Name of Program/Strategy: <u>Promoting Alternative</u> <u>Thinking Strategies (PATHS), PATHS Preschool</u>

Report Contents

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1. Overview and description

Promoting Alternative THinking Strategies (PATHS) and PATHS Preschool are school-based preventive interventions for children in elementary school or preschool. The interventions are designed to enhance areas of social-emotional development such as self-control, self-esteem, emotional awareness, social skills, friendships, and interpersonal problem-solving skills while reducing aggression and other behavior problems. Skill concepts are presented through direct instruction, discussion, modeling, storytelling, role-playing activities, and video presentations. The elementary school PATHS Curriculum is available in two units: the PATHS Turtle Unit for kindergarten and the PATHS Basic Kit for grades 1-6. The curriculum includes 131 20- to 30-minute lessons designed to be taught by regular classroom teachers approximately 3 times per week over the course of a school year. PATHS Preschool, an adaptation of PATHS for children 3 to 5 years old, is designed to be implemented over a 2-year period. Its lessons and activities highlight writing, reading, storytelling, singing, drawing, science, and math concepts and help students build the critical cognitive skills necessary for school readiness and academic success. The PATHS Preschool program can be integrated into existing learning environments and adapted to suit individual classroom needs.

2. Implementation considerations (if available)

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3. Descriptive Information

Areas of Interest	Mental health promotion
	Substance abuse prevention
Outcomes	1: Emotional knowledge
	2: Internalizing behaviors
	3: Externalizing behaviors
	4: Depression
	5: Neuro-cognitive capacity
	6: Learning environment
	7: Social-emotional competence
Outcome Categories	Education
	Family/relationships
	Mental health
	Social functioning
Ages	0-5 (Early childhood)
	6-12 (Childhood)
Genders	Male
	Female
Races/Ethnicities	American Indian or Alaska Native
	Asian
	Black or African American
	Hispanic or Latino
	White
	Race/ethnicity unspecified
Settings	School
Geographic Locations	Urban
	Suburban
	Rural and/or frontier
Implementation History	Since its development in the early 1980s, PATHS has been delivered to an estimated 865,600 students in all 50 States, the District of Columbia, Puerto Rico, the U.S. Virgin Islands, and internationally in an estimated 10,500 classrooms. PATHS has been used in a variety of schools, including those for children with special needs (e.g., deafness, learning disabilities, autism spectrum disorders). Outside the United States, PATHS has been implemented in Australia, Belgium, Bermuda, Brazil, Canada, Croatia, Czech Republic, England,

	Germany, Greece, Hong Kong, Iceland, Ireland, Israel, Japan, Mexico, the Netherlands, New Zealand, Norway, Peru, the Philippines, Scotland, Singapore, South Africa, South Korea, Switzerland, Taiwan, and Wales. Since its development in 2005, PATHS Preschool has been implemented in 45 States and the District of Columbia. Outside the United States, PATHS Preschool has been implemented in Argentina, Australia, Canada, Chile, England, France, Greece, Hong Kong, Ireland, Israel, Jamaica, the Netherlands, Poland, Scotland, Singapore, Taiwan, Turkey, and Wales. The intervention has reached an estimated 4,600 classrooms and at least 63,500 children.
NIH Funding/CER Studies	Partially/fully funded by National Institutes of Health: Yes Evaluated in comparative effectiveness research studies: No
Adaptations	PATHS materials have been translated into Croatian, Dutch, French, German, Greek, Hebrew, Spanish, and Welsh. Parent materials are available in Spanish. PATHS has been adapted for use with afterschool programs in Kansas, New York, Ohio, Pennsylvania, Washington, and West Virginia. Preschool PATHS has been translated into Dutch, Korean, and Spanish and has been successfully adapted for use in Head Start programs in Pennsylvania, where it has been tested in a randomized trial at two sites.
Adverse Effects	No adverse effects, concerns, or unintended consequences were identified by the applicant.
IOM Prevention Categories	Universal

