Training teachers in classroom management to improve mental health in primary school children: the STARS cluster RCT

Tamsin Ford,[1]* Rachel Hayes,[1] Sarah Byford,[2] Vanessa Edwards,[1] Malcolm Fletcher,[1] Stuart Logan,[1] Brahm Norwich,[3] Will Pritchard,[4] Kate Allen,[1] Matthew Allwood,[1] Poushali Ganguli,[2] Katie Grimes,[5] Lorraine Hansford,[1] Bryony Longdon,[1] Shelley Norman,[6] Anna Price,[1] Abigail Emma Russell[1] and Obioha C Ukoumunne[7]

[1]University of Exeter Medical School, Exeter, UK
[2]King's Health Economics, Institute of Psychiatry, Psychology & Neuroscience, King's College London, London, UK
[3]Graduate School of Education, University of Exeter, Exeter, UK
[4]Education and Early Years, Cornwall County Council, Truro, UK
[5]Educational and Counselling Psychology and Special Education, University of British Columbia, Vancouver, BC, Canada
[6]School of Psychology, University of Exeter, Exeter, UK
[7]National Institute for Health Research Collaborations for Leadership in Applied Health Research and Care South West Peninsula (PenCLAHRC), University of Exeter, Exeter, UK

*Corresponding author T.J.Ford@exeter.ac.uk

Declared competing interests of authors: Stuart Logan was a member of the Health Technology Assessment (HTA) Commissioning Board 2003–10, the HTA Medicines for Children Themed Call 2005–6 and the Rapid Trials and Add on Studies Board 2012.

Published March 2019
DOI: 10.3310/phr07060

Scientific summary

The STARS cluster RCT

Public Health Research 2019; Vol. 7: No. 6
DOI: 10.3310/phr07060

NIHR Journals Library www.journalslibrary.nihr.ac.uk

Scientific summary

Background

Extremely challenging behaviour that interferes with a child's ability to engage in normal social and educational settings is relatively common. Between 5% and 6% of primary school-aged children, or one or two children in the average school classroom, will display behaviours that reduce their ability to function, and conduct disorder is one of the strongest predictors of later adult mental health difficulties. Poor behaviour not only affects the individual child's ability to engage with education but also disrupts the learning of other children in the class. Teachers report that managing challenging behaviour can be a cause of additional stress in their role and that their initial training did not provide enough practical support for them to feel confident in their ability to control and engage their class. The Supporting Teachers And childRen in Schools (STARS) trial aimed to find out if the Incredible Years® (IY) Teacher Classroom Management (TCM) training programme could help teachers to improve the behaviour of the children in their classes. There is a lot of previous research that shows that the corresponding parent and child IY training programmes are very effective, but TCM training had not yet been tested in isolation in UK schools in a large randomised trial.

Teacher Classroom Management training is delivered to groups of 12 teachers over 6 full days over a 6-month period, a format that enables teachers to practice the new strategies that they have learnt between sessions. TCM has four explicit goals:

1. to enhance teacher management skills and improve teacher–pupil relationships
2. to assist teachers to develop effective individual and group behaviour plans in order to enable proactive (as opposed to reactive) classroom management
3. to encourage teachers to adopt and promote social and emotional regulation skills
4. to encourage teachers to strengthen positive teacher–parent relationships.

Teacher Classroom Management uses a range of methods to deliver the training of these four principles and is based on cognitive social learning theory as well as on several theoretical perspectives that are widely used in developmental psychology.

Objectives

To determine if TCM is an effective universal intervention for improving children's mental health in the context of the UK primary school system.

Secondary objectives included examining whether or not access to TCM training:

- improved teachers' mental health and professional self-efficacy and reduced their burnout
- improved children's academic attainment and classroom-based behaviour
- improved children's happiness in school and behaviour at home
- was cost-effective in relation to potential improvements in children's mental health
- affected teachers' practice in the classroom (investigating what factors supported or hindered any potential changes).

Methods

The STARS trial was a two-arm, pragmatic, cluster randomised controlled trial designed to evaluate whether or not the TCM course (delivered at class level) improves the mental health of individual children. We recruited 80 primary schools across the south-west of England between May 2012 and July 2014; one class (teacher and all pupils) from each school was selected by the headteacher. Schools were randomised with 40 of the class teachers receiving TCM training (intervention) and 40 being asked to continue teaching as usual [(TAU) control].

Schools were eligible for inclusion if they had a single-year class with $\geq$ 15 children aged between 4 and 9 years who were taught by a teacher who held classroom responsibility for at least 4 days per week. Schools were excluded if they primarily taught pupils with special educational needs, lacked a substantive headteacher or had been judged as failing at their last Office for Standards in Education, Children's Services and Skills inspection. All children in the selected classes were eligible for inclusion provided that the class teacher judged that they and their parents had sufficient English-language comprehension to understand recruitment information and complete outcome measures.

