

Loving Guidance, Inc.
Final Report
Conscious Discipline Research Study
Research Findings

Submitted to:

Becky A. Bailey, Ph.D.
President
Loving Guidance, Inc.
820 W Broadway Street
Oviedo, FL, 32765

Prepared by:

Jeffrey S. Rain, Ph.D.,
President and Principal Investigator
Rain & Brehm Consulting Group, Inc.
1486 Wellington Circle
Rockledge, FL 32955
321-362-4441

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CONSCIOUS DISCIPLINE PROGRAM RESEARCH STUDY

ABSTRACT

Targeting early social emotional development through early childhood curriculum is associated with a number of behavioral and academic outcomes. However, these typically manualized efforts are, necessarily, universal programs that focus solely on changes in child behavior. Conscious Discipline is a social emotional development intervention that uniquely targets teachers as well as child behaviors in a universal intervention approach, but can be applied in vivo to address the specific needs of individual students. A multi-site, quasi-experimental effectiveness study examined differences in social emotional development, school readiness, and school climate collected from multiple rating sources (teacher, observer, and parent).

Outcomes were compared between intervention and comparison classrooms drawn from 66 pre-kindergarten teachers (representing 24 school-based and center-based sites, 1,386 children, and three states) over an 8-month period. Implementation fidelity was monitored through teacher and observer reports. Potential threats to study integrity from attrition and confounding variables were examined. Repeated measure analysis of variance (ANOVA) and moderated multiple regression were the main statistical analyses.

Results showed significant improvement in social and emotional skills for both teachers and children exposed to Conscious Discipline. School readiness (Language, Literacy, and Mathematics) were significantly higher at posttest for children taught by Conscious Discipline trained teachers. Sites with school-wide implementation of Conscious Discipline show significantly higher organizational and relational support than do sites operating “as usual”. Eta-square and semi-partial correlations indicate moderate to large effects.

Viewed collectively, results reveal Conscious Discipline produces significant positive results for the quality of student-teacher interactions, improvement in social and emotional behavior skills for teachers and students, student academic preparedness, and overall school climate. Multiple rating sources and multi-site participation suggest the effects of Conscious Discipline are robust at the pre-kindergarten level.

BACKGROUND

Success, or lack thereof, once we pass through school doors has long been attributed to mastery of “reading, ‘riting, and ‘rithmetic”.¹ Competence in a fourth “R”, relationships, more broadly defined as social-emotional learning (SEL), has emerged as an equal to the “3Rs” in providing the necessary early foundation for later development in life. Arguably, the consideration of social and emotional skills is often not viewed as a core component, but rather as a form of ancillary support.

However, children do not develop by themselves. Instead, children develop through interactions with others. These relationships are formed with adults and similar-aged peers, as well as with larger groups, such as families or schools. Parents and teachers are the adults who figure most prominently in the early stages of a child’s development. Research with young children underscores the importance of early experience both for social and emotional development as well as cognitive functioning (Perry, 2000). Further, social and emotional development is regarded as essential to establishing strong cognitive functioning. Through interactions and attachments with others, children develop competence in controlling their emotions (Knitzer, 2000). Whereas these processes are described as positive development, brain development can be negatively impacted, for example by high levels of stress (Perry, Pollard, Blakley, Baker & Vigilante, 1995; Shore, 1997).

Perhaps in response to findings such as these, best practices for preschool programs now emphasize consistent themes relating to teaching skills and social and emotional skills. It is expected that preschool programs will focus on the whole child, balancing goals for their cognitive development with goals for social and emotional development. And it is expected resources will be directed to providing teachers with intensive coaching and supervision when implementing programmatic elements. These elements also must be considered within their contextual environment (e.g., school environment).

Though a relatively new area with few studies of pre-k effectiveness (Gilliam and Zigler, 2004), the link between a child’s social and emotional development and their school readiness, and later success in school and in life is well supported (e.g., Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011; Zins, Weissberg, Wang, & Walberg, 2004; Beelmann, Pfungsten, & Losel, 1994). The influence of social and emotional factors on future social functioning and academic performance is further supported as sustained outcomes in several longitudinal studies

¹ Origin of the “3Rs” is attributed to a speech by Sir William Curtis in 1824 as cited in The Mirror of Literature, Amusement, and Instruction (1825, January. Byerly, T. & Timbs, J., Eds., 5, 75. London: Limbird)

of pre-kindergarten (e.g., Curby et al 2009; Niles, Reynolds, & Nagasawa, 2006; Vogel, Xue, Moiduddin, Kisker, & Carlson, 2010) and kindergarten children (Durlak et. al., 2011) and in early elementary students (e.g., Malecki & Elliot, 2002; Teo, Carlson, Mathieu, Egeland, & Sroufe, 1996; U. S. Department of Education, 2010).

Social and emotional competencies that relate to these later academic and social outcomes can be enhanced through deliberate, systematic educational strategies (McNeely, Nonnemaker, & Blum, 2002; Osterman, 2000; Consortium on the School-Based Promotion of Social Competence, 1994; Elias et. al., 1997). Notably, the Common Core Standards acknowledge the critical importance of emphasizing social and emotional development in the early grades (National Governors Association Center for Best Practices, Council of Chief State School Officers, 2010).

Key Conceptual Components

Despite the clear links established between social emotional development and desired outcomes, the operationalization of what constitutes these components has been varied. (see Salovey & Mayer, 1990; and Bar-On, 1997).

As some researchers have suggested (Lopez & Salovey, 2004) our approach to operationalizing social emotional learning may continue to be impeded, in part, because of our cultural histories. To date, the conceptualization posited by the Collaborative for Academic, Social, and Emotional Learning (2003), or CASEL, is generally regarded as the most comprehensive consolidation of various research tracks (e.g., Elias, Tobias, & Friedlander, 2000; Goleman, 1995; Zins, et.al, 2004, Raver, 2002). CASEL identified a set of five interrelated skills: self-awareness, self-management, social awareness, relationship skills, and responsible decision making. We paraphrase CASEL's five skills.

Self-awareness: Accurately recognize one's emotions and thoughts and their influence on behavior which include: accurately assessing one's strengths and limitations and possessing a well-grounded sense of confidence and optimism.

Self-management: Regulating one's emotions, thoughts, and behaviors effectively in different situations which include: managing stress, controlling impulses, motivating oneself, setting and working toward achieving personal and academic goals.

Social awareness: Taking other's perspective and exhibiting empathy for others from diverse backgrounds and cultures, understanding social and ethical norms for behavior, and to recognizing family, school, and community resources and supports.

Relationship skills: Establishing and maintaining healthy and rewarding relationships with diverse individuals and group, which include: communicating clearly, listening

actively, cooperating, resisting inappropriate social pressure, negotiating conflict constructively, and seeking and offering help when needed.

Responsible decision making: Making constructive and respectful choices about one's own behavior and social interactions based on consideration of ethical standards, safety concerns, social norms, the realistic evaluation of consequences of various actions, and the well-being of self and others.

Acquiring Social Emotional Competencies

As it applies to early childhood development, social emotional learning encompasses processes whereby the knowledge and skills required to function effectively in various social contexts are acquired and practiced (Devaney, O'Brien, Resnik, Keister, & Weissberg, 2006; Gresham, 1981)

Studies conducted in other disciplines demonstrate a clear link between quality of teaching and student ability to acquire skill-sets. The research on resiliency and protective factors highlighted the influence of teachers in developing resilience (Howard, Dryden, & Johnson, 1999) and emphasized the importance of the everyday work, i.e., effective teaching. Mental health research (Harden, Rees, Sheperd, Brunton, Oliver, & Oakley, 2001) similarly argued that the way teachers behave has a major impact children and their mental health.

While an extensive body of research has established that skills can be taught through curricula and other forms of discrete intervention programs, their ultimate adoption is enhanced when school wide opportunities to acquire and practice skills in multiple settings throughout the day and within a supportive climate promoting high expectations (Devaney, et.al., 2006; see also www.casel.org). Essentially, such desired change does not occur in a vacuum and ultimately, if effective, a reciprocal relationship exists between social emotional skills and school climate. Since social, emotional and academic growth are interdependent, we can theorize the results of school wide SEL is a mutually supportive process. (Elias, O'Brien, & Weissberg, 2006).

Effective SEL Delivery

Discussed earlier, teachers have played a critical role in developing resiliency in youth (Howard et al., 1999). As well, Harden and colleagues (2001) argues that a teacher's behavior has a major impact on students. Further, reactions to children's emotions are important because they are related to children's expressiveness and emotion-knowledge (Fabes, Poulin, Eisenberg, & Madden-Derdich, 2003). Emotional competence is related to positive supportive reactions from others, whereas punitive reactions relate negatively. Of interest, early childhood educators rate social-emotional skills as more critical for school readiness than reading and math skills (Rimm-Kaufman, Pianta, & Cox, 2000).

It is therefore critical for classroom teachers to model the behaviors they wish students to adopt and internalize. Durlak and DuPre (2008) identified a range of factors affecting an implementation process (e.g., technical assistance and training). Further, the most effective strategies appear to be some combination of modeling, coaching and reinforcement procedures (Gresham, 1981; Hollinger, 1987).

Identifying the ideal mix of these implementation procedures is important for maximizing outcomes. Matching the need or deficit to assessment and intervention increases the likelihood of effective intervention outcomes. Essentially, this is the role of service delivery differentiation (Gresham, 1988). Interventions aimed at reinforcing a targeted social emotional skill will not be especially effective if the child has not already acquired some level of that skill. Programs that broadly teach social skills are not likely to have much impact on children who already possess those skills. Despite the logic of service differentiation, social skills training programs often adopt a one size fits all approach and do not differentially approach deficits.

Since maximizing outcomes is critically important, a linchpin for achieving outcomes relies upon implementation quality (i.e., fidelity). That is, programs and interventions must be delivered as they were intended and at the highest quality (Durlak and DuPre, 2008).

THEORETICAL IMPLICATIONS

It is clear, social-emotional learning is as critical to a child's school success and later life success as his or her academic training. Theoretically, school readiness is enhanced when children have the opportunity to experience positive relationships with adults such as parents and teachers. As well, it would seem critical for children to receive exposure to programs supporting the development of SEL competencies as early as possible, including at the preK or pre-school level.

While recognizing SEL's importance, defining its content and constructs conceptually is still underway. Nonetheless, CASEL's model, encompassing the five interrelated skills of self-awareness, self-management, social awareness, relationship skills and responsible decision-making, has viably underpinned a wide variety of studies. Therefore, we can reasonably theorize any program wishing to develop SEL competencies in students should strive to engender these specific skill areas in students.

Acquiring SEL competencies suggests students do best when learning is acquired and practiced in various social contexts. A significant body of research demonstrates that this most often occurs in the classrooms, with effective teachers who model the behavior they wish students to mirror.

While this is sometimes done via curricula and other forms of discrete intervention programs, success is best related to school wide opportunities and positive reactions by adults to children's expressiveness and emotional-knowledge. It is further theorized that the most effective strategies appear to be related to a combination of modeling, coaching, reinforcement procedures, and differentiation. Further, effective acquisition of SEL competencies involves delivery of programs embodying these elements to the highest level of fidelity possible.

DESCRIPTION OF THE PROGRAM AND HOW IT OPERATIONALIZES TO EXISTING RESEARCH/THEORY

Conscious Discipline (CD) is a social and emotional intelligence classroom management program that is designed to empower both teacher and student (Bailey, 2000, p. 11).

Conscious Discipline is a comprehensive self-regulation program that integrates social-emotional learning and discipline. It helps teachers build classrooms based on the internal resources of safety, connection and problem solving instead of external rewards and punishments. It is based on brain research that indicates our internal states dictates our behavior.

Conscious Discipline is organized around the seven powers for conscious adults, which help the adult to manage his/her internal state; the creation of the School Family, which utilizes connection to foster cooperation and optimal development; and the seven skills of discipline, which empower the adult with strategies to teach children to self-regulate and problem solve.

Core Components of CD

At the base operational level, Conscious Discipline focuses on development of seven core skills: Composure, Encouragement, Assertiveness, Choices, Positive Intent, Empathy, and Consequences.

In support of the development of the seven core skills specific structures, rituals, and routines have been developed within each skill area as mechanisms for involving all school family members in the social and emotional learning process.

Table 1. Comparison of Conscious Discipline seven core skills to core SEL competencies.

CD Skills Components	CASEL Core Competencies
(1) Composure	Self-awareness —accurately assessing one’s feelings, interests, values, and strengths; maintaining a well-grounded sense of self-confidence
(2) Encouragement	Self-awareness (as described above) and Self-management —regulating one’s emotions to handle stress, control impulses, and persevere in overcoming obstacles; setting and monitoring progress toward personal and academic goals; expressing emotions appropriately
(3) Empathy	Social awareness —being able to take the perspective of and empathize with others; recognizing and appreciating individual and group similarities and differences; recognizing and using family, school, and community resources
(4) Assertiveness & (5) Positive Intent	Relationship skills —establishing and maintaining healthy and rewarding relationships based on cooperation; resisting inappropriate social pressure; preventing, managing, and resolving interpersonal conflict; seeking help when needed

CD Skills Components	CASEL Core Competencies
(6) Choices & (7) Consequences	Responsible decision-making —making decisions based on consideration of ethical standards, safety concerns, appropriate social norms, respect for others, and likely consequences of various actions; applying decision-making skills to academic and social situations; contributing to the well-being of one’s school and community
Structures, Rituals, and Routines	Create learning environments – classroom and school climate are addressed in a structured way promotes establishing a safe, well-managed, caring and participatory environment.

Programmatic Approach

Skills, Content and Desired SEL Outcomes

Acquisition of SEL competencies is effected by exposing students to a variety of experiences involving the use of Supporting Structures, Routines or Rituals. The table below aligns CD’s Core Skills with Supporting Structure, Routines and Rituals contained in the CD program to the SEL behaviors and constructs defined by CASEL and upheld in subsequent studies with students.

