

# Project CATALYZE:

## The Impact of CARE + PATHS on Students' Success

### TABLE OF CONTENTS

A.	SIGNIFICANCE.....	1
	A.1 EIR Program Priorities.....	1
	A.2 National Significance.....	1
	A.3 Rationale: Conceptual Framework. ....	2
	A.4 A Promising New Strategy. ....	4
	A.5 Social-Emotional Skills and Academic Achievement. ....	5
	A.6 Promoting Alternative THinking Strategies (PATHS).....	6
	A.7 Teacher Stress and Social and Emotional Competence.....	7
	A.8 The CARE Intervention. ....	8
	A.9 Implementation Research. ....	11
B.	PROJECT DESIGN AND MANAGEMENT PLAN.....	11
	B.1 Project Design.....	11
	B.1 Goals, Objectives, and Outcomes. ....	12
	B.2 Management Plan.....	13
	B.3 Dissemination of Findings. ....	19
C.	PROJECT EVALUATION.....	19
	C.1 Overview of Evaluation Criteria. ....	19
	C.2 Research Questions. ....	20
	C.3 Design Overview.....	21
	C.4 Sampling Plan. ....	22
	C.5 Implementation Fidelity.....	23
	C.6 Outcome Measurement & Data Collection Schedule. ....	24
	C.7 Analytic Methods.....	24

Note: Project Narrative references may be found in Appendix J

## **A. SIGNIFICANCE**

**A.1 EIR Program Priorities.** The U.S. Department of Education’s EIR Program offers an extraordinary opportunity to improve academic and behavioral outcomes for students in the nation’s lowest-performing schools. Although persistently low-achieving schools have experienced years of intensive school improvement planning, many have not shown sufficient progress on student outcomes. This project is fully aligned with the EIR Early-Phase program, addressing *Absolute Priority 1—Demonstrates a Rationale* and *Absolute Priority 2—Field Initiated Innovations-General* by implementing and testing the catalytic effect of two scientifically validated interventions to improve student outcomes.

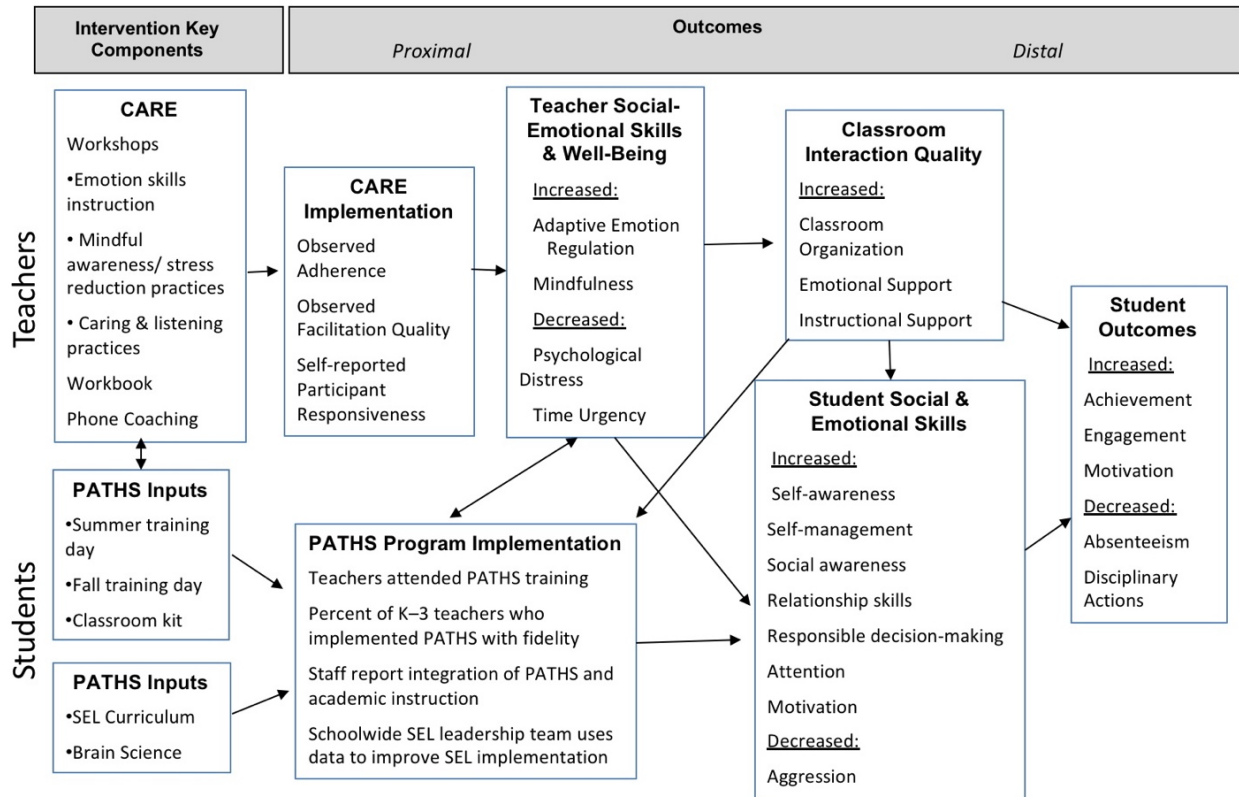
**A.2 National Significance.** In SY 2014–15 more than 100,000 public schools serving over 25 million children across the United States were eligible for Title I funds because they serve high numbers of children from low-income families. Despite continuing efforts, progress on student outcomes is insufficient. One important reason is students’ lack of the cognitive and non-cognitive skills essential to school achievement. Critical to learning are executive function (EF) skills involving deployment of attention, inhibition, and working-memory. Among the key non-cognitive skills are social-emotional skills because they are essential to persistence, motivation, and engagement in learning. Our understanding of SEL skills is derived from a large body of research. The term social-emotional learning (SEL) refers to the process of acquiring and mastering self-awareness, self-management, social awareness, relationship skills and responsible decision-making.

