Foundations
What Works Centre for Children & Families

Last reviewed: February 2018

Intervention website: www.pathseducation.co.uk

GUIDEBOOK INTERVENTION INFORMATION SHEET

Paths Elementary Curriculum

Please note that in the 'Intervention summary' table below, 'child age', 'level of need', and 'race and ethnicities' information is **as evaluated in studies**. Information in other fields describes the intervention as **offered/supported by the intervention provider**.

Intervention summary	
Description	PATHS Elementary Curriculum is a school curriculum intervention for children aged between 6 and 12 years. It is delivered by teachers to classes of children in 30 to 55 sessions per school year.
Evidence rating	3+
Cost rating	1
Child outcomes	• Preventing crime, violence and antisocial behaviour - Improved behaviour - Reduced hyperactivity - Reduced involvement in crime - Reduced antisocial attitudes. • Enhancing school achievement and employment - Improved academic competence and motivation.
Child age (population characteristic)	7 to 11 years old
Level of need (population characteristic)	Universal

Intervention summary	
Race and ethnicities (population characteristic)	• African American • Hispanic • White.
Type (model characteristic)	Group
Setting (model characteristic)	Primary school
Workforce (model characteristic)	Teacher
UK available?	Yes
UK tested?	No

Model description

PATHS Elementary Curriculum is a school curriculum intervention for children aged between 6 and 12 years, which is designed to promote emotional and social competencies and reduce aggression and behaviour problems in elementary school-aged children, while simultaneously enhancing the educational process in the classroom.

PATHS Elementary is delivered by teachers to classes of children in 30 to 55 sessions per school year of between 20 to 30 minutes duration each.

The PATHS Elementary Curriculum provides teachers with systematic, developmentally based lessons, materials, and instructions for teaching their students emotional literacy, self-control, social competence, positive peer relations, and interpersonal problem-solving skills. Lessons incorporate discussion, role-playing, storytelling, worksheets, and games, and teachers model and reinforce social skills throughout the school day. Parents are also engaged with the intervention through newsletters and homework assignments to be completed with their children.

PATHS Elementary Curriculum content covers identifying and labelling feelings, expressing feelings, assessing the intensity of feelings, managing feelings, understanding the difference between feelings and behaviours, delaying gratification, controlling impulses, reducing stress, self-talk, reading and interpreting social cues, understanding the perspectives of others, using steps for

problem-solving and decision-making, having a positive attitude towards life, self-awareness, non-verbal communication skills, and verbal communication skills.

Target population

Age of child	6 to 12 years
Target population	School children between the ages of 6 and 12

Please note that the information in this section on target population is as **offered/supported by the intervention provider**.

Theory of change

Why		Who	How	What		
Science-based assumption	**Science-based assumption**	**Science-based assumption**	**Intervention**	**Short-term outcomes**	**Medium-term outcomes**	**Long-term outcomes**
Children's emotional awareness, self-control (self-regulation), and interpersonal problem-solving skills are key mediators of socially competent outcomes (low behaviour problems, good mental health, good peer relations, and engagement in learning at school).	Children's ability to understand and discuss emotions is related to the development of communication skills, and is affected by socialisation practices.	All children aged 6 to 12 in a school environment.	The PATHS Curriculum is focused on teaching students skills to: • Become more aware of and be able to label their own emotions • Be able to take others' points of view and assess others' emotions • Use new strategies for self-control (regulation) to be able to calm down • Use new interpersonal problem-solving strategies to develop and carry out effective plans for interpersonal and school-related challenges.	• Children will have better accuracy in labelling and discussing their own and others' emotions • Children will be better able to calm down and self-regulate when upset or distressed, they will have improved abilities to describe interpersonal problems and generate and carry out effective solutions and they will be able to communicate positively with peers and adults.	• Improved social and emotional competence • Improved engagement and attention in the classroom.	Children will show lower rates of behaviour problems, and lower rates of internalising problems.

Implementation requirements

Who is eligible?	Children between the ages of 6 and 12 years in a school setting.
How is it delivered?	PATHS Elementary Curriculum is delivered to classes of children in 30 to 55 sessions of 20 to 30 minutes' duration each by one practitioner.
What happens during the intervention?	Teachers lead interactive sessions incorporating discussion, role-playing, storytelling, worksheets, and games, to teach emotional literacy, self-control, social competence, positive peer relations, and interpersonal problem-solving skills.
Who can deliver it?	The practitioner who delivers this intervention is a teacher.
What are the training requirements?	The practitioners have 14 hours of intervention training. Booster training of practitioners is recommended.
How are practitioners supervised?	It is recommended that practitioners are supervised by one intervention developer supervisor.
What are the systems for maintaining fidelity?	Intervention fidelity is maintained through the following processes: • Training manual • Other printed material • Face-to-face training • Fidelity monitoring • In-class coaching support.
Is there a licensing requirement?	No
***Contact details**	Contact person: Mairead Ewart Organisation: Barnardo's Email address: mairead.ewart@barnardos.org.uk Website: www.pathseducation.co.uk *Please note that this information may not be up to date. In this case, please visit the listed intervention website for up to date contact details.

Evidence summary

PATHS Elementary's most rigorous evidence comes from two RCTs. The first was conducted in the United States and is consistent with Foundations' Level 3 evidence strength threshold, and the second was conducted in Switzerland and is consistent with Foundations' Level 2+ evidence strength threshold.

Study 1 identified statistically significant reductions in teacher reported conduct problems and child reported aggressive social problem solving, hostile attribution bias, and aggressive interpersonal negotiation strategies, as well as improved academic competence and motivation over time.

