

Effect of a universal anxiety prevention programme (FRIENDS) on children's academic performance: results from a randomised controlled trial

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Background: Evaluations of school-based anxiety prevention programmes have reported improvements in psychological functioning although little is known about their effect upon educational outcomes. **Methods:** One thousand three hundred and sixty-two children from 40 primary schools in England took part in the randomised controlled trial, Preventing Anxiety in Children through Education in Schools. The trial investigated the effectiveness of a universal school-based cognitive behaviour therapy prevention programme, FRIENDS, delivered by health care staff or school staff compared with usual personal, social, health and education (PSHE) lessons. Self-report psychological outcomes and educational attainment on national standardised attainment tests in reading, writing and maths were collected 12 months postintervention. Analysis was performed at individual level using multivariable mixed effect models controlling for gender, type of intervention and school effect. Registered trial: ISRCTN: 23563048. **Results:** At 12 months, anxiety reduced in the health-led FRIENDS group compared to school-led FRIENDS and PSHE. There were no between-group differences in academic performance regardless of gender, deprivation, ethnicity and additional educational needs. **Conclusions:** School-based mental health interventions should assess psychological and educational outcomes. Further research should directly compare the effects of interventions led by health and school staff. **Keywords:** Anxiety; prevention; school; child; academic; performance.

Introduction

Anxiety is one of the most prevalent psychiatric disorders affecting around 10% of children and 20% of adolescents (Essau, Conrath, Sasagawa, & Ollendick, 2012). Untreated childhood anxiety increases the risk in young adulthood of other problems including depression, illicit drug dependence and educational underachievement (Kim-Cohen et al., 2003; Woodward & Fergusson, 2001). Effective psychological treatments are available but service uptake is low with many children with anxiety disorders not being referred to child mental health services (Essau et al., 2012; Merikangas et al., 2010). Although many children with anxiety disorders remain unidentified, they nonetheless incur significant public sector costs (Murphy & Fonagy, 2012; Snell et al., 2013).

In view of the prevalence, severity and economic burden, improving the mental health of children is recognised as a global priority with emphasis being placed upon the development of prevention programmes (Davies, Lerner, Strelitz, & Weil, 2013; Kieling et al., 2011). Schools have been advocated as convenient locations to deliver preventive mental health interventions and have an important role in helping to develop emotional resilience (Department for Education and Skills, 2005; Fazel, Hoagwood, Stephan, & Ford, 2014). In terms of anxiety, systematic reviews have demonstrated that school-based anxiety prevention programmes are effective

in reducing symptoms of anxiety (Fisak, Richard, & Mann, 2011; Neil & Christensen, 2009). One particular programme, FRIENDS for life (Barrett, 2004), has been more extensively evaluated (Fisak et al., 2011) with a recent randomised controlled trial confirming the programme's effectiveness as a universal intervention when delivered under everyday conditions in UK schools (Stallard et al., 2014).

While school-based mental health prevention programmes have documented improvements in psychological functioning, little is known about their impact on educational outcomes (Murray, Low, Hollis, Cross, & Davis, 2007). Although the reciprocal relationship between social and emotional health and academic performance has been highlighted, evaluations of mental health prevention programmes have typically focused on psychological well-being and have not evaluated academic outcomes (Hoagwood et al., 2007; Zins, Bloodworth, Weissberg, & Walberg, 2007). Aligning the health (i.e. improve psychological functioning) and educational (i.e. enhance academic performance) agendas would integrate and embed mental health skills more firmly within school policy and practice and across the curriculum (Atkins, Hoagwood, Kutash, & Seidman, 2010; Hoagwood et al., 2007). Research is limited, although some improvements in educational achievement were noted in a meta-analysis of universal school-based social and emotional learning interventions (Durlak, Dymnicki, Taylor, Weissberg, & Schellinger, 2011). However, educational outcomes were only available for a small percentage of studies at postintervention and the longer term durability of these benefits was unclear (Durlak et al., 2011). Of those programmes

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that have specifically focused upon mental health, few have included even rudimentary measures of educational outcomes and where they have been investigated, the effects were quite modest (Hoagwood et al., 2007).

The aim of this study was to determine the effects of a school-based universal anxiety prevention programme, FRIENDS, on children’s academic performance as assessed by national standardised attainment tests (SATs) in reading, writing and maths.

Method

Design

Data were collected from the Preventing Anxiety in Children through Education in Schools (PACES) study (Stallard et al., 2012). PACES is a randomised controlled trial comparing the FRIENDS anxiety prevention programme delivered by health or

school leaders with usual school provision. Forty-one primary schools in the south west of England were randomly assigned after recruitment on a 1:1:1 basis to: health-led FRIENDS, school-led FRIENDS, and usual school personal, social and health education (PSHE) lessons. Children aged 9–10 were eligible for inclusion in the study (Figure 1).

Trial arms

FRIENDS is a manualised cognitive behaviour therapy programme designed to develop skills to counter the cognitive, emotional and behavioural aspects of anxiety. FRIENDS helps children develop emotional awareness and emotional regulation skills by learning to replace thoughts that increase anxiety with those that help to reduce anxiety; to manage anxious feelings with relaxation techniques and to face challenges by applying problem solving skills. The programme involved nine, 60-min, weekly sessions.

