



Calm Classroom K-2 (CCK2):
Mindfulness and other Replenishment Practices to Improve Young Children’s Stress Levels, Self-Regulation, and Productive Engagement in School
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A. SIGNIFICANCE

Our partnership will further develop and implement a multi-faceted yet highly practical intervention addressing AP2b called **Calm Classroom K-2 (CCK2)**. CCK2 employs **calming and replenishing mindfulness practices** with children in the early grades so as **to reduce stress, increase self-regulation, attention, and absorption of academic content, as well improve interpersonal climate and decrease behavior management challenges in classrooms**. The mindfulness training in CCK2 is wholly secular in nature, places minimal burden on teachers, and cultivates an **attentive, present-centered, and non-reactive mental mode** (Kabat-Zinn, 2003; Morrison, Goolsarran, Rogers, & Jha, 2014). In this proposal, we explain why repeated exposure to the practices and classroom culture of focusing “now, small, and inside” has the counter-intuitive effect of increasing young children’s ability to engage productively with the high-demand external world of school.

We have implemented the school-wide Calm Classroom™ (CC) program in 3,640 Chicago Public Schools (CPS) classrooms since 2007, including 1,260 PK-2 classrooms. CC is the only mindfulness-based intervention approved by CPS’ Office of Social-Emotional Learning (SEL), and is aligned with CPS’ broader turnaround efforts, especially Pillar 2 of its 2013-2018 action plan - “systems of support that meet student needs.” CC is philosophically and pragmatically consistent with CPS’ efforts to “expand proven school climate and SEL strategies to help students develop the self-management, decision-making and relationship skills required to meet the academic expectations of the Common Core.” (CPS, p.15). Most importantly, our eight years of lessons learned achieving buy-in and fidelitous implementation of CC within the nation’s third-largest, 90+% minority, and 85+% free and reduced lunch school district (National Center for Education Statistics, 2010) ideally position us for executing the next level of focus and rigor that we propose here. Specifically, *the CCK2 project presents a unique opportunity to 1) capitalize on the high adoption and enjoyment of the strategies already displayed in our youngest classrooms; 2) address the unique manifestations of stress common in the youngest students in low-performing schools; and 3) test the effectiveness of program enhancements designed to maximally nurture academic success during the 5-to-7 year shift (Sameroff & Haith, 1996), when non-cognitive assets are required for surmounting a seismic change in the difficulty of cognitive tasks.*

A1. UNIQUE APPROACH Children and teachers in the early grades today encounter a thorny set of challenges. First, overwhelming biological and behavioral evidence now exists that productive school learning results only when children make the successful, normative transition between ages five and seven to effortful regulation of their emotions, behavior, and thought processes (Diamond, 2010; Ivrendi, 2011; McClelland & Cameron, 2011; Pelco & Reid-Victor, 2007). Critically, it has been shown that self-regulation skills predict academic success as much or more than intelligence or domain-specific knowledge (e.g., Blair & Razza, 2007; McClelland et al., 2007). At the same time, there is a trend for the youngest children to come to school with increasingly severe emotional and behavioral challenges (Morris et al., 2013). Recent estimates suggest this may affect as many as 25% of young children in the U.S. (Vo, Sutherland, & Conroy, 2012) and that this risk may increase up to 70% in high poverty or high minority school districts (Rimm-Kaufman, Pianta, & Cox, 2000). An additional contingent of children may not display outwardly disruptive behaviors, but experiences inwardly debilitating self-regulatory problems such as inattention, mind wandering, or low engagement. While persistently inattentive young students may never develop conduct issues or diagnosable mental disorders, they are nevertheless at risk for long-term school failure, and their self-regulation skills while still young represent a significant prevention opportunity (Coneus & Laucht, 2008; Jester et al., 2005; Moffitt, Poulton, & Caspi, 2013; Raver, McCoy, Lowenstein, & Pess, 2013).

Thus, mindfulness-based training is a unique and appropriate choice for our population, in part, in that it is **effective in improving a wide spectrum of risks for school failure** (Frank, Jennings, & Greenberg, 2013). This is especially important for the early grades, during which time brain function is more globalized and diffuse (Nie, Li, & Shen, 2013) and “softer signs” of struggling in school may be missed or assumed to be developmentally temporary. The CCK2 approach is unique further in that it includes core components not only for instilling calm and regulated behavior, but also for replenishing attention and effortful cognition. How does it do so?

Attention restoration theory (ART; Kaplan, 1995) posits that “Directed attention is not, in itself, more important to problem-solving than knowledge or perception or action...But unlike

these components, it is fragile...[and] susceptible to fatigue..." (1995; p. 171). Thus, even children with few risk factors never reach a point where they learn to be perfectly attentive all the time - **techniques for re-focusing must be engaged in daily**. Berman, Jonides, and Kaplan (2008) demonstrated that "soft fascination," such as occurs from experiencing the sights and sounds of nature, provides such replenishment and subsequent improvement in cognitive performance. It is important that this has been demonstrated with dementia patients (e.g., Chalfont & Rodiek, 2005) as well as children (e.g., Taylor & Kuo, 2009) because these populations share a need to derive cognitive benefits from viscerally engaging practices that do not, themselves, require high levels of skill to perform. Thus, in addition to traditional mindfulness exercises that involve inner focus and require practice, our intervention also includes components involving outer focus on items intended to automatically attract children's soft fascination and promote attention replenishment, such as videos of animals or nature scenes (Kahn, 2011). These scenes, along with occasional, gently voiced reminders (e.g., "Are you still watching the spider spin that amazing web?") will be displayed on tablets stationed in what we call "The Calm Spot." **Intervention components that address both calmness and re-focusing may provide a substantially more complete equation than general social-emotional learning (SEL) approaches for an initiative whose primary outcome is school success¹**. Goals for children are explicit and clear, as they are supported in channeling newly acquired calmness and replenishment *directly* into the academic content that follows, thereby making a tight connection between the non-cognitive practices and the cognitive result.

The needs above as well as CCK2's capacity to address them are especially relevant to children in low-performing schools. The tendencies to act out or shut down often result from the toxic stress associated with adversity, chronic poverty, or unpredictable home environments (Raver, Blair & Willoughby, 2013; Shonkoff et al., 2012). Recent evidence strongly confirms that toxic stress is

¹ Recess scholars (e.g., Pellegrini & Bohn, 2005) would contend that recess, and more specifically its unstructured, non-facilitated nature, provides some of the same attention restoration benefits that mindfulness does, and we agree. However, for reasons both theoretical (e.g., recess may not be effective in providing calming effects) and practical (recess quality is dependent on safety, weather, supervision, and facilities), recess alone cannot be relied upon for accessing non-cognitive pathways to young children's school success. Note that CCK2 activities do not occur during recess time, and furthermore, increasing levels of child-directedness are embedded in the program practices and outcomes, so that the activities are not experienced by children as just another context in which adults are telling them what to do.

more than a buzz word; indeed there are lifelong consequences of adversity experienced in childhood (Denese & McEwen, 2012; Miller, Chen, & Parker, 2011; Slopen et al., 2014). These breakthroughs are important - and disheartening - in at least two ways relevant to our approach. First, **toxic stress appears to require only a short time to “get under the skin,” as negative outcomes at the biological level already exist by school-age** (e.g., Hunter, Minnis, & Wilson, 2011; Mitchell et al., 2014; Shalev et al., 2013). Second, these effects can result from common stressful circumstances that may not seem, on their face, “toxic.” A study of 9-year-old African-American boys (Mitchell et al., 2014) found that indices of disadvantage such as low income, low maternal education, unstable family structure, and harsh parenting² led to effects mimicking *premature aging* at the genetic level (shortened telomere length). Indeed it is striking that stressful, but not necessarily overtly traumatic circumstances that are widely present in the lives of children who attend low-performing schools, can have such a deep impact after only a few years.