We argue that no turnaround strategy can be optimally successful or sustainable until students are fully engaged and connected to school. Students, particularly in low-performing schools, must be taught foundational skills that support productive engagement in their school work and healthy relationships with teachers and peers. Nurturing SEL skills is a pathway to

higher achievement because these factors promote resilience.<sup>1</sup> The PATHS<sup>®</sup> Curriculum is one classroom-based SEL program that has been empirically proven to promote social-emotional skills, positive peer relationships, engagement and learning.<sup>2</sup> Unfortunately, the professional capacity among teachers in most low-performing schools is often not sufficient to support the high-quality implementation of SEL programs such as PATHS that is necessary to optimize these outcomes.<sup>3</sup> Teachers' own social-emotional competence is required to not only deliver the SEL curriculum but to model such skills and engage in classroom processes that support quality instruction, effective pedagogy, and SEL.<sup>4</sup> A primary factor that can interfere with the deployment of social, emotional, and cognitive skills of both teachers and students is stress.<sup>5</sup> Low-performing schools are often embedded in neighborhoods that are affected by poverty, crime, and trauma creating a high level of chronic stress.<sup>6</sup> When teachers have strong social-emotional skills and can build supportive relationships in addition to delivering an evidence-based curriculum, the program may be more effective in supporting students' outcomes.<sup>4</sup> Students with strong SEL skills and feelings of connection with their teachers and peers are more likely to manage their stress effectively and use their EF to engage in instruction and learn successfully. Therefore, we hypothesize that programming to support teachers' social-emotional skills will improve the implementation quality and effectiveness of SEL programs, especially in low performing schools. The CARE Program, which has proven to improve teachers' social-emotional skills, classroom interactions,<sup>7</sup> and student engagement, motivation and reading competence<sup>8</sup> will be used to test this hypothesis. **A.3 Rationale: Conceptual Framework.** The proposed project aims to implement a strong SEL program in Grades 1–3 of Chicago Public Schools (CPS) elementary schools and, in half of those schools, we will also implement a program for teacher support, At the nexus of these two we will examine how together they may boost student outcomes. As shown in the Project CATALYZE conceptual framework (Figure 1),

we hypothesize that building teachers’ capacity with the CARE Program will enhance (a) teachers’ SEL skills and well-being, (b) the implementation quality of the PATHS curriculum, (c) and the quality of classroom interactions. These improvements will lead to (d) improvements in students’ SEL skills, engagement, motivation, and academic achievement.

Figure 1. Project CATALYZE Conceptual Framework



Replicating previous findings,<sup>7</sup> we hypothesize that Grade 1–3 teachers in schools who receive the CARE program implemented with 80% fidelity will demonstrate improvements in self-reported emotion regulation and mindfulness and reductions in psychological distress and time urgency. Further, classrooms of CARE teachers will be rated by independent observers as having more effective classroom organization and be more emotionally and instructionally supportive than control classrooms. These teacher and classroom outcomes will enhance the quality of PATHS curriculum implementation, compared to control teachers who receive only standard

PATHS training. The combined catalytic effect of CARE + PATHS will lead to higher-quality PATHS implementation, improved teacher social-emotional skills, and improved classroom interactions that will result in improved student SEL leading to improvements in engagement, motivation and academic achievement and reductions in absenteeism and disciplinary actions, compared to controls receiving PATHS only.

**A.4 A Promising New Strategy.** Project CATALYZE involves the demonstration of a promising new strategy by testing the catalytic impact of combining two existing programs (one for teachers and one for students) that have been shown to improve student outcomes independently. This project is particularly significant because it represents a model of implementation science, the next generation of SEL programming and Type II translational research. *As far as we are aware, this is the first attempt ever to evaluate whether supporting the SEL skill development of the education workforce provides additional benefit beyond that of using only a student-focused SEL curriculum.* Further, we conduct this research in low-performing schools where both students and teachers are likely to experience chronic stress and adversity that, without appropriate support, can compromise teaching and learning. We hypothesize, based on previous RCTs of both PATHS and CARE, that this combined approach of boosting teachers' social-emotional competence and improving classroom interactions is powerful enough to boost achievement in students attending persistently low-performing schools. The research team and institutions included in this proposal have the experience, effective working partnerships, and qualifications to carry out the project. The independence of the evaluation ensures that the results will be unbiased, making any positive findings all the more compelling and significant. The proposed study will expand scientific knowledge about evidence-based SEL practice in schools and its impacts on academic outcomes. It will ultimately serve substantially larger numbers of students by validating a replicable, schoolwide model for maximizing the effect of evidence-based universal SEL

programs by incorporating support for teachers' well-being and social-emotional skills. *Although classroom-based SEL programs can enhance students' persistence, engagement, mental health, and academic performance, we hypothesize that a coordinated, more comprehensive approach that combines classroom-based SEL with social and emotional support for teachers will be a more effective strategy that will result in improved academic outcomes.*

**A.5 Social-Emotional Skills and Academic Achievement.** There is increasing evidence that SEL skills undergird the behaviors that promote engaged learning and long-term academic success.<sup>9-13</sup> Students who become more self-aware and confident about their learning abilities try harder in school.<sup>14</sup> Students who set high academic goals, have self-discipline, motivate themselves, manage their stress, and organize their approach to work learn more and get better grades.<sup>15,16</sup> Also, students who use problem-solving skills to overcome obstacles and make responsible decisions about studying and completing homework do better academically.<sup>17</sup> Further, neuroscience suggests that SEL programs may improve EF skills by building greater cognitive-affective regulation in pre-frontal areas of the cortex.<sup>18</sup> In addition to student-centered explanations for higher academic performance, interpersonal, instructional, and environmental factors can support achievement by creating a positive classroom and school climate that promotes student SEL engagement, and learning. These supports include high expectations and support for academic success; caring teacher-student relationships; commitment to school and peers; and teaching that creates safe and orderly environments.<sup>7, 19-21</sup> It is likely that a combination of improvements in student SEL skills, the school environment, teacher practices and expectations, and student-teacher relationships can contribute to students' behavior change and academic performance.<sup>22,23</sup> A meta-analytic review<sup>2</sup> of 213 studies (270,034 students) examined the effects of SEL programs across diverse student outcomes and concluded that students exposed to an SEL intervention demonstrated enhanced motivation, positive social

behaviors, fewer conduct problems, and less emotional distress (effect sizes 0.22–0.57). Further, academic performance was significantly improved, with mean effect sizes for test scores of 0.27, which translated to an 11 percentile point improvement on standardized achievement scores. Recently, a meta-analysis of follow-up studies (6 months to 18 years later) of 82 SEL interventions (97,000 students) found the benefits of SEL programs to be durable over time and across diverse samples.<sup>24</sup> A separate study showed an excellent return on investment for six evidence-based SEL programs (five of which were elementary); specifically, there was an 11 dollar return for every dollar invested.<sup>25</sup>

