving), maladaptive coping skills (cognitive avoidance and behavioural avoidance), self-esteem (social self-esteem and school esteem), emotional problems, conduct problems, hyperactivity/inattention, peer relationship problems and pro-social behaviour. It was hypothesised that children with higher levels of anxiety symptomatology at pre-intervention would demonstrate the greatest reductions in anxiety and depressive symptomatology at post-intervention. It was also predicted that children who used more maladaptive coping skills at pre-intervention would demonstrate greater reductions in internalising symptoms at post-intervention. Similarly, it was predicted that children with lower social self-esteem and school esteem at pre-intervention would demonstrate greater reductions in internalising symptoms at post-intervention. Finally, it was predicted that children with a higher level of emotional problems, conduct problems, hyperactivity/inattention and peer problems at pre-intervention would show greater reductions in internalising symptoms post-intervention.

Method

Participants

Participants were 963 children attending three public primary schools in an urban local government region South of Brisbane, Australia. The sample consisted of 323 students in Grade 5, 340 students in Grade 6 and 300 students in Grade 7. The sample consisted of 494

males and 469 females. The schools were selected for their location in a statistical local area associated with high levels of socio-economic disadvantage, based on the Census Index of Relative Socio-economic Disadvantage (Australian Bureau of Statistics, 2006). Census data demonstrated that all schools were in a region of relative socio-economic disadvantage, on both state and national levels.

Measures

The Strengths and Difficulties Questionnaire (SDQ) is a 25-item self-report measure of psychological adjustment for use with children aged 3 to 16 years (Goodman, 1997). The items yield five sub-scales: emotional symptoms, conduct problems, hyperactivity/inattention, peer relationship problems and pro-social behaviour. The SDQ has sound psychometric properties, including moderate to strong internal reliability for all sub-scales, good test-retest reliability (Vostanis, 2006), concurrent validity and the ability to distinguish between community and clinical samples (Goodman, 2001; Goodman & Scott, 1999).

The Self-Esteem Inventory (SEI) is a 58-item self-report measure of self-esteem for children aged 8 to 15 years (Coopersmith, 1997). The measure consists of four sub-scales (general self-esteem, social self-esteem, home esteem and school esteem) and a lie scale. The SEI has demonstrated sound psychometric properties (Coopersmith, 1967, 1989), including good convergent validity and an internal consistency of 0.86 (Kokenes, 1978; Robertson & Miller, 1986). For the current study, only items which were used to calculate social self-esteem (eight items) and school esteem (eight items) sub-scales were included.

The Children's Depression Inventory (CDI) was used to measure depressive symptoms in participants (Kovacs, 1981). Items are designed to tap cognitive, behavioural and affective symptoms of depression. For the current study, a cut-off score of 16 was used to indicate the presence of moderate to severe levels of depressive symptoms, which is supported by the literature (Kovacs, 1992; Roberts *et al*, 2003). The CDI has demonstrated sound psychometric properties, with high internal consistency and moderate test-retest reliability (Saylor *et al*, 1984) and good convergent validity in discriminating between clinically depressed and non-depressed children in inpatient and non-referred groups (Kovacs, 1992; Lobotvits & Handal, 1985). For the current study, and consistent with earlier research (Hannon *et al*, 2000;

Shochet *et al*, 2001), one item on suicide was omitted so as not to cause concern to participants, parents or teaching staff. Research has shown that removal of the suicide item does not significantly alter CDI scores (Weiss *et al*, 1991).

The Revised Children's Manifest Anxiety Scale (RCMAS) is a self-report measure of trait anxiety in children (Reynolds & Richmond, 1978). A total of 28 items pertain to trait anxiety, and a further nine items assess social desirability. The RCMAS has sound psychometric properties, with good convergent validity (Reynolds, 1980), high internal consistency and moderate test-retest reliability (Reynolds & Richmond, 1985).

The Spence Children's Anxiety Scale (SCAS) is a self-report measure of child anxiety (Spence, 1997). The SCAS consists of 38 items assessing anxiety symptoms, including obsessions and compulsions, separation anxiety, social phobia, panic, agoraphobia, generalised anxiety and physical injury concerns, which correspond to DSM-IV (American Psychiatric Association, 1994) anxiety disorder sub-types. The SCAS was found to have high internal consistency, satisfactory test-retest reliability and adequate convergent and divergent validity (Spence, 1997; Spence *et al*, 2003). For the present study, a cut-off score of 42 was used to identify children at high risk for anxiety. This cut-off was recommended by the author of the scale (Spence, 1997), and has been used in previous research (Barrett & Turner, 2001).

The Coping Scale for Children and Youth (CSCY) is a 29-item self-report measure with four factors related to coping: assistance seeking, cognitive/behavioural problem-solving, cognitive avoidance and behavioural avoidance (Brodzinsky *et al*, 1992). Items corresponding to each factor are calculated to yield a mean score for each of four sub-scales. The CSCY has moderate to high internal reliabilities for each of the four factors (ranging from 0.70 to 0.80), and test-retest reliabilities within each of the factors ranges from 0.70 to 0.83 (Brodzinsky *et al*, 1992).

Procedure

Before commencing the program, all classroom teachers of Grades 5, 6 and 7 at each of the three schools participated in a one-day intensive training workshop which provided education on childhood anxiety and depression, and instruction in delivery of the *FRIENDS for Life* program. All training sessions were held in each of the three schools within a one-week period.

Parents of all children in Grades 5, 6 and 7 at each school were sent an information sheet detailing the research to be conducted in their schools. It was made clear that the intervention would be delivered during regular class time, and at no cost to parents. No parents refused to allow their child to participate in the program. This high acceptance rate may be due to familiarity with the *FRIENDS* program, because other schools in this region had previously been involved in running the *FRIENDS* program. None of the three schools involved in the current research had been directly involved with the *FRIENDS* program before this research project.