4. Outcomes

Outcome 1: Emotional knowledge

Description of Measures	In one study, the Kusché Affective InterviewRevised (KAI-R) was used to assess understanding of emotions and ability to provide examples of personal experience with different emotions. Five domains of emotional understanding were assessed among 2nd- and 3rd-grade children in regular education and special education classrooms: (1) ability to discuss one's own emotional experiences, (2) cues used to recognize emotions, (3) issues regarding the simultaneity of emotions, (4) display rules for emotions, and (5) whether and how emotions can change.
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	In another study, the revised version of the 30-item Recognition of Emotion Concepts subtest from the Kusché Emotional Inventory was used to assess preschool children's receptive emotion vocabulary. For each item, children were presented with four cartoon drawings and asked to identify the picture that corresponded to the emotion named by the interviewer.
	In the same study, the Assessment of Children's Emotions Scales (ACES) was used to assess preschool children's emotion expression knowledge and to determine whether they exhibited any anger bias. Children were presented with 12 photos of elementary school-aged children posing with various facial expressions and were asked how each child in the photos felt. The emotion accuracy score reflected how many items a child answered correctly. The anger bias score was the percentage of time children incorrectly identified the faces as displaying anger.
Key Findings	Children in special education and regular education classrooms who received PATHS showed improvements relative to children in comparison schools in several areas, including affective vocabulary range (p < .001); ability to provide appropriate personal examples of the experience of basic feelings (p < .001); beliefs that they can hide, manage, and change their feelings (p < .001); and understanding of cues for recognizing feelings in others (p < .01). Among children in special education classrooms, those who received PATHS improved significantly relative to those in comparison schools in their understanding of how others manage and hide their feelings (p < .05) and how feelings can be changed (p < .01).
	Among children in regular education classrooms, the children exposed to PATHS experienced improved comprehension of complex feelings (i.e., proud, guilty, jealous, nervous/anxious, lonely) compared with children in classrooms without the intervention (p < .01).
	Preschool children who received the PATHS Preschool intervention demonstrated a larger receptive emotion vocabulary at posttest relative to children in comparison classrooms (p < .01). They also were more accurate in identifying feelings (p < .05). In addition, exposure to the intervention significantly reduced children's anger attribution bias (p < .01). Effect sizes for receptive emotion vocabulary, identification of feelings, and anger attribution bias were small (Cohen's d = 0.36, 0.37, and 0.40, respectively).

Studies Measuring Outcome	Study 1, Study 5
Study Designs	Experimental
Quality of Research Rating	2.5 (0.0-4.0 scale)

Outcome 2: Internalizing behaviors

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Description of Measures	Teachers of children in 2nd- and 3rd-grade regular education classrooms and 1st- through 3rd-grade special education classrooms rated their students' internalizing behavior symptomatology using the Child Behavior Checklist - Teacher Report Form (CBCL-TRF), a 118-item checklist of behavioral and emotional problems commonly seen by teachers. The internalizing behaviors of preschool children were rated by teachers using the Problem Behavior Scale of the Preschool and Kindergarten Behavior Scales (PKBS), which includes two internalizing behavior subscales: Social Withdrawal and Anxiety/Somatic Problems. Items were rated on a 4-point scale from 0 (never true) to 3 (often true).
Key Findings	Teacher ratings of internalizing behaviors in children in special education classrooms who received a modified version of the PATHS Curriculum increased at a rate of 0.38 points per year over 3 years. In contrast, ratings of comparison group children increased at a much higher rate of 1.83 points per year over the same period (p < .05). The effect size for this finding was small (Cohen's d = 0.22).
	Children in regular education classrooms who participated in PATHS demonstrated fewer internalizing behaviors at 1-year follow-up than did comparison group children (p < .05).
	In one study, preschool children who were exposed to PATHS Preschool were significantly less likely at the end of the school year to be described by their teachers as anxious (rural study site only, $p < .01$) or withdrawn or lacking friends ($p < .05$) relative to children in comparison classrooms. The effect size for social withdrawal was small (Cohen's $d = 0.24$).
Studies Measuring Outcome	Study 2, Study 3, Study 5
Study Designs	Experimental
Quality of Research Rating	2.9 (0.0-4.0 scale)