FRIENDS was led by either a trained member of the school (school-led FRIENDS) or a health leader external to the school

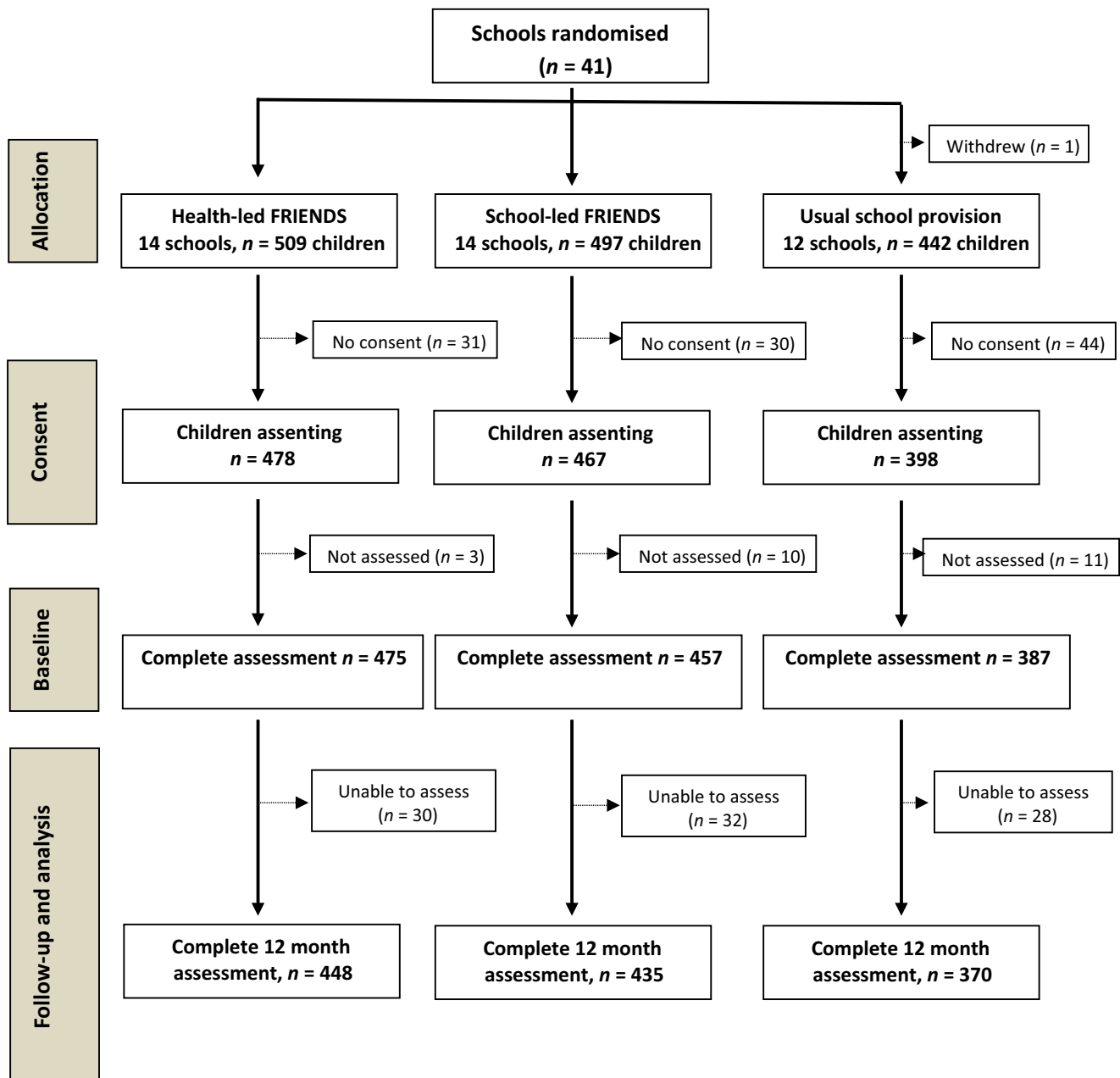


Figure 1 Preventing Anxiety in Children through Education in Schools (PACES), educational outcome CONSORT diagram

(health-led FRIENDS). School-led leaders were nominated by the school and included class teachers, special educational needs co-ordinators, learning support assistants and head teachers. Health-led leaders had at least an undergraduate university degree in a relevant discipline such as psychology or an appropriate professional background such as school nursing or education. None were mental health specialists but all had experience of working with children or young people. All FRIENDS leaders attended a 2-day training course and were offered ongoing fortnightly supervision by an accredited FRIENDS trainer during intervention delivery.

The comparison group was the usual Personal, Social and Health Education (PSHE) lessons provided by school staff. Most participating schools were following a UK National Curriculum programme designed to develop self-awareness, management of feelings, motivation, empathy and social skills (Department for Education and Skills, 2005). During the intervention phase PSHE addressed issues including personal safety, healthy eating, coping with loss, social skills, as well as emotional awareness and management. While the focus on emotional regulation and problem solving overlapped with FRIENDS, the specific PSHE focus on anxiety was less systematic and intensive. A summary of the usual PSHE programmes is provided elsewhere (Stallard et al., 2015). All PSHE sessions were led by school staff.

Interventions were delivered in the academic year September 2011 to July 2012.

Educational data

In the United Kingdom, a child's educational progress is assessed through compulsory national Standard Assessment Tests (SATs) which were introduced during the 1990s. These were completed at age 7 (Key Stage 1), 11 (Key Stage 2) and 14 (Key Stage 3), although the last assessment was dropped in 2008. The tests are age-standardised and are intended to demonstrate how much progress a child has made compared to other children born in the same year. Tests assess the core subjects of English, Maths and Science with test scores being converted into attainment levels with the thresholds being adjusted each year. The validity and reliability of SATs have been criticised for testing only a narrow part of the overall curriculum and a limited range of student skills and abilities which may be prone to examination stress (House of Commons Select Committee, 2008). Nonetheless, they are compulsory for children in the United Kingdom and continue to be used to assess individual and school performance.