Pre-intervention assessment was conducted within a one-week period, and was jointly facilitated by classroom teachers and postgraduate students during normal class time. Participants were informed that all responses were confidential, that responses would only be viewed by research staff, and that they were free to withdraw at any time. All questions were read aloud to participants, with pauses to allow participants to record their responses.

The post-intervention assessment was conducted within one week at each of the schools, approximately one week following completion of the last intervention session, and approximately three months following the pre-intervention assessment. At 12 months following the intervention, a postgraduate student returned to each of the three schools to assist classroom teachers in completing the 12-month follow-up assessment of participants. The 12-month follow-up assessment could only be completed with Grade 6 and Grade 7 students of the current year (Grade 5 and Grade 6 students of the intervention year). This is because the Grade 7 students of the intervention year had graduated from primary school at the end of that year, and had dispersed to a range of secondary schools in the region by the time the 12-month follow-up assessment was conducted.

Intervention

The intervention program used was the *FRIENDS for Life* program, a brief, group-based CBT for anxiety in children (Barrett, 2004). The program teaches children skills and techniques to manage anxiety and cope with difficult situations. The main components of the program include relaxation, cognitive restructuring, attention training, graded exposure to anxiety-provoking situations and problem-solving, all of which are facilitated by peer and family support (Barrett & Turner, 2004). The program originated as the *Coping Koala* program (Barrett *et al*, 1996), an Australian adaptation of the USA-originated

Coping Cat program (Kendall, 1990). The standard *FRIENDS* program comprises 10 weekly sessions and two booster sessions, which are typically conducted one month and three months respectively following completion of the treatment. Booster sessions may be used to allow children to further practise skills learnt in the intervention, and to assist in generalising these skills to everyday life situations. *FRIENDS for Life* is a manualised program; the group leader's manual provides scripts and activities to be in run each session, and children are given a workbook with a range of interactive activities to complete during each session. The program manual allows for flexibility in implementation, making *FRIENDS* an ideal program for use within the school curriculum.

The intervention commenced approximately one week following pre-intervention assessment, and was completed within one 10-week school term. The intervention was run on a class-by-class basis, with all program sessions facilitated by the regular classroom teacher. Teachers were instructed that, provided all material in each of the 10 sessions was covered and that each session was covered in chronological order, they did not need to deliver each session as a whole block, but could split session content between time slots. The flexibility of the program delivery was necessary due to individual differences in the curriculum between grades, timetabling differences between and within schools, and the progress and composition of each individual class.

All participants received a copy of the *FRIENDS for Life* workbook (Barrett, 2004), and classroom teachers were supplied with a copy of the program manual (Barrett, 2004). Parents were encouraged to participate by attendance at parent evening sessions held during the course of the intervention. These sessions were designed to provide education about childhood emotional development, anxiety and depression in children, and instruction in various strategies that parents could use to assist their child in reducing their anxiety. Given the poor attendance rates at four parent sessions in a previous universal school-based evaluation of the *FRIENDS for Life* program (Barrett & Turner, 2001), only two parent sessions per school were held.

Results

Preliminary analyses

Preliminary analysis of the data revealed significant

amounts of missing data at all time points, which became larger at later time periods. Of the original sample of 963 participants, there was fully completed data for 486 participants at both pre and post (**Table 1**, below). Missing value analysis further confirmed that data were not missing randomly. T-tests were used to compare the sub-sample of participants who completed the questionnaire measures at both pre- and post-intervention with the sub-sample who completed measures at pre-intervention but not at post-intervention to determine whether there were any significant differences in pre-intervention levels of internalising symptoms and other outcome measures. There were no significant differences on any of the outcome measures at pre-intervention between these two groups.

Due to the large amount of missing data, it was decided to analyse only complete data points using linear mixed effects models. This was used for the analysis of the overall effect of treatment across the three time points, with participant identity as a random factor, time as repeated measures and an unstructured covariance metric. Linear mixed effects models include all observations which are valid at each time point (Cnaan *et al*, 1998). For subsequent analyses, ANOVAs, t-tests and regressions were performed on difference scores formed from the difference between pre-intervention and post-intervention scores on each measure, and therefore include only participants who completed both assessments. Although there may still be issues of generalisability of findings derived from these analyses, the analysis of complete data is less problematic for multivariate analyses than is imputation of data when data are non-randomly and extensively missing, as these analyses make fewer assumptions about the nature of the missing data and therefore produce less biased estimates (Kalton & Kasprzyk, 1982).

All measures showed some degree of skew, and some were markedly skewed on visual inspection. Analyses were performed with both untransformed and transformed data, using each of the square-root, logarithm and power transforms. The optimal transform was selected using the Box-Cox procedure, which identifies the power transform which most closely resembles normality for any continuously scaled variable (Box & Cox, 1964) for each variable. Where substantive differences were observed, they are presented in the analyses. No significant outliers were observed after transformation. Due to the large number of analyses calculated, only significant F-ratios will be reported.

TABLE 1 Sample Sizes for All Measures Analysed, Across Time Points

Measure	Pre N	Post N	Follow-up N
SCAS			
Total	833	490	200
Panic disorder	828	489	200
Separation anxiety	832	490	200
Physical injury	833	488	200
Social phobia	832	490	200
OCD	829	487	200
GAD	833	488	200
RCMAS			
	610	488	199
CDI			
	830	512	195
SDQ			
Emotional problems	605	516	199
Conduct problems	605	516	199
Hyperactivity/inattention	605	516	199
Pro-social behaviour	605	516	199
Peer problems	605	516	199
SEI			
Social self-esteem	626	508	196
School esteem	626	509	196
CSCY			
Assistance seeking	523	391	141
Problem solving	523	391	141
Cognitive avoidance	523	391	141
Behavioural avoidance	523	392	141

SCAS = Spence Children's Anxiety Scale; RCMAS = Revised Children's Manifest Anxiety Scale; CDI = Children's Depression Inventory; SDQ = Strengths and Difficulties Questionnaire; SEI = Self-Esteem Inventory; CSCY = Coping Scale for Children and Youth.

