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Developmental Differences in Universal Preventive Intervention for Child Anxiety

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ABSTRACT

We compared the effects of a universal school-based preventive intervention for child anxiety at two developmental stages. Six hundred and ninety-two participants enrolled in either grade 6 (*n* = 293), children aged between 9 and 10 years, or grade 9 (*n* = 399), children aged between 14 and 16 years, were allocated to either a school-based cognitive-behavioural intervention or to a monitoring group. Participants completed the Spence Child Anxiety Scale and the Child Depression Inventory and were stratified into low-, moderate- and high-risk groups based on their anxiety scores at the start of the study. The effects of the prevention programme were evaluated at post- and 12-month follow-up intervals. Post-study results indicated significant reductions in anxiety (*p* < .001) and depression (*p* < .05) across high- and moderate-risk groups in both the intervention and monitoring conditions. This trend was evident at 12-month follow-up, however, reductions in anxiety were greater in the intervention condition (*p* < .05). At post assessment, grade 6 participants showed significant changes in anxiety compared with grade 9 participants (*p* < .001), although both primary and secondary school participants showed equal reductions in anxiety at 12-month follow-up. Overall, findings suggest that universal intervention is potentially successful in reducing anxiety symptoms in children. Primary school children reported the greatest changes in anxiety symptoms, suggesting that earlier preventive intervention is potentially more advantageous than later intervention in adolescence. The implications and limitations of this study and directions for future research are discussed.

KEYWORDS

childhood anxiety, developmental differences, prevention, universal intervention

PREVENTIVE INTERVENTION HAS emerged as a vital step forward in clinical research following data indicating that anxiety disorders are among the most common forms of psychopathology in youngsters (Kashani & Orvaschel, 1990; Mattison, 1992). For many children and adolescents, anxiety is a normal and transient experience, which parallels the biopsychosocial changes and challenges inherent throughout development. However, research suggests late childhood and early adolescence as a critical time in the development of anxiety disorders (Keller et al., 1992). Anxiety disorders have shown to

interfere significantly with children's adaptive functioning including interpersonal relationships, social competence, peer relations, and school adjustment (Last, Hansen, & Franco, 1997).

Clinical symptoms of anxiety in childhood, if left untreated, frequently follow a chronic course (Orvaschel, Lewinson, & Seely, 1995), and often continue into adulthood (Burke, Burke, Reiger, & Rae, 1990). Child anxiety disorders have been shown to carry a significant risk for other disorders, most importantly depression (Cole, Peeke, Martin, Truglio, & Seroczynski, 1998; Orvaschel et al., 1995). Longitudinal research suggests a developmental trajectory wherein anxiety in early childhood precedes depression in adolescence (Cole et al., 1998). Given the potentially debilitating effects of child anxiety disorders, effective treatment and early intervention have become a priority for many researchers (Donovan & Spence, 2000).

Clinical research provides substantial empirical support for efficacy of cognitive-behavioural therapy (CBT) in child, group and family format in the treatment of child anxiety disorders (for reviews of clinical treatment trials see Barrett, 1998; Kendall, 1994; Silverman, Kurtines, Ginsberg, Weems, Lumpkin, & Carmichael, 1999; Silverman, Kurtines, Ginsberg, Weems, Rabian, & Serafini, 1999). The core components of CBT for anxiety involve several strategies (exposure, relaxation, cognitive strategies, problem-solving skills and contingency management) taught to both children and their parents (Barrett, 1998; Shortt, Barrett, & Fox, 2001). Problem-focused coping skills, positive self-talk, relaxation skills, social support, parental modelling of non-fear/coping skills are considered to enhance children's resilience to anxiety (Spence, 2001). Given the success of CBT within clinical settings, research investigating preventive intervention is the next important step forward in reducing the prevalence of anxiety disorders in youngsters.

Primary preventive interventions can be defined further as universal, selected or indicated (Mrazek & Haggerty, 1994). Universal interventions target whole population groups, selective interventions involve youngsters identified as being at risk of psychological problems, and indicated interventions target individuals identified with mild to

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moderate symptoms of a disorder (Mrazek & Haggerty, 1994). Universal prevention interventions conducted in the school context have many advantages including reducing recruitment, screening, transportation and attrition difficulties, and reaching a broad range of children and adolescents with varying levels of psychopathology, ranging from those at risk, to those with sub-clinical or clinical symptoms. Furthermore, potential advantages involve reducing stigmatization, enhancing peer support and reducing psychosocial difficulties within the classroom, and thus promoting learning and healthy development in children and adolescents (Amburster, Andrews, Couenhoven, & Blau, 1999; Evans, 1999; Kubiszyn, 1999).