Table 2. Linkages between Conscious Discipline’s Skills, Content, and Outcomes

Conscious Discipline Core Skills	Supporting Structure, Routine, or Ritual	Social emotional behaviors (CASEL, 2005)
(1) Composure	Safe Place, Circle Time, & morning meetings	Self-awareness
(2) Encouragement	Meaningful Jobs, Friends and Family, and ways to be helpful boards	Self-awareness & Self-management
(3) Assertiveness	Time Machine and Instant Reply	Relationship skills
(4) Choices	Picture Rule Cards	Responsible decision-making
(5) Positive Intent	Celebration Center	Relationship skills
(6) Empathy	We Care Center, Wish Well board	Social Awareness
(7) Consequences	Class meetings Brain Smart Start, Visual	Responsible decision-making

School Family

The CD program focuses on the school family and encourages the school family to stress three principles: behavior can be controlled, connectedness governs behavior, and conflict is an opportunity to teach.

It is a relationship-based model, and as such, communication is a central feature. Further, the change process is viewed as a problem-solving process. The problem-solving /change process emphasizes the importance that change occurs within the adult first and then, through behavior modeling, similar changes can then be effected within students.

Teacher as Model

The program is brain-based, and tailored to engender in teachers the skills necessary to promote social emotional learning and competencies in students, including reacting to children's emotions proactively vs. negatively. In addition, teachers use a variety of approaches to develop core skills (see Table 2 in previous section).

The ability to meet programmatic goals as well as to imbue children with SEL competencies is effected through intensive training of teachers, followed by self-study, coaching, modeling and continuing support as they deploy key conceptual components in the classroom . Briefly we describe typical training process and post-training support.

Typical training process. In the 1st year, teachers receive basic training in a 4-day workshop, self-directed, reflective study via workbooks and DVD training, practical application of the program's principles/skills in their classrooms, and monthly coaching sessions in the classroom from certified trainers. During the 2nd year, teachers receive a one-day intensive training, continue self-directed, reflective study, and participate in monthly coaching sessions in the classroom from certified trainers. Monthly coaching sessions last between 30 and 60 minutes. Viewed collectively, a teacher with two years of CD training would accumulate 47 to 54 hours of training depending on the amount of coaching received.

Post-training support. After receiving the basic training, teachers follow a self-directed, reflective training program that focused on improving their skills and those of their children in self-regulation, constructive discipline, classroom values, and social skills.

Theoretical Approach

As demonstrated in the literature, the Conscious Discipline program purposefully focuses first on instilling changes in teachers and second on changes in the child, through direct instruction and modeling.

Typical classroom implementation is a universal approach and divides the content into seven sections, one section per month. While the program is deemed universal, facilitators/classroom teachers are given enough flexibility to differentiate their approach to certain students, when necessary.

CD sections correspond to the seven core CD skills and are introduced in the following order: Composure, Encouragement, Assertiveness, Choices, Positive Intent, Empathy and Consequences. Discussed in the previous section, these seven core skills align to the accepted conceptual frameworks established by CASEL and that have underpinned several prior SEL studies.

The program approach also supports the exposure of students to various social opportunities, including school wide opportunities and practice of skills.

In summary, the CD program's foundation is based on brain-based research, incorporates the SEL competencies currently accepted as theoretically viable, and employs means suggested by the research (i.e., training, modeling, coaching and continuing support of teachers; variety of experiences, practice of skills by students) to ensure the transfer of competencies from teacher to student and student application of skills.

It is anticipated that when implemented as designed and to fidelity, CD will increase teacher as well as student competencies and, lay the foundation to positively impact school climate. Specifically, CD's program goals and features suggest it should be effective in developing competencies in children of early school age, specifically with regard to social skills and social-emotional behavior, school climate, and academic readiness or success.

STATEMENT OF STUDY HYPOTHESES

Based on the literature and the program's goals and features, it was determined the study would investigate the following hypothesis:

- H1: Compared with the control group, teachers who implemented Conscious Discipline will evidence greater pre/post-test:
- (a) Improvement in teacher-student interactions (positive discipline climate, positive emotional climate, and classroom management and organization)
 - (b) Increase in use of SEL structures, routines, and rituals
 - (c) Increase in SEL skill development and application
- H2: Compared with the control group, pre/post-test comparisons of aggregate student behavior in classrooms that received Conscious Discipline will demonstrate:
- (a) Increase in positive social skills and social-emotional behaviors (self-awareness, management of emotions and behavior, social awareness, healthy and rewarding relationships, and responsible decision making).
 - (b) Increase in academic readiness or success.
- H3: Compared with the control group, perceptions of school climate will be more positive pre/post in classrooms implementing Conscious Discipline. More specifically, perceptions of school climate will vary as a function of the respondent's exposure to the climate.
- H4: Factors will moderate change over time (pre-post) in select outcomes. Teacher outcomes (H1) and aggregate student behavior (H2) will be moderated by the:
- (a) Implementation fidelity
 - (b) Teacher's training and experience.
 - (c) Instructional language used in the classroom.

DESCRIPTION OF THE SAMPLING METHODS AND SAMPLE POPULATION

Sampling Methods

Sampling used a two-stage clustering method. Two main criteria drove the initial sample selection. Initial sampling was determined primarily by factors relating to the pre-kindergarten teacher as the unit of analysis. Since teachers with more experience were hypothesized to have greater potential influence on students and classroom behavior, this factor weighed heavily in the initial site contact selection. Specifically we used several criteria when conducting initial site recruiting:

Intervention Site had at least three teachers having a minimum of two experiences implementing Conscious Discipline. Preference was given if the Intervention Site additionally had two or more teachers who had no prior exposure to Conscious Discipline (e.g., teacher transfer from out-of-state).

Intervention Site was near a Comparison Site that had at least three teachers who were not trained in Conscious Discipline. Comparison site had to be located within the same geographic area and be comparable in staff, student, and other demographic characteristics.

Viewed collectively, sites were geographically dispersed, except as noted for closely located pairings of Intervention and Comparison sites.

Site administrators expressed interest in participating in the study and were willing to enter into a MOU or external research agreement

Study participants (i.e., teachers) executed informed consent forms as per the study's IRB-approved protocol.

Application of the above criteria led to the selection of sites in three states, Florida, Texas, and Kansas. Descriptions of the participants and these sites are presented in the next section.

Initial Sample Subjects

In this section we describe the Initial Sample’s characteristics using the participating pre-K teachers as the unit of comparison. In the following section we describe the Analytic Sample. As the name implies, the Analytic Sample formed the dataset to which we applied the statistical tests of our hypotheses. Also, we conducted attritional analyses to examine the impact of participant loss on the equivalence of the Intervention and Comparison groups.

Initial Sample Population

The Initial Sample Population comprised 72 teachers, 41 in the Intervention Group and 31 in the Comparison Group. Columns for Intervention and Comparison groups indicate the number of teacher in each group. Chi-square tests determined if teacher characteristics differed depending on the experimental groups.

Table 3. Teacher demographic characteristics: Initial sample

	Pre-K Teacher Characteristic	Intervention ^a	Comparison ^b	χ^2
Gender	Female	41	30	1.34
	Male	0	1	
Ethnicity	Hispanic	21	15	.06
	Non-Hispanic	20	16	
Race	Asian	2	1	6.56
	African Am./ Black	2	8	
	Pacific Islander	2	0	
	White/Caucasian	35	19	
	Two or More Races	0	2	
Instructional Language	English	29	23	.11
	Bilingual	12	8	
State	Florida	14	8	2.29
	Kansas	6	9	
	Texas	21	14	
Site	School-based	35	22	2.22
	Center-based	6	9	
Teaching Exp.	Less than one year	0	1	3.35
	One to three years	5	7	
	Three to five years	8	7	
	More than five years	28	16	

^an= 41; ^bn= 31.

*p < .05; **p < .01.

Inspection of the Chi-square values indicates no significant teacher demographic differences. Additional analysis of pre Intervention equivalence is presented in the Attrition section.

We expected Intervention and Comparison group teachers to significantly differ on their reported exposure to Conscious Discipline training and coaching. Prior to inception of the study, teachers in the Intervention group reported significantly more prior CD training ($M=33.59$ hours; $SD = 2.61$) than Comparison group teachers reported ($M=.71$ hours, $SD=1.40$) [$t(40.74) = 12.55$, $p = .00$].

Review of written comments from Comparison group teachers reporting receiving CD training revealed that ten teachers attended a conference presentation about Conscious Discipline. The conference presentation (March 2013) was informational only. Two Comparison group teachers reported spending an average of four hours engaged in self-instruction reading Conscious Discipline materials (in addition to attending the one hour presentation).

While the self-instruction may be considered a form of contamination, we retained them in the Comparison group because the exposure likely had negligible impact because it occurred at the end of the study and after most of the study data were collected.

Analytic Sample

Of the 72 pre-K teachers in the initial sample, 92% were retained in the Analytic Sample ($n=66$). To be retained in the Analytic Sample, teachers had to complete all study measures as planned, at pretest and posttest time periods. Below we describe the characteristics of the final analytic sample and their distribution across experimental conditions (Intervention and Comparison). Further analysis of attrition and group equivalence is discussed in the Attrition section.

Table 4. Teacher demographic characteristics: Analytic sample.

	Pre-K Teacher Characteristic	Intervention ^a	Comparison ^b	χ^2
Gender	Female	38	27	1.38
	Male	0	1	
Ethnicity	Hispanic	21	15	.02
	Non-Hispanic	17	13	
Race	Asian	2	1	5.81
	African Am./ Black	4	6	
	Pacific Islander	2	0	
	White/Caucasian	30	19	
	Two or More Races	0	2	
Instructional Language	English	26	20	.07
	Bilingual	12	8	
State	Florida	14	8	3.69
	Kansas	3	7	
	Texas	21	13	
Site	School-based	35	21	3.67
	Center-based	3	7	
Teaching Experience	Less than one year	0	1	3.42
	One to three years	5	7	
	Three to five years	6	5	
	More than five years	27	15	

^an= 41; ^bn= 31.

* $p < .05$; ** $p < .01$.

Inspection of the above Chi-square results revealed that there were no significant teacher demographic differences between the Intervention and Comparison group teachers. We noted a trend, albeit not statistically significant, favoring retention of school-based teachers (versus center-based) and retention of more teachers with less than 5 years of teaching experience.

Again, we expected Intervention and Comparison group teachers to have significantly different levels of exposure to CD training. The anticipated differences serve to confirm that

teacher's experimental condition was coded correctly. For those teachers retained in the Analytic Sample, training exposure differences were almost identical to the pattern reported for the Initial Sample. Intervention group teachers received significant levels of CD training prior to the study's inception [$t(37.73) = 12.30, p = .00$].

Intervention group reported an average 34.66 hours (SD = 2.74) of prior training compared to less than one hour (M=.79 hours, SD=1.45) reported by Comparison group teachers. Recall from the Initial Sample results, 12 Comparison group teachers received a negligible exposure to CD information. These teachers were also retained in the Analytic Sample.

DESCRIPTION OF THE STUDY MEASURES (QUANTITATIVE AND QUALITATIVE)

Four instruments collected the study data. Teachers completed two instruments, the Educator Survey and the Implementation Log (Intervention group teachers only). Instruments completed by observers (Observation Checklist) and parents (Parent Survey) also provided study data. In addition, sites provided school readiness data (in aggregate) for students in consented teacher classrooms. Each of the four instruments contained several separate measures. Below we describe the general characteristics of the each survey instrument followed by detailed descriptions of the measures it contains and their respective psychometric properties. School Readiness data are discussed separately at the end of this section. Some instruments contain a measure that, slightly modified, also appears on another instrument. In these instances, we describe differences between the version of the same measure and any differences in the measure's psychometric properties.

Educator Survey

The Educator Survey consists of ten separate measures, totaling 106 Likert-type items, presented on a reusable test booklet. Teachers recorded survey responses on a separate paper and pencil, machine-readable, answer sheet. Eight demographic questions appear on the separate answer sheet. The first measure assesses the teacher-student relationship.

Teacher Style Rating Scale

Domitrovich, Cortez, and Greenburg (2000) developed the Teacher Style Rating Scale (TSRS) which comprises nine items assessing teaching style across three domains: Positive Discipline (PD), Classroom Management (CM), and Positive Emotional Climate (PEC). TSRS items use a five-point Likert scale, ranging from "almost never" to "almost always". Three items tap each domain.

Ratings of teacher Positive Discipline cover the use of positive behavior management strategies, application of proactive approaches, and the avoidance of highly authoritarian disciplinary techniques. Teacher's consistency of response, adherence to a regular routine, setting reasonable limits on child behavior, and preparedness and organization comprise the Classroom Managements items. The third domain, Positive Emotional Climate, rates teachers on whether they validate children's feelings, encourage children's appropriate expression of feelings or the use of self-control strategies, and model appropriate emotional expression.

Reliability estimates for the Positive Discipline, Classroom Management, and Positive Emotional Climate, are .84, .82, and .71, respectively. Minor wording changes allowed inclusion of the TSRS items on both the Educator Survey and the Observer Checklist. As used in the present study, Cronbach reliability estimates for the TSRS domains were comparable: .82 for PD, .75 for CM, and .80 for PEC.

The next two measures ask teachers to rate their levels of social-emotional skill development and their level of SEL support structures, rituals, or routines they employ in the classroom.