How does the deep impact of toxic stress affect the youngest students while at school, and how does CCK2 seek to address this issue in a novel way?

[REDACTED]

² Note that the harsh parenting difference across the disadvantaged and advantaged groups was defined as seven vs. three negative events (e.g., yelling, threatening) per year.

[REDACTED]

[REDACTED]

[REDACTED] During the early grades, toxically stressed children already show etched response patterns that may be adaptive at home or in their neighborhoods, but dysfunctional for the type of planful thinking required at school.

Thus, to engage productively in school, such children are in need of workaround strategies to help them learn to slow down, giving their system time to override a prepotent response (Barber & Carter, 2005) to either act out or shut down, and increasing the chances of a more reflective response. Indeed, evidence has shown that by as early as 6 years of age, children's accuracy on cognitively demanding tasks increases when given an explicit opportunity to slow down (Davidson, Amso, Anderson, & Diamond, 2006). We speculate that exclusively instructional, or "top-down" training of self-regulation may have had lukewarm results in the past (e.g., Barnett et al., 2008; Bierman et al., 2013; Morris et al., 2013; SCDRC, 2010; Wilson & Farran, 2012) as a result of an over-reliance on meta-cognitive ability and future-oriented rewards that cannot be viscerally experienced. Such an approach may be doubly ineffective for the population we will serve because young children's meta-cognitive skills are normatively underdeveloped, and in toxically stressed children are further preempted by a fight or flight response. In contrast, the power of "present moment" exercises may be in their added ability to act in a bottom-up fashion, perhaps similarly to psychotropic medication at first, in that they can "trick" sub-optimally canalized brain pathways into more adaptive functioning without needing to change them, while over time and with practice, the pathways may be beneficially re-routed (Klingberg, 2010). Zelazo and Lyons (2012) recently suggested that, as an "optimal balance model" (p. 3), mindfulness is an ideal intervention choice for addressing stress and self-regulation in young children because it trains both top-down reflective skills and bottom-up reactivity inhibition skills. **In short, CCK2 offers children a self-motivating and self-nurturing opportunity to *experience, practice, and discover the internal benefits of calmness and replenishment, which in turn creates an enhanced receptivity to the external and high-demand agendas they face in school.***

A2. ADVANCEMENT OF NON-COGNITIVE APPROACHES Let us be clear: We do not underestimate

the scope, importance, and in many cases rigorous science behind established SEL programs (e.g., Conduct Problems Prevention Research Group, 2010; Durlak, Weissberg, Dymnicki, Taylor & Schellinger, 2011; Grossman et al., 1997; Whitcomb & Merrell, 2012) and further acknowledge that some SEL outcomes may only be achieved meta-cognitively (e.g., socio-cultural rules for entering play or solving disputes). We offer the CCK2 approach neither because of the popularized “mindful revolution” (e.g., TIME, Feb. 3, 2014), nor because it addresses every non-cognitive factor. Nevertheless, we highlight five key lessons learned from SEL work that precedes us and the CCK2 response to each that position our project well for moving the field, and outcomes for children, forward: ❶ **Grade Levels:** The era of early education has arrived, but we aren’t the only ones to notice a relative neglect of K-2 (e.g., Bornfreund, 2014). This disconnect manifests in the SEL realm in that programs are often divided along the preschool-elementary line (e.g., <http://www.cfchildren.org>), effectively removing the unique considerations of children in the early grades from the equation. However, this age period is indeed unique, such as the finding that kindergarteners showed the widest mix of attention abilities compared to either fifth graders *or* preschoolers (Janvier & Testu, 2007). Persistent national deficits in high-risk children’s performance in the early grades are often interpreted as evidence of the need for more supports in preschool (e.g., Bernstein, West, Newsham, & Reid, 2014), but evidence shows further falling behind without additional early grades support (Moreno, 2013; Raver et al., 2013) and a continuation of preschool program effects with such support (Clements, Sarama, Wolfe, & Spitler, 2013). Beyond the fact that many of the children we will serve will not have attended a high-quality or any preschool, CCK2 bolsters the early grades as a bridge to academic competence by working at the intersection of non-cognitive factor development and the most challenging academic tasks faced yet (e.g., learning to read, taking tests). ❷ **Academic Outcomes:** Some exceptions to the previous rule exist, such as the PATHS curriculum’s recent disaggregation by grade (<http://www.pathstraining.com>) and Strong Start K-2 (Whitcomb & Merrell, 2012), however, what these and many SEL programs share is that their evidence of

effectiveness is based almost exclusively on social-emotional outcomes (e.g., CPPRG, 2010³; Hamre, Pianta, Mashburn, & Downer, 2012; Marquez et al., 2014; Morris et al., 2013; Webster-Stratton, Reid, & Stoolmiller, 2008). While the Durlak et al. (2011) meta-analysis found an 11-percentile gain in academic achievement from universal SEL programs, the authors note that only a subset of studies investigated this outcome, and we speculate that at most a small fraction of those was focused on K-2. Our project will not only measure the academic impact of CCK2, its core components are explicitly predicated (to both teachers and children) on replenishment *for and immediately followed by* more productive academic engagement. **3 Levels of Risk:** One finding is so consistent, in both traditional SEL and mindfulness interventions, that we felt it was incumbent upon us to address it: Effects are concentrated - if they exist at all - in the subgroup of students with the initially highest levels of risk on targeted outcomes (e.g., Ashdown & Bernard, 2012; Bierman et al., 2008; CPPRG, 2010; Flook et al., 2010; Razza, Bergen-Cico, & Raymond, 2013; Rimm-Kaufman et al., 2014; Tominey & McClelland, 2011). Furthermore, although traditional SEL and mindfulness interventions can be found in either class-wide or small group formats, we are unaware of any *single* program that provides both. We find both of these discoveries to be in conflict with the goals of multi-tiered systems of support (MTSS) employed by CPS and many other school districts. The traditional CC model uses mindfulness at both the universal (class-wide exercises) and indicated levels (for students during disciplinary hearings). CCK2 fills in the missing middle level of “targeted” by adding a small group component for students initially in the lowest quartile of executive function and self-regulation skills (EF/SR), thereby providing an efficient, potentially more effective, and system-aligned concentration of efforts. **4 Implementation:** Some trials of SEL interventions have had disappointing results not because they are unsound in principle, but likely due to colossal implementation burdens or high similarity to the counterfactual (e.g., Barnett et al., 2008; Bierman et al., 2013; Rimm-Kaufman et al., 2014; SCDRC, 2010; Wilson & Farran, 2012) whereas CCK2 minimizes these challenges. For example, the class-wide exercises require 2.5 hours of training to start, are read from a script