Study 2 identified reduced teacher and parent reported aggressive behaviour, reduced teacher reported impulsivity/ADHD, and reduced child reports of police contact.

PATHS Elementary can be described as evidence based: it has evidence from at least one rigorously conducted RCT or QED demonstrating a statistically significant positive impact on at least one child outcome, as well as at least one more RCT or QED.

Child outcomes			
Outcome	**Improvement index**	**Interpretation**	**Study**
Reduced hostile attribution bias	+11	0.07-point improvement on the 'What Would I Do?' self-report assessment Long-term, 2 years later	1a
Reduced aggressive interpersonal negotiation strategies	+11	0.09-point improvement 'What Would I Do?' self-report assessment Long-term, 2 years later	1a
Increased academic competence and motivation	+3	0.11-point improvement on the Teacher-reported Academic Competence and Motivation Scale Long-term, 2 years later	1b
Reduced aggressive social problem-solving	+11	0.05-point improvement on the 'What Would I Do?' self-report assessment Long-term, 2 years later	1a

Reduced conduct problems	+6	0.47-point improvement on the Behaviour Assessment Scale for Children-2 (BASC-2) Conduct Problems Subscale Long-term, 2 years later	1a
Reduced impulsivity/ADHD	N/A	N/A	2a
Reduced prevalence of police contacts	N/A	N/A	2b

Search and review

	Number of studies
Identified in search	12
Studies reviewed	6
Meeting the L2 threshold	3
Meeting the L3 threshold	1
Contributing to the L4 threshold	0
Ineligible	8

Individual study summary: Study 1

Study 1	
Study design	Cluster RCT
Country	United States

Study 1	
Sample characteristics	Approximately 779 students from 14 schools across three school districts
Race, ethnicities, and nationalities	• 51% White • 38% African American • 17% Hispanic • 10% Other • (According to Study 1a).
Population risk factors	• 57% of students attended urban schools • 33% were from single-parent homes.
Timing	• Baseline (3rd Grade – autumn) • interim (3rd Grade – winter) • post-intervention (3rd Grade – spring) • 12-month follow-up (4th Grade – autumn) • 15-month follow-up (4th Grade – winter) • 18-month follow-up (4th Grade – spring) • 24-month follow-up (5th Grade – autumn) • 27-month follow-up (5th grade – winter) • 30-month follow-up (5th Grade – spring)
Child outcomes	• Reduced conduct problems (teacher report) • Reduced aggressive social problem solving (child report) • Reduced hostile attribution bias (child report) • Reduced aggressive interpersonal negotiation strategies (child report) • Improved academic competence and motivation over time (teacher report).
Other outcomes	None
Study Rating	3
Citation	1a: Crean, H. F. & Johnson, D. B. (2013) Promoting Alternative Thinking Strategies (PATHS) and elementary school aged children's aggression: Results from a cluster randomized trial. *American Journal of Community Psychology*. 52, 56–72. 1b: Ruby, A. and Doolittle, E. (2010) *Efficacy of schoolwide programs to promote social and character development and reduce problem behaviour in elementary school children*. Social & Character Development Research Consortium and Institute of Education.

Brief summary

Population characteristics

This study involved approximately 779 children attending 14 participating elementary schools living in Minnesota and New York, US, in a Grade 3 class (8 to 9 years old) at the start of the study. 43% were boys.

51% of children were White, 38% African American, 17% Hispanic and 10% described as 'other'.

Study design

Schools were recruited to the study in two cohorts starting in consecutive years, with 10 schools recruited in cohort 1 from three school districts and four schools recruited in cohort 2 from the participating urban district. Schools were matched on school level demographic variables and randomised within each matched pair by coin toss. Seven schools (422 children) were randomly assigned to the intervention group and seven schools (357 children) to the control group. The control group continued using their standard social and character development practices.

There was a significantly higher percentage of students with limited English proficiency in the PATHS group schools at baseline. There were no significant baseline differences between groups in student level demographics, but there was a significant difference in parent rated intergenerational closure at baseline.

Measurement

Assessments took place at baseline (3rd Grade – autumn), interim (3rd Grade – winter), post-intervention (3rd Grade – spring), 12-month follow-up (4th Grade – autumn), 15-month follow-up (4th Grade – winter), 18-month follow-up (4th Grade – spring), 24-month follow-up (5th Grade - autumn), 27-month follow-up (5th grade – winter) and 30-month follow-up (5th Grade – spring). The first data collection timepoint (baseline) took place on average six weeks after implementation of the PATHS intervention had begun.

Baseline (3rd Grade – autumn)

- **Child report measures** included a group administered self-report questionnaire (Child Report; CR) incorporating questions adapted from The Aggression Scale, a modified version of the Frequency of Delinquent Behaviour Survey, questions adapted from The Victimization Scale, and the General Beliefs subscale from the Normative Beliefs About Aggression scale.
- **Teacher report measures** included a Teacher Report for Students (TRS) incorporating the Behaviour Assessment Scale for Children-2 (BASC-2) Teacher Version Aggression and Conduct Problems subscales and the Acting Out subscale of the Teacher-Child Rating Scales (TCRS).

Interim (3rd Grade – winter)

- **Child report measures** included eight hypothetical vignettes based on Lochman and Dodge's Social Problem Solving Measure, and six hypothetical vignettes based on the Dodge Home Interview.