Structures, Rituals, and Routines - Teacher (SRRT)

The Structures, Rituals, and Routines scale presented teachers with 19 statements describing various activities that promote social emotional learning. Teachers rated their level of implementation of these activities on a four-point Likert scale that ranged from “Minimal” to “Full”. The SRR content was an adaptation of the Structures Rubric (Loving Guidance, 2010). In the original rubric, the structures, rituals and routines referred to Conscious Discipline-specific products and processes. For use in the present study, all terminology that would identify Conscious Discipline by name or one of its trademarked products was replaced with a neutral description. For example, the original rubric rated implementation of a “Celebration Center” display which provides children and teachers with a way to honor each other’s efforts and achievements. In the present study, this statement referred only to a “display” with the same general description of its purpose. Cronbach Alpha reliability for the original rubric was .86 and .85 for the present study.

Social Emotional Personal Development (SEPD)

Teachers rated their level of personal development and implementation in each of Conscious Discipline’s core skill areas. The eight statements on the SEPD scale retained their original term; however, the description was modified from the original Skills Rubric (Loving Guidance, 2010a) by removing information that would identify Conscious Discipline. The seven skill names (e.g., Composure) were not changed because the terms were determined to be sufficiently generic and likely to be readily understood by a diverse population. Cronbach Alpha reliability for the original scale was .82 and was .84 for the present study.

Two measures focus on their students’ behavior. Teachers use one measure to rate their students’ social skill level. The second measure rates their students’ broader social-emotional development.

Social Skill Behaviors (SSB)

The Social Skills Behavior scale was adapted from a set of 10 social skills found essential to children later being seen as socially competent (Gresham, 2010). The items are based on the comprehensive Social Skills Improvement: Classwide Intervention Program (CIP) Progress Chart developed by Gresham and Elliot (2007) which tracks individual student performance. Cronbach Alpha reliability was estimated at .91.

Using a seven-point Likert scale, teachers estimate the percent of students in their classroom who exhibit each social skill. Ratings range from “10% or less” to “90% or more”.

The remaining points are anchored “25%”, “40%”, “50%”, “60%”, and “75%”. Teachers rate all children, in aggregate, which differs from the individual assessment and frequency/importance rating scheme used in the Social Skills Rating System.

Phrasing of the ten social skills was modified to match the purpose of rating all students in aggregate. For example, “Ignores classmates when they are distracting” became “Ignoring distraction from others”. Cronbach Alpha reliability for the adapted scale was .94.

Social Emotional Learning Skills (SEL)

The Social Emotional Learning Skills scale was developed for this study and consists of 19 social emotional behavior statements drawn from earlier childhood curriculum standards (e.g., Cimino, Forrest, Smith, & Stainback, 2007; U.S. Department of Health and Human Services, Administration for Children and Families, Office of Head Start, 2010). The five core SEL skills formed the framework for the items. Four statements were written in each area, except for Responsible Decision Making which had three.

Using a seven-point Likert scale, teachers estimate the percent of students in their classroom who exhibit each social emotional learning skill. Ratings range from “10% or less” to “90% or more”. The remaining points are anchored “25%”, “40%”, “50%”, “60%”, and “75%”. Cronbach Alpha reliability for the SEL scale was .72.

Teachers also rated various aspects of their site’s climate and collegial relationships on five scales: organizational support, relationship support, school connectedness, collective problem solving, and sense of their site as a community.

Organizational Support (OSC).

The OSC scale consists of seven statements concerning their site’s organizational climate. Developed through the Safe Schools / Healthy Students Initiative (U.S. Departments of Education, Health and Human Services and Justice, 1999), the OSC asks teachers to rate their agency’s support in creating a learning environment characterized by high standards, fairness, and open communications. A five-point Likert scale asks teachers to indicate their level of agreement with each statement. Anchors range from “Strongly Disagree” to “Strongly Agree”. The original scale’s reliability was .84. As used for the present study, Cronbach Alpha was .88

Relational Support (RSC)

The RSC scale (U.S. Departments of Education, Health and Human Services and Justice, 1999) consists of eight statements concerning their site’s climate as it relates to the collective support teachers and other site staff provide. Relational support is characterized by mutual respect, attention, assumed responsibility, and interest in the success of all children. A five-point Likert scale asks teachers to indicate their level of agreement with each statement. Anchors range from

“Strongly Disagree” to “Strongly Agree”. The original scale’s reliability was .93. As used for the present study, Cronbach Alpha was .94.

School Connectedness (SCON)

The school connectedness scale (Blum et al, 2002; Resnick et al 1997) from the National Adolescent Longitudinal Health Study was adapted as an adult indicator of the positive, protective factor bond with their school. Based on a five-point Likert scale (rated “Strongly Agree” to “Strongly Disagree”), the school connectedness scale assesses a broad view of school climate with items concerning fair treatment, closeness to others, and safety.

Collective Problem Solving (CPS)

The Collective Problem Solving scale (McLaughlin & Talbert, 2001) consists of four statements concerning collaboration and decision making among teachers. A five-point Likert scale asks teachers to indicate their level of agreement with each statement. Anchors range from “Strongly Disagree” to “Strongly Agree”. As used in this study, modifications to the original CPS instrument made wording consistent with other item phrasing. Cronbach Alpha reliability for the original scale was .83. As used in the present study, the reliability was .88.

Sense of Belonging/ Friendship (SBF)

The Sense of Belonging/ Friendship scale adapted items from the School as a Caring Community Profile-II (Lickona & Davidson, 2003) Shaping their Environment, Friendship and Belonging scale. A five-point Likert scale asked teachers to indicate their level of agreement with each statement as it describes the adults they work with. For example, “Help each other, even if they are not friends.” Anchors range from “Strongly Disagree” to “Strongly Agree”. Cronbach Alpha reliability for the original scale was .88. As used in the present study, the reliability was .95.

Parent Involvement (PIN)

The Parent Involvement scale (McLaughlin & Talbert, 2001) consists of two items assessing parent involvement in the school’s improvement efforts. A five-point Likert scale asks teachers to indicate their level of agreement with each statement. Anchors range from “Strongly Disagree” to “Strongly Agree”. Cronbach Alpha reliability for the original scale was .81. As used in the present study, the reliability was .88.

Implementation Log

The Implementation Log is an implementation fidelity instrument which was only completed by teachers in the Intervention group. The Log consists of 14 Likert-type items (tapping level of program emphasis in the seven core Conscious Discipline skills areas and the level of child engagement in the same seven areas) and three open-ended questions addressing interim training/coaching received, implementation barriers, and unique implementation results.

Teachers rated their implementation over the past two-week period. The Log included spaces for teacher to record the start date and end date for the two-week period.

Content Emphasis (CE)

For the Content Emphasis, teachers indicated the level of emphasis they placed on each core skill using a four-point Likert scale. The scale ranged from “None” to “Great”. Internal consistency reliability was .79.

Student Engagement (SE)

For the Student Engagement, teachers recorded the relative ease with which children grasp to skills. A trichotomous Likert scale used anchors of “easier than most areas”, “harder than most areas”, and “haven’t started”. The “haven’t started” option also provided information on when select core skills were incepted in the classroom. Internal consistency reliability was .65.

Observer Checklist

The Observer Checklist contained of Likert-type items covering four separate measures. Observers marked responses on a machine-read answer sheet that was fully consumed when completed. Observers indicate the start time and the stop time for the observation period. Reliability estimates (Shrout & Fleiss, 1979) based on internal consistency (Cronbach Alpha) and inter-rater agreement (Intraclass correlation coefficient, ICC) is presented for each dimension.

Teacher Style Rating Scale – Observer

We adapted the Teacher Style Rating Scale (Domitrovich et. al, 2000) used on the Educator Survey for use as an observational assessment. The nine-item content and four-point rating scales were identical to the version on the Educator Survey.

Reliability estimates for the three subscales, Cronbach Alpha and ICC (in parenthesis), were: 89 (.72) for Positive Discipline, 78 (.55) for Classroom Management, and 94 (.70) for Positive Emotional Climate.

Structures, Rituals, and Routines - Observer (SRRO)

The Observer Checklist version of the Structures, Rituals, and Routines scale presents teachers with same 19 statements describing various activities that promote social emotional learning as the Teacher survey version. The differences between the versions are the number of ratings and the rating scale. Instead of making separate ratings for each of the 19 structures, rituals, or routings, a single rating is made for groups of similar items. The Observer version uses a five-point Likert scale that rates teacher implementation with anchors from “little or no” to “Full”. The fifth anchor is “can’t rate”.

Teachers rated their level of implementation of these activities on a four-point Likert scale that ranged from “Minimal” to “Full”. The SRRO content was an adaptation of the Structures Rubric (Loving Guidance, 2010b). In the original rubric, the structures, rituals and routines referred to Conscious Discipline-specific products and processes. For use in the present study, all terminology that would identify a Conscious Discipline-specific element was replaced with a neutral description. For example, the original rubric rated implementation of a “Celebration Center display which provided children and adult with a way to honor each other’s efforts” and achievements. In the present study, this statement referred only to a “display” with the same general description of its purpose, but without reference to “Celebration Center”. Cronbach Alpha reliability for the original rubric was .86 and .85 for the present study. The ICC was .63.

Classroom Social Emotional Behavior (CSEB)

The Classroom Social Emotional Behavior scale rated aggregate student classroom behavior in four areas: dealing with stress and change, dealing with interruptions and interference, interacting with others, and accepting limits or conditions. Observers used a seven-point Likert scale to estimate the percent of students in the classroom exhibiting the targets behaviors. Ratings range from “10% or less” to “90% or more”. The remaining points are anchored “25%”, “40%”, “50%”, “60%”, and “75%”. At least three behavioral cues were included under each rated area. For example, under Accepting Limits/Conditions, the behavioral cues included: following teacher directions, following classroom rules, and accepting consequences of a wrongdoing without excessive complaining. The behavioral cues were selected from items on two of the Teacher Survey measures (SSB and SEL). Reliability was .92 (Cronbach Alpha) and .81 (ICC).

Social Emotional Personal Development (SEPD)

The SEPD scale on the Teacher survey was adapted for use as an observational tool. The eight behavior statements were the same, except we altered some wording to match the perspective of the individual completing the rating (Observer versus teacher). A four-point Likert style scale used anchors ranging from “little or no” to “full”; also, a fifth category, “Can’t rate”. Reliability was .91 (Cronbach Alpha) and .76 (ICC).

Parent Survey

The Parent Survey contained six measures using 55 Likert-type items, presented on a paper-and-pencil, machine-read, answer sheet that was fully consumed when completed. Seven additional items collect information on parent demographics, family structure, income, and perception of neighborhood safety.

Social Skill Behaviors - Parent (SSBP)

The Parent version of the Social Skills Behavior scale was identical to that of the Teacher version, except for the rating scale. On the SSBP, a four-point Likert style scale used anchors ranging from “never” to “always”. Reliability for the SELP was .84.

Social Emotional Learning Skills- Parent (SELP)

The SEL scale on the Teacher survey was adapted for use on the Parent Survey. The same 19 social emotional behavior statements were used with only minor wording changes to match the perspective and setting of the individual completing the item. For example, “home” replaced “classroom”. The Parent version’s scale used a four-point Likert style scale with anchors ranging from “never” to “always” which differs from the Teacher version scale. Reliability for the SELP was .91.

School Bonding (SB)

School Bonding used seven items to assess the parent’s perception of their child attachment with their school site. For example, “(My child:) Looks forward to going to school”. The SB items were adapted from McNeely, Nonnemaker, and Blum (2002). Adjustments to item wording created phrasing more appropriate to pre-K children and reflected the perspective of the parent rather than the child. A five-point Likert-style scale used anchors ranging from “Strongly disagree” to “Strongly agree”. Reliability for the SB was .80.

Parent-Teacher Interactions (PTI)

The Parent-Teacher Interactions scale used five Likert-type items to assess the frequency of contact between parent and their child’s teacher. The PTI’s five-point scale used anchors ranging from “never” to “more than once per week”. Items for the PTI were adapted from the six items Quality of Relationship between Parent and Teacher subscale of the Parent-Teacher Involvement Measure (Conduct Problems Prevention Research Group, 1991; Malone, Miller-Johnson, & Maumary-Gremaud, 2000). Minor wording changes matched the item phrasing to the rating scale anchors. Published reliability estimates for the original scale was .89. As calculated for this study, Cronbach alpha was .84.

Organizational Support - Parent (OSCP).

The OSCP scale uses six of the seven statements concerning the organizational climate of their child’s school that were on the Educator Survey. The dropped item, “supportive and inviting place to work” was not applicable to the parent’s perspective. The same five-point Likert scale and anchors from the Educator version were used. As used for the present study, Cronbach Alpha was .84.

Relational Support – Parent (RSCP)

The Relational Support – Parent version used six of the eight items contained on the Educator version of this scale. The items “support and treat each other with respect” and “feel a responsibility to improve the school” were not included. Minor edits to the retain item’s wording aligned them with the parent’s perspective. Again, the parent RSCP used the same five-point Likert scale and anchors from the Educator RSC. As used for the present study, Cronbach Alpha was .91.

School Readiness Indicator

Frogstreet Assessment (Houghton Mifflin Harcourt, 2010) is a school readiness assessment covering, 11 domains of Language and Literacy and 12 domains of Mathematics as well as eight other domains. Of interest in the present study, one of the eight other domains assesses Social Emotional skills. The Language, Literacy, and Mathematic domains correspond to the Common Core State Standards.

The Frogstreet Assessment is an individual child assessment, typically administered to pre-K children three times, once at the beginning, once at the middle, and again at the end of the school year. While most of the Language and Math domains are administered, one Language domain (Letter Sounds) and one Math domain (Operations) are administered only at the middle and end of year.

Frogstreet Total Weighted Score (FTWS)

We used the Total Weighted Score as a global school readiness indicator. The FTWS is the sum of the points earned across all domains administered divided by the number of domains tests administered. For the present study, Cronbach Alpha reliability was .91.