³ This study did examine teacher report of academic engagement.

while children’s eyes are closed, and take less than 10 minutes per day⁴. Most importantly, CCK2 does not require instructional overhaul or teacher expertise on multiple lessons of discrete content. In terms of similarity to the counterfactual, we think it is reasonable to posit that the CCK2 practices will stand far apart from most children’s experiences, either in or outside of school⁵. In addition to the obvious unfamiliarity of mindfulness to most children, another dramatic difference from practices-as-usual is that two of the three class-wide intervention components are teacher-supported but *child-directed*. Children choose when to use the Calm Spot as well as the “At Your Desk Anytime” strategies (see Project Design for details), thus increasing their control over and understanding of the ebb and flow of their own non-cognitive processes and how they proximally interact with their engagement in school. **5 Benefits for teachers:** Despite being student-targeted, CCK2 has been shown to have positive effects on teachers including and beyond those expected from a traditional SEL program. In a CC evaluation (Luster, 2013) of 13 CPS schools and 264 teachers (69 of whom taught K-2), 73% of teachers said their students were less disruptive and 82% said their students were more focused and ready to learn due to CC. Moreover, 77% of teachers said that CC helped *them* calm down and relax when they felt nervous, frustrated, or angry, and close to half (47%) reported using CC practices *outside of school* to re-focus or relax. Even though we do not require teachers to be experienced meditators or to receive an extensive mindfulness training of their own prior to facilitating the exercises with children, benefits at the level of self-care are nevertheless achieved via formal practice at weekly staff meetings, and spillover effects from the repetitive, daily breaks from the hectic school day as they support children in slowing and quieting their minds.

Finally, mindfulness interventions are gaining empirical support and CCK2 meets the criteria for “evidence of promise” (see Appendix D). The field of neuroscience has documented benefits of mindfulness including effects on deep structure of brain areas that support EF/SR skills necessary for academic competence. Examples include healthier brain activity in regions that

⁴ This still adds up to a higher school-year dosage compared to other mindfulness programs (e.g., Flook et al., 2010).

⁵ With the possible low-occurring exception of highly religious families or those who have witnessed meditative practices in religious contexts. These baseline variables will be measured in the evaluation.

support self-awareness, memory consolidation, and self- and emotion-regulation (Fox et al., 2014), and increases in telomerase activity (Schutte & Malouff, 2014), which prevents the premature aging due to toxic stress discussed above. These studies confirm the intuitive link between stress reduction and school performance that has led to pockets of mindfulness-based programming in the schools around the country, such as Calm Classroom. For such programs, and using conservative criteria for similarity to our project and scientific rigor, we count four studies in the peer-reviewed literature (Black & Fernando, 2013; Flook et al., 2010; Napoli, Krech, & Holley, 2005; Razza et al., 2013) and two conference presentations (Johnson, Forston, Gunnar, & Zelazo, 2011; Yang, Song, Shen, Cui, & Tang, 2010) that show significant impacts of school-based mindfulness training on young children. A study under review (Schonert-Reichl et al.) is the first to describe significant impacts on three critical levels simultaneously: physiologic stress (diurnal cortisol), executive function, and math grades. Not surprisingly, multiple calls for additional research on the type of project we are proposing have been made by cognitive neuroscientists, mindfulness interventionists and meta-analysts, and early education researchers (e.g., Greenberg & Harris, 2011; MLERN, 2012; Paulson, Davidson, Jha, & Kabat-Zinn, 2013; Willis & Dinehart, 2014; Zelazo & Lyons, 2012; Zenner, Herrleben-Kurz, & Walach, 2014).

In sum, we have tried to make a strong case for the promise of CCK2 relative to previous SEL initiatives including: Its design around evident and more subtle non-cognitive challenges of young children and the unique brain restructuring during the 5-to-7 shift; mindful and replenishing practices that address top-down and bottom-up sources of school struggles for young children experiencing toxic stress; an explicitly supported extension of impacts into academic achievement; provision of services at multiple levels of risk; and program components being relatively non-intrusive and easy to implement while targeting direct pathways for positively impacting children, classrooms, and teachers.

B. PROJECT DESIGN

B1. PROJECT GOALS AND LOGIC MODEL

In this four-year project, CCK2 will serve 16 low-performing schools, 120 K-2 classrooms, and 3,000 students during three full implementation years. Note that the 16 schools that are randomized to receive CCK2 will also be supported (with

non-project funds) to implement the standard CC model in the remaining grades (3-8). The school-wide impacts of CC have been preliminarily documented in non-experimental evaluations via staff-wide perceptions of program ease of use and success, as well as decreases in code of conduct violations, suspensions, and detentions (see Luster, 2013-b). These and other findings have led CPS to strongly urge the adoption of school-wide SEL approaches such as CC, and our partnership to align with these conditions for the study. Although we will not divert project resources to study school-wide impacts, we will study academic impacts into the third grade to evaluate whether they last once students begin to experience the standard CC model.

Overarching Goal of the CCK2 Project: To employ a mindfulness-based intervention to improve academic achievement via non-cognitive mediators for K-2 students in low-performing CPS schools at three levels: individual children-universal, individual children-targeted, and classrooms.

Goal 1: To specialize the Calm Classroom approach for the unique stresses, social-emotional competencies and needs, and academic priorities of K-2 students.

Actions: Prior to the first full implementation year, field test the newly developed: ✓ Small Groups curriculum, ✓ Calm Spot (technology and implementation), ✓ “At Your Desk Anytime” strategies, ✓ classroom signage, and ✓ more intensive parent meetings with children, parents, teachers, and school administrators.

Goal 2: To promote in teachers and parents awareness about the “mechanisms of change” upon which mindfulness-based practices work, and realization of benefits for themselves and the children in their care.

Actions: ✓ Develop and deliver materials, in both written and in-person formats, with user-friendly language, explaining the combined power of pivotal adults and mindfulness strategies to move the trajectories of children’s lives in a positive direction, from genes, to brain, to body, to behavior. ✓ Model and practice CCK2 strategies at every adult meeting.

Goal 3: To create a sustainable mindful culture and high likelihood of program continuation including infrastructural supports and a gradual transference of responsibility to school personnel.