Despite the advantages of community-based prevention programmes targeting large populations, research is in its early stages. Four empirical studies have investigated preventive interventions targeting children 'at risk' of anxiety (Barrett & Turner, 2001; LaFreniere & Capuano, 1997; Lowry-Webster, Barrett, & Dadds, 2001; Spence & Dadds, 1996). In the USA LaFreniere and Capuano (1997) conducted an indicated preventive programme to investigate anxious and withdrawn behaviour in an at risk subgroup of preschool children. The researchers targeted parent–child attachment in a family-based indicated intervention. The study aimed to reduce the anxious withdrawn behaviour and increase social competence by enhancing parent–child attachment, through the promotion of parent–child interaction, positive parenting skills, reducing parental stress and increasing parents' sensitivity to their child's needs. Forty-two anxious–withdrawn preschool children aged from 31 to 70 months and their parents were randomly allocated to either a treatment ($n = 21$) or control group ($n = 21$). The intervention involved twenty 45–60- minute sessions conducted in the family home over a 6-month period.

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

At present, the majority of preventive intervention research in child anxiety has been conducted in Australia. Most encouraging are results of the Queensland Early Intervention and Prevention of Anxiety Project (Dadds, Spence, Holland, Barrett, & Laurens, 1997; Dadds et al., 1999) a cognitive-behavioural programme for a 'selected' group of at risk children conducted in eight pre-selected schools within Brisbane, Queensland, Australia. The indicated preventative intervention targeted a range of children aged between 7 and 14 years from those without a diagnosis of a clinical disorder but showed mild anxious symptoms to those who met criteria for an anxiety disorder but were in the less severe range. From an initial sample of 1786 school children, 128 were selected to participate and were randomly allocated to either an intervention or monitoring control group. A comprehensive screening and assessment process utilizing psychometrically sound self-report questionnaires and diagnostic interviews involved children, parents and teachers. Exclusion criteria involved children with disruptive behavioural problems, learning problems, disability, developmental delays, and children from non-English-speaking families. Participants were selected based on self-reported levels of anxiety on the Revised Children's Manifest Anxiety Scale (RCMAS; Reynolds & Richmond, 1978), teacher nominations and diagnostic status based on parents' responses on the Anxiety Disorder Interview Schedule (ADIS; Silverman & Nelles, 1988). Participants attended ten 2-hour sessions of the cognitive-behavioural intervention after school

hours. Group sizes ranged from 5 to 12 children. Parents of participants attended three 2-hour sessions on a monthly basis.

Prior to the intervention 75% of participants met the criteria for an anxiety disorder (mild to moderate severity). Both groups showed improvement immediately post assessment, but differences between the intervention and monitoring groups based on self-report measures and diagnostic interviews were non-significant. However, at 6-month follow-up, changes on diagnostic status indicated that improvements were maintained in the intervention group only. Sixteen per cent of participants in the intervention condition met the criteria for an anxiety disorder compared with 54% in the monitoring condition. At 12-month follow-up 15% of participants had dropped out, and no significant differences were found between the intervention and monitoring groups. At 2-year follow-up, significant group differences were found, wherein 20% of participants in the intervention group achieved diagnostic status compared with 39% in the monitoring group. Consistent with prior research, regardless of intervention status, participants showed a general improvement over time (Last, Perrin, Hersen, & Kazdin, 1996) and results further revealed that gender (female), parental anxiety and pre-treatment severity predicted a poor response to intervention (Barrett, Dadds, & Rapee, 1996; Cobham, Dadds, & Spence, 1998). Overall, treatment effectiveness was demonstrated through the reduction of existing rates of anxiety disorder and prevention of the onset of new anxiety disorders (Dadds et al., 1999).

The findings of the Queensland Early Intervention and Prevention of Anxiety Project indicate that childhood anxiety disorders and the number of children 'at risk' with mild to moderate levels of anxiety can be successfully reduced through selected school-based cognitive-behavioural intervention. An interesting outcome was the immediate reduction in symptoms reported across both intervention and monitoring groups. The putative delay in intervention effects is consistent with the results of a similar prevention trial for adolescent depression (Jaycox, Reivich, Gillham, & Seligman, 1994). However, owing to time constraints, the post assessment was conducted during the school vacation, a potentially less stressful time for children, and this may have contributed to the non-significant findings (Dadds et al., 1999).