Frogstreet Social Emotional Score (FSES)

The Social Emotional domain score is based on daily observations of the child. One point is accrued for each of twelve behaviors observed. The observed behaviors are:

- 1 Child is aware of body in space.
- 2 Child follows classroom rules.
- 3 Child takes care of classroom materials.
- 4 Child is aware of own feelings.
- 5 Child sustains attention to a task.
- 6 Child focuses during group time for 20 minutes or more at one time.
- 7 Child initiates social interactions.
- 8- Child initiates problem-solving strategies.
- 9- Child begins to have meaningful friendships.

- 10- Child understands others have different opinions.
- 11- Child regulates behavior in a variety of contexts and settings.
- 12- Child shares easily and can resolve conflicts independently.

Since individual tallies of the twelve behaviors are not recorded, no reliability estimates were feasible.

ANALYTIC METHODS

Three sets of analyses were performed for the following purposes: to determine pre-intervention equivalence of study variables between groups; to evaluate the effectiveness of Conscious Discipline in impacting social skills outcomes for teacher and children, and academic outcomes for children; to assess the effectiveness of implementation fidelity on Conscious Discipline outcomes; and to determine the contribution of moderating variables, if any, to understanding the relationship of CD implementation to social and academic outcomes of interest.

In the first group of analyses, the pre-intervention equivalence of study variables was assessed. Selecting the initial sample and using experimental group as the independent variable (IV), analyses of variance (ANOVAs) procedures were conducted using each dependent variable (DV) of interest from the Educator Survey, Observer Checklist, Parent Survey, and School Readiness scores. The same ANOVAs were repeated after selecting the Analytic sample data. Other analyses examined the participant equivalence across experimental groups in both the initial and analytic samples.

The second series of analyses examined the effectiveness of Conscious Discipline's implementation for impacting prosocial behavior (teacher and student) and academic (student) outcomes within-groups (Time: Posttest versus pretest) and between-groups (Group: Intervention versus Comparison group). Mean scores from teacher and aggregate student behavior (DVs) were compared using repeated measure analyses of variance. Examining the interaction effect of Time and Group was a central purpose of this study (H1 and H2).

The third set of analyses examined the potential influence that school-wide implementation of Conscious Discipline had on pretest school climate (H3). Moderated regression analyses regressed climate measures on a model consisting of school implementation level (dummy coded), potential moderator variables (MVs), and the interaction of implementation level and moderator examined the relationship between school-wide implementation. School-wide implementation consisted of three levels, Full, Partial, and None. For the regression model, implementation level was dummy coded (0 & 1) to separately test these effects.

The regression models were tested in sequential steps. First, dummy coded Conscious Discipline implementation level (Full and Partial) entered into a moderated regression model to assess these factors of primary interest in predicting school climate. Next, scores from the moderator variables (MVs) were entered into the regression model that already accounted for implementation levels. Prior to entering the MVs, we centered the MVs scores (continuous scaled variables) at their respective means to aid interpretation of these effects. Finally, interaction effects were created for any pairing of IV and MV in which both effects were significant in the prior step. For these moderated regression models, our primary interest was the

implementation level's relationship to climate after any significant MVs and their respective interactions were included.

The last series of analyses examined the potential influence that implementation fidelity, teacher experience and instructional language each had the relationship between delivery of Conscious Discipline and important teacher and student outcomes. Mean scores from the moderator variables (MVs) were entered into regression analyses that already accounted for mean scores from outcome pretest variables and experimental group membership. Since implementation fidelity and teacher experience were continuous variables, their unit values were centered prior to entering them into the regression models. Instructional language, a naturally dichotomous variable, was not centered. Of greatest interest was the additional amount of variance accounted for when significant MVs were entered.

Initial Sample Equivalence

Intervention group teachers were recruited based on their level of training in and experience delivering CD. Along with other sampling considerations, the selection of diverse Intervention group teachers with pre-established CD experience and the recruitment of non-CD exposed, teachers from similarly diverse populations precluded a randomized study design. To maintain control over threats to the integrity of the study's resulting quasi-experimental design, the initial equivalency of the two groups was examined closely. Several series of analyses were conducted to assess group equivalence at major phases in the study's conduct, namely the initial sample, participant attrition, and final analytic sample. In each series of analyses, we used chi-squares to assess distributional differences in participant characteristics (e.g., ethnicity, location) and ANOVAs to examine mean score differences in study outcome variables (e.g., social emotional skills, school bonding). Later sections address the attrition and analytic sample analyses. Below we describe the equivalence between the Intervention and Comparison group teacher in the initial sample.

For most comparisons, Intervention group participants were not expected to differ from Comparison participants. However, pre-intervention differences should be found for some analyses. For example, we expect Intervention group teachers to have significantly more previous exposure to CD than Comparison group teachers and represented a desired difference. These expected differences are best considered a verification of their appropriate coding, Intervention or Comparison.

The initial sample group differences are presented in two groups. Chi-square tests conducted on teacher characteristics (previously presented under Initial Sample Population and Table 3) are followed by ANOVAs performed on main study variable mean scores. Recall from the Initial Sample Population section, the study began with 72 teachers, 41 in the Intervention Group and 31 in the Comparison Group.

For the initial sample equivalency ANOVAs, the results are arranged by rater source (e.g., teacher, observer). All analyses use teacher as the unit of analysis. On each table, the sample size, estimated marginal means, and standard error are organized by experimental condition. Samples sizes for some analyses indicate fewer teachers than expected in the Intervention (n=41) or Comparison (n=31) groups due to incomplete or missing data. The last column shows the F-statistic value each ANOVA. One or two asterisks denote statistical significance at traditional levels (.05 and .01, respectively).

Table 5. Initial Sample Pre-Intervention Equivalence: Educator Survey

	Intervention			Comparison			F
	N _a	Mean _b	SE	N _a	Mean _b	SE	
TSRS Positive Discipline	41	4.16	.14	29	4.49	.24	1.42
TSRS Classroom Management	41	4.55	.13	29	4.88	.22	1.71
TSRS Positive Emotional Climate	41	4.35	.18	29	4.83	.31	1.78
Structures, Rituals, and Routines - Teacher (SRRT)	41	3.12	.13	29	3.24	.22	.24
Social Emotional Personal Development (SEPD)	41	4.04	.25	29	4.73	.43	1.98
Social Skill Behaviors (SSB).	41	5.18	.17	29	5.50	.20	1.50
Social Emotional Learning Skills (SEL)	41	4.84	.19	29	5.43	.22	4.04*
Organizational Support (OSC).	41	3.98	.17	29	3.89	.28	.08
Relational Support (RSC).	41	4.17	.20	29	3.70	.34	1.46
School Bonding (SB)	41	4.34	.19	29	4.16	.33	.22
Collective Problem Solving (CPS).	41	3.40	.20	29	3.77	.34	.90
Sense of Belonging/ Friendship (SBF).	41	3.95	.19	29	3.78	.32	.20

^a Intervention (n=41) and Comparison (n=31) sample sizes were lower for some measures due to missing or incomplete data.

^b denotes estimated marginal means and standard errors.

*p < .05; **p < .01.

Inspection of the above information for Educator survey responses reveals one statistically significant difference. Comparison teachers (M=5.43) reported significantly higher percentage of students in their classroom exhibit social emotional learning skills than Intervention teacher reported levels (M=4.84). A cursory review of the table in its entirety reveals that, compared to Intervention group teachers, higher student percentages are reported by Comparison group teachers on most measures, albeit at non-significant levels.

Table 6. Initial Sample Pre-Intervention Equivalence: Observer Checklist

	<u>Intervention</u>			<u>Comparison</u>			<u>F</u>
	N _a	Mean _b	SE	N _a	Mean _b	SE	
TSRS Positive Discipline	41	2.78	.10	30	2.63	.12	1.09
TSRS Classroom Management	41	3.60	.11	30	3.41	.12	1.40
TSRS Positive Emotional Climate	41	2.80	.14	30	2.55	.16	1.27
Classroom Social Emotional Behavior (CSEB)	40	3.57	.16	28	3.14	.20	2.88
Structures, Rituals, and Routines - Observer (SRRO)	40	2.92	.13	30	1.98	.14	23.74**
Social Emotional Personal Development – Observer (SEPDO)	41	3.09	.11	30	2.12	.13	33.79**

^a Intervention (n=41) and Comparison ((n=31) sample sizes were lower for some measures due to missing or incomplete data.

^b denotes estimated marginal means and standard errors.

* $p < .05$; ** $p < .01$.

Inspection of the above information revealed (expected) significant differences between Intervention and Comparison teachers when observers viewed the structures, rituals, and routines being implement and saw the level of social-emotional development exhibited by teachers. Since these are the same structures and skills purported enhanced by CD, these statistically significant findings were anticipated. Further, as intended results of CD training, they do not cause concern for validity of the study.

As mentioned earlier, teacher is the unit of analysis, and consequently the next table is prepared accordingly. We draw attention to this analysis because the mean scores derive from the averaged responses from parents of each teacher. We wish to be clear that the sample sizes are teachers, not the number of parents (see subsequent table for clarification).

Table 7. Initial Sample Pre-Intervention Equivalence: Parent Survey

	<u>Intervention</u>			<u>Comparison</u>			<u>F</u>
	N _a	Mean _b	SE	N _a	Mean _b	SE	
Social Skill Behaviors - Parent (SSBP).	38	2.88	.03	31	2.93	.05	.02
Social Emotional Learning Skills- Parent (SELP)	38	2.92	.03	31	2.88	.05	.19
Organizational Support - Parent (OSCP).	38	4.46	.04	31	4.48	.08	.46
Relational Support – Parent (RSCP).	38	4.54	.04	31	4.54	.08	.96
School Bonding (SB)	38	4.34	.04	31	4.29	.07	2.86
Parent-Teacher Interactions (PTI)	38	2.60	.06	31	2.49	.12	.11

^a Intervention (n=41) and Comparison (n=31) sample sizes were lower for some measures due to missing or incomplete data.

^b denotes estimated marginal means and standard errors.

* $p < .05$; ** $p < .01$.

Inspection of the Parent survey results indicate no perceived pre-intervention differences between parent reports for Intervention teachers and Comparison teachers. Below we present information concerning the characteristics of the parents who completed the Parent Survey. Results shown are an average percent of parent responses by classroom. Parent response rates average about 50% per classroom. Parents of children in Intervention teacher classroom returned an average of two more surveys than returned by parents with children in Comparison teacher classrooms.

Table 8. Initial Sample: Characteristics of Parents who completed the Parent Survey .

	<u>Intervention</u>			<u>Comparison</u>			<u>F</u>
	N _a	Mean _b Percent	SE	N _a	Mean _b Percent	SE	
Hispanic	39	.70	.05	28	.68	.06	.07
African American	39	.91	.01	28	.88	.02	1.99
Female	39	.72	.04	28	.67	.05	.50
Income under \$25,000	39	.50	.05	28	.58	.06	1.01
Two parent family	39	.75	.03	28	.69	.04	1.89
Two or more children	39	.81	.03	28	.87	.04	1.43
Report living in a unsafe neighborhood	39	.07	.01	28	.04	.01	5.37*
Average number of parents completing Parent Survey	39	13.92	.63	28	11.79	.73	3.44

^a Intervention (n=41) and Comparison (n=31) sample sizes were lower for some measures due to missing or incomplete data.

^b denotes estimated marginal means and standard errors.

* $p < .05$; ** $p < .01$.

Review of the above information yields only one significant difference. A significantly greater percent of parents representing Intervention group teachers (7%) reported living in an unsafe neighborhood, compared to the 4% of Comparison group parents reporting their neighborhood was not safe.

Lastly, initial sample differences (Intervention and Comparison) were examined for the school readiness data. Inspection of these results indicated no significant differences for the overall School Readiness Total scores or scores for the Social-Emotional domain score.

Table 9. Initial and Analytic Sample Pre-Intervention Equivalence: School Readiness

	<u>Intervention</u>			<u>Comparison</u>			<u>F</u>
	N	Mean _a	SE	N	Mean _a	SE	
School Readiness Total	18	31.73	1.62	12	33.81	1.98	.66
School Readiness Social Emotional Learning	18	5.78	.490	12	6.72	.60	1.46

^a denotes estimated marginal means and standard errors.

* $p < .05$; ** $p < .01$.

However, review of the above information also reveals that the sample size for these comparisons (n=30) is approximately less than half the initial sample size (n=72). School readiness data were only available from a subset of the initial sample.

Therefore, we conducted additional analyses to examine the pre-intervention equivalence this subsample's Intervention (n=18) and Comparison (n=12) group teachers for the subsample with school readiness data. Of note, there was no loss of participants between this subsample and the subsample retained in the main analyses, thereby precluding the need for separate comparison between Intervention and Comparison teachers in the final analytic subsample.

Table 10. Initial sample Teacher demographic characteristics: School readiness subsample

Pre-K Teacher Characteristic		Intervention _a	Comparison _b	χ^2
Gender	Female	18	12	NA
	Male	0	0	
Ethnicity	Hispanic	14	8	.45
	Non-Hispanic	4	4	
Race	Asian	1	0	2.40
	African Am./ Black	2	2	
	Pacific Islander	0	0	
	White/Caucasian	15	9	
	Two or More Races	0	1	
Instructional Language	English	6	4	.00
	Bilingual	12	8	
Teaching Exp.	Less than one year	0	0	2.01
	One to three years	0	1	
	Three to five years	3	3	
	More than five years	15	8	

^an= 18; ^bn= 12.

* $p < .05$; ** $p < .01$.

From the above information, chi-square comparisons on gender, ethnicity, race, instructional language, and teaching experience revealed no statistically significant differences between Intervention and Comparison teachers. Not represented in the above table, the subsample differed in that all teachers were from school-based sites in Texas.

As expected, the level of CD training was significantly higher in the Intervention group than in the Comparison group. Intervention group teachers received significant levels of CD training prior to the study's inception [$F(1, 28) = 29.41, p = .00$]. Intervention group teachers reported an average 31.50 hours (SD = 3.61) of prior training compared to less than one hour (M=.58 hours, SD=4.42) reported by Comparison group teachers. As described earlier, the training reported by the comparison group teachers was informational rather than training for the purpose of implementing CD.