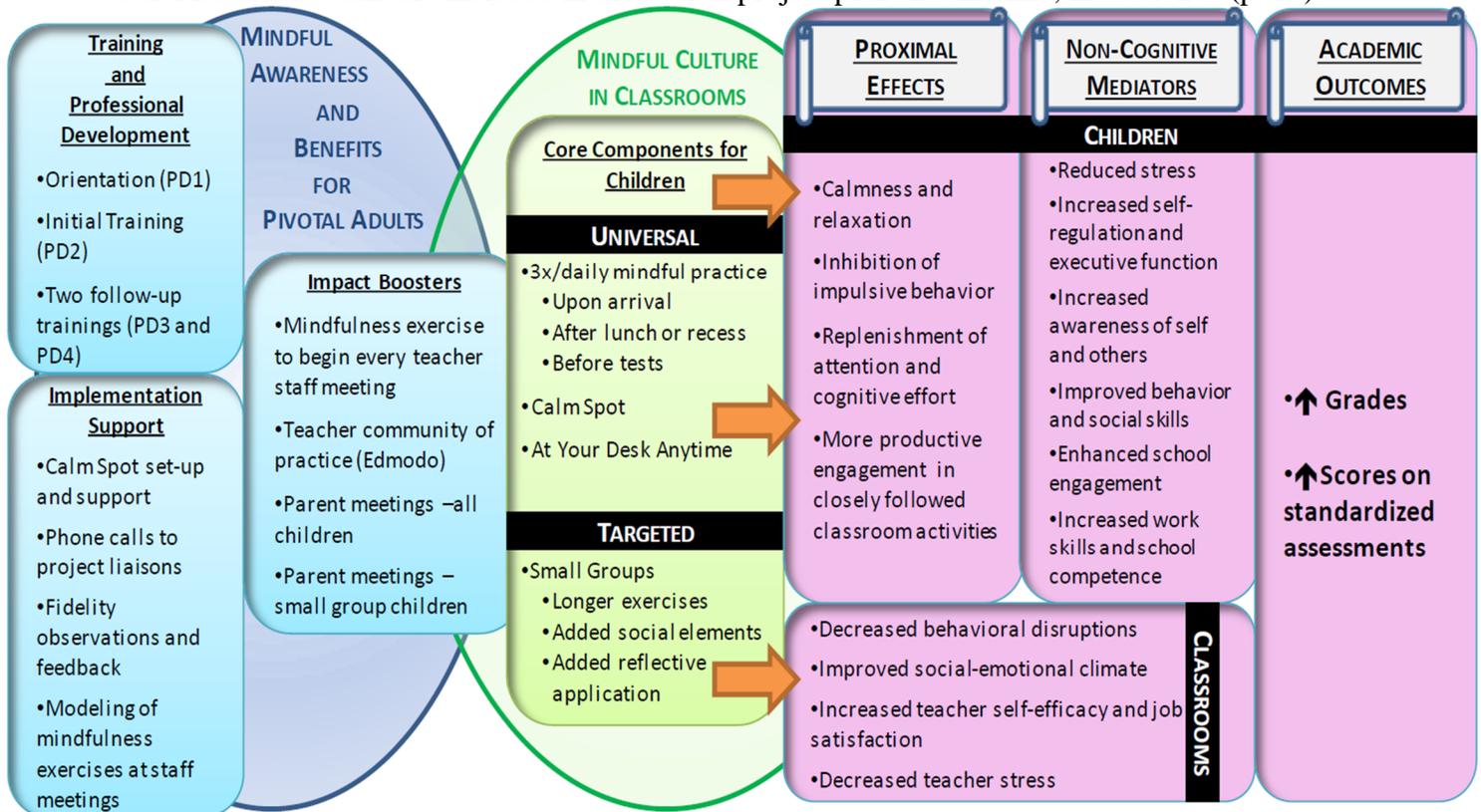
Actions: ✓ Integrate CCK2 practices and troubleshooting into existing meeting structures. ✓ Implement a model of staff turn-taking at facilitation, so turnover has less of an impact. ✓ Provide direct leadership of Small Groups in the first year, move to co-facilitation with school personnel in the second year, and train-the-trainer in the third year.

Goal 4: To ensure replicability for and applicability to young students in low-performing schools in various types of school structures and communities.

Actions: ✓ Collaborate with other experts, including committed advisors to this project (see letters of support). ✓ Integrate consultation with project-generated data to make program adjustments. ✓ Create tools with lessons learned and replication information and distribute to professional networks, such as the Mindfulness in Education Network. ✓ Create and disseminate scholarly publications, including at least two mid-grant. ✓ Conduct program evaluation such that it will prepare us for the next level of scale-up and validation.

The logic model for achieving the overarching and sub-goals is below. Please note that it depicts the intervention only, not development, field testing, continuous improvement nor dissemination

activities. These tasks are included in the overall project plan and timeline, in section C (p. 19).



As shown, CCK2 is a rather parsimonious model. Description of the core components (blue and green) in the following section will explain their feasible time commitments, utilization of existing meeting structures, and minimal disruptions of class-wide activities. The outcomes (pink) are consistent with the theoretical and evidentiary bases described in Section A, and signify measurements that will be taken within one academic year, although the evaluation (see Section D) will test the hypotheses that even larger impacts will be present for participants with two years of CCK2, and that detectable impacts will sustain into the third grade.

B2. COMPONENT DESCRIPTIONS, POTENTIAL RISKS, AND MITIGATING PLANS ① **Training and**

Implementation Support: The one-hour orientation (PD1) is the only school-wide meeting and is provided during May, after a school has been randomized to begin the following fall. All relevant staff are included (K-8 teachers, principals and assistant principals, mental health staff, and enrichment and physical education teachers, whose classes may be affected by the Small Groups). Staff will be introduced to CC and CCK2, and a Q&A segment will also be included. The initial 90-minute training (PD2) focuses on implementation of all classroom components (3x

daily exercises, Calm Spot, “At Your Desk Anytime”, and signage). It will take place each year in August as part of CPS’ built-in PD days. The two 45-minute follow-up trainings (PD3 and PD4) focus on practice refinement, troubleshooting, and building rapport and wisdom as part of the CCK2 community of practice. These will occur during the grade-level meetings that are also already a part of CPS schools’ structure. CCK2 staff will model and facilitate practice of program mindfulness exercises at all four trainings. In addition, to support implementation of teacher-facilitated mindfulness practices at the start of *every* weekly grade-level meeting (conceptualized in the logic model as an Impact Booster), CCK2 staff will attend, for the first 10 minutes only, three additional grade-level meetings over six weeks in September and October. We will co-facilitate and model the “calling to order” of these meetings with a mindfulness exercise, as well as help establish a routine for determining turn-taking and collective ownership of the process. Another element of CCK2 implementation support is troubleshooting and data gathering phone calls to a designated school liaison, twice a month in the fall, and once a month in the spring. The school liaison will be responsible for assisting project staff in managing the collection of several types of data that will be used for progress monitoring (See Section C) as well as evaluation (see Section D). Furthermore, each teacher will receive at least one observation and feedback session in the fall from a CCK2 staff (see Appendix J.5 for rubric) regarding their usage of all class-wide elements. Finally, CCK2 staff will assist teachers during a pre-year classroom set-up day, to help set up the Calm Spot so that it is both non-intrusive to teachers’ plans and in accordance with program specifications. 🍌 **Impact Boosters:** Knowledge about mindfulness and its benefits, and self-practice of mindfulness techniques are conceptualized as impact boosters rather than direct causes of child-level outcomes. This is appropriate given that the core program dosage is received by children regardless of the level of adult uptake of the impact boosters, yet, a “critical mass” of adult participation and enthusiasm is expected to have culture-level benefits that reach children. What is the critical mass? Our desired targets for the impact boosters are as follows: *80% of staff meetings will convene with a mindfulness exercise and all observed meetings will be rated at least “good” (see Appendix J.5 for rubric); 20 % of teachers (1-2 per school) will*