Standardised attainment test data were collected from the National Pupils Database. Child attainment data were obtained for Key Stage 1 (assessed when children were aged 6–7), before the interventions, and from Key Stage 2 (assessed when children were aged 10–11), 12 months after the interventions. Data were obtained for the assessments of maths, reading and writing.

Psychological outcomes

Child reported data were collected at baseline and 12 months, by researchers blind to arm allocation. The primary outcome was symptoms of anxiety and depression as determined by the Revised Child Anxiety and Depression Scale (RCADS; Chor-pita, Moffitt, & Gray, 2005; Sandin, Chorot, Valiente, & Chor-pita, 2010). Secondary outcomes assessed worry (The Penn State Worry Questionnaire for Children; Chorpita, Tracey, Brown, Collica, & Barlow, 1997), self-worth and acceptance (Rosenberg Self-Esteem Scale: Rosenberg, 1965), and life satisfaction (subjective well-being; Rees, Goswami, & Bradshaw, 2010). The effect on psychological functioning at 12 months has been reported (Stallard et al., 2014).

Ethical approval

The study was approved by the University of Bath Department for Health Research Ethics Committee.

Analysis

Descriptive statistics were used to assess the balance between trial arms (health-led, school-led and PSHE) at baseline on demographic variables, psychological functioning and educational variables.

Analysis of psychological functioning and academic performance was assessed using multivariable mixed effects regression models controlling for gender, trial arm and school effect to account for the nested nature of the interventions. Academic performance at KS1 was used as a covariate for academic attainments at KS2. Analyses were completed for the whole cohort and then to explore possible effects within those subgroups who traditionally achieve poorer educational outcomes (Department for Education 2015). Given the differences in educational attainment between girls and boys, we explored programme effects by gender. Second, we explored the effects of the programme on more disadvantaged children, that is higher levels of deprivation (eligible vs. not eligible for free school meals), ethnicity (British White vs. other ethnic groups) and additional educational needs (either school action, school action plus or statement of educational need vs. no identified additional need).

Results

One school dropped out after randomisation. The remaining 40 schools had 1,448 eligible children with 1,362 consenting to take part in the main study. A further 19 parents refused consent for their child's academic data to be accessed resulting in academic data being analysed for 1,343 of the eligible sample (92.7%).

Baseline characteristics

Demographic and educational characteristics of participants at baseline by trial arm are presented in Table 1.

There was an equal gender balance (boys $n = 645$; 48% vs. girls 692; 52%) with the cohort being predominantly British White ($n = 1,241$; 93%) with English as their primary language ($n = 1,283$; 96%). Approximately, 10% of children ($n = 132$) were eligible for free schools meals, an indicator of deprivation. Slightly over 20% ($n = 286$) were identified by their school as having additional educational needs, that is either school action, school action plus or a statement of educational needs. There were between-arm differences with more girls and fewer children with English as their major language in the usual PSHE arm and fewer children from non-White ethnic groups in the school-led arm.

Baseline psychological outcomes are summarised in Table 2.

There were few between group differences other than children in the usual PSHE arm reporting more symptoms of separation anxiety and achieving less well in Key Stage 1 maths than the other arms.

Table 1 Demographic and educational characteristics of participants ($n = 1,343$) at baseline by trial arm

| | Trial arm (%) | | | <i>p</i> -value |
|-----------------------------|-------------------------------------|-------------------------------------|-----------------------------|-----------------|
| | Health-led FRIENDS ($n = 478$) | School-led FRIENDS ($n = 467$) | Usual PSHE ($n = 398$) | |
| Number of schools | 14 | 14 | 12 | |
| Gender | | | | |
| Male | 245 (52) | 230 (50) | 170 (43) | .03* |
| Female | 231 (48) | 235 (50) | 226 (57) | |
| Ethnic major | | | | |
| British White | 436 (92) | 444 (96) | 361 (91) | .02* |
| Non-White | 40 (8) | 21 (4) | 35 (9) | |
| Language major | | | | |
| English | 460 (96) | 452 (97) | 371 (93) | .04* |
| Other | 16 (3) | 13 (3) | 25 (6) | |
| Free meal eligibility | | | | |
| Yes | 41 (9) | 50 (11) | 41 (10) | .508 |
| No | 435 (91) | 415 (89) | 355 (89) | |
| SEN provision | | | | |
| No special educational need | 375 (78) | 360 (77) | 316 (79) | .607 |
| A (school action) | 47 (10) | 61 (13) | 46 (12) | |
| P (school action plus) | 44 (9) | 34 (7) | 26 (7) | |
| S (statement) | 10 (2) | 10 (2) | 8 (2) | |
| Persistent absence | | | | |
| Yes | 9 (2) | 14 (3) | 7 (2) | .803 |
| No | 467 (98) | 451 (97) | 389 (98) | |
| Living situation | | | | |
| Mum and dad | 337 (71) | 312 (67) | 266 (67) | .760 |
| Parent and partner | 43 (9) | 54 (12) | 37 (9) | |
| Single parent | 66 (13) | 67 (14) | 57 (14) | |
| Other | 29 (6) | 24 (5) | 27 (7) | |
| Number of siblings | | | | |
| 0 | 46 (10) | 29 (6) | 31 (8) | .108 |
| 1 | 205 (43) | 205 (44) | 181 (45) | |
| 2 | 126 (26) | 133 (28) | 91 (23) | |
| 3 or more | 86 (18) | 92 (20) | 83 (21) | |

PSHE, personal, social, health and education.