Implementation of SEL skills by teachers or their use of SEL-related structures and other supporting activities were additional variables that may impact interpretation of the school readiness data. For this reason, we preformed ANOVAs on these teacher-reported and observer-reported behaviors. As seen in the next table, these results were similar to results presented for the entire initial sample. Intervention and Comparison group teachers reported no SEL skill

implementation differences whereas observers reported significant observed differences in the teacher use of SEL skills and structures, which were as expected.

Table 11. Initial subsample SEL skill implementation: School Readiness subsample

	<u>Intervention</u>			<u>Comparison</u>			<u>F</u>
	N	Mean _b	SE	N	Mean _a	SE	
Teacher							
SRR – Teacher (SRRT)	18	3.133	.105	12	3.400	.125	2.65
SEPD – Teacher (SEPDT)	18	3.140	.107	12	3.385	.127	2.18
Observer							
SRR - Observer (SRRO)	18	3.382	.136	12	2.177	.162	32.59**
SEPD – Observer (SEPDO)	18	3.172	.158	12	2.306	.189	12.37**

^a denotes estimated marginal means and standard errors.

* $p < .05$; ** $p < .01$.

In addition, we performed attrition analyses comparing characteristics of the sample with readiness data (n=30) with the characteristics of the sample without readiness data (n=42). These results are presented in the Attrition section.

Equivalence of Analytic Sample

The results from comparisons of Intervention and Comparison teachers in the initial sample demonstrated no substantive differences. Results that indicated differences related to the specific criteria confirming their coding as either Intervention or Comparison participants.

In this section, the final analytic sample is examined for differences between Intervention and Comparison group participants. Differences at this stage would indicate two potentially serious concerns for the interpretation of study outcomes. Pre-intervention differences raise concerns for the internal validity of the results. Any such change also could indicate a potentially differential loss of a subgroup of the sample, which may adversely impact the generalizability of the results. In the next series of tables, we present pre-intervention results when Intervention and Comparison teachers retained in the final analytic sample were compared.

Recall from the Analytic Sample Population section (and Table 5), of the 72 pre-K teachers in the initial sample, 92% were retained in the Analytic Sample (n=66). To be retained in the Analytic Sample, teachers had to complete all study measures as planned, at pretest and posttest time periods. Below we describe the ANOVAs comparing scale mean scores between the Intervention and Comparison groups.

Table 12. Analytic Sample Pre-Intervention Equivalence: Educator Survey

Measures	Intervention			Comparison			F
	N _a	Mean _b	SE	N _a	Mean _b	SE	
TSRS Positive Discipline	38	4.19	.14	28	4.47	.16	1.72
TSRS Classroom Management	38	4.72	.07	28	4.76	.08	.18
TSRS Positive Emotional Climate	38	4.54	.10	28	4.66	.11	.72
Structures, Rituals, and Routines - Teacher (SRRT)	38	3.28	.07	28	3.42	.08	1.80
Social Emotional Personal Development (SEPD)	38	3.37	.07	28	3.45	.08	.49
Social Skill Behaviors (SSB).	38	5.25	.17	28	5.48	.20	.77
Social Emotional Learning Skills (SEL)	38	4.90	.20	28	5.42	.23	3.05
Organizational Support (OSC).	38	4.41	.09	28	4.28	.10	1.00
Relational Support (RSC).	38	4.30	.11	28	4.40	.13	.39
School Bonding (SB)	38	4.35	.11	28	4.33	.12	.02
Collective Problem Solving (CPS).	38	3.93	.11	28	4.04	.13	.41
Sense of Belonging/ Friendship (SBF).	38	4.09	.10	28	4.17	.12	.24

^a Intervention (n=38) and Comparison (n=28) sample sizes were lower for some measures due to missing or incomplete data.

^b denotes estimated marginal means and standard errors.

*p < .05; **p < .01.

Review of the above information indicates no significant differences between Intervention and Comparison groups as reported by Teachers. These results differ in one respect from the analyses performed on the initial sample. Recall that Comparison group teachers reported significant higher implementation of SEL skills than were reported by Intervention group members. In the analytic sample analyses, the same trend is present for SEL skill implementation, albeit to a non-significant level.

Table 13. Analytic Sample Pre-Intervention Equivalence: Observer Checklist

	<u>Intervention</u>			<u>Comparison</u>			<u>F</u>
	N _a	Mean _b	SE	N _a	Mean _b	SE	
TSRS Positive Discipline	38	2.79	.11	28	2.60	.12	1.44
TSRS Classroom Management	38	3.63	.11	28	3.44	.13	1.20
TSRS Positive Emotional Climate	38	2.88	.14	28	2.54	.17	2.42
Classroom Social Emotional Behavior (CSEB)	38	3.64	.17	28	3.14	.19	3.97
Structures, Rituals, and Routines - Observer (SRRO)	38	3.05	.12	28	1.99	.14	34.15**
Social Emotional Personal Development - Observer (SEPDO)	38	3.00	.13	28	2.10	.15	19.59**

^a Intervention (n=38) and Comparison (n=28) sample sizes were lower for some measures due to missing or incomplete data.

^b denotes estimated marginal means and standard errors.

* $p < .05$; ** $p < .01$.

Similar to the results from the initial sample analyses, inspection of the above information revealed (expected) significant differences between Intervention and Comparison teachers when observers viewed the structures, rituals, and routines being implement and saw the level of social-emotional development exhibited by teachers. These results are consistent with the expectations of teachers trained in SEL skill implementation versus teacher without that training.

Table 14. Analytic Sample Pre-Intervention Equivalence: Parent Survey

	<u>Intervention</u>			<u>Comparison</u>			<u>F</u>
	N _a	Mean _b	SE	N _a	Mean _b	SE	
Social Skill Behaviors - Parent (SSBP).	38	2.89	.03	28	3.00	.03	3.27
Social Emotional Learning Skills- Parent (SELP)	38	2.92	.02	28	2.90	.03	.20
Organizational Support - Parent (OSCP).	38	4.46	.04	28	4.41	.05	.44
Relational Support – Parent (RSCP).	38	4.54	.04	28	4.48	.05	.95
School Bonding (SB)	38	4.34	.04	28	4.24	.05	2.82
Parent-Teacher Interactions (PTI)	38	2.60	.06	28	2.63	.07	.11

^a Intervention (n=38) and Comparison (n=28) sample sizes were lower for some measures due to missing or incomplete data.

^b denotes estimated marginal means and standard errors.

* $p < .05$; ** $p < .01$.

Table 15. Analytic Sample: Characteristics of Parents who completed the Parent Survey.

	<u>Intervention</u>			<u>Comparison</u>			<u>F</u>
	<u>N_a</u>	<u>Mean_b</u>	<u>SE</u>	<u>N_a</u>	<u>Mean_b</u>	<u>SE</u>	
Hispanic	38	.70	.06	28	.68	.07	.03
African American	37	.91	.01	27	.88	.02	2.80
Female	38	.73	.04	28	.67	.05	.89
Income under \$25,000	37	.50	.05	27	.58	.05	1.05
Two parent family	37	.75	.03	27	.69	.04	1.61
Two or more children	37	.81	.03	27	.87	.04	1.52
Report living in a unsafe neighborhood	37	.07	.01	27	.04	.01	6.73*
Average number of parents completing Parent Survey	38	14.11	.62	28	11.96	.73	5.01*

^a Intervention (n=38) and Comparison (n=28) sample sizes were lower for some measures due to missing or incomplete data.

^b denotes estimated marginal means and standard errors.

* $p < .05$; ** $p < .01$.

Review of the results in the above two tables indicated two significant differences between Intervention and Comparison group participants. As was presented in the initial sample analyses, significantly higher percentage of parents with children in Intervention group classrooms (7%) reported feeling unsafe in their neighborhood, when compared reports from parents of children in Comparison classrooms (4%).

In addition, parents with children in Intervention group classrooms returned a significantly greater number of completed Parent Surveys (almost 14 per classroom) than were returned in parents of children in Comparison classrooms (about 12 per classroom).

Lastly, recall from the initial sample pre-intervention analyses, that no loss of subject occurred in the School Readiness sample; therefore, no separate pre-intervention analyses were performed on these data.

Attrition Analysis

This study began with an initial sample of 72 teachers, 41 in the Intervention and 31 in the Comparison groups. For the final analytic sample, 66 teachers were retained: 38 for Intervention and 28 for Comparison. While the loss of subject participation is common in any study, and in particular studies involving data collection over time, attrition may flag threats to a study's internal and external validity (Campbell & Stanley, 1963; Shadish, Cook, & Campbell, 2002). In the present study, the loss of three teachers from each experimental group represented an eight percent overall attrition rate. When loss rates were compared between groups, the sample reduction was not a statistically significant loss [$\chi^2 (1, 70) = .13, p=1.0$].

One set of subsample of data was examined further. The analytic sample for the School Readiness data was substantially smaller (n=30) than the overall analytic sample (n=66). While the availability of school readiness data was the reason for the attrition (versus subject mortality) and the resulting subsample already has been shown to be comparable between the retained Intervention and Comparison groups, concern remains for the generalizability of this subsample's findings. Therefore, we divided the analytic sample into two teacher categories, those with school readiness data and those without that data. Chi-square and ANOVA statistics compared these two groups across participant characteristics and key study outcomes believed to have impact on the school readiness data.

Table 16. Attrition: Teachers with and without school readiness data

	Pre-K Teacher Characteristic	With School Readiness ^a	Without School Readiness ^b	χ^2
Gender	Female	30	35	.85
	Male	0	1	
Ethnicity	Hispanic	22	14	7.83**
	Non-Hispanic	8	22	
Race	Asian	1	2	2.23
	African Am./ Black	4	6	
	Pacific Islander	0	2	
	White/Caucasian	24	25	
	Two or More Races	1	1	
Instructional Language	English	10	36	34.44**
	Bilingual	20	0	
Teaching Exp.	Less than one year	0	0	13.03*
	One to three years	12	1	
	Three to five years	5	6	
	More than five years	19	23	

^an= 30; ^bn= 36.

* $p < .05$; ** $p < .01$.

In preceding sections, comparisons between Intervention and Comparison groups within each sample (initial and analytic) demonstrated the two samples were very similar before and after participant attrition occurred. Comparing the results between the two samples on the same measure shows revealed no substantive pre-intervention differences in the participant characteristics or the main study outcome variables. Therefore, we are confident the samples will allow us to draw inferences about the effectiveness of CD and to make generalizations from these results.

In the next section, we present the results from the main analyses examining the effectiveness of CD.

PROCESS (QUALITATIVE) RESULTS

Conduct of the study took place over the course of the 2012-2013 school-year. As an overview of the process results, we begin with a chronology of major study-related events. We describe these events separately for each source of study data (teacher, observer, parent, and student record).

Following IRB approval (described previously), the study began in August with participating teachers executing an Informed Consent Form (ICF). Teachers

Procedures

The number of teachers at each site varied based on the size of each site. The number of parent participants at each site varied proportionally based on the teacher participation rates and the size of the site. Teachers were the main sampling consideration and the unit of analysis; Parent participants formed a subsample within teacher. Student behavior and academic performance were viewed in aggregate and also formed a subsample within teacher. Of note, at the pre-K level no distinction is made between teachers their respective classroom because students remain with their instructor throughout the time they are on-site.

At participating sites, only teachers with an executed informed consent form were allowed to participate in the study. Teachers participated by completing an Educator Survey and Fidelity Implementation Log. The Educator Survey was completed three times: at the beginning of the school year (in September), before the winter break (in November), and again, at the end of the school year (in May). Teachers in both the Intervention and Comparison groups completed the Educator survey; however, only Intervention group teachers completed the Implementation Log.

Intervention group teachers completed the Implementation Log every two weeks for approximately three months, roughly from September through mid-December.

From that pool of consented teachers, only those parents with children in the consented teacher's classrooms were asked to complete the Parent Survey. Under the IRB-approved protocol, parents received informed consent information and their return of the completed surveys was considered their consent. Parents completed one measure, the Parent Survey, two times: at the beginning of the school year (in September), and again, at the end of the school year (in May). Parents in both the Intervention and Comparison groups completed identical measures.

Trained research staff observed teachers and their students (in aggregate) in their classrooms and completed the Observer checklist twice: at the beginning of the school year (about September), and again, at the end of the school year (about May). The same measure was

used when observing I-group and C-group Educators. At a minimum, observation periods lasted 35-60 minutes. Scheduling observations took into consideration the time of day, type of activities scheduled, and other events to ensure numerous opportunities to make observations were available. If unusual events occurred that interrupted observations (e.g., fire drill), they were rescheduled later the same day or the next day. Most observations were conducted by one observer. For the purpose of monitoring observer reliability, at least two teachers at each site were observed by a pair of observers during the same class period. The observer pairings were conducted at the beginning and end of the year.

School readiness data (de-identified) were collected electronically and in some cases via hard copy. Site staff ensured that data were aggregated by teacher and applied random identifiers so class-level performance could be matched pretest to posttest. Per the study's IRB-approved protocol, parental consent for the student data was not required.

Process Evaluation

Before discussing Outcome results, it is worth examining the process development of each program. When examining a program for effective implementation, it is important to do so in the context of:

- Readiness and qualifications of teacher;
- Implementation Fidelity; and
- Time and Resources.

Conscious Discipline in Intervention group classrooms was implemented meeting the developer's framework. Modifications were not made as a function of conducting this study.