Post-intervention (3rd Grade – spring)

- **Child report measures** included a group administered self-report questionnaire (Child Report; CR) incorporating questions adapted from The Aggression Scale, a modified version of the Frequency of Delinquent Behaviour Survey, questions adapted from The Victimization Scale, and the General Beliefs subscale from the Normative Beliefs About Aggression scale.
- **Teacher report measures** included a Teacher Report for Students (TRS) incorporating the Behaviour Assessment Scale for Children-2 (BASC-2) Teacher Version Aggression and Conduct Problems subscales and the Acting Out subscale of the Teacher-Child Rating Scales (TCRS).

12- month follow-up (4th Grade – autumn)

- **Child report measures** were completed by cohort 1 only and included a group administered self-report questionnaire (Child Report; CR) incorporating questions adapted from The Aggression Scale, a modified version of the Frequency of Delinquent Behaviour Survey, questions adapted from The Victimization Scale, and the General Beliefs subscale from the Normative Beliefs About Aggression scale.
- **Teacher report measures** included the Behaviour Assessment Scale for Children-2 (BASC-2) Teacher Version Aggression and Conduct Problems subscales (cohort 1 only) and the Acting Out subscale of the Teacher-Child Rating Scales (TCRS) (cohorts 1 and 2).

15-month follow-up (4th Grade – winter)

- **Child report measures** included eight hypothetical vignettes based on Lochman and Dodge's Social Problem Solving Measure, and six hypothetical vignettes based on the Dodge Home Interview.

18-month follow-up (4th Grade – spring)

- **Child report measures** included a group administered self-report questionnaire (Child Report; CR) incorporating questions adapted from The Aggression Scale, a modified version of the Frequency of Delinquent Behaviour Survey, questions adapted from The Victimization Scale, and the General Beliefs subscale from the Normative Beliefs About Aggression scale.
- **Teacher report measures** included a Teacher Report for Students (TRS) incorporating the Behaviour Assessment Scale for Children-2 (BASC-2) Teacher Version Aggression and Conduct Problems subscales and the Acting Out subscale of the Teacher-Child Rating Scales (TCRS).

24-month follow-up (5th Grade – autumn)

- **Teacher report measures** included the Acting Out subscale of the Teacher-Child Rating Scales (TCRS) (cohort 1 only).

27-month follow-up (5th grade – winter)

- **Child report measures** included eight hypothetical vignettes based on Lochman and Dodge's Social Problem Solving Measure, and six hypothetical vignettes based on the Dodge Home Interview.

30-month follow-up (5th Grade – spring)

- **Child report measures** were completed by cohort 1 only and included a group administered self-report questionnaire (Child Report; CR) incorporating questions adapted from The Aggression Scale, a modified version of the Frequency of Delinquent Behaviour Survey, questions adapted from The Victimization Scale, and the General Beliefs subscale from the Normative Beliefs About Aggression scale.
- **Teacher report measures** included the Behaviour Assessment Scale for Children-2 (BASC-2) Teacher Version Aggression and Conduct Problems subscales (cohort 1 only) and the Acting Out subscale of the Teacher-Child Rating Scales (TCRS) (cohorts 1 and 2).

Study retention

According to Study 1a, all 14 schools (cohorts 1 and 2) remained in the study throughout data collection. Children both entered and left the intervention and control classrooms throughout the course of the study; retention information provided here is in relation to the total sample size.

According to Study 1b, 10 schools (cohort 1) were included in the study. However, overall sample size is not provided in the paper, so retention information is unclear.

Baseline

79.8% (622) of children participated in the baseline assessment, representing 77.7% (328) of PATHS participants and 82.3% (294) of business-as-usual control.

Post-intervention

84.7% (660) of children participated in the post-intervention assessment, representing 82.7% (349) of PATHS participants and 87.1% (311) of business-as-usual control.

12-month follow-up

83.1% (647) of children participated in the 12-month follow-up assessment, representing 79.6% (336) of PATHS participants and 87.1% (311) of business-as-usual control.

18-month follow-up

80.2% (625) of children participated in the 18-month follow-up assessment, representing 76.8% (324) of PATHS participants and 84.3% (301) of business-as-usual control.

24-month follow-up

79.2% (617) of children participated in the 24-month follow-up assessment, representing 76.1% (321) of PATHS participants and 82.9% (296) of business-as-usual control.

30-month follow-up

76.8% (598) of children participated in the 30-month follow-up assessment, representing 74.4% (314) of PATHS participants and 80.0% (284) of business-as-usual control.

Results

Data-analytic strategy

In Study 1a, unconditional growth models were used to assess the change in aggression outcomes across the study period. For outcomes where significant curvilinear change was identified, three-level non-linear growth models were utilised with time at level 1, individual at level 2, and school-level variables at level 3 (including treatment status). For self-reported aggressive problem solving, social problem solving, and hostile attribution bias only three data points were collected so only linear effects could be examined. Children who moved away from the study schools were not included in data collection so intent to treat was not used, and the approach to missing data was not reported.

In Study 1b, year-by-year intervention effects were examined using hierarchical linear modelling, and impacts of the intervention on child outcomes over time were examined using growth curve modelling. Children who moved away from the study schools were not included in data collection so intent to treat was not used. Listwise deletion of cases with missing data was used in all analyses.

Findings

According to Study 1a, membership of the PATHS Elementary group was associated with a curvilinear deceleration in teacher-rated conduct problems; effect sizes at the separate data points suggest initial increases in conduct problems followed by decreases in older years for children in the intervention group compared to the control group.

The PATHS condition was also associated with significant linear effects for self-reported aggressive problem solving (slower increase for intervention group children than control group children), hostile attribution bias (decreased levels compared to an increase in the control group), and aggressive interpersonal negotiation strategies (slower increase for intervention group children than control group children).