Differences in baseline measures (school, gender and grade)

Preliminary examination of the data indicated that the gender and grade distributions were not significantly different between the three schools (**Table 2**, overleaf. A series of one-way ANOVAs comparing the three schools in terms of baseline anxiety and depression (**Table 3**, overleaf) showed that one of the three schools had significantly lower depression scores than the other two schools, $F(2,573) = 4.56, p = .011$. Another of the three schools had significantly lower scores on the SCAS separation anxiety sub-scale than did the other two schools, $F(2,573) = 4.18, p = .016$. It is unclear why the schools differed on measures of depression and separation anxiety at baseline. Despite the fact that all schools were located in a recognised region of socio-economic disadvantage, it is possible that variation on some indices of SES of families attending the three schools may account for this difference. Without the necessary data to quantify this, however, we cannot

TABLE 2 Sample Sizes for Each School, by Grade and Gender

School	Grade 5		Grade 6		Grade 7	
	Male	Female	Male	Female	Male	Female
School A	55	57	48	55	40	34
School B	43	46	46	56	43	43
School C	67	55	80	55	72	68

speculate further on this point.

Two-way ANOVAs of each clinical measure indicated that, overall, girls had significantly higher anxiety scores than boys, as measured on the SCAS, $F(1,827) = 35.93, p < .001$. A similar effect of gender was noted with regard to anxiety scores on the RCMAS, where girls reported significantly higher anxiety than boys, $F(1,604) = 11.91, p < .001$. With regard to differences in anxiety between the three grades, children in Grade 7 were found to have lower anxiety scores on the SCAS than children in Grade 5, $F(2,827) = 3.08, p = 0.046$. Children in Grade 6 did not differ significantly from the other two groups in terms of overall anxiety scores on the SCAS. When investigating self-reported anxiety symptoms on the RCMAS, children in Grade 7 exhibited less anxiety than children in either Grade 5 or Grade 6, $F(2,604) = 6.05, p = 0.002$. Children in Grade 5 and Grade 6 did not differ significantly in terms of self-reported anxiety on the RCMAS.

Treatment effects

Anxiety

Table 4, opposite, shows the changes on all outcome measures over time. **Table 5**, page 14, presents means and standard deviations for all measures at pre- and post-

TABLE 3 Mean and Standard Deviation for all Clinical Outcome Measures at Baseline

	School A		School B		School C	
	\bar{X}	s.d.	\bar{X}	s.d.	\bar{X}	s.d.
SCAS						
Total	27.87	20.46	27.40	21.95	27.26	19.42
Panic disorder	3.83	5.09	4.14	5.17	3.78	4.51
Separation anxiety	4.73	3.80	4.79	4.37	4.35	3.60
Physical injury	3.35	3.10	3.36	3.24	3.20	3.15
Social phobia	5.35	4.21	5.25	4.28	5.24	4.03
OCD	5.10	4.12	4.93	4.18	5.27	4.02
GAD	5.50	4.09	5.16	4.07	5.42	4.11
RCMAS						
	15.32	7.64	14.45	6.79	14.45	7.25
CDI						
	11.67	9.59	10.20	8.42	11.73	8.61

SCAS = Spence Children's Anxiety Scale; RCMAS = Revised Children's Manifest Anxiety Scale; CDI = Children's Depression Inventory.

intervention. On the SCAS total score, a significant main effect for time was found, $F(2,120.08) = 33.05, p < .001$, indicating that anxiety scores did change over time. Anxiety scores decreased significantly from pre- to post-intervention, though there was no significant difference between post-intervention and follow-up scores. Similarly, for the RCMAS a significant main effect for time was found, $F(2,102.54) = 20.7, p < .001$. Self-rated anxiety on this measure significantly decreased from pre- to post-intervention, though there was no significant difference between post-intervention and follow-up RCMAS scores.

Significant main effects for time were also noted on all SCAS subscales. Contrasts examining the main effect of time on the sub-scale for GAD, $F(2,168) = 44.38, p < .001$, demonstrated that scores decreased significantly from pre- to post-intervention, with significant decreases also noted between post and follow-up scores. Contrasts examining the main effect of time on the sub-scales for PD, $F(2,201.29) = 14.33, p < .001$, SAD, $F(2,157.07) = 34.33, p < .001$, and OCD, $F(2,168) = 44.38, p < .001$, revealed that scores significantly decreased from pre- to post-intervention, with no significant differences noted between post-intervention and follow-up scores. By comparison, contrasts examining the main effect of time on the sub-scales for fear of physical injury $F(2,101.29) = 4.87, p = 0.01$, and SP, $F(2,133.68) = 16.64, p < .001$, revealed that, while significant decreases from pre to post were evident, there were significant increases in scores on both scales from post to follow-up.

Depression

On the CDI, a significant main effect for time was found, $F(2,112.7) = 14.77, p < .001$, whereby self-rated depression significantly decreased from pre- to post-intervention. No significant difference was noted in depression scores from post-intervention to follow-up.