Outcome 3: Externalizing behaviors

Nescription of Measures Key Findings	Children's externalizing behavior symptomatology was rated using teacher and peer reports. In two separate studies, teachers of children in 2nd- and 3rd-grade regular education classrooms and 1st- through 3rd-grade special education classrooms rated their students' externalizing behavior symptomatology using the CBCL-TRF. In another study conducted in high-risk schools (defined by estimated rates of delinquency and juvenile arrest in the neighborhoods), aggressive and hyperactive-disruptive behavior of children in 1st-grade classrooms were rated by peers using individual socio-metric interviews. The child raters were asked to name one or more students from their class who matched descriptions of children with aggressive and hyperactive-disruptive behavior. After the socio-metric scores for each classroom were corrected for the number of raters, the classroom mean scores for all children were standardized across the entire sample within each of the three cohorts of 1st-graders who received the intervention. Teacher ratings of externalizing behaviors in children in special education classrooms who received a modified version of the PATHS Curriculum decreased at a rate of 0.37 points per year over 3 years. In contrast, ratings of comparison children increased at a rate of 0.72 points per year over the same period (p < .05). The effect size for this finding was very small (Cohen's d = 0.18). Children in regular education classrooms who participated in PATHS demonstrated fewer externalizing behaviors at 1-year follow-up than did children in the comparison group (p < .05). Children in high-risk schools who received an adapted version of PATHS had lower average aggression and hyperactive-disruptive behavior scores than children in comparison classrooms (p = .03 and p = .02, respectively). Effect sizes for aggression and hyperactive-disruptive behavior were small (Cohen's d = 0.22 for both analyses).
Studies Measuring Outcome	Study 2, Study 3, Study 4
Study Designs	Experimental
Quality of Research Rating	2.9 (0.0-4.0 scale)
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Outcome 4: Depression

Description of Measures	Children in 1st- through 3rd-grade special education classrooms completed the Children's Depression Inventory (CDI), a 27-item self-report measure of depression. For each item, the child was asked to describe his or her feelings during the past 2 weeks, with three possible response options associated with scores of 0 (an absence of symptoms), 1 (mild symptoms), and 2 (definite symptoms). The total score could range from 0 to 54.
Key Findings	The depression scores reported by students who received a modified version of the PATHS Curriculum declined at a rate of 3.7 points per year over 2 years, whereas the scores for children in the comparison classrooms decreased at a rate of 0.85 points per year over the same period (p < .05). The effect size was small (Cohen's d = 0.49).
Studies Measuring Outcome	Study 2
Study Designs	Experimental
Quality of Research Rating	3.2 (0.0-4.0 scale)

Outcome 5: Neuro-cognitive capacity

Description of Measures	Inhibitory control and verbal fluency, neuro-cognitive abilities thought by developers to mediate social competence, were examined in children in 2nd- and 3rd-grade regular education classrooms. Inhibitory control was measured by the Stroop Test, in which the names of colors are presented in different colors of ink (e.g., the word "red" printed in blue ink). For each item, students were asked to ignore the word itself and identify the color of the ink in which the word was printed.
	The Verbal Fluency Subtest of the McCarthy Scales of Children's Abilities was used to assess verbal concept formation, logical classification, verbal expression, and creativity. Children were given 20 seconds to name as many items as they could in each of four common categories (things to eat, animals, things to wear, and things to ride).
Key Findings	Children who participated in the PATHS intervention demonstrated greater inhibitory control and verbal fluency at 1-year follow-up than did children in comparison classrooms (p < .01 for both analyses).