Barrett and Turner (2001) evaluated the effects of a universal cognitive-behaviour intervention for the prevention of internalizing symptoms in children in grade 6. Ten schools in the Brisbane region were involved in the project, which involved all children participating in the FRIENDS programme (Barrett, 1998) in their classroom during the school curriculum. Participants completed standardized self-report measures of anxiety pre and post intervention. Trained psychologists or teachers implemented the FRIENDS programme over ten 75-minute sessions. Parents were invited to attend four parent evenings involving psycho-education and parenting strategies. Evaluation of children's self-report measures post intervention indicated preventive effects, with participants reporting significant reductions in anxiety symptoms across psychologist and teacher intervention conditions.

Also encouraging were recent findings from a study that examined the potential effects of a universal train – the trainer model in the prevention of child anxiety and depression (Lowry-Webster et al., 2001). Teachers and school counsellors were trained by clinical psychologists in the implementation of the FRIENDS programme prior to conducting intervention as part of the school curriculum. Five hundred and ninety-four children aged between 10 and 13 years were allocated to either an intervention or monitoring condition, and based on self-reported levels of anxiety on the Spence Child Anxiety Scale (Spence, 1994) the children were further divided into high-risk (> 42) and low-risk (< 42) groups. Post assessment all children reported significant reductions in anxiety, although

these decreases were significantly greater in the intervention group than in the monitoring condition. A significant reduction in depression was found for the intervention group only. Further analysis of changes in risk status showed positive findings. Of the children in the intervention group at risk pre intervention, 75.3% were no longer at risk post intervention, compared with 54.8% of high-risk children in the monitoring group. The findings of this study provide further evidence of the potential effects of the FRIENDS programme as a universal preventive intervention for child anxiety, when implemented by psychologists or trained researchers or school counsellors.

Research to date shows that CBT and preventive intervention, implemented by psychologists or school staff, are successful in reducing the symptoms of anxiety in primary and secondary school children with clinical disorders, and those 'at risk' with mild to moderate levels of anxiety (Barrett & Turner, 2001; Dadds et al., 1997, 1999; Lowry-Webster et al., 2001). The study conducted by LaFreniere and Capuano (1997) included targeting parent–child attachment in preschool children and was effective in enhancing parental control and child motivation and social competence, although there were no reductions in anxious–withdrawn behaviour.

Given the literature indicating that late childhood and early adolescence is a critical time in the onset and progress of anxiety disorders (Keller et al., 1992), developmental level may have a vital influence on intervention effects in terms of children's ability to benefit from prevention programmes. Developmental factors have been shown to be significant in determining treatment outcome for a number of psychological, social and behavioural problems in youngsters (Eyberg, Schumann, & Rey, 1998). Consequently, comparison of the effectiveness of school-based prevention programmes at different developmental stages has practical research implications in terms of selecting the most appropriate time to enhance long-term intervention effects.

This study was designed to examine the effects of a universal school-based cognitive-behavioural intervention for child anxiety at two developmental levels. Utilizing data from our previous study (Barrett & Turner, 2001), our main objective was to compare intervention effects between primary school participants in grade 6 and secondary school participants in grade 9. As research suggests that anxiety is a risk factor for depression (Cole et al., 1998), we were also interested in changes in children's level of anxiety over time and the effects of the intervention on reducing symptoms of depression.

The specific aims of this study were to compare self-reported anxiety and depression between an intervention condition and a monitoring condition at pre-intervention, post-intervention and 12-month follow-up intervals. It was hypothesized that the intervention group would be associated with greater reductions in self-reported anxiety than the monitoring group. A second aim was to examine the age group at which children benefit the most from a preventive intervention. In order to answer this question, children in primary school and secondary school were compared on self-reported anxiety and depression at pre- and post-assessment and 12-month follow-up intervals. A final aim was to determine the effects of preventive intervention across children identified at low, moderate and high risk of developing anxiety problems at post assessment and 12-month follow-up intervals. It was hypothesized that the intervention would be most effective with children with high risk of anxiety.

Method

Participants
Participants were 693 children aged 9–16 years from seven pre-selected schools in the metropolitan area of Brisbane, Australia. The schools represented diverse levels of

socio-economic status. The majority of children attending these schools were white, Anglo-Saxon, Catholic or Protestant Christian, and working to middle class. All parents of students in the intervention schools in grades 6 and 9 were sent a letter, including a consent form, outlining that their child, along with the rest of their class, had been invited to participate in a group to help build their emotional resilience, coping skills and problem-solving abilities. This consent form also outlined the nature and purpose of the research project. Two hundred and eighty-nine participants were from grade 6 and 404 were from grade 9. Of the families initially contacted, 80.5% of grade 6 and 78.3% of grade 9 participants consented to take part in the study. Schools rather than participants were selected as the unit of random assignment and the schools were randomly assigned to either an intervention condition or a monitoring condition. This resulted in 423 participants in the cognitive-behavioural intervention group and 269 in the monitoring control group.

