

Evaluating the efficacy of the Promoting Alternative Thinking Strategies (PATHS) curriculum in promoting social and emotional wellbeing among children in primary school: a cluster randomised controlled trial, process evaluation, and economic analysis

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Chief Investigator: Professor Neil Humphrey

Lead Author: Professor Neil Humphrey

Contractor: University of Manchester

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Co-authors: Dr. Alexandra Hennessey*, Dr. Ann Lendrum, Dr. Michael Wigelsworth, Dr. Alexander Turner, Dr. Margarita Panayiotou, Dr. Craig Joyce, Kirsty Pert, Emma Stephens, Lawrence Wo, Dr. Garry Squires, Professor Kevin Woods, Dr. Mark Harrison, Professor Rachel Calam

*née Barlow

Corresponding author: Neil Humphrey (neil.humphrey@manchester.ac.uk)

Institutional affiliation: University of Manchester, UK

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Scientific summary

Background

Universal social and emotional learning (SEL) interventions aim to develop children's social and emotional skills (e.g. empathy). They are delivered to all children in a given classroom, usually by the class teacher, and typically consist of a series of lessons on topics such as identifying and labelling feelings, controlling impulses, and understanding other people's perspectives. Alongside this, universal SEL interventions frequently include activities and strategies to promote a more positive school climate, and/or work with parents and the wider community. A number of studies have shown that they can lead to practically significant improvements in a range of outcomes, including children's social and emotional skills, mental health, and their academic attainment. In particular, the Promoting Alternative Thinking Strategies (PATHS) curriculum has a strong international evidence base. However, the evidence base in the UK remains limited. This study addresses a number of significant research priorities in this area, including the assessment of a comprehensive range of proximal and distal intervention outcomes, maintenance of intervention effects, the relationship between levels of implementation and intervention outcomes, temporal relations between outcomes, and cost-effectiveness.

Objectives

1. To determine the impact of PATHS on a variety of outcomes for children
2. To determine whether the impact of PATHS is sustainable
3. To determine the impact of PATHS on children's psychosocial adjustment to secondary school
4. To assess the role of implementation variability in moderating the impact of PATHS on outcomes for children
5. To assess the validity of the logic model for SEL programmes
6. To examine the cost-effectiveness of PATHS

Methods

We utilised a two group parallel cluster randomised controlled trial design, with schools as the unit of randomisation. Schools allocated to the intervention arm of the trial implemented PATHS throughout the school years 2012/13 and 2013/14. Those allocated to the usual provision arm of the trial continued as normal (e.g. implementing the social and emotional aspects of learning programme and related interventions) during this period. Random allocation of schools was conducted independently of the authors by the Clinical Trials Unit at the Manchester Academic Health Science Centre, and was balanced by proportions of children eligible for free school meals (FSM) and speaking English as an additional language (EAL) via adaptive stratification (minimisation).

Intervention

The PATHS curriculum aims to promote self-control, emotional understanding, positive self-esteem, relationships, and interpersonal problem-solving skills among children aged 4-11. This is primarily achieved through the implementation of a taught curriculum by the class teacher. Lessons on topics such as identifying and labelling feelings, controlling impulses, and understanding the perspectives of others are delivered approximately twice a week throughout the year. The curriculum is supplemented by generalisation activities and techniques that support the application and consolidation of new skills throughout the day. Finally, supplementary parent materials are provided, whose aim is to extend learning to the home environment. Teachers in PATHS schools receive one initial day and a half-day follow-up of training, and are aided by trained external coaches, who offer on-going technical support and assistance (e.g., lesson modelling, observation and feedback) throughout the school year as a means to optimise delivery.

Participants

Participants were children (N=5,218) in Years 3-5 (aged 7-9) attending 45 participating primary schools (23 PATHS, 22 usual provision).

Outcome measures

We assessed children's social skills, using the Social Skills Improvement System (self-report SSIS; primary outcome measure); pro-social behaviour and mental health difficulties, using the Strengths and Difficulties Questionnaire (teacher informant-report SDQ); psychological wellbeing, perceptions of peer and social support and the school environment, using the Kidscreen 27 (self-report KS27); exclusions, attendance, and attainment, assessed using National Pupil Database records (NPD); and, quality-adjusted-life-years (QALYs), assessed by the Child Health Utility 9 Dimensions measure (self-report CHU-9D).

Outcomes were assessed annually during the main two-year trial period: at baseline (T1), interim (T2), and post-intervention (T3). Following T3, approximately one-third of the trial sample (n=1,631) transferred to secondary school; this subsample provided 12-month (T4) and 24-month (T5) post-trial follow-up data.

In addition, a comprehensive implementation and process evaluation was undertaken involving usual provision surveys, structured observations of PATHS lessons, interviews with school staff and parents, and focus groups with children.

Results

Primary, intention-to-treat analysis pertaining to objective 1 utilised measures taken immediately post-intervention (T3), controlling for baseline scores (T1). PATHS led to marginal, non-significant improvements in children's social skills ($d=0.09$, CI -0.03 to 0.20, $p=.08$) and perceptions of peer and social support ($d=0.11$, CI -0.03 to 0.24, $p=.06$), in addition to reducing exclusions ($d=-0.04$, CI -0.1 to 0.02, $p=.09$), but these effects were all very small in magnitude. A very small but statistically significant improvement in children's psychological wellbeing ($d=0.12$, CI -0.02 to 0.25, $p<.05$) was also observed (objective 1). However, there was no evidence of any maintenance or sleeper effects at 24-month post-intervention follow-up (objective 2). Furthermore, there was no evidence from the 12-month post-intervention follow-up that PATHS impacted upon children's psychosocial adjustment to secondary school (objective 3).

PATHS lessons were implemented well, but not at the frequency recommended by the programme developer; our qualitative data analysis revealed that this was primarily due to competing priorities and pressure to focus on the core academic curriculum in participating schools. Our implementation-outcomes analyses produced mixed findings, though of particular note was the fact that while higher levels of implementation quality and responsiveness were associated with significant improvements in psychological wellbeing, higher levels of procedural fidelity were not associated with any outcomes (objective 4).

Analysis of the temporal associations between outcomes revealed that children's social skills contributed to their later academic attainment indirectly, via their protective influence on mental health difficulties (objective 5). Finally, the mean incremental cost of PATHS compared with usual provision was determined to be £29.93 per child. Mean incremental QALYs were positive and statistically significant (adjusted mean 0.0019, CI 0.0009 to 0.0029, $p < .05$), and the incremental net benefit of introducing PATHS was determined to be £7.64. The probability of the programme being cost-effective was 88% in our base case scenario, but this increased to 99% and above in all but one alternative costing scenarios (for example, using preference weights for constructing CHU-9D utility values from an adolescent, as opposed to adult, normative sample) (objective 6).

Conclusions

There was tentative evidence (at $p < .10$) that PATHS improved children's social skills and perceptions of peer and social support, in addition to reducing exclusions. In addition, it was found to produce very small but statistically significant improvements in their psychological wellbeing and QALYs. Despite these very modest and limited gains, our economic analysis indicated that the programme is likely to offer value for money. These findings need to be considered alongside implementation data that indicated PATHS lessons were only delivered at approximately half the recommended frequency - although we found no consistent evidence that higher dosage was related to improved outcomes. Furthermore, significant caution is required as the effects noted above were not maintained beyond the main trial period. Future work should examine the possibility of further modifications to the intervention to improve its goodness of fit with the English school context without

compromising its efficacy, and identify whether particular subgroups benefit differentially from PATHS.

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