Figures are numbers (%) unless otherwise stated.

* p -value < .05.

Psychological outcomes at 12 months

Analysis of self-report psychological outcomes at 12 months are presented in Table 3.

There were significant between-arm differences at 12 months for social anxiety, generalised anxiety, and total RCADS with health-led FRIENDS being more effective than either school-led FRIENDS or usual school PSHE. There were no between-arm differences for any secondary self-report outcomes, consistent with the full trial results (Stallard et al., 2014).

Academic attainment at 12 months

Analysis of academic performance, 12 months after the interventions (KS2) adjusted for baseline academic performance (KS1 data), gender and cluster balancing variables is reported in Table 4.

There were no overall group effects on educational attainment. The children's academic performance, assessed by national standardised tests in reading, writing and maths improved irrespective of whether or not they participated in the anxiety prevention programme.

The effect of the intervention on educational outcomes of subgroups of children is summarised in Table 5.

Once again there were no programme effects on educational outcomes associated with gender, deprivation, ethnicity or additional educational needs.

Discussion

This study is the first, to our knowledge, that has investigated the effect of a universal anxiety prevention programme (FRIENDS) on educational outcomes as assessed by national SATs. We had a large cohort, good recruitment, high retention, low absenteeism, good programme fidelity and our analysis accounted for the nested nature of our data.

In terms of psychological outcomes, we found a significant reduction in self-reported symptoms of anxiety, particularly social anxiety, generalised anxiety and total anxiety but only when FRIENDS was delivered by health leaders external to the school. These improvements in psychological outcomes were not, however, associated with improvements in educational attainment. Regardless of programme

Table 2 Psychological functioning of participants ($n = 1,343$) at baseline by trial arm. Figures are numbers (%) unless otherwise stated

| Measure | Trial arm | | | <i>p</i> -value |
|--|-------------------------------------|-------------------------------------|-----------------------------|-----------------|
| | Health-led FRIENDS ($n = 475$) | School-led FRIENDS ($n = 457$) | Usual PSHE ($n = 387$) | |
| Primary psychological outcome | | | | |
| RCADS: Depression, mean (<i>SD</i> ; 95% CI) | 4.05 (2.60; 3.82–4.29) | 3.67 (2.35; 3.46–3.89) | 3.84 (2.76; 3.56–4.11) | .079 |
| RCADS: Sep anxiety, mean (<i>SD</i> ; 95% CI) | 3.82 (3.67; 3.37–3.94) | 3.66 (3.13; 3.37–3.94) | 4.21 (3.45; 3.87–4.56) | .044* |
| RCADS: Social anxiety, mean (<i>SD</i> ; 95% CI) | 5.27 (3.28; 4.97–5.57) | 5.07 (3.23; 4.77–5.36) | 5.10 (3.24; 4.78–5.43) | .592 |
| RCADS: Gen anxiety, mean (<i>SD</i> ; 95% CI) | 5.76 (3.81; 5.42–6.11) | 5.63 (3.53; 5.31–5.96) | 5.95 (3.92; 5.56–6.34) | .471 |
| RCASDS: Panic, mean (<i>SD</i> ; 95% CI) | 2.86 (2.89; 2.59–3.11) | 2.68 (2.79; 2.42–2.94) | 2.96 (3.08; 2.65–3.27) | .373 |
| RCADS: OCD, mean (<i>SD</i> ; 95% CI) | 4.55 (3.33; 4.25–4.85) | 4.45 (3.11; 4.16–4.74) | 4.59 (3.20; 4.27–4.91) | .789 |
| Total RCADS mean (<i>SD</i> ; 95% CI) | 26.27 (15.62; 24.86–27.68) | 25.18 (14.29; 23.87–26.50) | 26.58 (16.17; 24.97–28.19) | .366 |
| Secondary psychological outcomes | | | | |
| Penn Worry Scale, mean (<i>SD</i> ; 95% CI) | 10.55 (8.08; 9.82–11.28) | 10.95 (8.18; 10.19–11.70) | 10.43 (8.29; 9.60–11.26) | .621 |
| Self-Esteem, mean (<i>SD</i> ; 95% CI) | 18.89 (5.32; 18.41–19.37) | 19.43 (5.38; 18.94–19.93) | 19.48 (5.89; 18.89–20.07) | .197 |
| Total Life Satisfaction, mean (<i>SD</i> ; 95% CI) | 14.25 (6.83; 13.64–14.87) | 13.31 (5.69; 12.79–13.83) | 13.72 (6.78; 13.04–14.39) | .081 |

PSHE, personal, social, health and education; RCADS, Revised Child Anxiety and Depression Scale.

* p -value < .05.

leader, the anxiety prevention programme had no additional effect on the academic performance of children 12 months after participating in the study.