Readiness and qualifications of teacher . Discussed in an earlier section of the report (See Description of Program) prior training expected for teachers in the Intervention group extended over a two-year period. In their 1st year, teachers receive basic training in a 4-day workshop, self-directed, reflective study via workbooks and DVD training, practical application of the program's principles/skills in their classrooms, and monthly coaching sessions in the classroom from certified trainers. During the 2nd year, teachers received a one-day intensive training, continued self-directed, reflective study, and monthly coaching sessions in the classroom from certified trainers. Monthly coaching sessions lasted between 30 and 60 minutes. Viewed collectively, a teacher with two years of CD training would accumulate to 47 to 54 hours depending on the amount of coaching received.

Experience reported by teachers on the Implementation Log (and Educator Survey) indicated that 92% (n=35) of the 38 retained Intervention group teachers (85% of the initial sample) met the combination of training experience described above.

Implementation fidelity. Also, as previously noted, after receiving the basic training, teachers followed a self-directed, reflective training program that focused on improving their skills and those of their children in self-regulation, constructive discipline, classroom values, and social skills. The program purposefully focuses first on instilling changes in teachers and second on changes in the child, through direct instruction and modeling. Typical classroom implementation is a universal approach and divides the content into seven sections, one section per month. Sections correspond to the seven core CD skills and are introduced in the following order: Composure, Encouragement, Assertiveness, Choices, Positive Intent, Empathy and Consequences.

During universal implementation, teachers are encouraged to implement Conscious Discipline skills at any time when a “teaching opportunity” arises.

By virtue of their initial recruitment, all teachers in the Intervention group had been trained and delivered Conscious Discipline during the study period. Teachers in the Comparison group did not receive training and did not implement the program, instead they were to conduct their classrooms as usual.

Intervention group members’ implementation of Conscious Discipline was monitored in three ways: through their completion of the Implementation Log, from the Educator Survey, and during classroom observations. The Implementation Log supplied bi-weekly accounts of the Conscious Discipline components they implemented as well as the level of student engagement in each of those content areas. The Log also collected the number of days the teacher was absent, the frequency and length of CD coaching received, and reports of any other SEL-related exposure.

From teacher self-report and observer information, Intervention group teacher implemented the seven skill areas to varying degrees. Teacher log data indicated that certain skills (Composure, Encouragement, Assertiveness, and Choices) were emphasized more than the remaining skill areas (Positive Intent, Empathy and Consequences). Student engagement also differed by skill area. Teachers reported children more readily adapted to Encouragement, Choices, Empathy, and Consequences, than they did to Composure, Assertiveness, and Positive Intent.

Implications for these implementation differences are examined further in the Results section. Also in the Results section, the impact of these implementation fidelity indicators on study outcomes are presented.

Time and resources. CD implementation occurs throughout the day, rather than delivered during a specified class time. Implementation combines a universal approach and a targeted approach when challenging situations occur. Therefore, Intervention group teachers had an

ongoing opportunity to implement CD principles and skills. The developer produces a range of materials designed to facilitate implementation. These materials include supplemental activities in the form of DVDs, music CDs, charts, displays, and workbooks. As documented by teacher self-report and observer data, these implementation aids were readily available and in use by Intervention group teachers.

RESULTS

In this section, we present the study outcomes. Results are organized by hypothesis with all rater sources (e.g., teacher, observer, parent) included as appropriate. Recall from the Analysis section, Hypotheses 1, 2, and 3 used repeated measure ANOVAs. Hypothesis 4 results are based on regression analyses. Before presenting the results, we describe how the results are depicted in their accompanying tables.

For H1-H3, two tables accompany each outcome variable and rater source combination (e.g., Teacher results for the Teaching Style Rating Scale). A standard Source Table shows the effects of interest (Source), degrees of freedom (df), F-statistic (F), and partial eta-square (η^2). The significance of a specific effect is indicated by one ($p < .05$) or two ($p < .01$) asterisks next to the value for the F-statistic. Partial eta-square indicates the percent of variance accounted for the effect (percent presented as a decimal) the amount of variance accounted.

The Between Subject effect Group represents the two experimental groups (Intervention and Comparison and its associated error term (S Within-group error). The Time effect (Pretest and Posttest) and the Time X Group interaction effect are presented under Within Subjects as is their associated error term (Time X S Within-group error). Values in parentheses indicate the marginal standard error.

To determine support for H1-H3, the interaction effect is of greatest interest. A significant interaction effect would indicate that the relative change (pretest to posttest) differed by Group. If that difference over time was greater for the Intervention Group than for the Comparison Group, the hypothesis is supported. The second table indicates the direction of any significant effects.

The second table in each rater source and DV combination indicates the mean and standard error for the combinations of Group and Time. Estimated marginal means are reported in all cases.

Hypothesis 1

Hypothesis 1 analyses focused on changes in teacher behavior in the classroom as a result of implementing Conscious Discipline. In particular we examined teacher-student interactions, the teacher's use of SEL skills and their use of structures and other activities in support of SEL practices.

Under Hypothesis 1a, compared with the Comparison group, we expected that teachers who implemented CD to evidence greater pretest to posttest change in their interactions with students. The following series of tables present results for three separate measures based on the Teaching Style Rating scale as self-reported by teachers and through classroom observations.

Significant interaction effects supported Hypothesis 1a based on Teacher self-reported levels of Positive Emotional Climate scale means, and Observer reports for the Positive Emotional Climate scale and the Positive Discipline scale. The Positive Discipline scale interaction effect for Teacher self-reports achieved a marginally significant ($p < .10$). In each case, the increase at posttest over pretest levels was significantly higher for the Intervention Group than for the Comparison Group.

For the Classroom Management scale, no significant effects were found for Teacher self-reports. For the Observation data, both main effects (Time and Group) were significant. Inspection of the Classroom Management scale means showed a greater pre/post increase for the Intervention Group than for the Comparison Group. However, this trend was not statistically significant.

Looking at the Teacher reported means, Comparison group pretest means on the three measures were higher, albeit not significantly, than Intervention Group pretest means. At posttest, the levels reversed, with Intervention Group posttest means higher than posttest Comparison Group means. While all of these trends lend support for H1a, only those effects noted above showed these effects to be significant.

Table 17.

Repeated measure ANOVA for Teacher's Positive Emotional Climate scale

Source	df	F	η^2
Between subjects			
Group	1	.92	.01
S Within-group error	64	(.36)	
Within subjects			
Time	1	11.52**	.15
Time X Group	1	13.59**	.18
Time X S within-group error	64	(.12)	

Note: Values in parentheses represent mean square error.

*p < .05; **p < .01

Table 18.

Teacher's Positive Emotional Climate scale by Condition

Group	Pretest		Posttest	
	Mean	SE	Mean	SE
Intervention ^a	4.54	.10	4.97	.06
Comparison ^b	4.66	.11	4.64	.07

Note: Means and SE are based on estimated marginal means.

^an = 38; ^bn = 28.

Table 19.

Repeated measure ANOVA for Teacher's TSRS Classroom Management scale

Source	df	F	η^2
Between subjects			
Group	1	.00	.00
S Within-group error	64	(.21)	
Within subjects			
Time	1	2.28	.03
Time X Group	1	.69	.01
Time X S within-group error	64	(.12)	

Note: Values in parentheses represent mean square error.

*p < .05; **p < .01

Table 20.

Teacher's TSRS Classroom Management scale by Condition

Group	<u>Pretest</u>		<u>Posttest</u>	
	Mean	SE	Mean	SE
Intervention ^a	4.72	.07	4.86	.06
Comparison ^b	4.76	.08	4.80	.07

Note: Means and SE are based on estimated marginal means.

^an = 38; ^bn = 28.

Table 21.
Repeated measure ANOVA for Teacher's TSRS Positive Discipline scale

Source	df	F	η^2
Between subjects			
Group	1	.36	.01
S Within-group error	64	(.78)	
Within subjects			
Time	1	4.63*	.07
Time X Group	1	3.07 ⁺	.05
Time X S within-group error	64	(.35)	

Note: Values in parentheses represent mean square error.

⁺p < .10; *p < .05; **p < .01

Table 22.
Teacher's Positive Discipline scale by Condition

Group	Pretest		Posttest	
	Mean	SE	Mean	SE
Intervention ^a	4.19	.14	4.60	.10
Comparison ^b	4.47	.16	4.51	.12

Note: Means and SE are based on estimated marginal means.

^an = 38; ^bn = 28.

Table 23.

Repeated measure ANOVA for Observer's Positive Emotional Climate scale

Source	df	F	η^2
Between subjects			
Group	1	17.50**	.22
S Within-group error	64	(1.25)	
Within subjects			
Time	1	17.87**	.22
Time X Group	1	15.80**	.20
Time X S within-group error	64	(.48)	

Note: Values in parentheses represent mean square error.

*p < .05; **p < .01

Table 24.

Observer's Positive Emotional Climate scale by Condition

Group	<u>Pretest</u>		<u>Posttest</u>	
	Mean	SE	Mean	SE
Intervention ^a	2.88	.14	3.88	.16
Comparison ^b	2.54	.17	2.57	.19

Note: Means and SE are based on estimated marginal means.

^an = 38; ^bn = 28.

Table 25.

Repeated measure ANOVA for Observer's TSRS Classroom Management scale

Source	df	F	η^2
Between subjects			
Group	1	4.49*	.07
S Within-group error	64	(.72)	
Within subjects			
Time	1	11.61**	.15
Time X Group	1	2.81 ⁺	.04
Time X S within-group error	64	(.23)	

Note: Values in parentheses represent mean square error.

⁺p < .10; *p < .05; **p < .01

Table 26.

Observer's Classroom Management scale by Condition

Group	Pretest		Posttest	
	Mean	SE	Mean	SE
Intervention ^a	3.63	.11	4.04	.11
Comparison ^b	3.44	.13	3.59	.13

Note: Means and SE are based on estimated marginal means.

^an = 38; ^bn = 28.

Table 27.

Repeated measure ANOVA for Observer's TSRS Positive Discipline scale

Source	df	F	η^2
Between subjects			
Group	1	9.07**	.12
S Within-group error	64	(.67)	
Within subjects			
Time	1	6.96*	.10
Time X Group	1	9.39**	.13
Time X S within-group error	64	(.20)	

Note: Values in parentheses represent mean square error.

* $p < .05$; ** $p < .01$

Table 28.

Observer's TSRS Positive Discipline scale by Condition

Group	Pretest		Posttest	
	Mean	SE	Mean	SE
Intervention ^a	2.79	.11	3.24	.11
Comparison ^b	2.60	.12	2.57	.13

Note: Means and SE are based on estimated marginal means.

^an = 38; ^bn = 28.

For Hypothesis H1b, compared with the Comparison group, we expected teachers who implemented CD to make greater use of routines, rituals, structures and other activities that support broad SEL skill implementation.

We expected a Group effect would indicate that previously trained teachers had these elements in place at the beginning of the school year. Further, we expected a significant interaction effect to the extent that teachers who had not fully implemented all Conscious Discipline components would do so by the end of the study period.

Teacher self-reports showed significantly greater increase in their use for the Intervention group as opposed to the Comparison group. Observers reported a similar trend, but the change rate was not significant.

Of note, while Teachers placed themselves on par with respect to pretest levels, pretest results based on Observer data were significantly higher for the Intervention Group than for the Comparison Group.

Table. 29. Repeated measure ANOVA for Teacher’s self-reported use of Structures, Rituals, and Routines.

Source	df	F	η^2
Between subjects			
Group	1	.01	.00
S Within-group error	64	(.25)	
Within subjects			
Time	1	2.43	.04
Time X Group	1	5.49 *	.08
Time X S within-group error	64	(.10)	

Note: Values in parentheses represent mean square error.

*p < .05; **p < .01

Table 30.

Teacher’s self-reported use of Structures, Rituals, and Routines by Condition

Group	<u>Pretest</u>		<u>Posttest</u>	
	Mean	SE	Mean	SE
Intervention ^a	3.28	.07	3.50	.07
Comparison ^b	3.34	.08	3.27	.08

Note: Means and SE are based on estimated marginal means.

^an = 38; ^bn = 28.

From inspection of the above information, teachers in the Intervention group increased their use of SEL structures at a significantly higher rate than Comparison group teachers whose use rate declined slightly. The anticipated significant Group effect was not found.

As seen below however, Observer rating evidenced a significant Group effect. Review of the estimated means shows the rate of use (pre to post) was higher for Intervention group members than for Comparison group members, but the rate of increase was not significant.

Observers noted that while both groups had many of the structures, they was not evidence of their use. For example, a classroom job which we intended to be rotated weekly or bi-weekly, had not been rotated in two months. Access to displays intended to be ongoing and as needed expressions of caring or concern was blocked by other class materials which were clearly there for an extended period.

Table 31.

Repeated measure ANOVA for Observer reported use of SEL Structures, Rituals, and Routines

Source	df	<u>F</u>	η^2
Between subjects			
Group	1	65.87**	.51
S Within-group error	63	(.70)	
Within subjects			
Time	1	2.93	.04
Time X Group	1	2.43	.04
Time X S within-group error	63	(.25)	

Note: Values in parentheses represent mean square error.

*p < .05; **p < .01

Table 32.

Observer reported use of SEL Structures, Rituals, and Routines by Condition

Group	<u>Pretest</u>		<u>Posttest</u>	
	Mean	SE	Mean	SE
Intervention ^a	3.05	.12	3.34	.11
Comparison ^b	1.99	.14	2.00	.12

Note: Means and SE are based on estimated marginal means.

^an = 37; ^bn = 28.

Closely related to H1b, H1c posited that, compared with the Comparison group, teachers who implemented CD would demonstrate a greater pretest to posttest change in their own exhibition of SEL skills (e.g., using SEL skills to calm themselves) as assessed on the Social Emotional Personal Development scale.

In support of this hypothesis, Intervention Group teacher self-reported results indicated a significant increase in their use of SEL skills whereas Comparison Group teacher results remained unchanged pre/post.

Mirroring the results for H1b, Observers reported a similar trend for the teacher skills, but the change rate was not significant. Likewise, Comparison group teachers placed themselves on par with to pretest levels of Intervention group teachers, whereas Observer results indicated significantly higher Intervention Group pretest levels.