participate at least twice weekly in the Edmodo Community of Practice social networking site; 25% of universal-level (UL) parents will attend their meetings; and 75% of targeted-level (TL) parents will attend their meetings. High adopters of impact booster components will also report personal benefits of participation. These targets will be measured via liaison phone calls (see above), observations, attendance, Edmodo site usage, and self-report surveys. It is especially critical to offer parent involvement elements in early educational interventions (Weiss, Caspe, & Lopez, 2006), and in CCK2 they are aligned with the potential risk of diminished caregiving in the toxic stress model. All parent sessions will provide food and babysitting, and be advertised with flyers, through school e-mail lists, and via parent ambassadors to encourage participation. UL parent meetings will be held twice per year and TL parent meetings will be held three times per year. The content of the UL and TL meetings will be similar (i.e., mindfulness exercises, education around benefits and mechanisms, practicing at home especially at bedtime, around homework, and after an upset). The TL meetings will be smaller (i.e., they are administered by grade-level for the bottom quartile students' families only), contain added content around challenging behaviors and other parent concerns, and promote connections between parents for mutual empowerment around creating mindful, better-regulated homes. Following the principles of the Buffering Toxic Stress Consortium's parent interventions, the take-home message behind all parent meetings will be that parents do not have to solve every one of their burdens and stressors before they have the power to have a positive impact - all the way down to the biological level - on their children's and their own lives. **3 Core Components for Children: Class-Wide Mindfulness Exercises** are taken from the 25, 2-3 minute exercises (grouped by "Breathe", "Focus", "Relax", and "Stretch") in the K-2 version of the manual, which is fully translated into Spanish (see Appendix J.3). The program guideline is to do these three times per day, generally 1) after arrival and prior to the content-heavy morning, 2) after lunch or recess, and 3) prior to a test or another challenging activity or task. In the 2013 CC evaluation mentioned above, 76% of teachers (K-8) reported doing these exercises at least twice per day. Considering the greater engagement of the youngest students, but the more accurate reporting we can expect with tablet

logs, we are targeting *80% of days for 2+ exercises*. Children take turns being “Classroom Ambassadors” who turn out the lights, and may assist teachers with simple commands such as “Please close your eyes” or “Please stand up.” Teachers are trained on tone of voice, pacing, and on minimizing and addressing problems children may have engaging in the activities. Exercises are not limited to those that require stillness, silence, or closed eyes. Some involve vigorous motor activity (e.g., “Music Scribble”, “Shake Like Spaghetti”), slow motor activity (e.g., “Seated Mountain”, “Standing Half Moon”), vocalizing (e.g., “Twist and Count”, “Bee’s Buzz”), outer focus (e.g., “Looking at One Thing”), and social elements (e.g., “Smile Time”). The *Calm Spot* element is an appropriate addition for young children and is inspired by the “Calm Down Spot” from the Head Start-Trauma Smart program (Smith, 2013). As is appropriate for somewhat older children and in accordance with Attention Restoration Theory (Kaplan, 1995), our Calm Spot is not only for the reduction of “big feelings” such as anger (Smith, 2013), but also for the reduction of internally disruptive experiences such as mental fatigue or lack of engagement. Teachers will train and support children in the self-initiated use of the Calm Spot, and teachers may also suggest its usage, but it must not be mandatory or used as a punishment. Each classroom’s Calm Spot will be equipped with two sets of noise canceling head phones and tablet computers that will display “soft fascination” videos (e.g., nature scenes) along with minimal voiceover. The app will randomly select from a set of dozens of scenes, with a different set of scenes available each quarter, thus minimizing the risk of children habituating to the effects. The tablets will boost the efficiency of the Calm Spot by: 1) Providing control in terms of duration (two minutes) and number of times an individual child is allowed to log on per day (three), and minimizing disruption to other students, thereby relieving the teacher of much of the monitoring burden; 2) Instructing the child to go back to the classroom activity when finished; and 3) Assisting the external evaluator with data collection via the individualized (photo-based) local log-in system. If every single child used the Calm Spot the maximum amount, it would be in usage for 1.5-3 hours per day, or less than half the school day. We are targeting a much lower usage level, *from familiarity and seldom usage (e.g., 1-2x per week) for well-regulated students,*

to regular usage (e.g., 2-3x per day) for students who would otherwise not absorb the majority of content without frequent replenishment. Infrequent users (whether they start out well-regulated or not) may receive indirect benefits by having better-regulated and more engaged classmates, or even the knowledge that their classroom has an ever-present support for a private break, should the need ever arise. Individual-level Calm Spot usage will be tracked on the tablets, and quarterly reports will be used both for teacher support (e.g., consultation around specific children) as well as project improvement efforts if there are systematic challenges in meeting usage targets. At Your Desk Anytime Strategies (AYD) are extremely brief “brain breaks” that do not require children to get up and go to the Calm Spot, and indeed will be an offered alternative if the Calm Spot is full. They are facilitated by room signage, which will display three of the easiest exercises to self-administer. For example, they may choose “Make a Wish Breath” during which they close their eyes, make a wish, breathe in, breathe out three times, and then repeat the breathing sequence. Program training will include assisting both teachers and children in accepting and getting used to this self-calming culture, and emphasizing that AYD is the one mindfulness opportunity that is available to them 100% of the time they are in that classroom. Whereas the risk for the Calm Spot may be over-usage (due to intrigue of the tablets), AYD is more likely to be under-utilized. The performance targets for AYD are: *At least two instances per day; teachers report that it enhances mindful culture and is a successful alternative to the Calm Spot; children report that having the option helps make school a more relaxing place.* Small Groups are designated for children starting out in the lowest quartile of the non-cognitive factors targeted by CCK2 - stress, executive function (e.g., attention and inhibition), and self-regulation (e.g., engagement, persistence, response to social challenges, appropriate emotional expression). There are 20, 30-minute Small Group sessions; 8 between late October and early December, and 12 between mid-January and mid-May. CPS has an extended, 7-hour school day (including full day kindergarten), within which at least 110 minutes are dedicated to purposes aligned with the CCK2 Small Groups, i.e., intervention for Tier II or Tier III students, social and emotional learning and behavioral interventions, “specials” which include health and wellness, and physical education

(CPS, 2012; p. 10). CCK2 staff will arrange sessions to occur during one of these enrichment or intervention periods⁶. Absences on school days on which sessions are scheduled will be kept to a minimum with the help of Parent Liaisons who will provide phone call or text message reminders. We are targeting *90% per-child session attendance (two or fewer of 20 sessions missed)*. Sessions will involve extended CC exercises and incorporate aspects of “social mindfulness” to develop kindness and awareness of both “self and other without blending the two” (Flook et al., 2010). It is important to address the sense of non-belongingness that is often present in children with self-regulation challenges (Rubin & Coplan, 2004). The sessions also have reflective elements for applying a mindful approach to situations beyond the group (e.g., upsets at home or on the playground), and gradually increase children’s ownership around recognizing their self-regulation needs, and appropriate times for engaging in mindfulness practices. Please see Appendix J.4 for two Small Group lessons. Beyond the risks and protective actions already discussed, below is a summary of key issues.