Written consent was obtained from the headteacher for the school's participation and from the class teacher for their involvement. Parent information leaflets were sent home with children and parents were given 2 weeks to 'opt out' their child from the research. Verbal assent was obtained from children each time they were asked to complete a questionnaire.

Outcome measures were collected on four occasions: baseline measures were collected in October, and follow-up measures were collected 9 (June), 18 (February) and 30 (February) months later. Baseline and 9-month assessments took place during the first academic year of participation, before and after the intervention, respectively, so were completed by the same teacher. The 18-month and 30-month assessments were completed by different teachers.

At each assessment point we asked teachers and parents to complete the Strengths and Difficulties Questionnaire (SDQ), which measures children's mental health. The SDQ measure provides a Total Difficulties (SDQ-TD) score comprising the Behaviour, Emotions, Inattention/Overactivity and Peer Relationships subscale scores, as well as Pro-social and Impact scores. Higher scores indicate poorer mental health, except on the Pro-social subscale. Our primary outcome was the teacher-completed SDQ-TD score. In addition, teachers were asked to complete the Pupil Behaviour Questionnaire (PBQ), which measures children's classroom-based disruptive behaviours, and to rate each child's academic progress in literacy and numeracy. Parents were also asked to complete a brief questionnaire about their child's use of key NHS services. Children were asked to complete the How I Feel About My School (HIFAMS) measure, which assesses children's attitudes towards school, with higher scores indicating greater happiness. The study also linked to the National Pupil Database (NPD) so that accurate records of attendance for all included children could be obtained.

Researchers who did not know which teachers had attended TCM training observed lessons in just over one-quarter of the schools. They were recording behaviours that are specifically targeted in TCM training. Researchers met with teachers in focus groups and asked them to say in their own words if they felt that anything had changed in their approach to teaching and what impact, if any, this had had on the children they teach and on other staff and parents.

The trial outcomes at follow-up were compared using the intention-to-treat principle. Random-effects regression models were used to compare the intervention and TAU children, allowing for the similarity of data (clustering) within one class of children compared with a different class of children.

The study tested to see if the effect of TCM training might be stronger or weaker for children falling into subgroups based on school- or child-level deprivation status (in bottom two deciles vs. otherwise), whether

or not the child scored in the struggling range on the teacher-reported SDQ-TD score at baseline, the length of the study teacher's experience (> 5 years vs. ≤ 5 years), key stage (KS) status (KS 1 vs. KS 2), the child's gender and the cohort status (cohort 1, 2 or 3). Given the relationship between emotional health and educational progress, the study also explored if any effect of the intervention on educational progress was modified by whether or not the child had scored in the struggling range on the teacher-reported SDQ-TD score at baseline.

This study was granted ethics approval by the Peninsula College of Medicine and Dentistry Research Ethics Committee, now under the auspices of the University of Exeter Medical School Committee, on 8 March 2012 (reference number 12/03/141). The University of Exeter acted as the sponsor for the study. The trial was registered with the International Standard Randomised Controlled Trial Register with the reference number ISRCTN84130388 and was funded by the National Institute for Health Research Public Health Research programme and the National Institute for Health Research Collaborations for Leadership in Applied Health Research and Care South West Peninsula. All of the information collected was kept strictly confidential and held in accordance with the principles of the Data Protection Act 1998 (Great Britain. *Data Protection Act 1998*. London: The Stationery Office; 1998).

Results

A total of 2075 children were recruited to the trial (1037 in the TCM arm and 1038 in the TAU arm). A further 113 children were either opted out by their parents ($n = 107$) or ineligible ($n = 6$). The study lost contact with 271 (13%) children over the 30-month follow-up period, and two parents withdrew permission for parent-reported outcomes but permitted the collection of teacher- and child-reported outcomes. During the trial some schools did not provide teacher-completed data on child outcomes at the 9-month ($n = 1$), 18-month ($n = 2$) and 30-month ($n = 1$) assessments. In addition, one intervention school withdrew from the trial after completing the 18-month assessment. Primary outcome data were collected at 9-, 18- and 30-month follow-up for 96%, 89% and 85% of participants, respectively. Thirty-six (90%) of the 40 teachers in the intervention arm attended four or more TCM sessions; 23 teachers (58%) attended all six.

The study found that TCM improved child mental health, according to the teacher-reported SDQ-TD score, by 1.0 point [95% confidence interval (CI) 0.1 to 1.9; $p = 0.03$] at the 9-month follow-up. There was little evidence, however, of an effect at the 18-month ($p = 0.85$) and 30-month follow-ups ($p = 0.23$).