Table 33.

Repeated measure ANOVA for Teacher’s self-reported Social Emotional Personal Development.

Source	df	F	η^2
Between subjects			
Group	1	.75	.01
S Within-group error	64	(.25)	
Within subjects			
Time	1	10.28**	.14
Time X Group	1	8.38**	.12
Time X S within-group error	64	(.09)	

Note: Values in parentheses represent mean square error.

*p < .05; **p < .01

Table 34.

Teacher’s self-reported Social Emotional Personal Development by Condition

Group	Pretest		Posttest	
	Mean	SE	Mean	SE
Intervention ^a	3.37	.07	3.69	.06
Comparison ^b	3.45	.08	3.46	.07

Note: Means and SE are based on estimated marginal means.

^an = 38; ^bn = 28.

Table 35.

Repeated measure ANOVA for Observer reports of teacher Social Emotional Personal Development.

Source	df	<u>F</u>	η^2
Between subjects			
Group	1	31.44**	.33
S Within-group error	64	(1.01)	
Within subjects			
Time	1	.63	.01
Time X Group	1	.81	.01
Time X S within-group error	64	(.37)	

Note: Values in parentheses represent mean square error.

*p < .05; **p < .01

Table 36.

Observer's reports of teacher Social Emotional Personal Development by Condition

Group	<u>Pretest</u>		<u>Posttest</u>	
	Mean	SE	Mean	SE
Intervention ^a	3.00	.13	3.18	.14
Comparison ^b	2.10	.15	2.09	.16

Note: Means and SE are based on estimated marginal means.

^an = 38; ^bn = 28.

Hypothesis 2

Turning to Hypothesis 2, analyses compared change in classroom-level children's behavior over time between the Intervention and Comparison Groups. H2a examined aggregate child behavior across social skills and related social emotional behaviors. H2b assessed differences in school readiness indicators (academic and SEL behavior).

Intervention Group teacher self-reports of their students' aggregate Social Skill Behavior and SEL Behaviors revealed significantly higher rates of change from pretest to posttest when compared to change across time for Comparison Group teachers.

Using a similar measure, Parent reports of Social Skill Behaviors revealed a similar trend (i.e., higher rate of change for the Intervention Group over the Comparison group), but only to a marginally significant level ($p < .10$).

Observer data also informed this hypothesis. Observers reported significantly greater pretest to posttest change in classroom-level social skills and social-emotional skills in the Intervention Group, as opposed to the Comparison Group.

Viewed collectively, these results broadly support the positive impact of CD on aggregate classroom level student behavior.

Table 37.

Repeated measure ANOVA for Teacher's self-report of aggregate child Social Skills Behavior

Source	df	F	η^2
Between subjects			
Group	1	1.10	.02
S Within-group error	64	(1.54)	
Within subjects			
Time	1	35.49**	.36
Time X Group	1	15.91**	.20
Time X S within-group error	64	(.43)	

Note: Values in parentheses represent mean square error.

* $p < .05$; ** $p < .01$

Table 38.

Teacher's self-report of aggregate child Social Skills Behavior by Condition

Group	<u>Pretest</u>		<u>Posttest</u>	
	Mean	SE	Mean	SE
Intervention ^a	5.25	.17	6.40	.15
Comparison ^b	5.48	.20	5.71	.18

Note: Means and SE are based on estimated marginal means.

^an = 38; ^bn = 28.

Table 39.

Repeated measure ANOVA for Teacher's self-report of aggregate child Social Emotional Skills (SEL)

Source	df	F	η^2
Between subjects			
Group	1	.35	.01
S Within-group error	64	(1.73)	
Within subjects			
Time	1	44.46**	.41
Time X Group	1	28.04**	.31
Time X S within-group error	64	(.51)	

Note: Values in parentheses represent mean square error.

*p < .05; **p < .01

Table 40.

Teacher's self-report of aggregate child Social Emotional Skills by Condition

Group	<u>Pretest</u>		<u>Posttest</u>	
	Mean	SE	Mean	SE
Intervention ^a	4.90	.20	6.40	.14
Comparison ^b	5.42	.23	5.60	.17

Note: Means and SE are based on estimated marginal means.

^an = 38; ^bn = 28.

Table 41.

Repeated measure ANOVA for Parent reports of their child's Social Skills Behavior

Source	df	F	η^2
Between subjects			
Group	1	.15	.00
S Within-group error	64	(.05)	
Within subjects			
Time	1	5.80*	.08
Time X Group	1	3.47	.05
Time X S within-group error	64	(.03)	

Note: Values in parentheses represent mean square error.

*p < .05; **p < .01

Table 42.

Parent reports of their child's Social Skills Behavior by Condition

Group	<u>Pretest</u>		<u>Posttest</u>	
	Mean	SE	Mean	SE
Intervention ^a	2.89	.03	3.01	.04
Comparison ^b	3.00	.03	2.97	.04

Note: Means and SE are based on estimated marginal means.

^an = 38; ^bn = 28.

Table 43.

Repeated measure ANOVA for Parent reports of aggregate child Social Emotional Skills

Source	df	F	η^2
Between subjects			
Group	1	2.20	.03
S Within-group error	64	(.05)	
Within subjects			
Time	1	11.25**	.15
Time X Group	1	5.17*	.08
Time X S within-group error	64	(.04)	

Note: Values in parentheses represent mean square error.

* $p < .05$; ** $p < .01$

Table 44.

Parent reports of aggregate child Social Emotional Skills by Condition

Group	<u>Pretest</u>		<u>Posttest</u>	
	Mean	SE	Mean	SE
Intervention ^a	2.92	.02	3.09	.04
Comparison ^b	2.90	.03	2.95	.05

Note: Means and SE are based on estimated marginal means.

^an = 38; ^bn = 28.

Table 45.

Repeated measure ANOVA for Observer report of Classroom Level Student Behavior.

Source	df	F	η^2
Between subjects			
Group	1	30.01**	.34
S Within-group error	61	(1.41)	
Within subjects			
Time	1	17.38**	.22
Time X Group	1	19.36**	.24
Time X S within-group error	61	(.60)	

Note: Values in parentheses represent mean square error.

*p < .05; **p < .01

Table 46.

Classroom Level Student Behavior by Condition - observer

Group	Pretest		Posttest	
	Mean	SE	Mean	SE
Intervention ^a	3.64	.17	4.90	.17
Comparison ^b	3.14	.18	3.11	.19

Note: Means and SE are based on estimated marginal means.

^an = 35; ^bn = 28.

Hypothesis H2b expected significantly greater pre/post change in school readiness indicators for Intervention Group members than the rate of change for Comparison Group members. Two measures of School Readiness were examined: the total score and the domain score for social-emotional skills.

For both school readiness indicators, children's school readiness scores (Total score and Social-emotional Domain score) rose significantly at posttest. The rate of this pre to post improvement significantly differed by group. The interaction effects revealed that scores improved at a significantly higher rate for children in the Intervention group than their children in the Comparison group. Prior to analyzing the total score, the social-emotional domain score along with other non-core academic domains (e.g., Creative Arts, Approaches to Learning) were subtracted and the total score recalculated. The remaining components of the total score comprised only domains related for Mathematics, Literacy and Language.

Taken together, these results support H2b, where children in CD classrooms had school readiness performance increases that were significantly higher than children in non-CD classrooms.

Table 47.

Repeated measure ANOVA for the School Readiness Total Score.

Source	df	F	η^2
Between subjects			
Group	1	.41	.01
S Within-group error	28	(50.65)	
Within subjects			
Time	1	940.67**	.97
Time X Group	1	4.26*	.13
Time X S within-group error	28	(36.15)	

Note: Values in parentheses represent mean square error.

*p < .05; **p < .01

Table 48.

School Readiness Total Score by Condition

Group	Pretest		Posttest	
	Mean	SE	Mean	SE
Intervention ^a	31.73	1.62	83.58	1.56
Comparison ^b	33.81	1.98	79.12	1.82

Note: Means and SE are based on estimated marginal means.

^an = 18; ^bn = 12.

Table 49.

Repeated measure ANOVA for the School Readiness Social-Emotional Domain score.

Source	df	F	η^2
Between subjects			
Group	1	.11	.00
S Within-group error	28	(3.26)	
Within subjects			
Time	1	196.18**	.77
Time X Group	1	4.20*	.13
Time X S within-group error	28	(2.09)	

Note: Values in parentheses represent mean square error.

*p < .05; **p < .01

Table 50.

School Readiness Social-Emotional Domain score by Condition

Group	Pretest		Posttest	
	Mean	SE	Mean	SE
Intervention ^a	5.78	.49	10.26	.24
Comparison ^b	6.72	.60	9.63	.29

Note: Means and SE are based on estimated marginal means.

^an = 18; ^bn = 12.

Hypothesis H3

In broad terms, Hypothesis 3 (H3) posited that, compared to the Comparison group, perceptions of school climate would be more positive among teachers trained in Conscious Discipline who are implementing the program in their classrooms. We further hypothesized that climate levels may be directly influenced by whether Conscious Discipline is being implemented school-wide or only in select classrooms. Recall that when fully implemented school-wide, Conscious Discipline anticipates increased school climate through the development of the school family. Therefore, climate differences were expected at pretest, especially for tenured teachers at school-wide implementation sites.

Lastly, we hypothesized that the relationship between Conscious Discipline implementation and school climate may be moderated by factors that may be unique to the perspective of the rating source (teacher or parent). Specifically, teacher experience may moderate the relationship between both teacher and parent ratings of climate. The rating source's amount of exposure to the school's climate also may moderate climate, primarily for parent ratings.

A series of moderated regression analyses examined the relationship between Conscious Discipline (IV) and climate measures (DVs) of interest while exploring the influence of moderating factors (MVs). While specific regression analyses differ based on combinations of these factors, we first describe the general approach to the analyses.

In each moderated regression, dummy coded variables categorized the experimental group as either a school-wide Conscious Discipline implementation (Full) or non school-wide implementation (Partial). Dummy codes were "1" or "0" to indicate presence of the respective effect (Part or Full) in the analysis. These effects first entered the regression model. Next, depending on the rating source, potential MVs entered the model. Lastly, interaction terms entered the model. Interaction terms were constructed between significant predictor variables and the MV.

For each effect of interest (IV, MV, DV), the parameter estimate, standard error of the estimate, t-value, and variance inflation factor (VIF) are depicted. The parameter estimate indicates the predicted change in the DV given one unit change the effect (IV or MV) while controlling for the other effects in the model. The standard error is average deviation of the predicted from the observed DV value. The t-value provides a statistical test of whether the parameter estimate is significant. Asterisks indicate the level of significance (* $p < .05$; ** $p < .01$). In addition, we used the "+" symbol to denote results considered marginally significant ($p < .10$).

Lastly, multiple regression assumes there is no relationship among the IVs and MVs. If those effects are highly correlated, then the model may be misleading due to over prediction. High correlation among IVs and MVs is termed multicollinearity. The variance inflation factor (VIF) provides a measure of this redundancy among effects. A VIF value of one indicates very little

redundancy. As a rule of thumb, a value of 10 would indicate substantial multicollinearity could contribute to the model’s misinterpretation.

Interpretation of the multiple regression results focuses on whether the effect for Full (school-wide) implementation was significant. A significant (and positive) Full would support the hypothesis that school-wide implementation of Conscious Discipline produces significantly more positive school climate.

Also of interest, the presence of statistically significant MVs may reduce or enhance the effects for Partial or Full. If the MV is significant, then an interaction effect of IV and MV enters the model. Interaction effects were created only when their respective IV/MV effects were significant. To reduce potential multicollinearity and increase interpretability, we centered all continuous variables used in the interactions by subtracting the measure’s average from the obtained value using procedures described by Aiken and West (1991).

Climate measures were collected from two rating sources, teachers and parents. In some cases (Organizational Support and Relational Support), teachers and parents completed similar climate measures. The results for these climate measures are presented first. In all cases, the model containing the final set of effects is presented for each climate measure.

Table 51.
Multiple regression model for Teacher’s Organizational Support.

Effect	Parameter Estimate	Standard Error	t	VIF
Intercept	4.00	.08	54.43**	
Partial	.34	.20	1.72 ⁺	2.32
Full	.52	.20	2.65**	2.18
Years at Current Site	-.03	.06	-.47	1.45
Years Teaching Experience	.06	.09	.59	1.51

N= 66

F(4, 61) = 1.81, p = .14; Adjusted R² = 0.07.

^A These continuous variables were centered as recommended by Aiken and West (1991)

⁺p < .10; *p < .05; **p < .01

Table 52.
Multiple regression model for Parent's Organizational Support.

Effect	Parameter Estimate	Standard Error	t	VIF
Intercept	4.35	.08	53.47**	
Partial	.13	.10	1.30	3.28
Full	.19	.09	2.10*	2.67
Parent – Teacher interaction ^A	.13	.07	1.84 ⁺	1.43
Years Teaching Experience ^A	-.08	.04	-1.94 ⁺	1.36

N= 66

F(4, 61) = 3.32, p = .02; Adjusted R2 = 0.14.

^A These continuous variables were centered as recommended by Aiken and West (1991)

⁺ p < .10; *p < .05; **p < .01

The above information demonstrates that Full school-wide implementation of Conscious Discipline is associated with significantly higher reports of Organizational Support climate. Both teachers and parents reported higher Organizational Support at Full implementation sites. Sites progressing toward school-wide implementation (Partial), teachers reported higher Organizational Support levels, albeit at a marginally significant level (p = .09).

The teacher-based model did not support moderator effects for either experience factor (years of teaching experience or time in current position). For the parent-based model, while the inclusion of parent-teacher interaction and years of teaching experience explained a significant amount of additional variance in the model [$F(2, 61) = 3.33, p = .04, R^2 \text{ change} = .09$], these effects were only marginally significant as individual effects, therefore no interaction terms were tested.