In Study 1b, there were no significant differences observed between control and intervention groups on year-by-year child outcomes. One of 18 child outcomes over time was significantly different in the intervention group compared to the control group (no more than expected by chance); intervention group children had a significantly greater improvement in academic competence and motivation across the course of the study.

Study 1: Outcomes table

Outcome	Measure	Effect size	Statistical significance	Number of participants	Measurement time point
Child outcomes					
Aggression	BASC-2 (teacher report)	0.036, 0.035, -0.005, -0.083, -0.199*	No	780**	Model over time from baseline to 30-month follow-up (baseline and 5 follow-up measurements)
Aggression	Items adapted from The Aggression Scale (child report)	-0.048, -0.064, -0.048, 0.001, 0.82*	No	770**	Model over time from baseline to 30-month follow-up (baseline and 5 follow-up measurements)
Conduct problems	BASC-2 (teacher report)	0.148, 0.207, 0.177, 0.056, -0.154*	Yes	780**	Model over time from baseline to 30-month follow-up (baseline and 5 follow-up measurements)
Acting out behaviour problems	TCRS (teacher report)	0.005, -0.016, -0.064, -1.39, -0.240*	No	778	Model over time from baseline to 30-month follow-up (baseline and 5 follow-up measurements)
Delinquent minor acts	Modified Frequency of Delinquent Behaviour Survey (child report)	-0.023, -0.030, -0.019, 0.007, 0.050*	No	770**	Model over time from baseline to 30-month follow-up (baseline and 5 follow-up measurements)

Outcome	Measure	Effect size	Statistical significance	Number of participants	Measurement time point
Victimization at school	Items adapted from The Victimization Scale (child report)	0.044, 0.074, 0.092, 0.097, 0.089*	No	770**	Model over time from baseline to 30-month follow-up (baseline and 5 follow-up measurements)
Normative beliefs about aggression	General Beliefs subscale of Normative Beliefs About Aggression scale (child report)	-0.120, -0.202, -0.244, -0.248, -0.212*	No	770**	Model over time from baseline to 30-month follow-up (baseline and 5 follow-up measurements)
Aggressive social problem solving	Vignettes based on Lochmann and Dodge's Social Problem Solving Measure (child report)	-0.135, -0.269***	Yes	746	Model over time from interim to approx. 27-month follow-up (baseline and 2 follow-up measurements)
Hostile attribution bias	Vignettes based on the Dodge Home Interview (child report)	-0.134, -0.268***	Yes	746	Model over time from baseline to approx. 27-month follow-up (baseline and 2 follow-up measurements)
Aggressive interpersonal negotiation strategies	Vignettes based on the Dodge Home Interview (child report)	-0.139, -0.277***	Yes	746	Model over time from baseline to approx. 27-month follow-up (baseline and 2 follow-up measurements)

Outcome	Measure	Effect size	Statistical significance	Number of participants	Measurement time point
Altruistic Behaviour	Altruism Scale (child report)	0.15, 0.06, 0.00	No	Unclear	Post-intervention, 18-month follow-up, 30-month follow-up
Altruistic Behaviour	Altruism Scale (parent report)	0.03, -0.16, -0.06	No	Unclear	Post-intervention, 18-month follow-up, 30-month follow-up
Altruistic Behaviour	Altruism Scale (teacher report)	0.02, 0.17, -0.31	No	Unclear	Post-intervention, 18-month follow-up, 30-month follow-up
Engagement with Learning	4 items from Engagement vs Disaffection with Learning Scale (child report)	0.05, 0.01, -0.11	No	Unclear	Post-intervention, 18-month follow-up, 30-month follow-up
Normative Beliefs About Aggression	Normative Beliefs About Aggression Scale (child report)	-0.05, -0.17, -0.01	No	Unclear	Post-intervention, 18-month follow-up, 30-month follow-up
Self-Efficacy for Peer Interaction	Self-Efficacy for Peer Interaction Scale (child report)	0.01, -0.16, -0.16	No	Unclear	Post-intervention, 18-month follow-up, 30-month follow-up

Outcome	Measure	Effect size	Statistical significance	Number of participants	Measurement time point
Empathy	11 items from Children's Empathy Questionnaire (child report)	0.10, 0.13, -0.03	No	Unclear	Post-intervention, 18-month follow-up, 30-month follow-up
Problem Behaviour	6 items from Frequency of Delinquent Behaviour Scale (child report) and 6 items from Aggression Scale (child report)	-0.10, -0.06, 0.12	No	Unclear	Post-intervention, 18-month follow-up, 30-month follow-up
Problem Behaviour	12 items from BASC Aggression subscale (parent report) 6 items from BASC Conduct Problems subscale (parent report) and 2 items from Responsibility Scale (parent report)	0.10, 0.00, -0.04	No	Unclear	Post-intervention, 18-month follow-up, 30-month follow-up
Problem Behaviour	14 items from BASC Aggression subscale (teacher report), 7 items from BASC Conduct Problems subscale (teacher report) and 2 items from Responsibility scale (teacher report)	0.03, 0.01, -0.14	No	Unclear	Post-intervention, 18-month follow-up, 30-month follow-up