Measures

The Spence Child Anxiety Scale (SCAS; Spence, 1998) is a 44-item self-report measure of anxiety. The current study used 38 items designed to assess children's report of anxiety symptoms (the six items assessing social desirability were not used). Respondents are asked to rate the frequency with which each symptom occurs on a 4-point scale ranging from *never* (0) to *always* (3). A total SCAS score was obtained by summing scores across each of the 38 items, and subscale scores are obtained by summing items relevant to each subscale. The clinical cut-off for the SCAS is > 42. The scale has demonstrated high internal consistency, high concurrent validity with other measures of child and adolescent anxiety, and adequate test–retest reliability across both child (Spence, 1998) and adolescent (Spence, Barrett, & Turner, 2003) samples.

The Children's Depression Inventory (CDI; Kovacs, 1981) is the most commonly used self-report measure for depressive symptoms in children aged 7–17 years. The scale has 27 items dealing with sadness, self-blame, insomnia, loss of appetite, interpersonal relationships, and school adjustment. For each item, there are three response alternatives differing in severity and intensity. Respondents are asked to endorse the one alternative within each item that best applies to them during the past two weeks. Items are scored as 0, 1 or 2, depending on the level of symptom severity, with higher scores reflecting greater severity. The clinical cut-off for the CDI is > 17. The scale has demonstrated high internal consistency (Orvaschel, Weissman, & Kidd, 1980) and test–retest reliability (Kovacs, 1985), and correlates highly with clinician ratings of depression (Kovacs, 1985).

Procedure

All participants in both the intervention and monitoring conditions were administered the questionnaires in a classroom within regular school hours. Participants were assured of confidentiality and that they could withdraw at any time. It was emphasized that there are no right or wrong answers. One PhD student and three post-graduate psychology students were trained to read each questionnaire, item-by-item, aloud to the class. The research assistants not reading to the class circulated the classroom to ensure the children or adolescents were filling out the questionnaires appropriately, and to answer any questions. The questionnaires used in the current study were part of a larger questionnaire package examining symptoms of anxiety and depression and related constructs.

Intervention materials

The cognitive-behavioural intervention used was the FRIENDS programme (Barrett, Lowry-Webster, & Turner, 2000a, 2000b), which has been shown to be effective in child,

family and group format in the treatment and early intervention of child anxiety disorders (for a comprehensive overview, see Barrett, Lowry-Webster, & Turner, 1999). In recognition of the developmental needs of children at different ages (Barrett, 2000; Kendall, 1994), FRIENDS has two parallel forms: one for children (7–11 years) and the other for youth (12–16 years). In total, 15 intervention groups were run in the classroom. Grade 6 participants received the child version of FRIENDS, and the grade 9 participants received the youth programme. There were between 20 and 30 children in each group. Each session consisted of an outline of the current session, review of homework activities and specific FRIENDS strategies.

The FRIENDS programme consists of ten weekly 45–60-minute sessions and two booster sessions, which are conducted 1 and 3 months following completion of intervention. The booster sessions provide additional opportunities for children to practise the skills learned in the previous sessions and to facilitate the generalization of these skills to help them cope with situations encountered in everyday life. The FRIENDS programme has a group leaders' manual that describes the activities that therapists need to implement in each session. Children work through a workbook and parents have a booklet detailing the strategies discussed in each parent session. The manuals permit flexible implementation to allow for family individuality and the needs of any specific group.

The FRIENDS programme also incorporates a family skills component, consisting of four, 2-hour parent workshops with content matched to what the children's sessions cover each week. Parents of participants in the intervention condition were notified of the workshops by school newsletter and personal letter from the school. First, parents were provided information on how to identify and deal appropriately with anxiety. Second, parents were trained in reinforcement strategies including praise and tangible rewards for gradually facing feared situations. Third, parents were taught cognitive techniques to challenge unhelpful thoughts. Fourth, parents received brief training in communication, partner support and problem-solving skills. Finally, we encouraged the development of a support maintenance network among parents. Group processes included normalization of anxiety experiences, group exposure through discussion and role-plays of common threatening experiences, and peer learning through discussion of success and difficulties.

Unfortunately, attendance at the workshops was particularly poor, involving an average of 10 parents per school. Consequently, we were unable to obtain enough data to analyse the affect of parent attendance on the outcome of the study.

Intervention integrity

A clinical master's trained psychologist or doctoral candidates conducted all intervention groups. One of the authors (PMB) trained the psychologists in how to conduct the FRIENDS programme. In addition, she conducted ongoing supervision sessions (1 hour a week) to address difficulties in implementing the programme.