Our findings highlight three key issues. First, we found that the same manualised programme resulted in different psychological outcomes depending upon who led the intervention. The effect of the intervention leader in school-based prevention programmes has seldom been directly investigated. In terms of psychological outcomes, reviews have found depression prevention programmes to be less effective when delivered by trained school staff while school and health staff were found to be equally effective in delivering anxiety prevention programmes (Calear & Christensen, 2010; Neil & Christensen, 2009). However, only one study has directly compared the effectiveness of an anxiety prevention programme (FRIENDS) led by school and health staff (Barrett & Turner, 2001). Although both leaders were found to be effective, the study lacked statistical power. Our study was appropriately powered to detect psychological outcomes and suggests that reductions in anxiety were only achieved when the programme was delivered by health leaders. Whether comparable psychological outcomes can be achieved by school staff with additional training, practice and support is unclear. Nonetheless, our findings suggest that we cannot assume that anxiety prevention programmes will achieve comparable psychological outcomes when delivered by trained school or health staff.

Second, we failed to find any effect on educational outcomes. Once again who delivers the programme appears important with a meta-analysis of universal school-based social and emotional programmes finding that improvements in academic performance only occurred when school staff delivered the programme (Durlak et al., 2011). However, in our study, even when the programme was delivered by teachers, we failed to find any additional effect of FRIENDS on academic performance. Our failure to find any effects might be related to a number of issues. First, the effects of school-based mental health programmes on academic performance have been found to be modest and often do not persist over time (Durlak et al., 2011; Hoagwood et al., 2007). Our follow-up assessment was completed at 12 months and we did not assess any immediate postintervention effects. However, if universal prevention programmes are to be adopted within schools, the effects upon psychological and educational outcomes need to be robust over time in order to justify the additional costs involved in delivering them. Second, we relied upon national SATs administered to classes of children to determine educational progress. While these are convenient, they may not be as sensitive to changes in learning that might be obtained from more specific individual assessments. Similarly, we did not assess more immediate educational outcomes, such as improved attitudes towards school work, better school attendance or fewer school exclusions. While

Table 3 Analysis of self-report psychological outcomes at 12 months

| RCADS, mean (SD) | Health-led FRIENDS | | Adjusted mean difference (95% CI) at 12 months: Health-led FRIENDS versus usual school provision | | School-led FRIENDS | | Adjusted mean difference (95% CI) at 12 months: school-led FRIENDS versus usual school provision | | Usual school provision | | <i>p</i> -value, covariate baseline means; adjusted for study arm, gender and school effect | |
|---------------------|----------------------------|-----------------------------|--|-----------------------------|----------------------------|-----------------------------|--|-----------------------------|------------------------|---------------|---|-------|
| | Baseline <i>n</i> = 474 | 12 months <i>n</i> = 448 | Baseline <i>n</i> = 454 | 12 months <i>n</i> = 435 | Baseline <i>n</i> = 386 | 12 months <i>n</i> = 370 | Baseline <i>n</i> = 386 | 12 months <i>n</i> = 370 | | | | |
| Depression | 4.05 (2.60) | 3.15 (2.54) | 3.67 (2.35) | 3.22 (2.49) | 3.84 (2.76) | 3.46 (2.72) | 3.84 (2.76) | 3.46 (2.72) | 0.023 (-0.46, 0.52) | 3.84 (2.76) | 3.46 (2.72) | .125 |
| Social anxiety | 5.27 (3.29) | 4.39 (3.32) | 5.07 (3.24) | 5.02 (3.40) | 5.10 (3.24) | 4.67 (3.37) | 5.10 (3.24) | 4.67 (3.37) | -0.38 (-1.05, 0.28) | 5.10 (3.24) | 4.67 (3.37) | .013* |
| Separation anxiety | 3.82 (3.37) | 2.48 (2.94) | 3.66 (3.13) | 2.88 (2.95) | 4.22 (3.45) | 3.06 (3.13) | 4.22 (3.45) | 3.06 (3.13) | -0.00 (-0.68, 0.68) | 4.22 (3.45) | 3.06 (3.13) | .197 |
| Generalised anxiety | 5.76 (3.82) | 4.33 (3.56) | 5.63 (3.53) | 5.16 (3.62) | 5.95 (3.92) | 5.15 (3.71) | 5.95 (3.92) | 5.15 (3.71) | -0.11 (-0.88, 0.67) | 5.95 (3.92) | 5.15 (3.71) | .012* |
| Panic | 2.86 (2.89) | 2.03 (2.56) | 2.68 (2.79) | 2.32 (2.73) | 2.96 (3.09) | 2.42 (3.00) | 2.96 (3.09) | 2.42 (3.00) | -0.02 (-0.56, 0.53) | 2.96 (3.09) | 2.42 (3.00) | .164 |
| OCD | 4.55 (3.33) | 3.43 (3.11) | 4.45 (3.12) | 3.98 (3.19) | 4.59 (3.20) | 3.79 (3.21) | 4.59 (3.20) | 3.79 (3.21) | -0.30 (-0.94, 0.34) | 4.59 (3.20) | 3.79 (3.21) | .131 |
| Total RCADS | 26.22 (15.67) | 19.84 (14.85) | 24.94 (14.36) | 22.66 (15.05) | 26.68 (16.20) | 22.51 (15.83) | 26.68 (16.20) | 22.51 (15.83) | -1.31 (-4.52, 1.90) | 26.68 (16.20) | 22.51 (15.83) | .009* |
| Penn Worry Scale | 10.56 (8.13) | 8.19 (7.94) | 10.98 (8.22) | 9.57 (8.22) | 10.43 (8.21) | 9.02 (8.53) | 10.43 (8.21) | 9.02 (8.53) | -0.27 (-2.05, 1.52) | 10.43 (8.21) | 9.02 (8.53) | .147 |
| Self-esteem | 18.94 (5.32) | 20.89 (6.22) | 19.44 (5.41) | 20.79 (5.82) | 19.63 (5.94) | 20.87 (5.96) | 19.63 (5.94) | 20.87 (5.96) | 0.23 (-0.99, 1.45) | 19.63 (5.94) | 20.87 (5.96) | .660 |
| Life satisfaction | 8.04 (5.94) | 7.48 (6.16) | 7.61 (6.01) | 7.66 (6.29) | 8.04 (6.59) | 8.06 (6.62) | 8.04 (6.59) | 8.06 (6.62) | 0.03 (-1.66, 1.72) | 8.04 (6.59) | 8.06 (6.62) | .501 |