Outcome	Measure	Effect size	Statistical significance	Number of participants	Measurement time point
Positive School Orientation	9 items from Sense of School as a Community Scale (child report) and 1 item from Feelings of Safety at School Scale (child report)	-0.03, 0.15, 0.00	No	Unclear	Post-intervention, 18-month follow-up, 30-month follow-up
Negative School Orientation	4 items from Engagement vs Disaffection with Learning Scale (child report) and 4 items from Sense of School as a Community Scale (child report)	-0.08, -0.05, -0.19	No	Unclear	Post-intervention, 18-month follow-up, 30-month follow-up
Student Afraid at School	4 items from Feelings of Safety at School Scale (child report)	-0.01, -0.01, -0.22	No	Unclear	Post-intervention, 18-month follow-up, 30-month follow-up
Victimization at School	Victimization Scale (child report)	0.04, 0.12, 0.20	No	Unclear	Post-intervention, 18-month follow-up, 30-month follow-up
Positive Social Behaviour	6 items from Responsibility Scale (parent report) and 19 items from Social Competence Scale (parent report)	-0.13, -0.01, -0.08	No	Unclear	Post-intervention, 18-month follow-up, 30-month follow-up

Outcome	Measure	Effect size	Statistical significance	Number of participants	Measurement time point
Positive Social Behaviour	6 items from Responsibility Scale (teacher report) and 19 items from Social Competence Scale (teacher report)	0.05, 0.15, 0.06	No	Unclear	Post-intervention, 18-month follow-up, 30-month follow-up
Academic Competence and Motivation	Academic Competence and Motivation Scale (teacher report)	0.02, -0.09, 0.08	No	Unclear	Post-intervention, 18-month follow-up, 30-month follow-up
ADHD related behaviour	5 items from DSM-IV Criteria for ADHD (teacher report) and 5 items from IOWA Conners Teacher Rating Scale (teacher report)	-0.07, -0.13, -0.22	No	Unclear	Post-intervention, 18-month follow-up, 30-month follow-up
Altruistic Behaviour	Altruism Scale (child report)	-0.07	No	Unclear	Growth in score from baseline to 30 month follow-up
Altruistic Behaviour	Altruism Scale (parent report)	-0.01	No	Unclear	Growth in score from baseline to 30 month follow-up
Altruistic Behaviour	Altruism Scale (teacher report)	-0.05	No	Unclear	Growth in score from baseline to 30 month follow-up

Outcome	Measure	Effect size	Statistical significance	Number of participants	Measurement time point
Engagement with Learning	4 items from Engagement vs Disaffection with Learning Scale (child report)	-0.04	No	Unclear	Growth in score from baseline to 30 month follow-up
Normative Beliefs About Aggression	Normative Beliefs About Aggression Scale (child report)	-0.12	No	Unclear	Growth in score from baseline to 30 month follow-up
Self-Efficacy for Peer Interaction	Self-Efficacy for Peer Interaction Scale (child report)	0.07	No	Unclear	Growth in score from baseline to 30 month follow-up
Empathy	11 items from Children's Empathy Questionnaire (child report)	-0.12	No	Unclear	Growth in score from baseline to 30 month follow-up
Problem Behaviour	6 items from Frequency of Delinquent Behaviour Scale (child report) and 6 items from Aggression Scale (child report)	0.02	No	Unclear	Growth in score from baseline to 30 month follow-up

Outcome	Measure	Effect size	Statistical significance	Number of participants	Measurement time point
Problem Behaviour	12 items from BASC Aggression subscale (parent report) 6 items from BASC Conduct Problems subscale (parent report) and 2 items from Responsibility Scale (parent report)	-0.01	No	Unclear	Growth in score from baseline to 30 month follow-up
Problem Behaviour	14 items from BASC Aggression subscale (teacher report), 7 items from BASC Conduct Problems subscale (teacher report) and 2 items from Responsibility scale (teacher report)	-0.01	No	Unclear	Growth in score from baseline to 30 month follow-up
Positive School Orientation	9 items from Sense of School as a Community Scale (child report) and 1 item from Feelings of Safety at School Scale (child report)	-0.05	No	Unclear	Growth in score from baseline to 30 month follow-up
Negative School Orientation	4 items from Engagement vs Disaffection with Learning Scale (child report) and 4 items from Sense of School as a Community Scale (child report)	0.06	No	Unclear	Growth in score from baseline to 30 month follow-up

Outcome	Measure	Effect size	Statistical significance	Number of participants	Measurement time point
Student Afraid at School	4 items from Feelings of Safety at School Scale (child report)	0.01	No	Unclear	Growth in score from baseline to 30 month follow-up
Victimization at School	Victimization Scale (child report)	-0.01	No	Unclear	Growth in score from baseline to 30 month follow-up
Positive Social Behaviour	6 items from Responsibility Scale (parent report) and 19 items from Social Competence Scale (parent report)	0.01	No	Unclear	Growth in score from baseline to 30 month follow-up
Positive Social Behaviour	6 items from Responsibility Scale (teacher report) and 19 items from Social Competence Scale (teacher report)	0.04	No	Unclear	Growth in score from baseline to 30 month follow-up
Academic Competence and Motivation	Academic Competence and Motivation Scale (teacher report)	0.08	Yes	Unclear	Growth in score from baseline to 30 month follow-up
ADHD related behaviour	5 items from DSM-IV Criteria for ADHD (teacher report) and 5 items from IOWA Conners Teacher Rating Scale (teacher report)	-0.03	No	Unclear	Growth in score from baseline to 30 month follow-up

Outcome	Measure	Effect size	Statistical significance	Number of participants	Measurement time point
Classroom and school outcomes					
Feelings of Safety	Feelings of Safety at School Scale (teacher report)	-0.02, 0.20, -0.29	No	Unclear	Post-intervention, 18-month follow-up, 30-month follow-up
Student Support for Teachers	7 items from the School-Level Environment Questionnaire (teacher report)	0.01, 0.07, -0.20	No	Unclear	Post-intervention, 18-month follow-up, 30-month follow-up

* Effect sizes for post-intervention and 12-, 18-, 24-, and 30-month follow-ups provided separately.