Self-esteem, coping skills and psychosocial difficulties

A significant main effect of time was noted for the SDQ emotional problems sub-scale, $F(2,147.29) = 14.68, p < .001$, whereby scores on this scale decreased from pre to post, with no significant difference between post and follow-up scores. Significant main effects of time were also found for both the CSCY cognitive avoidance sub-scale, $F(2,277.95) = 11.52, p < .001$, and the CSCY behavioural avoidance sub-scale, $F(2,243.32) = 11.19, p < .001$, with contrasts indicating significantly lower scores from pre- to post-intervention, with further decreases noted between post-intervention and follow-

TABLE 4 Mean and Standard Deviation for all Measures at Pre-Intervention, Post-Intervention and Follow-up

	Pre-test		Post-test		Follow-up		Change over time
	\bar{x}	s.d	\bar{x}	s.d.	\bar{x}	s.d	
SCAS							
Total	27.48	20.44	22.23	17.06	22.17	18.23	$F(2,120.08) = 33.05, p < .001^*$
Panic disorder	3.89	4.87	3.01	4.13	3.07	4.47	$F(2,201.29) = 14.33, p < .001^*$
Separation anxiety	4.59	3.89	3.59	3.35	3.37	3.33	$F(2,157.07) = 34.33, p < .001^*$
Fear of physical injury	3.29	3.16	2.96	2.85	3.06	3.06	$F(2,101.29) = 4.87, p = 0.01^*$
Social phobia	5.28	4.15	4.42	3.65	4.71	3.55	$F(2,133.68) = 16.64, p < .001^*$
OCD	5.13	4.09	3.77	3.45	3.64	3.52	$F(2,168) = 44.38, p < .001^*$
GAD	5.37	4.09	4.55	3.32	4.34	3.78	$F(2,133.08) = 20.45, p < .001^*$
RCMAS	14.76	7.25	13.01	6.72	13.01	6.58	$F(2,102.54) = 20.7, p < .001^*$
CDI	11.26	8.86	9.4	8.21	8.72	8.21	$F(2,112.7) = 14.77, p < .001^*$
SDQ							
Emotional problems	3.69	2.41	3.2	2.22	3.06	2.26	$F(2,147.29) = 14.68, p < .001^*$
Conduct problems	2.99	2.1	2.77	1.97	2.41	1.92	$F(2,179.77) = 5.61, p = 0.004^*$
Hyperactivity	4.25	2.31	4.01	2.27	4.08	2.5	$F(2,99.11) = 1.73, p = 0.183$
Peer problems	2.5	1.91	2.43	1.82	2.03	1.74	$F(2,195.19) = 7.1, p = 0.001^*$
Pro-social behaviour	7.26	1.96	7.28	1.9	7.56	1.95	$F(2,211.75) = 1.22, p = 0.298$
SEI							
Social self-esteem	5.8	1.96	5.93	1.94	6.16	1.73	$F(2,108.17) = 5.49, p = 0.005^*$
School esteem	5.54	1.73	5.57	1.79	5.7	1.63	$F(2,171.95) = 0.35, p = 0.705$
CSCY							
Assistance seeking	8.83	2.77	8.75	2.67	8.32	2.84	$F(2,265.63) = 1.75, p = 0.176$
Problem solving	16.68	5.69	16.21	5.54	14.55	5.46	$F(2,228.82) = 11.56, p < .001^*$
Cognitive avoidance	23.42	7.47	22.07	7.13	20.38	7.46	$F(2,277.95) = 11.52, p < .001^*$
Behavioural avoidance	11.1	3.87	10.6	3.53	9.63	3.69	$F(2,243.32) = 11.19, p < .001^*$

SCAS = Spence Children's Anxiety Scale; RCMAS = Revised Children's Manifest Anxiety Scale; CDI = Children's Depression Inventory; SDQ = Strengths and Difficulties Questionnaire; SEI = Self Esteem Inventory; CSCY = Coping Scale for Children and Youth. * indicates significant result.

up scores. Significant main effects of time were also found for the SDQ peer problems sub-scale $F(2,195.19) = 7.1, p = 0.001$, SEI social self-esteem sub-scale, $F(2,108.17) = 5.49, p = 0.005$, CSCY problem-solving sub-scale, $F(2,228.82) = 11.56, p < .001$, and for the transformed SDQ conduct problems sub-scale, $F(2,179.77) = 5.61, p = 0.004$. Contrasts performed on each of these main effects revealed no significant differences in scores for the above scales from pre- to post-intervention, but demonstrated significantly higher follow-up scores for the SEI social self-esteem scale relative to those both pre and post intervention, and significantly lower follow-up scores for the CSCY problem-solving sub-scale, SDQ peer problems sub-scale and the transformed SDQ conduct problems sub-scale than those both pre and post intervention.

Change in risk status

Changes in risk status over time are displayed below in **Figure 1**, below. Overall, 21.9% of children exhibited levels of anxiety at or above the clinical cut-off on the total SCAS score at baseline, which reduced to 14.7% at post-test and 12% at follow-up. On the CDI, 30.4% of children scored above the clinical cut-off for depression

at baseline, and this rate dropped to 23.4% at post-test and 21% at follow-up.

Predictors of improvement

Gender and grade

A series of two-way ANOVAs were conducted examin-

FIGURE 1 Change in Risk Status Over Time

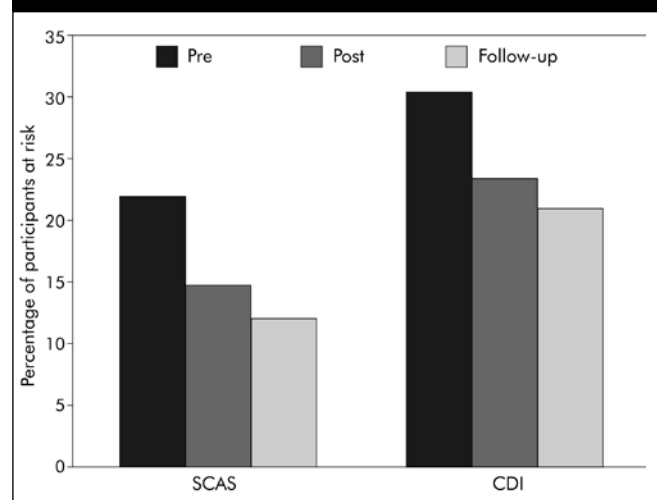


TABLE 5 Mean and Standard Deviation for Difference Between Pre-Intervention and Post-Intervention Scores