Studies Measuring Outcome	Study 3
Study Designs	Experimental
Quality of Research Rating	2.8 (0.0-4.0 scale)

Outcome 6: Learning environment

Description of Measures	For 30 minutes on 2 different days, trained, unbiased observers watched 1st-grade children previously identified as high risk (demonstrating the greatest degree of early conduct problems) in their classrooms. The classrooms were all in high-risk schools, defined by estimated rates of delinquency and juvenile arrest in the neighborhoods. To assess the quality of the classroom atmosphere, the observers rated 10 items derived from the Classroom Rating Form on a scale from 1 (low) to 5 (high): (1) level of disruption during academic time, (2) ability to handle classroom transitions, (3) ability to follow rules, (4) level of cooperation, (5) use of problem solving during conflict or need, (6) ability to express feelings appropriately, (7) level of interest and enthusiasm, (8) ability to stay focused and on task, (9) responsiveness to individual student's needs and feelings, and (10) level of criticism versus supportiveness. A mean score for each rating and a total classroom atmosphere score were computed for each classroom, with lower scores indicating a more positive atmosphere.
Key Findings	Classrooms exposed to an adapted version of the PATHS Curriculum were rated as having a more positive classroom atmosphere than comparison classrooms (p < .01). According to exploratory analyses, results on 4 of the 10 separate rating scales were statistically significant: ability to follow rules (p < .05), ability to express feelings appropriately (p < .05), level of interest and enthusiasm (p < .01), and ability to stay focused and on task (p < .005).
Studies Measuring Outcome	Study 4
Study Designs	Experimental
Quality of Research Rating	2.6 (0.0-4.0 scale)

Outcome 7: Social-emotional competence

Description of Measures	Social-emotional competence of preschool children was measured using both teacher and parent ratings. Teachers completed the Social Skills Scale of the PKBS. This 34-item scale describes adaptive or positive behaviors across three subscales: Social Cooperation, Social Interaction, and Social Independence. Parents completed the Head Start Competence Scale (HSCS), a 12-item measure of children's social and emotional skills that reflects interpersonal relationships and emotion regulation.
Key Findings	At posttest, teachers who taught the PATHS Preschool program described their students as significantly more cooperative (only for children with higher mean levels of verbal ability), emotionally aware, and interpersonally skilled than did teachers in the comparison classrooms (p < .0001 for the social skills composite score). The effect size for the composite social skills rating was small (Cohen's d = 0.48).
	Parents of preschool children who received the PATHS Preschool program described their children as significantly more socially and emotionally competent than did parents of children in comparison classrooms (p < .01). The effect size was small (Cohen's d = 0.36).
Studies Measuring Outcome	Study 5
Study Designs	Experimental
Quality of Research Rating	2.8 (0.0-4.0 scale)

5. Cost effectiveness report (Washington State Institute of Public Policy – if available)

Benefits minus cost, per participant
Return on Investment: Evidence-Based Options
to Improve Statewide Outcomes - July 2011
Update. Washington State Institute for Public
Policy, http://www.wsipp.wa.gov/rptfiles/11-07-1201.pdf.

Costs and Benefits of Prevention and Early Intervention Programs for At-Risk Youth: Interim Report – 2003. Washington State Institute for Public Policy,

http://www.wsipp.wa.gov/pub.asp?docid=03-12-3901.

According to the WSIPP study, this program strategy returns

\$1,348

in savings that would otherwise be associated with education, substance abuse, teen pregnancy, child abuse and neglect, or criminal justice system.

- **6. Washington State results** (from Performance Based Prevention System (PBPS) if available)
- 7. Where is this program/strategy being used (if available)?

Washington Counties	Oregon Counties

8. Study Populations

The studies reviewed for this intervention included the following populations, as reported by the study authors.

Study	Age	Gender	Race/Ethnicity
Study 1	6-12 (Childhood)	58.4% Male 41.6% Female	57.7% White 31.8% Black or African American 3.8% Asian 3.8% Race/ethnicity unspecified 2.4% American Indian or Alaska Native 0.3% Hispanic or Latino
Study 2	6-12 (Childhood)	72.9% Male 27.1% Female	66.2% White 20.3% Black or African American 13.5% Race/ethnicity unspecified
Study 3	6-12 (Childhood)	50% Female 50% Male	55% White 33% Black or African American 12% Race/ethnicity unspecified
Study 4	6-12 (Childhood)	Data not reported/available	Data not reported/available
Study 5	0-5 (Early childhood)	51.2% Female 48.8% Male	47% Black or African American 38% White 10% Hispanic or Latino 5% Race/ethnicity unspecified

9. Quality of Research

The documents below were reviewed for Quality of Research. Other materials may be available. For more information, contact the developer(s).