**A.6 Promoting Alternative Thinking Strategies (PATHS).** PATHS<sup>23</sup> is one of the most extensively researched and effectively replicated classroom-based SEL programs available to schools.<sup>26</sup> Numerous federal agencies and registries have identified PATHS as an effective program, and it is recognized as a proven program by the stringent criteria of the Blueprints for Healthy Youth Development. PATHS provides teachers at each grade level with a scope and sequence of lessons that directly teach SEL skills. It also includes daily practices to promote skill generalization and teaching strategies to create a positive classroom climate and help teachers integrate the curriculum with other areas of instruction (e.g., language arts, social studies and science). Results from efficacy trials indicate that PATHS leads to significant improvements in children’s emotional understanding, self-control, frustration tolerance, and social problem-solving skills.<sup>27–30</sup> PATHS also shows effects on cognitive outcomes, with several studies showing significant improvement in EF, inhibitory control, working memory, efficiency of problem-solving, and planning ability compared to controls. The skills children gain from PATHS facilitate positive coping, classroom behavior, and academic engagement.<sup>31–34</sup>

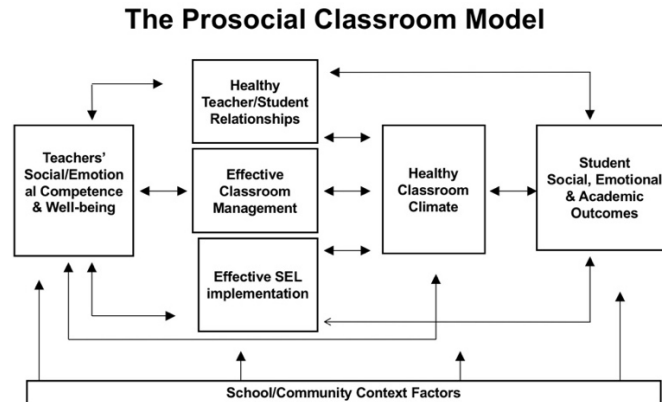
*General Education Provisions Act (GEPA) Requirement for Equitable Access.* The PATHS curriculum has been translated in 27 languages and used in 35 countries. It has been

used with diverse populations and the replication of research results has been consistent in urban and rural settings. PATHS appeals to all students and is designed to address diverse needs of children through scripted lessons dealing with issues such as stereotypes, rejection, inclusion, bullying, friendships, and other topics pertinent to supporting children of all backgrounds. Students are taught to express their emotions in an appropriate manner and use problem solving skills. Novels and biographies are used to highlight diversity among people and settings. A service learning project helps students learn to work together. PATHS Education Worldwide (PEW) provides training to administrators, teachers, and counselors that helps them understand how best to differentiate for all student needs. These trainings also encourage whole school community participation. Materials used throughout the curriculum and parent letters/home activities are available in Spanish.

**A.7 Teacher Stress and Social and Emotional Competence.** Teacher stress and the resulting attrition affect student behavior and achievement,<sup>35,36</sup> particularly among high-poverty schools where both stress and attrition levels are the highest.<sup>37</sup> Teachers experiencing high levels of stress and frustration may transmit these feelings directly to students via “stress-contagion.”<sup>39-41</sup> Jennings and Greenberg presented the prosocial classroom theoretical model (Figure 2) and proposed that certain social-emotional competences support teachers’ ability to cope with the demands of teaching and prevent burnout.<sup>4</sup> According to the model, when teachers lack the social-emotional competences required to manage the demands of teaching, their well-being erodes and leads to a deterioration of the classroom climate, triggering a “burnout cascade” (p. 492).<sup>4</sup> In contrast, teachers with higher levels of these competences are able to better cope with the demands of the classroom, maintain a positive classroom climate, build and maintain supportive relationships with their students, and establish consistent classroom interactions that promote student learning.



Figure 2. The Prosocial Classroom Model<sup>4</sup>



**A.8 The CARE Intervention.** Cultivating Awareness and Resilience in Education (CARE) is a comprehensive manualized professional learning (PL) program designed to promote and support teachers’ SEL and well-being via training in: (a) Emotion Skills Instruction, (b) Mindfulness/Stress Management, and (c) Caring & Listening Practices (see Appendix K). CARE involves 30 hours of group instruction, presented as a series of five 6-hour sessions over the course of a school year. Following best practices in adult learning, CARE introduces material sequentially, using a blend of didactic, experiential and interactive learning processes.<sup>38</sup>

*Emotion Skills Instruction.* Emotional exhaustion is a major contributor to teacher burnout and often interferes with the ability to provide instructional and emotional support.<sup>4</sup> CARE combines didactic instruction with experiential activities to help teachers understand, recognize, and regulate emotional responses in the classroom. Teachers learn the brain science associated with the stress response, which prepares them to teach this content to their students. Reflective practices and role-plays support teachers’ recognition of emotional states and their exploration of their habitual emotional patterns, tendencies, and reactivity profile. Self-induction of positive emotions is introduced as a tool for promoting well-being and resilience.

*Mindfulness/Stress Reduction Practices.* Mindfulness-based practices promote psychological flexibility and the ability to reflect upon one’s experiences from a broader

perspective, resulting in reduced stress and improved coping in stressful situations.<sup>42</sup> Such strategies reduce automatic, reactive appraisals of student behavior that contribute to emotional exhaustion<sup>43</sup> and support a mental set associated with effective classroom management. CARE introduces mindfulness practices beginning with short periods of silent reflection, body awareness, or breath awareness and extend to activities that bring mindfulness into aspects of daily living such as eating, walking, and listening to others. Through these activities, teachers bring greater awareness into the classroom and modulate their physical/emotional state thus improving their relationships with students, classroom management, and instructional practices.