	Male						Female					
	Grade 5		Grade 6		Grade 7		Grade 5		Grade 6		Grade 7	
	\bar{X}	s.d.	\bar{X}	s.d.	\bar{X}	s.d.	\bar{X}	SD	\bar{X}	s.d.	\bar{X}	s.d.
SCAS												
Total	-7.16	19.91	-6.52	20.58	-5.91	12.61	-5.66	17.38	-4.85	17.07	-3.43	14.49
Panic disorder	-1.20	5.36	-1.53	5.91	-.48	3.90	-1.00	4.00	-1.14	5.21	-.32	3.67
Separation anxiety	-1.22	3.29	-1.30	3.82	-.87	2.20	-1.36	4.14	-1.00	3.44	-.60	3.19
Fear of physical injury	-.45	2.84	-.05	2.74	-.23	1.93	-.79	2.80	-.32	2.80	-.14	2.60
Social phobia	-1.66	4.11	-.87	3.71	-1.61	2.81	-.90	3.67	-.32	3.43	-.53	3.76
OCD	-1.50	4.66	-1.87	4.65	-1.41	3.30	-.94	4.07	-1.32	3.89	-1.31	3.76
GAD	-1.16	4.02	-.95	4.10	-1.32	3.15	-.67	3.50	-.75	4.06	-.52	3.47
RCMAS												
	-3.57	6.19	-1.10	6.81	-.92	5.44	-1.59	6.53	-1.33	6.53	-1.33	5.99
CDI												
	-.72	8.32	-1.71	9.82	-2.74	6.76	-.87	8.58	-.18	7.67	-2.68	6.19
SDQ												
Emotional problems	-.76	2.10	-.61	1.99	-.16	2.36	-.42	1.99	-.65	2.50	-.38	2.38
Conduct problems	.05	2.36	-.50	1.96	.28	2.23	-.14	1.85	-.41	1.96	-.13	1.77
Hyperactivity/inattention	.10	1.99	.22	1.85	-.36	2.15	-.07	2.16	-.11	2.37	-.28	1.91
Peer problems	-.02	1.63	-.67	2.17	-.34	1.70	.28	1.86	.07	1.81	.01	1.52
Pro-social behaviour	.40	2.10	.11	2.17	.43	2.37	-.28	1.89	.31	2.03	-.25	1.93
SEI												
Social self-esteem	.38	1.31	.16	1.71	-.16	1.84	.05	2.07	-.06	1.56	.16	1.49
School esteem	.81	1.77	.53	1.65	.03	1.83	-.41	1.63	-.14	1.91	.09	1.53
CSCY												
Assistance seeking	1.00	3.99	-1.10	3.66	.74	3.36	-.34	3.25	.25	3.40	-.30	3.66
Problem solving	-1.35	8.83	-3.23	5.44	.05	7.90	-2.28	5.76	-.86	5.25	-.70	6.55
Cognitive avoidance	-3.45	11.72	-3.27	10.06	-2.17	9.19	-4.48	9.20	-2.41	9.11	-.15	9.20
Behavioural avoidance	-.60	5.20	-2.20	5.24	-.55	4.78	-1.31	5.04	-1.25	4.01	.06	3.68

SCAS = Spence Children’s Anxiety Scale; RCMAS = Revised Children’s Manifest Anxiety Scale; CDI = Children’s Depression Inventory; SDQ = Strengths and Difficulties Questionnaire; SEI = Self Esteem Inventory; CSCY = Coping Scale for Children and Youth.

ing whether improvement (difference between pre-intervention and post-intervention scores) was related to the grade or gender of participants. For the SCAS total score, there was an effect of gender, such that girls demonstrated a higher improvement score than boys, $F(1, 412) = 34.77, p < .001$. However, it was found that boys’ difference scores for the SCAS social phobia sub-scale were significantly greater than girls’ scores, $F(1,418) = 5.14, p = .024$.

Two main effects were revealed with regard to difference scores on several secondary outcome measures. There was a significant main effect of gender for the SDQ Peer Problems sub-scale, such that boys’ scores on this measure decreased more than girls’ scores, $F(1,308) = 5.34, p = .022$. With regard to self-esteem, there was a significant main effect of gender for the SEI sub-scale for social self-esteem, such that boys’ scores increased more than girls’ scores, $F(1,326) = 9.96, p = .002$. There was also a significant two-way interaction of grade and gender for the SEI social self-esteem sub-scale, such that scores increased more for boys than for girls in Grades 5 and 6, with no significant difference between boys and girls in Grade 7, $F(2,326) = 3.62, p = .028$.

Baseline anxiety

Anxiety level at baseline was associated with the effectiveness of the intervention in the difference between anxiety levels at pre- and post-treatment. Improvement in SCAS-total score was correlated, $-.62 (p < .001)$ with SCAS-total score at baseline, such that those with higher initial levels of anxiety demonstrated a significantly greater decrease in anxiety symptoms post-intervention.

Participants were stratified into low-risk and at-risk groups, based on their pre-intervention total score on the SCAS. Participants were assigned to the low-risk group based on scores below the clinical cut-off score of 42, while participants scoring at or above this cut-off were allocated to the at-risk group. Improvement scores were examined on the SCAS total score, RCMAS and CDI, as a function of risk status, age and grade, to establish whether there were differential patterns of improvement. Of the 833 children who completed the SCAS at baseline, 183 (21.9%) were allocated to the at-risk group based on their pre-intervention SCAS score. Children in the at-risk group demonstrated significantly greater improvement than children in the low-risk group on all primary outcome measures, $F(1, 410) = 8.1,$

$p = .005$ for CDI, $F(1,305) = 12.28$, $p < .001$ for RCMAS, and $F(1,412) = 199.66$, $p < .001$ for SCAS-total. For the SCAS total score, there was a significant two-way interaction of gender and clinical status $F(1,412) = 23.15$, $p < .001$; children in the at-risk group experienced significantly greater reduction in self-reported anxiety than those in the low-risk group, but this effect was stronger for boys than for girls.