Each group facilitator completed the Program Integrity Checklist (Barrett et al., 1999). This checklist (i) lists session-by-session content areas, and (ii) asks trainers to rate the overall effectiveness of their implementation. The psychologists checked the items they felt they completed successfully during the implementation of each session, and provided overall Likert ratings on a number of dimensions of group process skills (e.g. listening, including children, use of positive reinforcement, setting home tasks, implementation of group problem-solving tasks, and completion of activities as outlined in the manual). In short, this measure examines how effective psychologists felt they were in implementing the FRIENDS programme. The integrity checks showed 88.8–95.6% concordance between session and manual content.

Results

Preliminary analyses and descriptive statistics

Prior to analysis, data were screened for missing variables and outliers. Within each grade level, a small percentage of students (0.9–3.5%) had randomly missing data points throughout the questionnaires. Given the random nature of this missing data, and the small number of students involved, these missing data points were substituted with the mean value for that question (mean values were determined separately for each grade). Twenty-four participants (2.8%) were excluded from analyses at this point as they were identified as extreme scores using Mahalanobis distance ($\chi^2(4) = 18.46$, $p < .001$). This data screening resulted in a final sample of 668 participants; 283 (42.4%) grade 6 students and 385 (57.6%) grade 9 students.

Preliminary analyses identified violations of assumptions of statistical analysis. All dependent measures were positively skewed and logarithmic and square root transformations were performed as appropriate. Although normality was significantly improved, there was minimal difference in the results of analyses. These variables were expected to be positively skewed in a community population, and owing to the large sample size, violations of assumptions are considered acceptable using the Pillais Trace statistic at an alpha level of $p < .05$. Results are reported on the untransformed variables (Tabachnick & Fidell, 1996).

Risk group status

In order to compare the effects of the intervention across children with different levels of anxiety, participants were stratified in low-, moderate- and high-risk groups, based on pre-intervention scores on the SCAS. Participants ($n = 352$) were identified as being at low risk based on scores below the median score of 22 at pre assessment. Participants ($n = 164$) in the moderate-risk group were identified by scores of 23–31 placing them within the third quartile. Participants ($n = 152$) in the high-risk group were identified by scores above 32, which placed them in the fourth quartile of scores at pre assessment.

Attrition rates and missing data

Patterns of missing data were examined to determine drop out and absenteeism rates in order to assess potential influences of these factors on intervention outcome at post assessment and 12-month follow-up. By SPSS default, cases with missing scores at either post assessment or at 12-month follow-up were excluded from the statistical analysis. By 12-month follow-up, 39 children had withdrawn from the study; 18 from the intervention group and 21 from the monitoring group. A total of 530 participants completed questionnaires at post assessment and 138 (20.7%) children were absent when the assessment was conducted. At 12-month follow-up, 542 participants completed questionnaires and 123 (18.4%) children were absent at the time of assessment. Of the entire sample, 33% of children were absent at both post assessment and 12-month follow-up.

As shown in Table 1, analysis of missing data indicates that in the monitoring condition a significantly larger percentage of children were absent from the high- and low-risk groups compared with the moderate-risk group, $\chi^2(2, N = 260) = 7.97$, $p < .05$. No significant differences were found within the intervention condition.

Intervention effects

To evaluate the effects of the FRIENDS programme as a preventive intervention repeated measures analysis of variance (ANOVA) was conducted separately with the anxiety and depression measures. Between-subjects factors were group (intervention vs

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Table 1. Number and percentage of participants missing across low-, medium- and high-risk groups at post and follow-up intervals

	Intervention condition				Monitoring condition		
	Missing				Missing		
Risk group	Pre N (%)	Post N (%)	Follow-up N (%)	Risk group	Pre N (%)	Post N (%)	Follow-up N (%)
High	82 (12.3)	13 (15.9)	12 (14.9)	High	77 (11.5)	29 (37.7)	20 (26)
Med	86 (12.9)	9 (10.5)	16 (18.6)	Med	71 (10.6)	12 (16.9)	11 (15.5)
Low	240 (58.8)	41 (17.1)	33 (13.8)	Low	112 (16.8)	34 (30.4)	31(27.7)
N	408 (61.1)	63 (15.4)	61 (15.0)	N	260 (38.9)	75 (28.8)	62 (23.8)

monitoring) and risk group (low, moderate, high), and the within-subjects factor was time (pre-intervention vs post-intervention vs follow-up). Pre intervention significant differences were found in level of anxiety, across grade ($F(1,666) = 55.56$, $p < .001$) and gender ($F(1,666) = 38.60$, $p < .001$). Grade 6 participants had a mean score of 28.31 (SD = 14.46), whereas the grade 9 participants had a mean score of 20.94 (SD = 11.10). Females had a mean score of 27.47 (SD = 13.60) and males had a mean score of 21.29 (SD = 12.08). Consequently, these variables were included as covariates. The following sections report statistics including the power.