Tests of interaction indicated that TCM led to greater reductions in the teacher-reported SDQ-TD score at 9 months (interaction $p < 0.001$) for children who were classified by their teacher as struggling with their mental health at baseline (mean difference –2.6, 95% CI –4.6 to –0.6) than for children who were not (mean difference –0.4, 95% CI –1.2 to 0.4). A subgroup effect was also found at 30 months ($p < 0.001$) but not at 18 months ($p = 0.10$).

There was evidence, based on the PBQ score, of reduced disruptive behaviour across all 30 months of follow-up ($p = 0.04$). Likewise, there was evidence that TCM reduces the percentage of children who are classified as struggling according to the SDQ-TD score ($p = 0.05$) and reduces the Inattention/Overactivity score ($p = 0.02$) across the full 30-month follow-up. At 9 months only, there was also evidence of a reduction in peer relationship problems ($p = 0.02$) and an improvement in pro-social behaviour ($p = 0.02$). Finally, there was little evidence of effects on teacher-reported emotions and impact, assessment of pupil progress (APP), parents' assessment of their child's mental health or the child-reported outcome HIFAMS.

There was little evidence that the intervention had any effect on either the rate of overall absence during the first [adjusted rate ratio (RR) 1.08, 95% CI 0.95 to 1.24; $p = 0.24$] or the second (adjusted RR 1.10, 95% CI 0.72 to 1.70; $p = 0.65$) year of the trial or the number of unauthorised absences during the first (adjusted RR 1.03, 95% CI 0.90 to 1.18; $p = 0.62$) or second (adjusted RR 0.96, 95% CI 0.75 to 1.22; $p = 0.74$)

year of the trial. School exclusions were reported on 22 separate occasions, two in the intervention arm and 20 in the TAU arm, which resulted in a total loss of 64 school sessions: 3 sessions in the intervention arm and 61 sessions in the TAU arm. These exclusions were issued to a total of six children, two from the intervention arm and four from the TAU arm of the trial.

Although there was no overall effect of the intervention on academic progress in either literacy or numeracy, subgroup analysis did indicate that the intervention effect differed between those who were and were not classified by their teacher as struggling with their mental health at baseline for both literacy (interaction $p = 0.04$) and numeracy (interaction $p = 0.03$). The intervention arm had lower odds than the TAU arm of below-expectation assessments in literacy [odds ratio (OR) 0.77, 95% CI 0.53 to 1.12] and numeracy (OR 0.82, 95% CI 0.59 to 1.14) among those children not classified as struggling, whereas it had greater odds of below-expectation assessments for literacy (OR 1.17, 95% CI 0.70 to 1.94) and numeracy (OR 1.35, 95% CI 0.88 to 2.06) among those children who were classified as struggling. This suggests that children who were classified as struggling performed worse in the intervention arm than in the TAU arm, whereas children who were not classified as struggling performed better in the intervention than in the TAU arm. However, all four of these CIs include unity, so it is difficult to interpret these findings, other than to comment that there seems to be a differential effect according to baseline mental health.

The cost of the TCM course was calculated to be £11.52 per child and was applied to the intervention arm. Observed mean total costs of services used over the 30-month follow-up period were very slightly lower for the intervention arm (£524.16) than for the TAU arm (£528.14). However, this difference was not statistically significant (adjusted mean difference £30.24, 95% CI –£140.98 to £201.47; $p = 0.7$). For the primary cost-effectiveness analysis using the SDQ-TD score, the lower costs and better outcomes in the intervention group generate an incremental cost-effectiveness ratio of –£19.90 per unit improvement in SDQ-TD and suggested that the probability of TCM being cost-effective compared with TAU was associated with some uncertainty (range of 40% to 80% depending on the willingness to pay for a unit improvement in SDQ-TD score). In terms of quality-adjusted life-years (QALYs), there was evidence to suggest that TCM was cost-effective compared with TAU at the National Institute for Health and Care Excellence threshold of £20,000–30,000 per QALY at the 9-month and 18-month follow-up, but not at the 30-month follow-up.

There was little evidence that TCM had any impact on teachers' self-efficacy, burnout and well-being scores. However, teachers did say that they felt that the TCM training had helped them in other ways, including helping them to see things from the child's point of view, improving their relationships with the children, and helping themselves to feel more positive, confident and in control. In addition, we demonstrated that in those schools in which researchers observed lessons, teachers' behaviour had changed following training: teachers used more praise and were more positive in their behaviour towards the children.

Conclusions

A small but statistically significant improvement in teacher-reported children's mental health was detected at 9 months (SDQ-TD). The findings provide tentative evidence that TCM may provide teachers with strategies that can have an effect on children's mental health, and, although small, the effect detected suggests that this intervention could usefully be tested further. The planned subgroup analyses suggest that children with poorer mental health at baseline derived the most benefit according to teacher report.