Self-esteem, coping style, strengths and difficulties

Bivariate correlations were examined to ascertain whether improvement on the clinical measures differed according to psychosocial characteristics of participants at pre-intervention (Table 6, below). Children with higher scores on the SDQ emotional problems sub-scale at pre-intervention had significantly lower post-intervention scores on the SCAS, RCMAS and CDI, while children with higher scores for pro-social behaviour pre-intervention had greater reductions on the CDI only. Children with lower scores on both SEI subscales for social self-esteem and school esteem pre-intervention were more likely to have lower scores on the CDI at post-intervention, while children with higher scores on the CSCY behavioural avoidance sub-scale at pre-intervention had significantly lower scores on both the SCAS total scale and the CDI at post-intervention.

Discussion

The study investigated the effectiveness of a universal school-based intervention program for childhood anxiety

for upper primary-school aged children in a socio-economically disadvantaged community. The primary objective was to examine changes in anxiety and depressive symptomatology. Consistent with predictions, participants reported significantly fewer anxiety symptoms post-intervention. There was no significant difference in total anxiety symptom scores between post-intervention and 12-month follow-up on either anxiety measure, indicating that the positive treatment gains were maintained over time. Participants also reported significantly less depressive symptoms post-intervention, and these improvements remained robust over time. The findings are consistent with earlier research into school-based anxiety prevention (Barrett & Turner, 2001; Barrett et al, 2006; Barrett et al, 2005; Lock & Barrett, 2003; Lowry-Webster et al, 2001, 2003; Stallard et al, 2008).

As with several earlier studies of universal prevention in schools (Barrett et al, 2005; Lock & Barrett, 2003; Stallard et al, 2008), the current study was affected by missing data. In outcome studies of this nature there is always a question of whether the interpretability of significant results may be compromised by differential rates of attrition. In the current study, no significant differences in pre-intervention anxiety and depressive symptoms were found between those participants who completed questionnaire measures at pre- and post-intervention, and those who completed measures at pre but not at post. This therefore suggests that significant reductions in internalising symptoms post-intervention are not purely an artefact of missing data, and so the results presented above can be interpreted with greater confidence.

TABLE 6 Pearson Bivariate Correlations Between Psychosocial Predictors and Difference Scores in Outcome (Differenced from Pre to Post on Each Clinical Measure)

	SCAS total Correlation, <i>p</i> , <i>N</i>	RCMAS Correlation, <i>p</i> , <i>N</i>	CDI Correlation, <i>p</i> , <i>N</i>
SDQ			
Emotional problems	-0.24 (0, 296)*	-0.24 (0, 294)*	-0.21 (0, 302)*
Conduct problems	-0.11 (0.05, 296)	0 (0.985, 294)	-0.12 (0.037, 302)
Hyperactivity	-0.1 (0.09, 296)	-0.05 (0.368, 294)	-0.11 (0.061, 302)
Pro-social behaviour	-0.1 (0.094, 296)	-0.07 (0.266, 294)	-0.23 (0, 302)*
Peer problems	0 (0.993, 296)	-0.01 (0.842, 294)	0.13 (0.022, 302)
SEI			
Social self-esteem	0.08 (0.149, 318)	0.16 (0.005, 316)	0.29 (0, 317)*
School esteem	0.07 (0.237, 318)	0.05 (0.372, 316)	0.24 (0, 317)*
CSCY			
Assistance seeking	-0.07 (0.254, 276)	-0.1 (0.105, 276)	-0.01 (0.92, 280)
Problem solving	-0.19 (0.002, 276)	-0.18 (0.002, 276)	-0.01 (0.899, 280)
Cognitive avoidance	-0.18 (0.003, 276)	-0.12 (0.054, 276)	-0.11 (0.057, 280)
Behaviour avoidance	-0.27 (0, 276)*	-0.19 (0.002, 276)	-0.23 (0, 280)*

*significant at $< .001$ (bonferonni correction)

SCAS = Spence Children’s Anxiety Scale; RCMAS = Revised Children’s Manifest Anxiety Scale; CDI = Children’s Depression Inventory; SDQ = Strengths and Difficulties Questionnaire; SEI = Self Esteem Inventory; CSCY = Coping Scale for Children and Youth.

The study also examined potential intervention effects on coping and self-esteem. Our hypotheses were partially supported; use of cognitive avoidance and behavioural avoidance decreased significantly from pre- to post-intervention, and again from post-intervention to follow-up. This finding suggests that participants were more likely to address and confront challenging and anxiety-provoking situations following the intervention. These findings are similar to those reported by Lock and Barrett (2003), who found significant decreases in both cognitive and behavioural avoidance.

By comparison, and contrary to prediction, use of cognitive behavioural problem-solving significantly decreased 12 months post-intervention, while there was no significant change in the use of assistance-seeking over time. These results indicate that participants were less likely, or no more likely, to use these positive coping skills following the intervention. These results may be partly reconciled with those reported by Lock and Barrett (2003), who investigated changes in coping strategies for children in Grade 6 (late primary school) and Grade 9 (early high school). In this study, while females and children from Grade 9 reported increased cognitive behavioural problem-solving and assistance-seeking post-intervention, improvements had disappeared at 12-month follow-up. The study's authors concluded that, while younger children were less likely to avoid anxiety-provoking situations post-intervention, they were also less likely to use positive coping strategies post-intervention than older children. This may be reflected again in the results of the current study, given that the sample comprised late primary school-aged children.