*Caring and Listening Practices.* To promote empathy and compassion, CARE introduces “caring practice” and “mindful listening.” Caring practice involves a silent reflection during which one generates feelings of kindness and compassion by mentally offering well-being, happiness, and peace—first to oneself, then to a loved one, then to a neutral colleague or acquaintance, and finally to a person who one finds challenging. Practiced over time, this activity produces increases in daily experiences of positive emotions, which contribute to greater life satisfaction, and decreased illness and depressive symptoms.<sup>44</sup>

*CARE Delivery Model.* CARE is typically delivered in three, 1–2-day sessions during the Fall semester followed by a 1-day booster session in the Spring (the CARE Program Schedule is provided in Appendix K). Between sessions, facilitators provide weekly coaching sessions by phone or webinar (approximately 20–30 minutes each) as participants practice and apply emotion skills and mindfulness practices to their teaching. The CARE model has a coaching protocol with suggested sequences of topics, probes, and scripts to guide each coaching session (see Appendix K-3). CARE facilitators and the PIs will work with administrators to develop an ongoing support plan for teachers at each school. CARE was developed by Patricia Jennings (Project PI) and Christa Turksma with support from the Garrison Institute (GI). CREATE is a

non-profit agency that is licensed by GI to deliver CARE, and Christa Turksma will supervise program delivery through CREATE. Program materials include a Facilitator's Manual, Participant Workbook, and a CD containing audio of guided practice for personal use.

*Evidence of Efficacy of CARE.* After 3 years of development and piloting, in 2009 IES awarded a Goal 2 study to refine CARE program materials and assess its potential to reduce teacher stress and improving well-being, self-efficacy, and mindfulness among K–5 teachers (IES Goal 2; R305A090179). A small RCT (50 K–5 teachers) documented that CARE resulted in significant improvements in teacher well-being (ES=0.80), self-efficacy (ES=0.60), time urgency (ES=-0.42), personal accomplishment (ES=0.40), stress-related physical symptoms (ES=-0.32), emotion regulation (ES=0.80), and mindfulness (ES=0.56) compared to controls.<sup>45</sup> The efficacy of CARE then was tested in a large-scale cluster RCT (IES Goal 3; R305A140692). The study involved 224 racially diverse general education teachers in 36 New York City elementary schools and 5,200 of their students. Results of 2-level HLM analyses revealed CARE teachers reported significant improvements in adaptive emotion regulation (ES=0.25), mindfulness (ES=0.28), and significant reductions in psychological distress (ES=0.18) and time-related stress (ES=0.20). On the CLASS observational measure, CARE teachers demonstrated significantly higher levels of emotional support (ES=0.22), positive climate (ES=0.23), teacher sensitivity (ES=0.23) and productivity (ES=0.23). Marginal effects were found for classroom organization (ES=0.19).<sup>46</sup> Students in CARE classrooms had significantly higher levels of engagement in learning (ES=0.10), and those with the lowest social skills had higher reading competence at the end of the year as compared to controls (ES=0.08). Students of teachers with low baseline mindfulness showed significant improvement in reading competence (ES=0.10) and academic motivation (ES=0.18) compared to their peers.<sup>47</sup> These results demonstrate that CARE has an impact on student engagement, and teachers' mindfulness may play an important

mediating role on student academic achievement. On teacher outcomes, CARE compares favorably to effect sizes of organization-sponsored, occupational stress-reducing interventions ( $d=0.08-0.14$ )<sup>48,49</sup> and classroom-management interventions that aim to modify student-teacher exchanges ( $g = 0.08$ ).<sup>50</sup> These results provide support for our hypothesis that providing CARE to teachers will improve PATHS implementation and classroom and student outcomes.

**A.9 Implementation Research.** Although evidence-based programs are essential, the extent to which they are implemented with quality and fidelity is critical for producing effective outcomes<sup>51</sup>—when they are implemented better they produce more change.<sup>52-57</sup> Although SEL programs have the potential to improve engagement and achievement among students in poverty, implementation quality is often lower in high-need schools.<sup>3,54</sup> This is partly because many low-performing schools lack the capacity to implement evidence-based programs to improve student outcomes, and most intervention models do little to build such capacity.<sup>54</sup> *This underscores the need to couple evidence-based programs with strategies that boost schools’ capacity for implementation, such as supporting teachers’ social-emotional skills and well-being, a critical aspect of workforce development.* Essential supports underlying schools’ capacity for improvement have been identified through the work of Bryk and colleagues.<sup>58</sup> These supports include school leadership, professional capacity, strong relationships with families and community partners, and a safe and stimulating learning for all students. As teachers are on the front line of these interactions, we propose that their own social-emotional skills and well-being may be critical to promoting these school-level supports.

## **B. PROJECT DESIGN AND MANAGEMENT PLAN**

**B.1 Project Design.** The project will be conducted in Chicago Public Schools (CPS; see letter of support, Appendix C). CPS students attend high-minority schools (86% African-American and Latino) and met the EIR eligibility definition as “high-need” by living in poverty (86% receive

free and reduced lunch). The district has a large pool of elementary schools that meet AP1 eligibility requirements from which to recruit the 40 participating schools for the proposed study—58.2% of CPS elementary schools fall below the 25th percentile for reading and 54.2% fall below for math. Thus, more than half of CPS schools fall in the bottom quartile statewide for Grade 3 achievement. All 40 schools that participate in this project will implement PATHS. Half of the schools will be randomized to receive the standard PATHS training and support model (the “Standard-PATHS” condition), and the other 20 schools will be randomized to receive the combination of PATHS and the CARE program (the “PATHS+CARE” condition). We expect that the synergistic effects of combining the PATHS program with the CARE program will provide additional benefits compared to those achieved when PATHS is delivered alone, especially in these low-performing schools. We expect that these benefits will be demonstrated at multiple points across the two-year period of implementation and the one- and two-year follow-ups.