Study 1

Greenberg, M. T., Kusché, 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.

Study 2

Kam, C.-M., 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(2), 66-78.

Study 3

Riggs, N.R., Greenberg, M.T., Kusché, C.A., & Pentz, M.A. (2006). The meditational role of neurocognition in the behavioral outcomes of a social-emotional prevention program in elementary school students: Effects of the PATHS curriculum. Prevention Science, 7(1), 91-102.

Study 4

Conduct Problems Prevention Research Group. (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.

Study 5

Domitrovich, C. E., Cortes, R. C., & Greenberg, M. T. (2007). Improving young children's social and emotional competence: A randomized trial of the Preschool "PATHS" curriculum. Journal of Primary Prevention, 28, 67-91.

Supplementary Materials

Greenberg, M. T. (1996). The PATHS project: Preventive intervention for children. Final report to NIMH. Seattle: University of Washington, Department of Psychology.

Greenberg, M. T., & Kusché, C. A. (1998). Book 10. Promoting Alternative Thinking Strategies. In D.S. Elliott (Series Ed.), Blueprints for violence prevention. Boulder: University of Colorado, Boulder, Institute of Behavioral Science.

Kam, C.-M., Greenberg, M. T., & Walls, C. T. (2003). Examining the role of implementation quality in school-based prevention using the PATHS curriculum. Prevention Science, 4(1), 55-63.

Quality of Research Ratings by Criteria (0.0-4.0 scale)

External reviewers independently evaluate the Quality of Research for an intervention's reported results using six criteria:

- 1. Reliability of measures
- 2. Validity of measures
- 3. Intervention fidelity
- 4. Missing data and attrition
- 5. Potential confounding variables
- 6. Appropriateness of analysis

For more information about these criteria and the meaning of the ratings, see Quality of Research.

Outcome	Reliability of Measures	Validity of Measures	Fidelity	Missing Data/Attrition	Confounding Variables	Data Analysis	Overall Rating
1: Emotional knowledge	3.0	2.3	2.5	2.0	2.8	2.8	2.5
2: Internalizing behaviors	3.0	3.0	3.0	2.9	2.8	3.0	2.9
3: Externalizing behaviors	2.8	3.0	3.0	3.0	2.8	3.0	2.9
4: Depression	2.5	3.8	2.5	3.5	2.8	3.0	3.2
5: Neuro-cognitive capacity	2.5	2.5	3.0	2.5	2.8	3.3	2.8
6: Learning Environment	2.5	2.3	2.8	2.3	2.8	3.0	2.6
7: Social-emotional competence	3.3	2.8	3.0	2.0	3.0	3.0	2.8

Study Strengths

The studies used a randomized control group design and a multi-method assessment strategy that included interviews, observation, and teacher ratings. Most of the measures used are well known and have established psychometric properties. Teachers were provided training, and project staff observed and consulted with the teachers each week. Instruments were used to monitor and track intervention fidelity. Most teachers were rated as doing an "adequate or better" job in using the curriculum, and the mean number of lessons taught indicates that most teachers administered the whole curriculum. Attrition and missing data varied across the studies but were addressed with statistical methods. Cross-rater estimates used in several of the studies showed that the intervention affected the study's findings. Analytic methods appear to have been appropriate.

Study Weaknesses

The studies did not adequately address the validity of the socio-metric interviews. Teachers made modifications to the intervention, but those modifications and their effects are not clear. Most of the

children in special education classrooms completed only a small number of problem-solving lessons. There were some problems with attrition, largely due to children moving during the school year.

10. Readiness for Dissemination

The documents below were reviewed for Readiness for Dissemination. Other materials may be available. For more information, contact the developer(s).

Dissemination Materials

Domitrovich, C., Greenberg, M., Kusché, C., & Cortes, R. (2004). PATHS Preschool (Vols. 1 and 2). South Deerfield, MA: Channing Bete Company.