RCADS, Revised Child Anxiety and Depression Scale.

**p*-value < .05.

Table 4 Analysis of educational performance, standard attainment tests KS1 and KS2, adjusted for baseline attainment (KS1 scores) $n = 1,343$

| SAT | Health-led FRIENDS | | Adjusted effect size (95% CI) at 12 months: Health-led FRIENDS versus usual school provision | | School-led FRIENDS | | Adjusted effect size (95% CI) at 12 months: school-led FRIENDS versus usual school provision | | Usual school provision | | p -value ^a |
|---------|--------------------|------------------|--|------------------|--------------------|------------------|--|--------------|------------------------|------|-------------------------|
| | KS1 $n = 473$ | KS2 $n = 410$ | KS1 $n = 457$ | KS2 $n = 438$ | KS1 $n = 387$ | KS2 $n = 365$ | | | | | |
| Reading | 16.13 (4.10) | 28.56 (4.68) | 16.18 (3.81) | 29.39 (4.44) | 15.97 (4.10) | 28.46 (4.71) | -0.68 (-1.81, 0.44) | 15.97 (4.10) | 28.46 (4.71) | .158 | |
| Writing | 14.64 (3.87) | 27.86 (4.89) | 14.67 (3.63) | 28.66 (4.74) | 14.14 (3.88) | 27.18 (4.36) | -1.05 (-2.46, 0.36) | 14.14 (3.88) | 27.18 (4.36) | .182 | |
| Maths | 16.14 (3.77) | 29.91 (4.92) | 16.15 (3.28) | 29.23 (5.04) | 15.54 (3.68) | 28.08 (5.06) | -0.23 (-1.47, 1.01) | 15.54 (3.68) | 28.08 (5.06) | .883 | |

^aCovariate KS1; adjusted for study arm, gender and school effect.

this limitation is acknowledged, the measures we collected are those used nationally to assess pupil academic progress and school performance. Third, while we found a positive effect on symptoms of anxiety, the overall size of this effect was small. Thus, while anxiety reduced, the size of this change may not be sufficient to positively impact upon educational attainment. Indeed, while our study was large and appropriately powered to detect changes in anxiety, it was not powered to detect changes in educational outcomes. If effects on educational outcomes are small, it is doubtful whether we would have sufficient power to detect them. Fourth, our cohort was fairly affluent with few children from other ethnic groups or with English as a second language, factors associated with differences in educational attainment (Department for Education 2015). Although we found no association with deprivation (as assessed by eligibility for free school meals) or ethnicity, further research is required to explore this within a larger and more diverse population. Finally, we did not take the relative age of the child into account when analysing our data. Children born towards the end of the academic year (summer) tend to perform worse than those born in the autumn (Crawford, Dearden, & Greaves, 2013). While noting these limitations, we nonetheless conclude that we were unable to demonstrate that a universal anxiety prevention programme had any additional effect on educational outcomes.

Third, we failed to find an association between psychological and educational outcomes. Our health-led FRIENDS condition resulted in reductions in anxiety, although these were not associated with enhanced educational performance. While our programme had a clear theoretical model and specifically targeted cognitions, emotions and behaviours associated with anxiety, it did not directly focus on the development or application of these skills to enhance learning. Similarly, FRIENDS was primarily focused on children and was relatively brief being delivered over 9 weeks. It has been noted that programmes which had a positive effect on psychological outcomes but not on educational outcomes tended to be researcher-led, less intense and child focused (Hoagwood et al., 2007). Whether longer, more intense programmes delivered by teachers, spanning multiple contexts and involving children, parents and school staff have effects on educational and psychological outcomes needs to be determined. However, this will result in additional costs which, within the current climate of increasing financial austerity, schools may be unable to fund. If mental health programmes are to be widely adopted by schools, the potential benefits in terms of psychological and educational outcomes need to be determined and need to be greater than the costs involved in delivering these programmes.

Table 5 Analysis of educational performance, standard attainment tests KS1 and KS2 by gender, deprivation (free school meals), ethnicity and additional educational needs, $n = 1,343$