Potential Risk	Mitigating Factors
Low child engagement in classroom components	Specific teacher training, data-driven ongoing support, components with proven or high-probability engaging qualities.
Low attendance at parent meetings	Targeted advertising, provision of babysitting and dinner, use of parent ambassadors to spread the word and spark enthusiasm.
Lack of time or commitment for teachers	Training stipends provided, minimal instruction disruption, incorporation of elements into existing meeting structures, lack of extensive program content to memorize or master, personal and fast-acting program benefits will increase motivation, co-facilitation of staff meeting exercises and establishment of turn-taking process.
Teacher turnover or other school staffing challenges	At least two project liaisons per school will receive additional stipends to achieve train-the-trainer status, project will work closely with Karen Van Ausdal at CPS’ OSEL (see letter of support).
Lack of staff for Small Group facilitation	A variety of school personnel are options (e.g., school social workers, health or P.E. teachers, character development instructors, disciplinary deans or team leads, or outside vendors who are already in place to fill extended day hours with enrichment time or SEL programming).
Inflated fidelity and implementation data	The independent evaluator will collect these data, and emphasize its separateness from the project, and its utmost goal of accuracy. Any implementation assistance that may be offered as a result of these data will be conducted at the teacher’s convenience.

⁶ If Small Groups occur during Specials, it will only be during classes with related purpose, i.e., Health and Wellness, or Physical Education. Note also that the CCK2 sessions do not take up an entire class session. Affected teachers will be able to choose whether Small Group students attend the first, or last, 15 minutes of their class, and CCK2 staff will escort students on both ends.

Small group curriculum is developed but not yet field tested	Most of the existing evidence on successful mindfulness programs in schools is on small group models. Child engagement is not a significant plausible risk as K-2 students are high adopters of CC approach under more difficult circumstances (larger groups, teacher facilitators). Scheduling and space are the greatest anticipated challenges, which were addressed above in the element description. Securing time and space for small groups is a major responsibility of the Project Manager. Sufficient time for field testing of content and making revisions is scheduled in the project plan.
Calm Spot “app” is not yet developed	Erikson’s Technology in Early Childhood (TEC) Center is a project partner, and is providing consultation to ensure sufficient resources (time, money, expertise) for creation and testing of the app. Both the interface and back-end database are dramatically simpler than most apps (e.g., nature footage taken from royalty-free stock videos).
Clinical-level concerns may be raised by parents in the parent meetings	Erikson’s Center for Children and Families (CCF) is a project partner and will provide consultation around the detailed agendas for parent meetings. Parents can also be directly referred to CCF for services or further referral, and CCF staff will provide mandated reporting oversight to the project.

C. MANAGEMENT PLAN AND PERSONNEL (CV’s in appendix F)

C1. PERSONNEL AND RESPONSIBILITIES

The management structure and key personnel are detailed in Appendix J.2. As shown, there is a lead individual from each project partner (CPS, Erikson, Calm Classroom, and Chapin Hall) comprising the Management Team. Erikson Institute is the lead applicant, and meets eligibility with a long history of improving student achievement, especially in CPS (see Appendix C). There is strong institutional commitment from all partners, including capacity to leverage funder relationships, and pre-committed partial match funds (see Letters of Support). **Dr. Amanda Moreno** will serve as PI (.4 FTE for 10 months and 1.0 FTE for 2 months), is the final responsible party for the project being implemented with quality, reaching its goals (including budget oversight and reporting duties), and providing coordination of the partnership and duties across the key parties. Substantively, she will assure that program components are being delivered in a model-consistent manner (including brain- and age-appropriateness), and, drawing upon her expertise in implementation science, she will assure that expected dosages are reaching children directly and with quality. She has directed large-scale education intervention projects, designed and documented the effectiveness of curricula and learning assessment instruments, oversaw the Marsico Institute for Early Learning and Literacy’s research arm in her former position as its Associate Director, and has had responsibility for

improving achievement in high-needs school-age children (see CV and Appendix C). As founder and Executive Director of Luster Learning Institute (LLI, 501(c)(3)), **Jai Luster** will serve as Intervention Director (.4 FTE). He will finalize program elements, direct school recruitment, and serve as primary liaison to principals. Mr. Luster left a highly successful career in hedge funds in 2001 to pursue his joint passions of mindfulness practice and education improvements for at-risk children. **Dr. Stephen Baker** will serve as Evaluation Director (.30 FTE). He has been a researcher at Chapin Hall for over 20 years, leading studies on child well-being for clients such as Kellogg Foundation and The Wallace Foundation. Chapin Hall has been a leader in using administrative data combined with primary research to study child well-being in disadvantaged communities since 1985, using experimental and mixed designs and drawing upon strong relationships with policy partners and the faculty, staff, graduate students and other resources of the University of Chicago. Supported by the vast set of skills among the Chapin team, Dr. Baker will design and direct the evaluation study, and lead the mid-project data feedback loops for use in continuous project improvement, maintaining independence and integrity of methods and results at all times. Drs. Baker and Moreno will collaborate on the write-up and dissemination of project results. **Karen Van Ausdal** directs CPS' OSEL, and will serve as the primary Management Team Advisor (50 hours per year) from our LEA partner to the project. **Dr. Jana Fleming** is the Director of Erikson's Herr Research Center for Children and Social Policy, and will serve as Co-I (.15 FTE) and senior scholar. She will provide project guidance, taking particular ownership of the adult-targeted program elements. Dr. Fleming was formerly the Executive Director of Child Development Studies at City College of Chicago, a researcher at the Frank Porter Graham Institute, and has conducted numerous studies in education settings, with a strong focus on teacher professional development and PK-3 systems. **Kandace Thomas, MPP**, will serve as the full-time Project Manager (1.0 FTE), carrying out day-to-day operations of the project, providing consultation on diversity issues, supervising project assistants, overseeing Edmodo participation, and conducting direct services including training, Small Groups, and Parent Meetings. Ms. Thomas has expertise in non-profit grants management, child development and trauma,

particularly in African-American families, and systems work. **Dr. Chip Donohue** is the Director of Erikson’s TEC Center (see Risks and Mitigation chart above) and will be the lead consultant (100 hours per year) to the development, set-up, and support of the Calm Spot. **Dr. Margret Nickels** is the Director of Erikson’s CCF and will provide mental health consultation to the project (20 hours/year). **Jori Griffith, M.S.**, is Luster Learning’s Director of Operations and will serve as the project’s Intervention Manager (.50 FTE), attending to training, curriculum materials, direct services, and being the primary project liaison to teachers. Finally, we have recruited an impressive and broad-based **Panel of Expert Advisors**(see Appendix F for CV’s and J.2 for full list) who will participate in two, 2-hour videoconferences per year and as-needed consultation.

C2. TIMELINE, PROGRESS MONITORING, AND CONTINUOUS IMPROVEMENT

The timeline for achieving many of the major project tasks is below. Please note that project start-up and one full implementation year (including continuous improvement targets) are included. The intervention pattern will occur three times, and in addition, July-December 2018 will be used for full dataset analyses, and creation and dissemination of results and replication tools.