Predicted improvements in self-esteem were also found by the current study; social self-esteem had improved significantly by 12-month follow-up. By comparison, the expected change in school esteem was not found, suggesting that children's self-esteem with regard to their school achievement did not vary. The improvements in self-esteem are similar to those reported by Stallard and colleagues (2008), who found significant improvements in total self-esteem from pre-intervention to three months post-intervention and 12-month follow-up. By contrast, however, improvements in self-esteem did not become apparent in the current study until 12 months post-intervention. Future longitudinal research should investigate whether this delayed improvement in self-esteem can be generalised across other low SES samples and, if so, explore the possible mechanisms behind the observed delayed response.

With regard to other measures of psychosocial

functioning, emotional problems decreased from pre- to post-intervention as predicted, with gains maintained at 12 month follow-up. By comparison, peer problems remained stable from pre- to post-intervention, but improved significantly at 12-month follow-up. This finding indicates that children reported experiencing significantly fewer problems within their peer group over time. This complements the earlier reported finding of significant increases in social self-esteem, which suggested that children felt that they were more liked by their peers. Similar to changes in self-esteem, significant reductions in self-reported peer problems did not emerge until 12 months post-intervention, suggesting that children may require more time to practise their new skills before reaping social benefits.

Predicted improvements in self-reported conduct problems were also noted. While these problems remained stable from pre- to post-intervention, significant decreases were evident at follow-up. By comparison, predicted improvements in pro-social behaviour were not observed, which is interesting, given the improvements noted in the areas of self-esteem and peer problems. Lastly, there was no significant reduction in self-reported hyperactivity and inattention, suggesting that these issues may be better addressed by other interventions tailored specifically to problem behaviours.

The secondary focus of this research was to investigate predictors of improvement (difference between pre-intervention and post-intervention scores) on the primary outcome measures (anxiety and depressive symptomatology), and secondary outcome measures (coping skills, self-esteem and psychosocial factors). In terms of demographic predictors, girls demonstrated significantly greater improvement in anxiety symptoms post-intervention, a finding consistent with earlier research (Barrett *et al*, 2006; Lock & Barrett, 2003). It was also found that males were significantly more likely to demonstrate decreases in social phobia symptoms post-intervention, suggesting that boys may derive greater benefits than girls from the *FRIENDS* program in developing social confidence.

The current research failed to identify any between-grade differences in improvement in internalising difficulties. Several earlier studies investigating developmental differences in universal anxiety prevention established that children from younger grades tend to respond more positively to treatment (Barrett *et al*, 2005; Lock & Barrett, 2003). Notably, however, the mean age of the comparison groups selected by these researchers (Grade 6 and Grade 9) differed by approximately five to six years. By comparison, the participants in the

current study were drawn from three successive school grades (Grades 5, 6 and 7), resulting in a much smaller age range. The lack of difference between grades probably reflects the homogeneity of children of upper primary school age, relative to the greater heterogeneity between upper primary school-aged children and early high school-aged children, as highlighted by the earlier research (Barrett *et al*, 2005; Lock & Barrett, 2003).

In terms of secondary outcome measures, male gender predicted greater reductions in peer problems. Boys from Grades 5 and 6 demonstrated greater improvements in social self-esteem than girls, while there was no significant difference in improvement in social self-esteem between boys and girls in Grade 7. The findings suggest that boys from younger grades felt more liked by their peers than girls and older boys, post-intervention. It would be useful to conduct further longitudinal research to examine whether these gender and age differences disappear over time, given that significant changes in self-esteem collapsed across the total sample were not evident until 12-month follow-up.

Baseline anxiety was a significant predictor of improvement in internalising symptoms, such that children in the at-risk group demonstrated greater reductions in both anxiety and depressive symptomatology. This finding is consistent with earlier research (Barrett *et al*, 2005). It was also found that, within the at-risk group, male gender predicted greater reductions in internalising symptoms. This finding is important, given that boys are less inclined to report anxiety difficulties than girls (Bell-Dolan *et al*, 1990; Essau & Peterman, 2001; Silverman & Treffers, 2001). The current study indicates, therefore, that participation in school-based anxiety prevention programs may be very effective for anxious boys, whose difficulties might otherwise not come to the attention of parents and teachers.

Significant relationships were also identified between several psychosocial variables at pre-intervention, and anxiety and depressive symptomatology at post-intervention. Children with higher self-reported emotional problems before the intervention showed greater reductions in both anxiety and depressive symptomatology post-intervention. This is consistent with earlier reported findings that children with higher levels of pre-intervention anxiety experienced the greatest improvements in internalising symptoms. Lower social self-esteem and school self-esteem at pre-intervention was predictive of significantly decreased depression post-intervention, highlighting self-esteem as a possible mediator for intervention effectiveness. Lastly, greater use of behav-

oural avoidance pre-intervention predicted greater improvement in both anxiety and depressive symptomatology post-intervention. This finding reflects an existing theorised connection between avoidant coping and anxiety (Barrett *et al*, 1996; Herman-Stahl & Petersen, 1996; Lengua *et al*, 1999; Prior *et al*, 2000), and further research should examine whether the modification of either positive or maladaptive coping skills may mediate the intervention effect on internalising symptoms.

Clinical implications

This study is the first to examine the effectiveness of the universal school-based delivery of the *FRIENDS for Life* program in a socioeconomically disadvantaged population. The findings indicate that the *FRIENDS* program was successful in reducing anxiety and depression in children in this population. This finding has important implications for anxiety intervention in low-SES communities. Specifically, the treatment dosage afforded by the universal delivery of *FRIENDS* appears sufficient to produce meaningful decreases in internalising symptoms, despite the increased risk of psychopathology in this population. This study also successfully demonstrated that treatment gains were maintained 12 months post-intervention. It therefore provides further evidence of the protective effect afforded by the *FRIENDS for Life* program, and demonstrates for the first time that long-term symptom reduction is possible when intervening with children from disadvantaged communities at universal level.