**B.1 Goals, Objectives, and Outcomes.** The project will accomplish three key goals: 1a) implement PATHS, a high-quality SEL program, in Grades 1–4 in 40 CPS elementary schools; 1b) implement CARE, a high-quality professional learning (PL) program in half of these schools selected at random; 2) Achieve high-fidelity implementation of both programs resulting in improved student learning; and 3) Build capacity of the district leaders to sustain work following the grant period. The project goals, objectives, and outcomes with associated measures are listed in Table 1.

**Table 1. Goals, Objectives, Outcomes, and Measures**

Objective	Outcomes (measures)
Goal 1: Implement two high quality SEL programs, PATHS (for students) in Grades 1–4 in 40 CPS elementary schools and CARE (for teachers), in in 20 CPS elementary schools	
1. Recruit 40 CPS elementary schools	<ul style="list-style-type: none"> <li>Signed letters of agreement with 40 CPS elementary schools (Monitoring data collected by project management team.)</li> </ul>
2. Implement PATHS and	<ul style="list-style-type: none"> <li>All Grade 1–4 teachers complete the PATHS PL (operations</li> </ul>

Objective	Outcomes (measures)
PATHS+CARE PL	<ul style="list-style-type: none"> <li>data)</li> <li>Grade 1–4 teachers in CARE + PATHS schools also complete CARE PL (operations data)</li> </ul>
3. Monitor PATHS & CARE PL delivery	<ul style="list-style-type: none"> <li>Program facilitators implement PATHS &amp; CARE PL with fidelity (fidelity of implementation (FOI) measures, observations, surveys)</li> <li>Teachers report satisfaction with PL programs (surveys)</li> </ul>
Goal 2: Achieve high-fidelity implementation of both programs resulting in improved student learning	
4. Teachers implement PATHS in Grade 1–3 classrooms (Year 1) and Grade 4 classrooms (Year 2)	<ul style="list-style-type: none"> <li>Teachers Implement PATHS with fidelity (FOI measures, surveys)</li> <li>Teachers report PATHS curriculum is user-friendly (surveys)</li> <li>Teachers report understanding of PATHS curriculum (surveys)</li> </ul>
5. Support teacher implementation with coaching (PATHS & PATHS + CARE)	<ul style="list-style-type: none"> <li>Teachers participate in coaching activities (operations data)</li> <li>Teachers report satisfaction with coaching activities (surveys)</li> </ul>
Goal 3: Build capacity of the district leaders to sustain work following the grant period	
6. Support continued implementation with PATHS and CARE PL for school leaders	<ul style="list-style-type: none"> <li>School leaders understand fundamentals of PATHS model including curriculum and PL (surveys)</li> <li>School leaders know how to use FOI tools to assess implementation of PATHS at their schools (surveys)</li> </ul>
7. Co-lead key implementation activities with school leaders	<ul style="list-style-type: none"> <li>School leaders co-lead with fidelity (FOI measures, observations, surveys)</li> </ul>
8. Support continued implementation with CARE facilitation training for school personnel	<ul style="list-style-type: none"> <li>School personnel identified to become CARE facilitator (operations data)</li> <li>CARE facilitator trainees co-facilitate PL with fidelity (FOI measures, observations, surveys)</li> <li>CARE facilitator trainees facilitate PL alone with fidelity (FOI measures, observations, surveys)</li> </ul>

**B.2 Management Plan.** The project partners have many years of experience leading large-scale, multi-year, multi-site projects that involved implementing programs with fidelity. For example, the PI recently successfully completed the IES-funded Goal 3 study of CARE. Below are details of the timelines and milestones and the teams responsible for accomplishing all tasks.

*Goal 1a) implement PATHS, a high-quality SEL program, in Grades 1–4 in 40 CPS elementary schools Goal 1b) implement CARE, a high-quality professional learning program in half of the schools selected at random. Table 2 shows the process and timeline to implement the*

PATHS and the PATHS+CARE curriculum. The first steps in October 2019 are for the American Institutes for Research (AIR), the independent evaluator that has worked with CPS effectively on previous projects, to secure approval from their IRB and the CPS Research Review Board. CPS and the project team will work together to present the project opportunity to principals and recruit schools. Grade 1–3 teachers will complete PATHS or PATHS+CARE professional learning (PL) in Summer 2020. Grade 4 teachers will complete PATHS or PATHS+CARE in Summer 2021.

**Table 2. Goal 1 Milestones, Team Responsible, Timeline**

<b>Obj</b>	<b>Milestone</b>	<b>Team(s)</b>	<b>Dates</b>
1.1	IRB and CPS RRB approvals secured	AIR	Fall 2019
1.1	School principals confirmed school participation	CPS, UVA, AIR	Winter/Spring 2020
1.2	Teachers completed PATHS or PATHS + CARE	PEW & CREATE	Summer/Fall 2020
1.2	Grade 4 teachers completed PATHS or PATHS + CARE	PEW & CREATE	Summer/Fall 2021

*Goal 2 Achieve high-fidelity implementation of both programs resulting in improved student learning.* Table 3 represents the process and timeline to monitor fidelity of implementation. Schools randomized to the Standard-PATHS condition will begin with a principal meeting to provide an overview of the evaluation activities, provide basic information about PATHS and its approach to training, and provides suggestions for how administrators can support high-quality implementation. This meeting will be followed by a school-level teacher orientation that provides an overview of the project and evaluation, information about the PATHS curriculum, and how training and support will be provided. PATHS training for all Grade 1–4 teachers in all 40 schools will be provided by PATHS Education Worldwide (PEW)—a non-profit organization (Letter of Support, Appendix C). The standard model used in both conditions includes two curriculum training sessions that are each 1 day long (August and

October) delivered to 25–30 teachers by a certified PATHS trainer. In addition, PATHS trainers will visit 50% of all classrooms in January of both implementation years to observe curriculum delivery, complete a fidelity rating, and provide feedback to each teacher and aggregated feedback to the administration. The same procedures will be followed in 2020–2021 for Grade 4 teachers. Make-up trainings will be provided to Grade 1–3 teachers as needed, and fidelity observations will be conducted for teachers in Grades 3–4. In addition, PEW will provide email support to each school on a monthly basis. Each school will identify a designated PATHS liaison who will have this regular ongoing contact with their PATHS trainer.