Domitrovich, C., Greenberg, M., Kusché, C., & Cortes, R. (2004). PATHS Preschool: Instructor's manual. South Deerfield, MA: Channing Bete Company.

Kusché, C., & Greenberg, M. (1994). The PATHS curriculum: Instructor's manual. South Deerfield, MA: Channing Bete Company.

Kusché, C., & Greenberg, M. (1994). The PATHS curriculum: Vols. 1-3. Feelings and relationships unit. South Deerfield, MA: Channing Bete Company.

Kusché, C., & Greenberg, M. (1994). The PATHS curriculum: Vol. 4. Problem-solving unit. South Deerfield, MA: Channing Bete Company.

Kusché, C., & Greenberg, M. (1994). The PATHS curriculum: Vol. 5. Supplemental unit. South Deerfield, MA: Channing Bete Company.

Kusché, C., & Greenberg, M. (2005). PATHS evaluation kit. South Deerfield, MA: Channing Bete Company.

PATHS materials catalog PATHS Preschool Photo Pack PATHS Program Preview Kit

Program online preview, http://www.channing-bete.com/prevention-programs/paths/preview-intropaths.php and http://www.channing-bete.com/prevention-programs/paths-preschool/preview-intropaths-pre.php

Program Web sites, http://www.channing-bete.com/paths and http://www.channing-bete.com/pathspreschool

Turtle hand puppet

Readiness for Dissemination Ratings by Criteria (0.0-4.0 scale)

External reviewers independently evaluate the intervention's Readiness for Dissemination using three criteria:

- 1. Availability of implementation materials
- 2. Availability of training and support resources
- 3. Availability of quality assurance procedures

For more information about these criteria and the meaning of the ratings, see Readiness for Dissemination.

Implementation Materials	Training and Support Resources	Quality Assurance Procedures	Overall Rating
4.0	3.3	3.5	3.6

Dissemination Strengths

The program materials include everything that an individual or school would need to implement the program, with detailed instructions for using each component as well as creative supplemental materials to engage children and families. On-site, individualized training is available for implementation sites to help them tailor the program to the local culture and identify and address local needs, strengths, and barriers to implementation. An evaluation kit is provided to support quality assurance.

Dissemination Weaknesses

Training is available for a fee but is not required. No initial or continuing education is available that brings together implementers from different sites for networking or peer-to-peer learning opportunities. No guidance is provided for interpreting and using the information derived from process evaluation measures to support quality assurance. Materials also do not include any tools for assessing the satisfaction or perceptions of parents.

11. Costs

The information below was provided by the developer and may have changed since the time of review. For detailed information on implementation costs (e.g., staffing, space, equipment, materials shipping and handling), contact the developer.

Item Description	Cost	Required by Program Developer
Complete elementary school curriculum (includes Turtle Unit for kindergarten, Basic Kit for grades 1-6, and PATHS evaluation kit)	\$799 each	Yes
Additional Turtle Unit for kindergarten (includes PATHS evaluation kit)	\$209 each	No
Additional Basic Kit for grades 1-6 (includes PATHS evaluation kit)	\$699 each	No

PATHS Preschool Kit for ages 3-5 (includes PATHS Preschool evaluation kit)	\$479 each	Yes
2-day, on-site workshop	\$4,000 for up to 30 participants, plus travel expenses	No
Phone and email consultation	\$75 per hour	No
On-site technical assistance	\$2,000 per day plus travel expenses	No

Additional Information

Discounts are available for 10 or more curriculum kits.

12. Contacts

For information on implementation:

Channing Bete Company, Inc. (877) 896-8532 custsvcs@channing-bete.com

Carol A. Kusché, Ph.D. (206) 323-6688 ckusche@comcast.net

Dorothy Morelli (615) 364-6606 dorothygm@hotmail.com

Celene E. Domitrovich, Ph.D. (814) 865-2616 cxd130@psu.edu

For information on research:

Mark T. Greenberg, Ph.D. (814) 863-0112 mxg47@psu.edu

Learn More by Visiting:

http://www.channing-bete.com/paths

http://www.channing-bete.com/pathspreschool

http://www.prevention.psu.edu/projects/paths.html.