**Sample sizes rounded to nearest 10.

*** Effect sizes for 15- and 27-month follow-ups provided separately.

Individual study summary: Study 2

Study 2	
Study design	Cluster RCT
Country	Switzerland
Sample characteristics	1,675 second graders in 56 Swiss elementary schools
Race, ethnicities, and nationalities	Not reported
Population risk factors	45% of children had both parents of non-Swiss nationality

Study 2	
Timing	• Baseline 1 (before first year of elementary school) • Baseline 2 (end of first year of elementary school) • Post-intervention (end of second year of intervention) • 36-month follow-up (end of fourth year of elementary school) • 5-year follow-up • 7-year follow-up.
Child outcomes	• Reduced aggressive behaviour (36-month follow-up, teacher and parent-report) • Reduced impulsivity/ADHD (36-month follow-up, teacher report) • Reduced police contact (5-year follow-up, child report).
Other outcomes	None
Study Rating	2+
Citations	**Study 2a:** Malti, T., Ribeaud, D. & Eisner, M. P. (2011) The effectiveness of two universal preventive interventions in reducing children's externalizing behavior: A cluster randomized controlled trial. *Journal of Child Clinical and Adolescent Psychology*. 40, 677–692. **Study 2b:** Averdijk, M., Zirk-Sadowski, J., Ribeaud, D. & Eisner, M. (2016) Long-term effects of two childhood psychosocial interventions on adolescent delinquency, substance use, and antisocial behavior: A cluster randomized controlled trial. *Journal of Experimental Criminology*. 12, 21–47.

Brief summary

Population characteristics

This study involved 1,675 first-grade children (age 7) attending 56 elementary schools in Zurich, Switzerland. At time of receiving PATHS intervention children were in second grade (age 8). 52% were boys.

Study design

This study was a four-arm cluster RCT. 14 blocks of four schools of similar size and from the same school district were created, and schools from within each block were randomly allocated by computer generated randomisation to one of the three intervention conditions or the control condition. 14 schools (442 children) were randomly assigned to receive the PATHS intervention, 14 (422) to receive the Triple P intervention, 14 (397) to receive both Triple P and PATHS interventions and 14 (414) to a control condition. Results reported here are taken from the PATHS and control group comparison only.

Triple P was delivered to the Triple P groups between baseline (T1) and the end of the first year of elementary school (T2); PATHS was delivered between the end of first year of elementary school (T2) and the second year of elementary school (T3).

There were no statistically significant baseline differences on any teacher, parent or child outcome measures across treatment conditions.

Measurement

Assessments took place at baseline (T1), baseline 2 (end of first year of elementary school, T2), 1-year follow-up (end of second year of elementary school, T3), and 3-year follow-up (T4). Note that teacher measurements at T4 were completed by new teachers due to children changing class at this timepoint; T4 teachers were blinded to treatment conditions.

Baseline 1 (T1)

- **Child report** measures included the Social Behavior Questionnaire (SBQ).
- **Parent report** measures included the Social Behavior Questionnaire (SBQ).
- **Teacher report** measures included the Social Behavior Questionnaire (SBQ) and seven deviance items.
- **Researcher-led** assessments included coded observations of responses to hypothetical vignettes assessing social-cognitive skills adapted from Crick and Dodge (1996) by two independent coders.

Baseline 2 (T2)

- **Child report** measures included the Social Behavior Questionnaire (SBQ) shortened version excluding the Impulsivity/ADHD subscale.
- **Parent report** measures included the Social Behavior Questionnaire (SBQ) shortened version excluding the Impulsivity/ADHD subscale.
- **Teacher report** measures included the Social Behavior Questionnaire (SBQ) shortened version excluding the Impulsivity/ADHD subscale.

Post-intervention (12 months post-baseline 2; T3)

- **Child report** measures included the Social Behavior Questionnaire (SBQ).
- **Parent report** measures included the Social Behavior Questionnaire (SBQ).
- **Teacher report** measures included the Social Behavior Questionnaire (SBQ).
- **Researcher-led** assessments included coded observations of responses to hypothetical vignettes assessing social-cognitive skills adapted from Crick and Dodge (1996) by two independent coders.

36 months post-baseline-2 (T4)

- **Child report** measures included the Social Behavior Questionnaire (SBQ) shortened version excluding the Impulsivity/ADHD subscale.
- **Parent report** measures included the Social Behavior Questionnaire (SBQ) shortened version excluding the Impulsivity/ADHD subscale.
- **Teacher report** measures included the Social Behavior Questionnaire (SBQ) shortened version excluding the Impulsivity/ADHD subscale.

5-year and 7-year follow-ups

- **Child report** measures included the Social Behavior Questionnaire (SBQ), an eight-item conflict resolution scale adapted from Wetzels et al. (2001), 15 delinquency items with follow-up items assessing self-reported prevalence of police contact due to each type of delinquency, a peer-aggression scale derived from Olweus (1993), and four items measuring substance use in the past year.
- **Teacher report** measures included the Social Behavior Questionnaire (SBQ), seven items measuring deviance.

Study retention

Note that children entered as well as left study classrooms and assessment; as a result, we have calculated retention against the total sample size as opposed to the sample size at baseline 1, which was the point of initial allocation to groups.