*PATHS+CARE Activities.* The PATHS+CARE condition will use a combination of leadership team meetings, coaching and professional development to build capacity for both CARE and PATHS implementation. The principal orientation meeting for PATHS+CARE schools will be similar to the one provided in the Standard-PATHS condition but will be co-facilitated by the CARE co-developer Christa Turksma who will describe the CARE program. In August 2020, a one-day PATHS training and two days of the CARE training will be presented to teachers in participating schools. In October, teachers will receive one additional day of training on PATHS and CARE (two days total). In the early spring, teachers will also receive a half-day CARE booster. CARE facilitators will coach participating teachers over the course of the fall semester as they apply the CARE skills to their teaching.

*Fidelity monitoring.* Sign-in sheets will be used at trainings to assess attendance and anonymous evaluation forms will be collected and submitted to PEW, CREATE and the management team (MT). A report regarding the PATHS fidelity observations will be provided to the MT by PEW after the January observations. The CARE Implementation Monitoring Materials (Appendix K-4) will be employed to monitor the quality and fidelity of the CARE programs. A report on CARE program implementation will be presented to the MT at the



conclusion of each training period. Implementation of the CARE intervention will be measured by a team of highly-trained coders who have previously attended a CARE program. Coders will receive instruction in the use of a detailed coding manual and trained using videos that illustrate both “exemplary” and “non-exemplary” examples of instruction. All CARE trainings will be video recorded and a random selection of 25% of each of the CARE facilitators’ trainings will be coded. Two coders will independently rate facilitator implementation (quality of facilitation, adherence to manualized facilitator activities, meeting participant objectives) and coders will be randomized across trainings to minimize coder bias. Coder interrater reliability will be calculated and disagreements will be resolved by consensus with support from the coding supervisor. The outcome evaluation will be monitored through ongoing reports provided by AIR to the MT. All reports will compare completion rates of the data collected against the targets outlined in the cloud-based project management tool.

**Table 3. Goal #2 Milestones, Team Responsible, Timeline**

<b>Obj</b>	<b>Milestone</b>	<b>Team(s)</b>	<b>Dates</b>
2.1	School leaders presented information about PATHS or PATHS + CARE	PEW/CREATE	Fall/Winter/Spring 2020
2.2	PATHS & CARE PL is delivered on time and with fidelity	PEW/CREATE	Summer/Fall 2020–2023
2.4	Coaching is conducted with teachers for PATHS or PATHS + CARE	PEW/CREATE	Fall 2020–2023
2.3	PATHS implementation is monitored	PEW/CREATE	January 2020–2023
2.3	Teachers implement PATHS with fidelity	PEW/CREATE	2020–2023 SYs

*Goal #3 Build capacity of the district leaders to sustain work following the grant period.*

Table 4 represents the Goal 3 process and timeline. Throughout the project, we will build the capacity of school leaders to sustain the quality implementation of both programs. School leaders will participate in annual PL programs to learn the fundamentals of each program and how leadership can support quality implementation and sustainability. After the first PL sessions, with

the support of the Management Team, CPS will identify school personnel who may be qualified to become CARE and/or PATHS PL facilitators. These individuals will engage in facilitator training over the course of the project by first co-facilitating and then independently facilitating one or both programs. Both programs offer site licensing that allows districts to continue to provide the programs independently at a reduced cost.

**Table 4. Goal #3 Milestones, Team Responsible, Timeline**

<b>Obj</b>	<b>Milestone</b>	<b>Team(s)</b>	<b>Dates</b>
3.1 3.4	School leaders complete annual PL on fundamentals of PATHS or PATHS + CARE	PEW/CREATE	Summer 2020–2023
3.2	Identify school leaders or other personnel to become CARE/PATHS PL facilitators	CPS	Summer/Fall 2020
3.2	CARE/PATHS PL facilitator trainees co-lead programs	PEW/CREATE	Summer 2021
3.3 3.4	CARE/PATHS PL facilitated by CPS personnel independently	PEW/CREATE	Fall 2022

*Project Management.* The proposed project requires the combined expertise and effort of experienced partners who share a strong history of collaboration (University of Virginia, American Institutes of Research, PATHS Education Worldwide, and CREATE). The University of Virginia (UVA) meets eligibility requirements as an EIR applicant. Numerous trials of intervention studies that have significantly improved both student achievement and the quality of teachers’ classroom practices have been conducted by Dr. Jennings and her colleagues at the Curry School of Education. Dr. Jennings has extensive experience in conducting and coordinating school-based research focusing on teacher development. The American Institutes for Research (AIR), one of the largest education and social science research organizations in the world, will conduct the independent evaluation. UVA is partnering with the Chicago Public Schools (CPS) (see letters in Appendix C). The strength of the research team, history of collaborative relationships, and open communication across all parties will contribute to project success and help to overcome risks that might undermine project implementation and evaluation.

Dr. Mark Greenberg holds The Bennett Endowed Chair at Penn State and founded the Prevention Research Center. He will be retired from Penn State at the outset of this project. He is the Chairperson of the Board of Directors for CREATE and a co-developer of the PATHS Curriculum. Dr. Greenberg and Jennings have been research partners for over a decade. UVA will partner with CREATE and PATHS Education Worldwide (PEW) (see letters of support in Appendix C). PEW has been delivering PATHS professional development to schools for many years. CREATE is a new organization founded to deliver research-tested mindfulness-based SEL programs and has an exclusive license with the Garrison Institute, owner of the CARE IP, to deliver CARE. Fidelity monitoring and evaluation of CARE will be conducted by UVA, using the same protocol developed for the Goal 3 RCT (see Appendix K-4).<sup>46</sup>

*Project Structure and Communication.* The project structure includes an overall Management Team (MT; organizational chart, Appendix I.6), a CPS Committee, and an Advisory Board. Dr. Jennings will provide overall management as Principal Investigator (PI) and will be responsible for maintaining and adhering to timelines, problem-solving when obstacles arise, and reporting to the DOE project officer. She will monitor costs of project-required products and services to ensure the efficient use of resources. The MT will include Kimberly Kendziora and Amy Mart (AIR Evaluation Team), Mark Greenberg and Christa Turksma (CREATE), Dorothy Morelli (CEO of PEW) and Hellen Antonopoulos (CPS' SEL Director). The MT will coordinate all project activities and ensure that they are executed as specified in the project timeline and project plans. This ongoing progress will be tracked against the plan using a cloud-based project monitoring tool that will align with the Project Objectives and Performance Measures. Dr. Jennings will convene the MT by phone and/or web-based call bi-weekly and the MT will have yearly face-to-face meetings. Amy Mart and Hellen Antonopoulos will serve as a CPS Committee within the MT, coordinating all activities within the district and providing

monthly progress reports to the MT. An Advisory Board will be formed to provide broad oversight to the project will meet quarterly with the MT by phone or web-based call.