This study expanded on the standard prevention evaluation model by examining predictors of outcome other than those solely related to anxiety and depressive symptoms. Specifically, measures assessing positive and maladaptive coping skills, self-esteem and additional psychosocial factors were employed to provide a broader picture of intervention effectiveness. An examination of associations between these secondary outcome measures and improvement in internalising symptoms offers some insight into which factors predict a more positive outcome. These results provide an impetus for additional research, to determine which aspects of the program might be most useful in improving emotional resilience in children from disadvantaged communities.

The research employed a considerably larger sample size than either of the three earlier studies conducted in low-SES communities, consisting of children from three school grades. Comparing this study with the only other universal study in this field (Roberts *et al*, 2010),

the percentage of children in the current sample identified as at risk of anxiety and depression (based on scores on the SCAS and CDI) was notably higher than that identified by the earlier study. This is notable, given that Roberts *et al* (2010) employed the same measures and used a slightly more conservative cut-off score on the CDI. Arguably, then, the constellation of difficulties faced by children in the current sample may more accurately reflect those of a population at risk, which gives further credence to the significant intervention effects revealed in this study.

Limitations

A significant limitation of this study was the lack of a waiting-list control condition, which was denied ethical clearance for two reasons. First, there is substantial evidence for the effectiveness of the *FRIENDS* program when delivered at universal level (Barrett & Turner, 2001; Barrett *et al*, 2006; Lock & Barrett, 2003; Lowry-Webster *et al*, 2001, 2003; Stallard *et al*, 2008, 2007). Second, the three schools involved in this research were selected on the basis of their location in a region of socio-economic disadvantage. Due to the increased risk of significant emotional/behavioural problems faced by children from disadvantaged communities, it was deemed unethical to deny children the opportunity to participate in an empirically validated anxiety prevention program. Without a control condition, the potential influence of both placebo and maturation effects cannot be conclusively discounted. The use of a comparison group, consisting of an alternative program to the *FRIENDS* protocol, would have provided another comparison condition in lieu of a waiting-list group.

A second limitation is that the results of this study are based solely on children's subjective self-reporting of symptoms. There may therefore be some question about the accuracy of results. Due to financial and personnel constraints associated with longitudinal universal prevention research, this study did not incorporate any parent or teacher self-report measures of child functioning. Undoubtedly these measures would have provided useful collateral information to further gauge the effectiveness of the intervention, and greater scope for statistical evaluation. Future researchers in this area would do well to collect data from multiple sources.

Another significant limitation was the large portion of missing data at all three time-points. The degree of missing data rendered the use of data imputation techniques (such as multiple imputation or expectation

maximisation) inappropriate, limiting the range of statistical analyses. Significant rates of missing data have also been reported in previous universal evaluations of the *FRIENDS* program (Barrett, Lock *et al*, 2005; Lock & Barrett, 2003; Stallard *et al*, 2008). It is probable that the proportion of missing data was due largely to the characteristics of the population sample, for example increased rates of absenteeism and the greater tendency of families in this region to relocate due to residential and employment instabilities. Missing data may also have been an artefact of the necessity to conduct assessments across several sessions and days, the large ratio of facilitators to participants during assessment sessions, or by participant fatigue or boredom in completing a relatively large questionnaire battery.

Future directions

While research into universal prevention of childhood anxiety is still in its infancy, the dearth of studies conducted in socio-economically disadvantaged communities must be addressed. In the interest of minimising the disease burden of internalising disorders at a macro level, priority must be directed to prevention in high-risk populations. Further evaluation of the *FRIENDS* program in disadvantaged schools may in due course provide impetus for this program to be implemented as part of the curriculum in such schools. This initiative would overcome the many barriers to mental health services faced by those families who most require help.

Future evaluations of childhood anxiety prevention in socio-economically disadvantaged regions should strive to overcome what is arguably the most inherent challenge in universal school-based prevention – missing data. Greater data integrity might be achieved by ensuring that participants complete the questionnaire battery in one session, which could be achieved by more planning and personnel, and inclusion of fewer, or more succinct, assessment measures. Additionally, reductions in missing data might be achieved by providing incentives for children to complete the questionnaires, such as token rewards (for example stickers) or enjoyable activities such as computer time, free play or sports games in lieu of classroom time. Such initiatives would require greater collaboration between the research team and the schools involved, to determine a mutually appropriate option that does not heavily compromise class time.

The current study focused exclusively on children in an urban geographical area. Future research might

also focus on comparing program effectiveness between urban and rural disadvantaged schools. A related project might be an evaluation of the *FRIENDS* program in both urban and rural indigenous school communities, which are typically disadvantaged on many levels. A comparison of program outcomes between urban, rural and indigenous children could provide useful information to help optimise programs such as *FRIENDS for Life* for special-needs populations, by adopting a more tailored and culturally appropriate approach.

Since the commencement of this study, a number of positive measures of psychosocial functioning have become available for use in prevention research, assessing factors such as hopefulness, self-efficacy, life satisfaction, social support and resilience. Future prevention research should endeavour to incorporate not only traditional measures of symptomatology and functioning deficits, but also these more positive 'strengths based' measures, to provide a more thorough picture of program effectiveness.

Lastly, the goal of increasing parental involvement in universal prevention may be a key aspect of future research. In research with disadvantaged communities, increasing parental engagement is likely to be a challenging task. However, given the increased risk of psychopathology to both adults and children in such communities, it would be interesting to determine whether the involvement of parents might produce greater improvements in child functioning, as well as additional benefits to parents.

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