Baseline 1

81.6% (1,367) of the total sample of children participated in the baseline 1 assessment, representing 81.4% (360) of PATHS only participants, 80.3% (339) of Triple-P only participants, 77.1% (306) of PATHS plus Triple-P participants, and 86.0% (356) of control.

Baseline 2

80.3% (1,345) of the total sample of children participated in the baseline 2 assessment, representing 85.3% (377) of PATHS only participants, 77.3% (326) of Triple-P only participants, 75.6% (300) of PATHS plus Triple-P participants, and 82.6% (342) of control.

Post-intervention

78.2% (1,310) of children participated in the baseline 2 assessment, representing 79.9% (353) of PATHS only participants, 76.1% (321) of Triple-P only participants, 74.6% (296) of PATHS plus Triple-P participants, and 82.1% (340) of control.

3-year follow-up

67.8% (1,135) of the total sample of children participated in the baseline 2 assessment, representing 70.4% (311) of PATHS only participants, 64.2% (271) of Triple-P only participants, 64.0% (254) of PATHS plus Triple-P participants, and 72.2% (299) of control.

5-year follow-up

69.1% (1,158) of the total sample of children participated in the baseline 2 assessment, representing 71.0% (314) of PATHS only participants, 68.2% (288) of Triple-P only participants, 63.7% (253) of PATHS plus Triple-P participants, and 73.2% (303) of control.

7-year follow-up

67.5% (1,131) of the total sample of children participated in the baseline 2 assessment, representing 70.0% (309) of PATHS only participants, 67.5% (285) of Triple-P only participants, 62.0% (246) of PATHS plus Triple-P participants, and 70.3% (291) of control.

Results

Data-analytic strategy

Hierarchical Linear modelling was used in Study 2a to assess the effects of the interventions on child externalising behaviour and social competence over time. Models incorporated three levels: data-collection wave (level 1), child (level 2), and school (level 3). Gender, special-education classes, nationality, and household SES were controlled for in all multilevel analyses. Multiple imputation was used to account for missing parent and child data using expectation maximisation method; multiple imputation was not used to account for missing teacher data due to lower levels of missing data (6%) and random distribution of missing data. An intent-to-treat approach was followed.

In Study 2b, random intercept multilevel models were used to assess the effects of the interventions on child outcomes. Missing data was handled using robust full-information maximum-likelihood estimation (FIML). Analysis was conducted using all available data points and repeated using only participants with baseline data and data from at least one of the 5- and 7-year follow-up assessments. Outcomes reported here are from the initial analysis with the complete dataset. An intent-to-treat approach was followed.

Findings

Study 2a found significant reductions for children in the PATHS group in teacher and parent-rated child aggressive behaviour at 36-month follow-up, and significant reductions in teacher rated impulsivity/ADHD. The effect of the PATHS intervention on teacher rated impulsivity/ADHD was moderated by baseline impulsivity/ADHD and was non-significant for children with low baseline scores.

Tests for effects of interventions immediately post-intervention (T3) were not significant and were not reported in the study.

Study 2b found a significant reduction in child reported police contact at the 5-year follow-up for children in the PATHS group compared to the control group, with a small effect size. All other 5- and 7-year follow-up outcomes were non-significant.

Limitations

This study is limited by levels of overall study attrition greater than 10% combined with lack of information about differences between study dropouts and completers, and an absence of analyses demonstrating that study attrition did not undermine the equivalence of study groups.

Study 2: Outcomes table

Outcome	Measure	Effect size	Statistical significance	Number of participants	Measurement time point
Child outcomes					
Aggressive Behaviour	SBQ (teacher report)	d = 0.42	Yes	716	36 months
Aggressive Behaviour	SBQ (parent report)	d=0.26	Yes	716	36 months
Aggressive Behaviour	SBQ (child report)	Not reported	No	716	36 months
Aggressive behaviour	SBQ (teacher report)	Not reported	No	1,580	5-year follow-up
Aggressive behaviour	SBQ (teacher report)	Not reported	No	1,580	7-year follow-up
Aggressive behaviour	SBQ (child report)	Not reported	No	1,580	5-year follow-up
Aggressive behaviour	SBQ (child report)	Not reported	No	1,580	7-year follow-up
Non-Aggressive Conduct Disorders	SBQ (teacher report)	Not reported	No	716	36 months
Non-Aggressive Conduct Disorders	SBQ (teacher report)	Not reported	No	1,580	5-year follow-up

Outcome	Measure	Effect size	Statistical significance	Number of participants	Measurement time point
Non-Aggressive Conduct Disorders	SBQ (teacher report)	Not reported	No	1,580	7-year follow-up
Impulsivity / ADHD	SBQ (teacher report)	d = 0.46	Yes	716	36 months
Impulsivity / ADHD	SBQ (parent report)	Not reported	No	716	36 months
Impulsivity / ADHD	SBQ (child report)	Not reported	No	716	36 months
Prosocial Behaviour	SBQ (teacher report)	Not reported	No	716	36 months
Prosocial Behaviour	SBQ (parent report)	Not reported	No	716	36 months
Prosocial Behaviour	SBQ (child report)	Not reported	No	716	36 months
Prosocial behaviour	SBQ (teacher report)	Not reported	No	1,580	5-year follow-up
Prosocial behaviour	SBQ (teacher report)	Not reported	No	1,580	7-year follow-up
Prosocial behaviour	SBQ (child report)	Not reported	No	1,580	5-year follow-up
Prosocial behaviour	SBQ (child report)	Not reported	No	1,580	7-year follow-up