*General Education Provisions Act (GEPA) Requirement.* In addition to the elements of the PATHS curriculum that satisfy the requirement of Section 427 of GEPA, we will address potential barriers that may impede equitable access to participation in the project. For example, our recruitment materials will use accessible language and graphics representing diverse populations. The CARE and PATHS trainers will be diverse in terms of gender, race and ethnicity. Finally, we will employ a diverse group of CLASS coders who will be randomly assigned to classrooms to minimize coder bias.

**B.3 Dissemination of Findings.** We will use multiple approaches to disseminate information on the project. First, we will continue to use a newly developed Project CATALYZE website hosted at UVA as a resource for sharing our milestones, our biographies, and our conference papers and publications. We will update the website regularly to provide information on our progress and products. Second, we will produce an annual report that we will share with Chicago Public Schools sharing current activities and findings. We believe this report will provide important feedback to stakeholders and will apprise readers on the progress of our project. Third, we will present our model and findings (both process and outcome) both academic and practitioner-oriented conferences (e.g. AERA, ASCD, SRCD). Fourth, we will publish our findings in academic and practitioner-oriented journals. Moreover, we will use UVA and AIR's public relations offices to develop and disseminate press releases. Taken together, we will seek out both practitioner and research venues to ensure a wide distribution of the results of Project CATALYZE to all interested audiences.

## **C. PROJECT EVALUATION**

**C.1 Overview of Evaluation Criteria.** The project evaluation plan described below meets the

Early-Phase EIR Program criteria. The evaluation will include both an implementation and an impact study, which will be conducted by AIR and will thus be independent. The randomized design will result in evidence about Project CATALYZE's effectiveness that will meet the What Works Clearinghouse standards without reservations. The implementation study will document and monitor implementation fidelity and identify areas where implementation needs improvement and factors that may hinder or facilitate implementation. The study team will make detailed information about context and procedures available to enable replication in other settings. Below we articulate the plan for collecting valid and reliable performance data on relevant outcomes including key project components, mediators, and outcomes, as well as measurable thresholds for acceptable implementation of both PATHS and CARE interventions.

**C.2 Research Questions.** AIR will use a matched-pair cluster randomized design to determine whether student, teacher, and classroom outcomes differ when the CARE model is added to the PATHS curriculum or when PATHS is delivered alone. The evaluation team will match schools and then randomly assign one school from each pair to receive PATHS alone or PATHS plus CARE. In addition to implementation questions about the extent to which CARE and PATHS are each implemented with fidelity, we will address the following impact questions:

1. What is the impact of adding CARE to PATHS on the quality of teachers' implementation of PATHS?
2. What is the impact of adding CARE to PATHS on the quality of classroom interactions: emotional support, instructional support, and classroom organization?
3. What is the impact of adding CARE to PATHS on teachers' social-emotional competence (e.g., emotion regulation and mindfulness) and psychological well-being (e.g., reduced psychological distress)?
4. What is the impact of adding CARE to PATHS on student social-emotional skills, attention,

aggression, learning engagement, and academic performance?

5. To what extent is the impact of adding CARE on student outcomes moderated by quality of teachers' PATHS implementation and other teacher, student, and school characteristics?
6. To what extent is the impact of adding CARE on student outcomes mediated by classroom interaction quality and teacher social-emotional competence and psychological well-being?

We hypothesize that, compared to the schools using PATHS alone: (1) classrooms in the CARE+PATHS condition will exhibit better observed interaction quality (emotional support, instructional support, and classroom organization); (2) teachers in the CARE+PATHS condition will report higher levels of emotion regulation and mindfulness and reduced psychological distress; (3) teachers in CARE+PATHS schools will report better implementation fidelity and dosage of PATHS will be higher; (4) teacher ratings of student social-emotional skills, behavior, and academic outcomes will be better in CARE+PATHS schools; (5) student behavior and academic outcomes and teacher ratings of students' social-emotional skills will be more positive when their teachers report higher implementation fidelity and dosage of PATHS; and (6) the impact of CARE on student outcomes will be indirect and mediated by classroom interaction quality, teacher social-emotional competence, and psychological well-being.

**C.3 Design Overview.** The evaluation will use a cluster randomized comparative effectiveness design in which teacher, classroom, and student outcomes for schools in the CARE+PATHS condition will be compared to outcomes from schools in the PATHS-only condition, implementing PATHS with typical levels of support provided by the program developers.

Randomization will be at the school level with 40 elementary schools. We chose to randomize at the school level for three reasons. First, contamination across intervention and control classrooms can occur in schools that group teachers by grade level or department for professional learning. Second, using classroom-level randomization, students may be exposed to different

treatment conditions than originally assigned as we follow them across grade levels. Third, it may not be feasible to assign classrooms at random due to scheduling and staffing constraints.<sup>59</sup> Prior to randomization, AIR will use a pairwise matching procedure to maximize similarity of CARE+PATHS and PATHS-only conditions. School pairs will be matched based on school-level demographics, academic achievement, and other relevant school characteristics (e.g., geography, management). Pairwise matching not only ensures balance on key variables and increases precision but also can protect against selection bias due to schools dropping out after the start of the study.<sup>60</sup>

**C.4 Sampling Plan.** Of the 457 elementary schools in CPS, more than 250 schools have more than 75% of their students scoring below proficient in English/language arts and mathematics achievement. The study team will begin with the pool of CPS schools that meet the eligibility criteria for lowest-performing schools, are not committed to implementing a social and emotional learning program other than PATHS, and which, following attendance at CPS-supported informational meetings about the project in the spring of 2020, are willing to commit to this study. From this group, AIR will match schools into 20 pairs, using an algorithm to compute the Mahalanobis distance from each school to every other school along variables drawn from the CPS 2018–19 administrative database (e.g., school size, percentage of students eligible for free or reduced-price lunch, racial/ethnic composition, student academic achievement, teacher retention, and school climate). After schools are matched into pairs, AIR will randomly assign one school in each pair to CARE+PATHS or PATHS-only. Training will begin in the summer of 2020.