		S	O	N	D	J	F	M	A	M	J	J	A
* Pre-Award 2014		→											
Ch	Obtain IRB and CPS Research Office approval	→											
E,C	Secure 15% match	→											
E	Search and select Calm Spot app developer	→											
E,C	Search and hire any open positions (e.g., graduate assistants)	→											
E	Develop, test Calm Spot app technology	→											
C	Field test Small Groups, Parent Mtg. curricula in 5 classrooms	→											
Project Start January 2015		→											
E	Conduct Panel of Expert Advisors videoconference	→											
Ch, C	Select and RA first 16 schools for full intervention/evaluation	→											
E	Field test Calm Spot set-up and usage in 5 classrooms	→											
C	Finalize training prep	→											
E,C	Classroom set-up and conduct trainings	→											
First Intervention Year, Academic Year 2015-2016		→											
Ch,E	Pre-tests and Small Group student selection**	→											
C	CCK2 staff attend 3 teacher staff meetings	→											
C,E	Core child program elements	→											
C	Follow-up PD	→											
C	Implementation observations and feedback	→											
C	UL Parent Meetings	→											
E	TL Parent Meetings	→											
E,Ch, C	Available evaluation data review (implementation and outcome)	→											
Ch, C	Select and RA second 16 schools for full intervention/evaluation	→											
E,C,Ch	Design project improvements for next intervention year	→											

*Lead responsible partner, Erikson, Calm Classroom, Chapin Hall, listed in order. ** See Section D for details.

Progress monitoring and performance targets are addressed in both the timeline as well as in Section B2. CCK2, albeit multi-faceted, is highly fine-tuned in terms of its targets and does not

require complex systemic change to be successful. All CCK2-controlled elements have 100% performance targets (e.g., Calm-Spot set-up in every program classroom, trainings, all Parent Meetings, and all 20 sessions of each Small Groups conducted); the Managers (Ms. Thomas and Ms. Griffith) will have primary responsibility for tracking these items using a combination of a shared project management platform (Asana) and a proprietary database created for Erikson by Chief Research Officer, Charles Chang. Teacher-led daily exercises will be tracked with an extremely easy-to-use tablet interface (Quick Tap Survey), requiring three taps (preceding activity, following activity, and which exercise) before the desired exercise script is displayed. Although Calm Spot usage is tracked automatically, please note that this will be a local system so as to prevent internet access and protect children's privacy. Thus, graduate assistants will go to schools and download tablet data to secure laptops twice per semester. Small group attendance will be tracked by facilitators and entered into the project database. All available performance metrics will be reviewed at least bi-weekly at team meetings, and solutions generated for any targets not on track. Project partners are all local, and have the capacity to respond nimbly to anecdotal challenges from the field between data reviews. Available screening, implementation, and outcome data collected by the Evaluation Team (including teacher and parent satisfaction and barriers surveys) will be reviewed and acted upon for continuous improvement three times per year (see timeline), and will also provide part of the content for the Panel of Expert Advisors videoconferences, so that we can integrate data- and consultation-driven decisions into our final continuous improvement effort each August. Obtaining participation from the required amount of schools to achieve sufficient power (See Section D) is not anticipated to be a problem given CC's success at getting whole schools on board with fewer supports, and the fact that we have a continuous record of working with CPS central office (see letter of support), who are providing us with the school-level data needed to meet project requirements (e.g., test scores, SEL programs). Finally, Erikson has systems in place and extensive precedent (including 13 grants) for supporting major projects around financial tracking and requirements, legal issues and ethics, reporting, and personnel issues including hiring and workspace.

D. EVALUATION PLAN

D1. EVALUATION OVERVIEW AND RESEARCH QUESTIONS Chapin Hall at the University of Chicago will serve as the independent evaluator, assessing CCK2 implementation and its impact upon students and classrooms. We designed a study intended to meet What Works Clearinghouse standards without reservations, and that would ready the program for a replication and validation effort in the next phase. The impact study will employ a cluster randomized control trial among schools identified by CPS as having no structured SEL program in place but eligible for new SEL curriculum. Schools will be randomly assigned to receive CCK2 services or the most common CPS SEL curriculum. This evaluation is organized to answer three key questions about program implementation and impacts: 1) What is the fidelity and quality of the CCK2 implementation, including the barriers and facilitators for stakeholders? 2) What are the proximal effects, non-cognitive mediators and outcomes, and academic impacts of CCK2, including any differential effects upon those students with the greatest needs? 3) What are the effects of CCK2 on teachers (e.g., self-efficacy, stress, job satisfaction) and classrooms (emotional climate and behavioral disruptions)? Below is an overview of evaluation activities designed to answer these questions. A timeline of evaluation management and technical details is provided in Appendix J.6.

Construct	Informants	Methods	Measures	Administration
Implementation/Impact Boosters				
Dosage	T, LL	DB, O	CCK2-DB, CH	Interviews, focus groups, and surveys - April-May. Performance targets - ongoing.
Quality	T, A, LL	S, O, F	CH	
Barriers and facilitators / perceived value (self and others) / satisfaction	T, A, LL, P	S, F	CH	
Impact boosters	P, LL	F, I	CH	
Proximal effects				
Calmness and relaxation	S, T	Direct measure, S	Heart rate	Immediately prior to and after mindfulness exercise
Impulsive behavior	T, LL	S, O	Barratt Impulsiveness Scale	September / May
Attention and cognitive effort	T, LL	S, O	Academic Performance Rating Scale Exam grades preceded and not preceded by CCK2 exercises	Video recording review, fall/spring
Engagement after program components	T, S, LL	S, O		
Non-cognitive mediators/outcomes				
Stress levels	S	Saliva	HPA levels	September /February
Self-regulation & executive function	T, LL	Direct assessment, S	Flanker Task Dimensional Card Sort Selective and Sustained Attention	September / May

			Behavior Rating Inventory of Executive Function	
Awareness of self and others	T	S	Devereux Student Strengths Assessment (DESSA)	September / May
Behavior and social skills				
School engagement	T, S	S (read to students by research assistants)	Rochester School Assessment Package	September / May
Increased work skills & school competence	T	S	Academic Performance Rating Scale	September / May
Academic outcomes				
Grades	CPS / S	CPS-DB		Admin data
Standardized test scores	CPS / S	CPS-DB	NWEA MAP Growth	Twice a year
Woodcock-Johnson	S	Protocol	Woodcock-Johnson III	September / May
Classroom-Level Impacts				
Teacher Self-Efficacy	T	S	Teacher Self-Efficacy Scale	September / May
Teacher Stress and Job Satisfaction	T	S	Teacher Job Satisfaction Questionnaire – Responsibility and Work Itself subscales	September / May
Classroom Climate	CCK2	O	Classroom Assessment Scoring System K-3	September / May
Behavioral Disruptions	T, CCK2	S, O	Logs naming specific types of incidents	Teacher logs and via videos

Informants: T = teachers; ; LL = Calm Classroom (Luster Learning) program staff; ; A= Administrators at school; S = students ; P=parents *Methods:* O = observation; I = interviews; S = surveys; F = focus groups; DB = database of secondary data *Measures:* Chapin Hall developed survey = CH; Existing instrument (named)

D2. STUDY COMPONENTS, METHODS, AND ANALYSIS

An **implementation study** will examine the processes of the core program components outside and inside classrooms. This includes 1) teacher training and PD, implementation support, and “impact boosters” for staff and parents; and 2) student small group activities. Classroom core processes are 1) brief mindfulness exercises, 2) the use of “Calm Spot” and 3) “At Your Desk” activities. Four aspects of implementation will be measured: 1) dosage, including attainment of quantified implementation thresholds; 2) quality, including the perspective of experienced CCK2 staff; 3) barriers and facilitators, including compatibility with school processes; and 4) satisfaction and perceived value. These constructs of implementation will also be measured in the comparison schools.