| SAT | Health-led FRIENDS | | Adjusted mean difference (95% CI) at 12 months: Health-led FRIENDS versus usual school provision | | School-led FRIENDS | | Adjusted mean difference (95% CI) at 12 months: school-led FRIENDS versus usual school provision | | Usual school provision | | <i>p</i> -value* |
|--------------------------------|--------------------|--------------|--|--|--------------------|--------------|--|--|------------------------|--------------|------------------|
| | KS1 | KS2 | | | KS1 | KS2 | | | KS1 | KS2 | |
| Boys | | | | | | | | | | | |
| | $n = 230$ | $n = 218$ | | | $n = 224$ | $n = 222$ | | | $n = 164$ | $n = 165$ | |
| Reading | 15.70 (4.24) | 28.23 (4.70) | 0.23 (-1.21, 1.66) | | 15.86 (3.90) | 29.12 (4.46) | -0.59 (-2.03, 0.84) | | 15.52 (4.14) | 27.95 (4.82) | .307 |
| Writing | 13.92 (3.93) | 26.97 (5.04) | -0.05 (-1.63, 1.52) | | 13.97 (3.62) | 28.11 (4.83) | -0.96 (-2.54, 0.62) | | 13.54 (3.76) | 26.64 (4.33) | .220 |
| Maths | 16.47 (3.91) | 29.37 (5.13) | -0.07 (-1.52, 1.39) | | 16.31 (3.47) | 29.78 (4.98) | -0.40 (-1.85, 1.06) | | 15.83 (3.90) | 28.72 (5.04) | .757 |
| Girls | | | | | | | | | | | |
| | $n = 208$ | $n = 208$ | | | $n = 227$ | $n = 227$ | | | $n = 212$ | $n = 212$ | |
| Reading | 16.56 (3.96) | 28.91 (4.65) | 0.05 (-1.14, 1.23) | | 16.50 (3.70) | 29.64 (4.42) | -0.68 (-1.89, 0.50) | | 16.30 (4.06) | 28.76 (4.61) | .223 |
| Writing | 15.37 (3.67) | 28.79 (4.56) | -0.61 (-2.19, 0.98) | | 15.35 (3.51) | 29.19 (4.60) | -1.03 (-2.63, 0.57) | | 14.59 (3.92) | 27.59 (4.35) | .279 |
| Maths | 15.81 (3.60) | 28.44 (4.65) | -0.32 (-1.70, 1.06) | | 16.00 (3.09) | 28.70 (5.05) | -0.07 (-1.46, 1.32) | | 15.33 (3.51) | 27.59 (5.02) | .824 |
| Free school meals not eligible | | | | | | | | | | | |
| | $n = 416$ | $n = 388$ | | | $n = 404$ | $n = 405$ | | | $n = 343$ | $n = 341$ | |
| Reading | 16.48 (3.95) | 28.87 (4.47) | 0.25 (-0.88, 1.39) | | 16.36 (3.76) | 29.53 (4.34) | -0.51 (-1.64, 0.63) | | 16.21 (4.04) | 28.77 (4.47) | .221 |
| Writing | 14.95 (3.74) | 28.11 (4.73) | -0.29 (-1.64, 1.06) | | 14.81 (3.62) | 28.78 (4.69) | -0.91 (-2.25, 0.44) | | 14.31 (3.84) | 27.36 (4.22) | .234 |
| Maths | 16.45 (3.64) | 29.22 (4.79) | -0.13 (-1.33, 1.07) | | 16.28 (3.33) | 29.45 (5.06) | -0.31 (-1.51, 0.89) | | 15.68 (3.62) | 28.27 (5.00) | .810 |
| Free school meals eligible | | | | | | | | | | | |
| | $n = 40$ | $n = 38$ | | | $n = 50$ | $n = 44$ | | | $n = 41$ | $n = 36$ | |
| Reading | 12.50 (3.94) | 25.49 (5.68) | -1.25 (-3.66, 1.16) | | 14.72 (3.94) | 28.07 (5.21) | -2.26 (-4.57, 0.06) | | 13.98 (4.10) | 24.94 (5.53) | .065 |
| Writing | 11.45 (3.75) | 25.26 (5.74) | -1.04 (-4.41, 2.32) | | 13.56 (3.48) | 27.55 (5.15) | -1.78 (-5.04, 1.47) | | 12.71 (3.99) | 24.50 (4.84) | .385 |
| Maths | 12.90 (3.62) | 25.83 (5.19) | -0.82 (-3.48, 1.84) | | 15.16 (2.74) | 27.24 (4.46) | -0.04 (-2.60, 2.52) | | 14.37 (4.09) | 26.30 (5.33) | .681 |
| British White ethnicity | | | | | | | | | | | |
| | $n = 418$ | $n = 389$ | | | $n = 435$ | $n = 428$ | | | $n = 351$ | $n = 343$ | |
| Reading | 16.25 (4.10) | 28.73 (4.65) | 0.05 (-1.16, 1.26) | | 16.12 (3.82) | 29.39 (4.45) | -0.78 (-1.99, 0.43) | | 16.03 (4.09) | 28.41 (4.71) | .154 |
| Writing | 14.72 (3.84) | 27.91 (4.91) | -0.38 (-1.83, 1.07) | | 14.60 (3.63) | 28.65 (4.73) | -1.08 (-2.53, 0.37) | | 16.03 (4.09) | 27.26 (4.36) | .172 |
| Maths | 16.27 (3.71) | 29.03 (4.85) | -0.12 (-1.38, 1.13) | | 16.14 (3.30) | 29.24 (5.05) | -0.30 (-1.55, 0.96) | | 15.64 (3.55) | 28.14 (5.08) | .838 |

(continued)