In the fall of 2020, AIR will recruit students in Grades 1–3 ( $N \approx 6,000$ ) in the 40 (20

treatment and 20 control) participating schools<sup>1</sup> and will follow this cohort of students for 4 years. In the back-to-school packets sent to all families at the beginning of the 2020–21 school year, AIR will include consent letters and forms for parents of Grades 1–3 children, informing them of the study and seeking consent for their child’s participation. It is anticipated that approximately 55% of students will obtain permission to participate ( $N \approx 3,300$ )<sup>2</sup>. All teachers who teach Grades 1–3 in the participating schools during the 2020–21 academic year will be included in the study. We estimate that there are three classes per grade, resulting in nine teachers per school, for a total of 360 teachers and classrooms for these grades.

**C.5 Implementation Fidelity.** The implementation study will follow the logic model for this project (Figure 1) that specifies the key components of the interventions. We will assess the extent to which implementation of CARE and PATHS is of high quality using both teacher-report and observational measures (See Appendix I-3). Teachers in all study schools will complete online surveys regarding their use of strategies related to PATHS (social and emotional development strategies) each spring. In addition, implementation of CARE will be assessed using the CARE Implementation Monitoring Materials during each training period (Appendix K-4). In January of each implementation year, developer-trained observers will observe and rate the fidelity of PATHS implementation in 50% of classrooms, randomly selected. A rubric will establish thresholds for satisfactory levels of implementation for each school. Implementation questions will address the fidelity of implementation, school and classroom factors related to variation in implementation, and differences in PATHS implementation across study conditions.

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<sup>1</sup> Because all study schools will be K–8 or Pre-K–8 schools, a large majority of Grade 1–3 students would have been enrolled in the study schools (in Grades K–2) prior to random assignment. We believe that joiner bias (students newly enrolled in the fall of 2020) is unlikely because, based on experience, Chicago Public Schools does not provide information to families regarding the study conditions of its schools. We will conduct sensitivity analysis to test whether results of analyses would be different with joiners included or excluded.

<sup>2</sup> This consent rate is based on a recent school-level RCT conducted in elementary schools in the same district.



**C.6 Outcome Measurement & Data Collection Schedule.** Appendix I-1 provides an overview of the measures used to assess the proximal and distal targets of the CARE intervention and the time points at which they will be collected. Descriptions of each covariate and outcome measure are provided in Appendix I-2. All measures have been used in research with urban populations and have satisfactory to excellent reliability and validity. Half of all study classrooms, selected at random, will be observed using CLASS<sup>61</sup> in the spring of Years 2 and 3 to assess the quality of classroom interactions. Each spring, teachers will be asked to complete ratings of the social-emotional skills, behavior, and academic engagement of up to eight consented students in their classroom using a teacher rating instrument developed for studies of an array of social and emotional interventions (i.e., not PATHS specifically). Rasch reliability for the teacher report instrument's social and emotional scales averaged .84 (range = .82–.87) in a prior study analyzing data across six districts.<sup>62</sup> We will also collect students' educational record data to examine achievement, attendance, and discipline outcomes.

**C.7 Analytic Methods.** In the proposed evaluation, students are nested within teachers, who are nested within schools, which are clustered in matched pairs. AIR will conduct impact analyses using an HLM approach to accommodate the nested nature of the design. We will estimate the impact of CARE+PATHS on changes in student outcomes, compared to PATHS-only using a series of 3-level hierarchical linear models (see description in Appendix I-4) with students at level 1, teachers at level 2, and schools (and treatment) at level 3. Group comparisons controlling for baseline scores will be conducted with teacher ratings of student SEL and behavior outcomes including academic engagement and aggression. In addition, we will compare groups on school records of student academic performance, controlling for baseline school-level academic performance and school characteristics that differ between conditions. We will use the same analytic approach to conduct comparisons of teacher and classroom outcomes. We will estimate

the impact of introducing CARE using 2-level HLM models with teachers/classrooms at the first level and schools at the second level. AIR will conduct initial comparisons of CARE+PATHS and PATHS-only schools in summer 2021 to test whether the effects of CARE on teachers and students are evident after one year of implementation, but we expect that the full impact of CARE on teacher outcomes will not be evident until summer 2023, after 3 years of implementation. In addition to the main impact models, we will conduct differential impact analyses to examine whether student, teacher, and school characteristics moderate CARE's impact (RQ5). Mediation analyses will explore potential teacher or classroom mechanisms through which CARE will impact student outcomes (RQ6). AIR conducted separate power analyses for each outcome. Further details on the power analyses for each outcome are provided in Appendix I-5. A meta-analysis<sup>2</sup> found that the average effect size of school-based SEL programs is 0.57 on student SEL skills and 0.27 on student academic achievement. Another meta-analysis<sup>63</sup> found that the average effect size of teacher professional development/coaching programs is 0.56 on teachers' classroom practices at the elementary level. Thus, we set the minimum detectable effect size (MDES) for this evaluation to 0.20 for student outcomes, 0.35 for teacher outcomes, and 0.45 for classroom outcomes; the power analyses indicate that the impact evaluation will have sufficient power to detect these MDESs. Impact analyses will follow an "intent-to-treat" model in which all schools are included in the outcome analyses regardless of their level of implementation given that this is the recommended approach for testing efficacy in randomized trials by the What Works Clearinghouse. However, exploratory analyses using PATHS implementation levels as moderators and complier average causal effect analyses (CACE) also will be conducted.