Outcome	Measure	Effect size	Statistical significance	Number of participants	Measurement time point
Aggressive Problem Solving	coded responses to hypothetical vignettes (researcher assessment)	Not reported	No	716	Post-intervention (12 months post-baseline 2)
Socially Competent Problem Solving	coded responses to hypothetical vignettes (researcher assessment)	Not reported	No	716	Post-intervention (12 months post-baseline 2)
Delinquency	variety scale constructed from 15 delinquency items (child report)	Not reported	No	716	5-year follow-up
Delinquency	variety scale constructed from 15 delinquency items (child report)	Not reported	No	716	7-year follow-up
Delinquency	variety scale constructed from seven deviance items (teacher report)	Not reported	No	716	5-year follow-up
Delinquency	variety scale constructed from seven deviance items (teacher report)	Not reported	No	716	7-year follow-up

Outcome	Measure	Effect size	Statistical significance	Number of participants	Measurement time point
Police contact	prevalence score constructed from follow-up items to delinquency measure (child report)	d=-0.157	Yes	716	5-year follow-up
Police contact	prevalence score constructed from follow-up items to delinquency measure (child report)	Not reported	No	716	7-year follow-up
Substance use	variety scale constructed from four substance use items (child report)	Not reported	No	716	5-year follow-up
Substance use	variety scale constructed from four substance use items (child report)	Not reported	No	716	7-year follow-up
Substance use	variety scale constructed from a subset of the delinquency items (teacher report)	Not reported	No	716	5-year follow-up
Substance use	variety scale constructed from a subset of the delinquency items (teacher report)	Not reported	No	716	7-year follow-up

Outcome	Measure	Effect size	Statistical significance	Number of participants	Measurement time point
Peer aggression	peer aggression scale derived from Olweus (1993) (child report)	Not reported	No	716	5-year follow-up
Peer aggression	peer aggression scale derived from Olweus (1993) (child report)	Not reported	No	716	7-year follow-up
Aggressive conflict resolution	conflict resolution scale adapted from Wetzels et al. (2001) (child report)	Not reported	No	716	5-year follow-up
Aggressive conflict resolution	conflict resolution scale adapted from Wetzels et al. (2001) (child report)	Not reported	No	716	7-year follow-up
Competent conflict resolution	conflict resolution scale adapted from Wetzels et al. (2001) (child report)	Not reported	No	716	5-year follow-up
Competent conflict resolution	conflict resolution scale adapted from Wetzels et al. (2001) (child report)	Not reported	No	716	7-year follow-up

Other studies

The following studies were identified for this intervention but did not count towards the intervention's overall evidence rating. An intervention receives the same rating as its most robust study or studies.

Barnardo's. (2015) *PATHS® programme for children in Northern Ireland: Executive summary*.

Conduct Problems Prevention Research Group. (2010) The effects of a multiyear universal social-emotional learning program: The role of student and school characteristics. *Journal of Consulting and Continuing Psychology*. 78 (2), 156–168.

Goossens, F., Gooren, E., de Castro, B. O., Van Overveld, K., Buijs, G., Monshouwer, K., ... & Paulussen, T. (2012) Implementation of PATHS through Dutch municipal health services: A quasi-experiment. *International Journal of Conflict and Violence*. 6 (2), 234–248.

Greenberg, M. T., Kusche, C. A., Cook, E. T. & Quamma, J. P. (1995) Promoting emotional competence in school-aged children: The effects of the PATHS Curriculum. *Development and Psychopathology*. 7, 117–136.

Greenberg, M. T. & Kusché, C. A. (1998) Preventive intervention for school-aged deaf children: The PATHS Curriculum. *Journal of Deaf Studies and Deaf Education*. 3, 49–63.

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Humphrey, N., Barlow, A., Wigelsworth, M., Lendrum, A., Pert, K., Joyce, C., ... & Calam, R. (2016) A cluster randomized controlled trial of the Promoting Alternative Thinking Strategies (PATHS) curriculum. *Journal of School Psychology*. 58, 73–89.

Kam, C., Greenberg, M. T. & Kusché, C. A. (2004) Sustained effects of the PATHS Curriculum on the social and psychological adjustment of children in special education. *Journal of Emotional and Behavioral Disorders*. 12, 66–78.

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Little, M., Berry, V., Morpeth, L., Blower, S., Axford, N., Taylor, R., Bywater, T., Lehtonen, M. & Tobin, K. (2012) The impact of three evidence-based programmes delivered in public systems in Birmingham, UK. *International Journal of Conflict and Violence*. 6 (2), 260–272.

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McMahon, R. J. & Canal, N. (1999) Initial impact of the fast track prevention trial for conduct problems: II. Classroom effects. *Journal of Consulting and Clinical Psychology*. 67 (5), 648–657.

Novak, M., Mihic, J., Bašic, J. & Nix, R. L (2017) PATHS in Croatia: A school-based randomised-controlled trial of a social and emotional learning curriculum. *International Journal of Psychology*. 52 (20), 87–95.

Schonfeld, D. J., Adams, R. E., Fredstrom, B. K., Weissberg, R. P., Gilman, R., Voyce, C., Tomlin, R., … Speese-Linehan, D. (2015) Cluster-randomized trial demonstrating impact on academic achievement of elementary social-emotional learning. *School Psychology Quarterly*. 30, 406–420.

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Note on provider involvement: This provider has agreed to Foundations' terms of reference (or the Early Intervention Foundation's terms of reference), and the assessment has been conducted and published with the full cooperation of the intervention provider.