Changes in anxiety and depression

Table 2 presents descriptive statistics for the SCAS and CDI for all participants. Examination of Table 2 shows changes in anxiety and depression scores from pre- to post-assessment and to follow-up, highlighting reductions in anxiety and depression for both the intervention and monitoring groups. A significant interaction was found for changes in anxiety ($F(2,437) = 6.46$, $p < .05$, $\eta^2 = 12.33$) and depression ($F(2,471) = 4.84$, $p < .05$, $\eta^2 = 9.68$) from pre and post assessment and 12-month follow-up intervals.

Changes in anxiety and depression were found both in groups regardless of intervention status. Univariate tests showed significant reductions in anxiety ($F(2,1.93) = 7.10$, $p < .001$, $\eta^2 = 14.21$) and depression ($F(2,1.97) = 5.37$, $p < .05$, $\eta^2 = 10.75$) over time, for both the intervention and monitoring groups. No significant differences were found between the intervention and monitoring groups in anxiety at post intervention, but intervention effects were evident at 12-month follow-up ($F(1,543) = 7.29$, $p < .05$, $\eta^2 = 13.58$). No significant differences were found between the intervention and monitoring groups on the CDI.

Grade differences in anxiety and depression

Differences were found between the grade 6 and grade 9 groups between pre and post intervention. Significant interactions were shown across grade and time ($F(2,437) = 11.62$, $p < .001$, $\eta^2 = 23.24$). Univariate tests showed significant changes in anxiety between the grade 6 and grade 9 groups from pre to post assessment ($F(2,1.93) = 13.066$, $p < .001$, $\eta^2 = 26.13$). At post assessment, grade 6 children evidenced significantly greater reductions in anxiety ($M = 20.77$, SD = 11.93) compared with the grade 9 children ($M = 18.48$, SD = 11.21). At 12-month follow-up differences in anxiety reduction were maintained across grades.

Significant differences in levels of depression were found between the grade 6 and grade 9 groups across time ($F(2,471) = 3.65$, $p < .001$, $\eta^2 = 7.31$). At post assessment, the grade 6 children evidenced significantly greater reductions in depression ($M = 7.60$, SD = 7.55) compared with the grade 9 children ($M = 9.80$, SD = 8.12). These differences were maintained at 12-month follow-up with grade 6 children reporting significantly lower levels of depression ($M = 6.30$, SD = 6.52) compared with grade 9 children ($M = 8.29$, SD = 7.01).

Changes in 'at-risk' status

At post assessment participants in each of the risk groups in both the intervention and monitoring conditions evidenced reductions in anxiety scores. Table 3 shows changes in means across high-, moderate- and low-risk groups at pre and post assessment and 12-month follow-up for both intervention and monitoring conditions. Significant interaction effects were found for risk group across time in changes in anxiety ($F(4,876) = 30.19$ $p < .001$, $\eta^2 = 120.78$). Univariate analyses indicated significant changes in anxiety across all risk groups at post assessment ($F(2,527) = 120.93$, $p < .001$) and follow-up

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Table 2. Low-, moderate- and high-risk group: Means (SD) for anxiety and depression measures

Measure	Low risk				Moderate risk				High risk			
	Intervention		Monitoring		Intervention		Monitoring		Intervention		Monitoring	
	6	9	6	9	6	9	6	9	6	9	6	9
Anxiety												
SCAS total: Pre	13.90 (4.99)	14.34 (5.16)	15.40 (4.24)	12.77 (5.08)	26.77 (3.79)	26.75 (3.80)	28.24 (3.79)	28.50 (4.18)	47.40 (8.44)	43.56 (8.90)	51.00 (7.92)	44.46 (10.92)
SCAS total: Post	11.76 (5.88)	15.14 (8.92)	16.05 (7.70)	11.03 (6.98)	20.39 (10.06)	25.62 (9.28)	22.98 (9.32)	22.00 (8.76)	30.74 (11.72)	31.45 (9.52)	31.32 (11.66)	28.50 (15.03)
SCAS total: 12-month follow-up	8.63 (6.77)	12.62 (10.14)	14.35 (11.56)	10.36 (6.5)	13.93 (8.96)	23.28 (13.84)	20.97 (14.32)	20.33 (14.12)	19.05 (14.95)	27.57 (13.22)	26.42 (10.62)	29.80 (21.84)
Depression												
CDI Total: Pre	4.39 (4.80)	6.61 (4.94)	4.75 (3.89)	6.31 (4.52)	9.07 (5.27)	11.55 (7.03)	9.02 (5.27)	11.97 (8.01)	16.69 (8.21)	17.75 (5.3)	16.00 (6.86)	17.80 (8.95)
CDI Total: Post	4.29 (4.43)	8.19 (7.21)	5.07 (4.16)	4.75 (5.66)	7.48 (6.49)	10.60 (7.15)	7.47 (6.95)	10.62 (7.27)	11.55 (8.37)	13.52 (8.99)	8.07 (5.24)	15.40 (10.31)
CDI Total: 12-month follow-up	3.23 (3.95)	7.02 (5.87)	5.24 (4.82)	4.91 (4.61)	5.68 (5.45)	10.58 (8.60)	8.04 (7.55)	10.10 (8.65)	8.75 (8.81)	11.15 (5.77)	8.70 (6.90)	13.00 (8.74)