Economic evaluation, carried out at the 30-month follow-up using the SDQ-TD, suggests that TCM may be cost-effective compared with TAU. However, it was not possible to draw a firm conclusion without knowing society's willingness to pay for improvements in SDQ-TD score. In terms of QALYs, there was evidence to suggest that TCM was cost-effective compared with TAU in the short term, but not at the 30-month follow-up.

The effect of TCM on the primary outcome was not maintained at 18 and 30 months, which could mean that TCM has no longer-term impact or could be a result of the children's reaction to the teaching style of their subsequent teachers who had not accessed TCM training. Most effective universal programmes employ a whole-school approach, and the findings from this study would suggest that training all school staff to use the same strategies might amplify and sustain any initial impact on children's mental health that training a single teacher might have.

The small but sustained effects on disruptive behaviour and inattention/hyperactivity as measured by the teacher SDQ across all three follow-ups are interesting and warrant replication. The linkage to the NPD demonstrated some interesting differences in relation to exclusion between the trial arms, which suggests that these data may be a useful vehicle for conducting longer-term follow-up of the STARS participants.

No intervention effect on parent-reported measures was detected, but this was not unexpected. Children respond differently in different situations and TCM targets classroom behaviour rather than behaviour at home.

In the process evaluation, teachers reported that children were calmer, more motivated and more ready to learn; however, these reported experiences did not translate into empirical evidence of an improvement in academic attainment at a universal level. The interaction with baseline mental health, which is difficult to interpret in terms of direction, is interesting and suggests that the impact on attainment is worth studying in more depth. It is intuitively plausible that a more settled classroom would allow accelerated progress for children who were otherwise thriving. Given the crudeness of the measure available, it was not surprising that there was no main effect on attainment detected.

Implications and directions for future research

1. The findings of the STARS trial provide strong evidence that TCM is feasible and acceptable in the UK context.
2. Our findings provide early evidence that TCM may be an effective universal child mental health intervention in the short term, particularly for children who are struggling.
3. TCM should be explored as a whole-school approach.
4. The impact of TCM on teachers' relationships with children and on children's academic progress should be evaluated.

Trial registration

This trial is registered as ISRCTN84130388.

Funding

This project was funded by the Public Health Research programme of the National Institute for Health Research (NIHR) and the NIHR Collaboration for Leadership in Applied Health Research and Care South West Peninsula (NIHR CLAHRC South West Peninsula).

Public Health Research

ISSN 2050-4381 (Print)

ISSN 2050-439X (Online)

This journal is a member of and subscribes to the principles of the Committee on Publication Ethics (COPE) (www.publicationethics.org/).

Editorial contact: journals.library@nihr.ac.uk

The full PHR archive is freely available to view online at www.journalslibrary.nihr.ac.uk/phr. Print-on-demand copies can be purchased from the report pages of the NIHR Journals Library website: www.journalslibrary.nihr.ac.uk

Criteria for inclusion in the *Public Health Research* journal

Reports are published in *Public Health Research* (PHR) if (1) they have resulted from work for the PHR programme, and (2) they are of a sufficiently high scientific quality as assessed by the reviewers and editors.

Reviews in *Public Health Research* are termed 'systematic' when the account of the search appraisal and synthesis methods (to minimise biases and random errors) would, in theory, permit the replication of the review by others.

PHR programme

The Public Health Research (PHR) programme, part of the National Institute for Health Research (NIHR), evaluates public health interventions, providing new knowledge on the benefits, costs, acceptability and wider impacts of non-NHS interventions intended to improve the health of the public and reduce inequalities in health. The scope of the programme is multi-disciplinary and broad, covering a range of interventions that improve public health. The Public Health Research programme also complements the NIHR Health Technology Assessment programme which has a growing portfolio evaluating NHS public health interventions.

For more information about the PHR programme please visit the website: http://www.nets.nihr.ac.uk/programmes/phr

This report

The research reported in this issue of the journal was funded by the PHR programme as project number 10/3006/07. The contractual start date was in June 2012. The final report began editorial review in March 2018 and was accepted for publication in September 2018. The authors have been wholly responsible for all data collection, analysis and interpretation, and for writing up their work. The PHR editors and production house have tried to ensure the accuracy of the authors' report and would like to thank the reviewers for their constructive comments on the final report document. However, they do not accept liability for damages or losses arising from material published in this report.

This report presents independent research funded by the National Institute for Health Research (NIHR). The views and opinions expressed by authors in this publication are those of the authors and do not necessarily reflect those of the NHS, the NIHR, NETSCC, the PHR programme or the Department of Health and Social Care. If there are verbatim quotations included in this publication the views and opinions expressed by the interviewees are those of the interviewees and do not necessarily reflect those of the authors, those of the NHS, the NIHR, NETSCC, the PHR programme or the Department of Health and Social Care.

Published by the NIHR Journals Library (www.journalslibrary.nihr.ac.uk), produced by Prepress Projects Ltd, Perth, Scotland (www.prepress-projects.co.uk).