As noted in the table, we will employ multiple traditional data collection methods. Classrooms will be videotaped to record activities before, during and after key program components and reduce teacher data logging burdens. The implementation study will provide formative guidance, a resource to triangulate other findings, the basis for a fidelity index covariate for outcomes analysis, and information for any scale-up and replication efforts.

An **impact study** will measure the four areas conceptualized in the CCK2 logic model: proximal effects, non-cognitive mediators and outcomes, academic outcomes (grades and standardized test scores), and classroom-level effects. We will use protocols and scales that are reliable and validated measures of these constructs. We will also validate devices for measuring heart rate and other physiological measures of relaxation.⁷ Stress levels will be measured with cortisol markers in saliva. At the classroom level, we will be measuring behavioral disruptions, social-emotional climate, teacher self-efficacy and job satisfaction, and teacher stress.

Because students in the earliest grades lack lagged indicators, we will administer the Woodcock-Johnson (WJ) assessment (which has a normed version in Spanish) in addition to school-administered standardized tests to measure changes in academic achievement. The WJ has been shown to be sensitive to intervention effects within the 8- or 9-month academic year among young students (e.g., Chien et al., 2010; Li, Farkas, Duncan, Burchinal & Vandell, 2013). Academic outcomes will be assessed each year at the individual-level (consented students) and aggregate level (all students). We will track academic progress of second grade students into the third grade using administrative data.

Design, sampling and minimum detectable effect size: Our design, sampling process, and assignment of the comparison condition balances important ethical and scientific interests in conducting applied research in the nation's third largest school district. CPS has specific plans to expand SEL services to all schools in Chicago in the coming years. Assigning schools with no current structured SEL program to receive either CCK2 or Second Step services (rather than preventing schools from obtaining services during the study) supports this fundamental goal and offers additional benefits. While not designed to make strong claims about the effectiveness of Second Step effectiveness per se, this process allows us to measure CCK2 impact against a commonly-used SEL intervention with a model that is representative of more traditional programs (e.g., multiple lessons based on discrete social situations) and provides a general test of

⁷ Because the field of health-monitoring technology is rapidly evolving, we will make a final decision about specific devices to measure physiological changes in the spring of 2015.

CCK2 against a stronger counterfactual than “no services.” As noted, we will assess actual implementation levels in both the treatment and comparison condition to ensure that we can make reasonable claims about relative effectiveness.

Specifically, CPS will identify 80 schools with no structured SEL program in place (40 for fall 2015 and 40 for fall 2016) where the district plans to expand SEL programs. Using CPS’ School Quality Rating⁸ we will exclude Tier 1 or Tier 2 high-performing schools and recruit 32 schools over two cohorts to be randomly assigned into the treatment or comparison conditions.⁹ All K-2 classrooms will receive CCK2 services. We estimated an average of 2.5 classes per grade, 25 students per class, and 6,000 students.¹⁰ Teacher-report data and individual-level administrative data will be collected on all consented students. To conserve evaluation resources while retaining sufficient power, face-to-face measures (e.g., executive function, Woodcock-Johnson) will be conducted on a randomly selected set of 4 students per classroom within the universal level (960 total) (Chien et al., 2010) and all students screened into the targeted level (1,500 total) . Thus, face-to-face measures will be available for approximately 41% of the 6,000 children across all treatment and comparison classrooms. The screening process employs both teacher- and student-report, and is fully described in Appendix J.6.

The minimum detectable effect size for this study was calculated using Optimal Design software (Raudenbush, 1997) and is 0.220σ for student academic impacts. Our power calculations assume 7 classrooms per school¹¹ and 32 treatment and comparison schools. We expect to have data for 10 students per classroom (4 randomly selected and 6 small group). Based on available school-level data, we conservatively anticipate being able to explain 80% of between-school variation using pre-treatment covariates. We assume the classroom and school level intra-cluster correlations are both 0.1, based on expected high and consistent program

⁸ (<http://www.cps.edu/Performance/Pages/PerformancePolicy.aspx>)

⁹ Recruiting schools for the pool to be randomly assigned has two immediate benefits. First, it decreases the variability among the schools in our sample, increasing the power of our analysis. Second, it identifies schools that are more likely to support an effective implementation, which is necessary for this developmental study.

¹⁰ CPS average class size was 23.8 in 2013. CPS has set its official class size standard at 30 students per grade and has been closing schools to “reduce capacity” with this explicit number.

¹¹ Only integers can be entered for number of classrooms.

implementation across classrooms and our plan for reducing heterogeneity in the pool of eligible schools.¹² Rather than pairwise matching prior to randomization, we propose using a pre-treatment covariate in our analysis model (Raudenbush, Martinez & Spybrook, 2007). We expect our exclusion of Tier 1 and 2 schools to increase homogeneity such that matching prior to randomization would not substantially increase our intraclass correlation coefficient.

Data Analysis: Implementation data analysis will be conducted in Atlas.ti, which facilitates within and across-document analysis. Findings will be used to develop school-specific implementation profiles and fidelity index. Analysis will be ongoing and iterative, using the constant comparative method of analysis and grouping of data (Strauss, 1987).

The primary goal of our quantitative outcomes analytic models will be to estimate the impact of CCK2 on proximate effects, non-cognitive mediators and outcomes, and academic performance. The study is modeled at three levels: student, classroom, and schools. Good estimation requires acknowledging the underlying nested quality of the data, taking advantage of existing administrative data (e.g., school performance in prior years), and minimizing selection bias. Outcomes are continuous and will be analyzed using a hierarchical mixed-effects linear regression model (Raudenbush and Byrk 1992, Goldstein 2003), after ensuring that the data are normally distributed (Appendix J.6). This will account for the correlation of observations within a school and classroom and will estimate the effect that this clustering has on the outcomes.

In addition to the primary predictor of group assignment, in models for student-level academic outcomes, additional covariates will be included in the model that control for student-level demographics (e.g., race/ethnicity, gender, family income) and proximal and non-cognitive measures, whether the student participated in small group activities, classroom-level factors (e.g., classroom climate assessment, teacher stress and self-efficacy measures), school-level factors and other predictors (e.g., Woodcock-Johnson measures) identified during baseline comparisons.

¹² CCK2 effect size (.27) is the average estimated academic impact for nonacademic programs (Durlak, 2011). Second Step social emotional effect sizes are reported as one-third the size of the Durlak average, so we are optimistic that the effect size for this study will be sufficient to demonstrate academic differences between Calm Classroom and Second Step.