Intervention, intervention group; monitoring, monitoring group; 6, grade 6 pupils; 9, grade 9 pupils; SCAS, Spence Child Anxiety Scale; CDI, Child Depression Inventory.

Table 3. High-, medium- and low-risk group SCAS means and standard deviations for the intervention and monitoring conditions

	Pre SCAS score						Post SCAS score						12-month follow-up SCAS score					
	Intervention condition			Monitoring condition			Intervention condition			Monitoring condition			Intervention condition			Monitoring condition		
	High	Mod	Low	High	Mod	Low	High	Mod	Low	High	Mod	Low	High	Mod	Low	High	Mod	Low
M	43.41	26.18	14.85	42.32	26.91	14.34	30.92	21.90	14.38	28.53	21.28	13.71	21.06	17.22	11.11	26.65	18.93	12.41
SD	10.81	2.46	5.36	10.75	2.43	5.28	10.89	10.13	8.79	12.03	9.23	8.29	13.71	10.61	9.12	15.35	13.76	9.11

SCAS, Spence Child Anxiety Scale; High, high-risk group; Mod, moderate risk group; Low, low-risk group.

Table 4. Number (%) of children in high-, medium- and low-risk groups at pre, post and follow-up intervals

Risk group	Intervention condition			Monitoring condition		
	Pre n (%)	Post n (%)	Follow-up n (%)	Pre n (%)	Post n (%)	Follow-up n (%)
High	82 (12.3)	50 (14.5)	27 (7.8)	77 (11.5)	27 (14.7)	23 (11.7)
Med	86 (12.9)	66 (19.1)	39 (11.3)	71 (10.6)	45 (24.3)	30 (15.2)
Low	240 (58.8)	229 (66.4)	279 (80.9)	112 (16.8)	113 (61.1)	144 (73.1)
N	408	345	345	260	185	197

($F(2,542) = 49.83$, $p < .001$). At post assessment there were no significant differences between the intervention and monitoring conditions in the high-, moderate- or low-risk groups in levels of anxiety. At 12-month follow-up there were greater reductions in anxiety in the high- and moderate-risk groups in the intervention condition only.

Between pre and post assessment the number of participants in the high-risk groups decreased across both conditions. Table 4 shows changes in percentage of participants in the high-, moderate- and low-risk groups in the intervention and monitoring conditions. Although the percentage of the sample increased, reductions in anxiety were most evident at 12-month follow-up, wherein greater reductions in percentage of children were observed in both the high- and moderate-risk groups, with greater increases in the percentage of participants in the low-risk groups.

Discussion

As one of the first prevention trials in the literature to evaluate the effects of a universal school-based cognitive-behavioural intervention for child anxiety across two different age groups, this study offers important findings. Overall, the results are encouraging in that a preventive effect was found, indicating that the FRIENDS programme has the potential to reduce the number of children at risk of developing an anxiety disorder. The hypothesis that the intervention group would show a greater reduction in self-reported anxiety than the monitoring group was partially supported. Participants in the study showed general reductions in anxiety across time regardless of intervention status. However, at 12-month follow-up, reductions in anxiety were significantly greater for participants in the intervention group.

Similar putative delays in intervention effects were found in the Queensland Early Intervention project (Dadds et al., 1997) and are consistent with the results of a prevention trial for depression (Jaycox et al., 1994). However, a possible explanation for the non-significant differences between groups at post assessment is that a significantly larger number of participants in the monitoring group (28%) were absent at post assessment compared with the intervention group (15.4%). Over twice as many absent participants within the monitoring condition were those with high levels of anxiety at pre assessment. Thirty-seven per cent were from the high-risk group and 30.4% from the low-risk group, compared with 15.9 and 17.1% in the respective intervention conditions. The missing data from the high-risk groups may well have influenced intervention outcome.