Table 5 (continued)

| SAT | Health-led FRIENDS | | Adjusted mean difference (95% CI) at 12 months: Health-led FRIENDS versus usual school provision | | School-led FRIENDS | | Adjusted mean difference (95% CI) at 12 months: school-led FRIENDS versus usual school provision | | Usual school provision | | p-value* |
|---------------------------------|--------------------|--------------|--|--------------|--------------------|--------------|--|--------------|------------------------|-----|----------|
| | KS1 | KS2 | KS1 | KS2 | KS1 | KS2 | KS1 | KS2 | KS1 | KS2 | |
| Non-White ethnicity | | | | | | | | | | | |
| | n = 38 | n = 37 | n = 19 | n = 21 | n = 33 | n = 34 | | | | | |
| Reading | 14.74 (3.92) | 26.86 (4.73) | 0.70 (-1.27, 2.66) | 29.24 (4.31) | 17.53 (3.32) | 29.24 (4.31) | 0.46 (-1.92, 2.84) | 15.36 (4.23) | 28.33 (4.78) | | .683 |
| Writing | 13.74 (4.12) | 27.32 (4.68) | -0.96 (-4.15, 2.23) | 28.71 (5.07) | 16.16 (3.22) | 28.71 (5.07) | -0.25 (-3.50, 2.99) | 13.55 (4.54) | 26.29 (4.37) | | .675 |
| Maths | 14.68 (4.15) | 27.66 (5.48) | -0.83 (-3.97, 2.30) | 29.21 (4.95) | 16.37 (2.91) | 29.21 (4.95) | 0.04 (-3.27, 3.34) | 14.45 (4.83) | 27.57 (4.84) | | .707 |
| Additional educational needs | | | | | | | | | | | |
| | n = 97 | n = 91 | n = 104 | n = 101 | n = 77 | n = 79 | | | | | |
| Reading | 11.13 (3.76) | 23.28 (5.42) | -1.29 (-3.26, 0.69) | 25.59 (5.41) | 12.58 (3.71) | 25.59 (5.41) | 0.31 (-0.179, 2.42) | 12.61 (3.91) | 23.89 (6.06) | | .119 |
| Writing | 10.06 (3.91) | 22.01 (4.72) | -1.33 (-3.51, 0.86) | 24.36 (4.92) | 11.22 (3.37) | 24.36 (4.92) | -0.71 (-3.01, 1.59) | 10.79 (3.86) | 23.37 (5.10) | | .322 |
| Maths | 12.03 (3.80) | 23.77 (4.52) | 0.25 (-1.65, 2.15) | 24.75 (5.26) | 13.42 (3.09) | 24.75 (5.26) | 0.06 (-1.94, 2.06) | 12.61 (4.01) | 24.36 (5.29) | | .942 |
| No additional educational needs | | | | | | | | | | | |
| | n = 359 | n = 335 | n = 350 | n = 348 | n = 307 | n = 298 | | | | | |
| Reading | 17.43 (3.10) | 29.99 (3.23) | -0.57 (-1.52, 0.38) | 30.51 (3.38) | 17.24 (3.15) | 30.51 (3.38) | -0.02 (-0.99, 0.96) | 16.81 (3.71) | 29.61 (3.40) | | .246 |
| Writing | 15.84 (2.88) | 29.47 (3.49) | -0.43 (-1.63, 0.78) | 29.91 (3.88) | 15.67 (3.05) | 29.91 (3.88) | 0.81 (-0.43, 2.05) | 14.97 (3.42) | 28.21 (3.48) | | .053 |
| Maths | 17.21 (3.00) | 30.32 (4.01) | -0.17 (-1.34, 1.01) | 30.54 (4.16) | 16.92 (2.88) | 30.54 (4.16) | 0.27 (-0.94, 1.48) | 16.27 (3.22) | 29.07 (4.49) | | .670 |

*Covariate KS1; adjusted for study arm, gender and school effect.

In terms of future research, there is a need to assess the impact of school-based mental health prevention programmes on both psychological and educational outcomes. Schools are not just convenient locations to deliver mental health programmes but provide a context in which skills can be applied and integrated across the educational curriculum. Assessing a larger range of educational outcomes including attainment, absence rate, pupil attitudes, bullying and exclusion rates would help to explore important educational outcomes of these programmes. Second, the role of the intervention leader has received little attention, despite reviews noting that the effectiveness of health and school leaders varies depending upon the focus of the programme (e.g. anxiety vs. depression) and the nature of the outcome (psychological functioning vs. educational attainment). Direct comparisons of school and health leaders delivering the same programme are required in order to determine the most effective way of delivery. Third, many school mental health prevention programmes target specific disorders, for example anxiety, depression, substance misuse, etc. While this may maximise the effects on the targeted disorder, the wider benefits on psychological functioning, as we report here, may be more limited. Focusing on single mental health problems has been criticised and will result in a fragmented approach to mental health prevention in schools (Catalano et al., 2012; Zins et al., 2007). A more integrated approach to education and health might be achieved by identifying how the school context and pedagogy influence mental health and academic performance and how these factors could be strengthened to enhance both the domains (Fazel et al., 2014; Hoagwood et al., 2007).

Conclusion

Using national SATs in maths, reading and writing, we found no differences in educational outcomes between children who took part in a universal anxiety prevention programme and those who attended school PSHE lessons. The significant reduction of anxiety in the health-led arm was not reflected in improved academic performance on national SATs, 12 months postintervention. Further research is needed to assess the impact of mental health interventions on a wider range of educational outcomes.

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Key points

- The classroom-based FRIENDS programme was effective in reducing children anxiety but only when delivered by health care staff.
- Reductions in anxiety were not associated with improvements in academic performance in national standardised tests in reading, writing and maths.
- A need to include multiple outcome measures, alongside mental health outcomes, to understand multiple effects of school-based mental health interventions is acknowledged.

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