As studies suggest a relationship between anxiety and depression (Cole et al., 1998), we were also interested in the effects of the intervention on reducing symptoms of depression. No overall intervention effects were found, although children in grade 6 in the moderate- and high-risk intervention groups evidenced greater reductions in depression compared with children in the grade 9 group.

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A further aim was to determine the grade at which children will benefit the most from preventive intervention for child anxiety. Our findings suggest that earlier preventive intervention may yield greater success in reducing anxiety symptoms and preventing the development and onset of anxiety disorders in youth. Foremost, children in grade 6 reported significantly higher levels of anxiety and greater reductions in anxiety and depression across time compared with the adolescent group.

A final aim was to compare the effects of preventive intervention across children identified at low, moderate and high risk of anxiety. The hypothesis that the intervention would be most effective with children with high to moderate symptoms of anxiety was partially supported. In the current study, children in both the high- and moderate-risk group reported significant reductions in anxiety at post intervention and 12-month follow-up. However, at 12-month follow-up, reductions in anxiety level were greater for participants in the high- and moderate-risk groups in the intervention condition only, despite the large percentage of participants with high levels of anxiety absent within the monitoring condition. Overall, our findings suggest that children aged between 9 and 10 years, and/or children who report high to moderate levels of anxiety are more responsive to preventive intervention than adolescents. However, it would be interesting to follow-up this study for 2–3 years to assess the sustained effects of the intervention.

As one of the first universal prevention studies of its kind in the literature, it is important to emphasize inherent issues in conducting school-based clinical research trials. It is important to consider the limitations of this study and how future research might address them. A primary consideration lies in the research empirical design involving comparison between intervention and monitoring groups. A strength of this type of design is that it enables careful evaluation of intervention effects at different time points and enhances internal validity by controlling for external factors that may account for results such as history, maturation, selection and testing procedures. However, the limitations of this experimental design include the cost-effectiveness of longitudinal research, the delaying of intervention resulting in participants dropping out, absenteeism the day of post-intervention and 12-month assessments, and non-specific effects such as participants seeking medical, alternative or additional treatment. These factors may have impacted on intervention outcome.

The findings of this study must be viewed with caution. Given the large percentage of high-risk children absent at post intervention and 12-month follow-up, patterns of missing data limit the validity of our results. Post assessment data from the participants in the monitoring condition who showed high levels of anxiety at pre assessment would have provided a more accurate indication of intervention effects.

A further limitation of our study was that statistical analysis was based on children's self-reported subjective interpretation of anxiety and depression. The question of the degree of accuracy of children's self-report measures is widely documented in the literature. It is generally recommended that multiple sources be used to assess childhood anxiety. Also, this study did not use measures of symptoms or functioning apart from anxiety and depression. Future research would benefit from examining data on multiple methods of assessment of childhood anxiety and depression and general measures of coping.

It is also important to note the inherent challenges of conducting large-scale longitudinal research within the school setting. Initial participant recruitment was successful due to the cooperation and assistance of school principals and personnel. However, research demands involving the organization and administration of assessment and intervention to a large number of classes of children were particularly demanding both on school and

project resources. Factors such as changes to timetabling, holidays, public holidays, absenteeism due to illness, exams and school excursions, impacted on project implementation and potentially intervention outcome. Additional factors involved classroom dynamics, student characteristics and the facilitator's ability to maximize the therapeutic process within the classroom setting. Particular issues involved measures of confidentiality, disclosure and behaviour management of externalizing students. A final point, most disappointing was the poor attendance at the parent workshops, which may further have contributed to the intervention effects. Studies such as this, which assess programmes incorporating parent sessions, should consider ways of engaging parents in school-based activities.

Preventative intervention research is in its early stages and seems to show promise. Overall, our findings clarify the inherent challenges for research that examines school-based universal preventive interventions within the classroom setting. Nevertheless, late childhood appears to be a critical time, and the children in the current study reported greater levels of anxiety and a greater response to intervention compared with adolescents in secondary school. However, a general trend was observed wherein levels of anxiety decreased over time, perhaps a refection of the transient nature of mild self-reported anxiety throughout childhood development.

Much more research is needed to determine the factors that contribute to optimal intervention. Future research investigating individual factors such as intelligence, child attendance at sessions and completion of homework, and environmental factors such as school, environment, psychologist or teacher characteristics, and classroom layout would increase our knowledge in this area.

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