The next two tables present climate results for Relational Support.

Table 53. Multiple regression model for Teacher's Relational Support.

Effect	Parameter Estimate	Standard Error	t	VIF
Intercept	4.25	.17	24.69 **	
Partial	.04	.20	.21	2.29
Full	.39	.21	2.05*	2.15
Years at Current Site ^A	.01	.07	.17	1.46
Years Teaching Experience ^A	.06	.10	.59	1.51

N= 66

F(4, 61) = 1.17, p = .33; Adjusted R2 = 0.01.

^A These continuous variables were centered as recommended by Aiken and West (1991)

⁺p < .10; *p < .05; **p < .01

Table 54. Multiple regression model for Parent's Relational Support.

Effect	Parameter Estimate	Standard Error	t	VIF
Intercept	4.38	.09	49.18**	
Partial	.25	.11	2.26*	3.19
Full	.23	.11	2.11*	2.88
Parent – Teacher interaction ^A	.05	.08	.64	1.62
Years Teaching Experience ^A	-.08	.04	-1.94+	1.30

N= 66

F(4, 61) = 2.55, p = .05; Adjusted R2 = 0.082.

^A These continuous variables were centered as recommended by Aiken and West (1991)

⁺p < .10; *p < .05; **p < .01

Inspection of the above information revealed that the Relational Support results were similar to those for Organizational Support. The Relational Support climate at Full implementation sites was significantly higher from both the teacher's and parent's perspectives.

Also, parent reports of Relational Support were significantly higher at Partial implementation sites. Lastly, the parent results also indicated that the teachers' experience marginally influenced the model (p=.06) such that climate was more positive when the primary contact teacher had less teaching experience.

Teachers and parents both responded to a third climate measure, School Connectedness.

Table 55. Multiple regression model for Teacher’s School Connectedness.

Effect	Parameter Estimate	Standard Error	t	VIF
Intercept	4.60	.13	21.08**	
Partial	-.14	.24	-.57	2.32
Full	.19	.24	.77	2.18
Years at Current Site ^A	-.01	-.08	-.08	1.46
Years Teaching Experience ^A	.02	.12	.15	1.51

N= 66

F(4, 61) = .85, p = .50; Adjusted R2 = 0.01.

^A These continuous variables were centered as recommended by Aiken and West (1991)

⁺ p < .10; *p < .05; **p < .01

Table 56. Multiple regression model for Parent’s School Connectedness.

Effect	Parameter Estimate	Standard Error	t	VIF
Intercept	4.22	.085	49.49**	.000
Partial	.17	.100	1.67	3.39
Full	.16	.095	1.68	2.88
Parent – Teacher interaction ^A	-.08	.072	-1.15	1.43
Years Teaching Experience ^A	.01	.035	.40	1.21

N= 66

F(4, 61) = 1.97, p = .11; Adjusted R2 = 0.06.

^A These continuous variables were centered as recommended by Aiken and West (1991)

⁺ p < .10; *p < .05; **p < .01

Review of the above results revealed no significant differences in the already high levels of school connectedness reported. Neither the teachers nor the parents reported differences in school connectedness. Further, when only the dummy coded variables entered the model, these effects did not produce a statistically significant model based on teacher reports [$F(2, 63) = 1.74, p = .18$] or the parent reports [$F(2, 63) = 1.95, p = .14$].

Lastly, teachers completed two additional climate measures, Collective Problem Solving and Belongingness/Friendship. Compared to the broader Organizational and Relational Support climate measures, these measures represent select facets of climate.

Table 57. Multiple regression model for Teacher’s Collective Problem Solving.

Effect	Parameter Estimate	Standard Error	t	VIF
Intercept	4.09	.14	28.25**	
Partial	-.12	.17	-.68	2.32
Full	.54	.17	3.14**	2.18
Years at Current Site ^A	-.03	.06	-.45	1.46
Years Teaching Experience ^A	.14	.08	1.70 ⁺	1.51

N= 66

F(4, 61) = 6.67, p = .00; Adjusted R2 = 0.26.

^A These continuous variables were centered as recommended by Aiken and West (1991)

⁺p < .10; *p < .05; **p < .01

Table 58. Multiple regression model for Teacher’s Belonging and Friendship.

Effect	Parameter Estimate	Standard Error	t	VIF
Intercept	4.04	.16	24.86**	
Partial	-.07	.19	-.39	2.32
Full	.40	.19	2.07*	2.18
Years at Current Site ^A	-.01	.06	-.15	1.45
Years Teaching Experience ^A	.06	.09	.66	1.51

N= 66

F(4, 61) = 2.80, p = .03; Adjusted R2 = 0.09.

^A These continuous variables were centered as recommended by Aiken and West (1991)

⁺p < .10; *p < .05; **p < .01

Review of the above two tables, indicated that teachers rated Collective Problem Solving and Belonging/Friendship significantly higher in a school-wide implementation setting. Examination of the potential MV results revealed no significant effects, although years of teaching experience had a marginal influence when included in the Collective Problem Solving model (p = .09).

Hypothesis 4

In H4, we hypothesized that certain study characteristics (i.e., teaching experience, instructional language, fidelity) could either limit or enhance the relationships between our experimental conditions and various outcomes. To test these relationships, moderator regression analyses were performed (Aiken and West, 1991; Cohen, Cohen, West, and Aiken, 2003; Judd, Kenny, and McClelland, 2001). Three sets of moderated regressions examined whether changes in outcome as a function of Group (effects coded: Comparison group=0, Intervention group=1) were moderated by teaching experience, instructional language, or fidelity implementation. Each potential moderator was tested separately in a two-step process. In the step one, Group and Moderator variables were entered simultaneously as predictors. In step two, retaining the previously entered predictors, the interaction of Group and Moderator was entered also. If the change in the predictive efficiency of the model was significant (R² change between step 1 and step 2), the presence of a moderator's differential role with Group is supported². The potential moderators fidelity and teaching experience are both continuous variables, so they were centered about their mean before entry in step 1 or entry in step 2 (as part of the interaction effect).

Teaching Experience

Teaching Experience was examined as potential moderator of teaching style interactions with children (Positive Emotional Climate, Classroom Management, and Positive Discipline scales) as self-reported by teachers and as witnessed by observers.

From the teachers' perspective, the number of years they've been teaching was not a significant moderator when predicting Positive Emotional Climate [$B = .15$, $SE_B = .09$, $t(65) = 1.62$, $p = .11$], Classroom Management [$B = .02$, $SE_B = .12$, $t(65) = .18$, $p = .86$], or Positive Discipline scales [$B = -.08$, $SE_B = .18$, $t(65) = -.44$, $p = .66$]. When teaching experience was entered into the models that included these same measures, but from the observer's vantage point, the results were consistent. Teaching experience did not produce a significant interaction effect predicting Positive Emotional Climate [$B = -.14$, $SE_B = .28$, $t(65) = -.50$, $p = .62$], Classroom Management [$B = -.02$, $SE_B = .19$, $t(65) = -.12$, $p = .90$], or Positive Discipline scales [$B = -.04$, $SE_B = .17$, $t(65) = -.21$, $p = .83$].

Teaching Experience's possible influence was assessed for the teacher's view of their children's aggregate Social Skills Behavior and Social Emotional Skills and on the observer's view of children's aggregate social and emotional behavior (Classroom Level Student Behavior). Beginning with the teacher's self-report outcomes, no significant interactions were found for

² If the moderator is significant in step 1, that also is interpreted as support for a moderator effect; however, the interaction effect is of prime interest in this study.

Socials Skills Behaviors [$B = -.03$, $SE_B = .24$, $t(65) = -.10$, $p = .92$] or Social Emotional Skills [$B = -.15$, $SE_B = .22$, $t(65) = -.68$, $p = .50$]. When applied to the observer's view of classroom level social and emotional skills, the interaction effect was not significant [$B = .11$, $SE_B = .30$, $t(65) = .35$, $p = .73$].

Instructional Language

Examining the same outcome variables (teaching style behaviors and aggregate child classroom behavior, Instructional Language was the potential moderator. The primary language in some classroom was Spanish ($n=20$), in other classrooms it was English ($n=46$).

From the teachers' perspective, the instructional language (English or Bilingual/Spanish) was not a significant moderator when predicting Positive Emotional Climate [$B = .24$, $SE_B = .17$, $t(65) = 1.42$, $p = .16$], Classroom Management [$B = .12$, $SE_B = .21$, $t(65) = .56$, $p = .58$], or Positive Discipline scales [$B = .52$, $SE_B = .33$, $t(65) = 1.61$, $p = .11$]. When teaching experience was entered into the models that included these same measures, but from the observer's vantage point, the results were consistent. Teaching experience did not produce a significant interaction effect predicting Positive Emotional Climate [$B = -.22$, $SE_B = .50$, $t(65) = -.45$, $p = .66$], Classroom Management [$B = -.20$, $SE_B = .34$, $t(65) = -.60$, $p = .55$], or Positive Discipline scales [$B = -.57$, $SE_B = .30$, $t(65) = -1.92$, $p = .06$].

Teaching Experience's possible influence was assessed for the teacher's view of their children's aggregate Social Skills Behavior and Social Emotional Skills and on the observer's view of children's aggregate social and emotional behavior (Classroom Level Student Behavior). When we reviewed results for the teacher's self-report outcomes, we found significant interaction effects for Socials Skills Behaviors [$B = .82$, $SE_B = .41$, $t(65) = 2.01$, $p = .05$] or Social Emotional Skills [$B = .78$, $SE_B = .39$, $t(65) = 2.02$, $p = .05$]. In both of these results, greater gains in prosocial behaviors in Intervention classrooms where the instructional language was Spanish. However, when we entered the interaction term into the model for the observer's view of classroom level social and emotional skills, the interaction effect was not significant [$B = .38$, $SE_B = .52$, $t(65) = .73$, $p = .47$].

Implementation Fidelity

The Implementation Fidelity also was assessed as a potential moderator of the Teacher-student relationship as well as aggregate classroom child behaviors. As with teaching experience and instruction language, interaction effects were of greatest interest.

We used the observer's ratings of Structure, Rituals, and Routines as a fidelity measure because it was thought to be sensitive to the use of CD-specific elements in the Intervention classrooms (enhancing the relationship), but could show CD-like activities conducted per chance or through some unknown element in Comparison teacher's background. In this way, Comparison teachers with casual CD fidelity might increase the main effect for fidelity, but

would likely cancel-out (limiting the relationship) benefits obtained by Intervention group members. However, none of these analyses produced significant interaction effects [Positive Emotional Climate scale: $B = -.18$, $SE_B = .11$, $t(65) = -1.63$, $p = .11$; Classroom Management scale: $B = .18$, $SE_B = .14$, $t(65) = 1.28$, $p = .20$; and Positive Discipline scale: $B = .31$, $SE_B = .22$, $t(65) = 1.41$, $p = .16$].

We did not use the observer ratings of Structures as potential moderators for observer recorded teaching style because of the potential for common method variance error.

Lastly, we used fidelity benchmarks from the Implementation Log to test the relationship between outcomes and fidelity implementation level while pre-intervention outcome levels are held constant. We then used the same outcome measures as discussed above.

Results from these partial correlations demonstrated a single significant relationship between fidelity implementation and select outcomes. Notably, when we examined the teacher's Positive Discipline scale we found a significant relationship with the teacher fidelity [$t(35) = .52$, $p = .00$]. None of the other outcome-fidelity relationships were significant.

DISCUSSION

We compared the effectiveness of Conscious Discipline's implementation in pre-kindergarten settings on the social-emotional and social skill behavior of teachers and the children in their classroom as well as teacher-child interactions. Also, we examined the impact of Conscious Discipline's implementation as a foundation for positive school climate.

The results of this quasi-experimental study of Conscious Discipline suggest that teacher's can effectively alter their own behavior and model social-emotional skills when delivering Conscious Discipline to children in their classrooms. Results also suggest that delivery of this universal social-emotional program improves children's core skills relating to self-awareness, self-management, social awareness, relationship skills, and responsible decision making. Reports from multiple sources evidenced improvement in children's social-emotional competence and their interactions with adults central to their development. Further, when Conscious Discipline implementation is conducted as a school-wide effort, higher levels of school climate emerged.

One of the strengths of this study is that multiple rating sources provided outcome data. Teachers are often the only source of data, frequently because they represent a convenient and easy to obtain source. In this study, teachers, parents, and observers provided outcome data using similar measures. These design elements were undertaken to reduce common method bias and increase the confidence in the study's findings where convergence occurs.

Another strength of this study is the equivalence of the experimental groups. It was not feasible to randomly assign either teachers to experimental conditions or children to specific classrooms. Since participant recruiting efforts had to first focus on teachers experienced in Conscious Discipline's delivery, recruiting similarly situated comparison participants was emphasized. The result of requiring nearby comparison sites and, where feasible, same-site comparison teachers is evidenced in the initial sample's equivalence.

A third strength of this study is the emphasis on monitoring fidelity. Often studies have limited information as to how the program or intervention implemented. This well recognized transfer of training challenge is compounded by the frequent expectation that teachers adapt implementation to fit a variety of goals (Bierman et. al., 2008). In this study, teachers maintained implementation logs which documented the quality of the implementation. Observers provided supplemental information concerning fidelity implementation. The combination of information from these sources ensured that Conscious Discipline was implemented as intended and that where that implementation varied, direct data were available to assess that deviation's influence on study outcomes.

A programmatic component of Conscious Discipline training supported fidelity implementation. As noted in the intervention's description, follow-on coaching is conducted with teachers as part of their training. Monthly coaching and training sessions were held. As Greenberg, Domitrovich, Graczyk, and Zins (2005) noted, the availability and quality of implementation support affects outcomes. Expanded upon later in this section, the sustainability of program implementation is both a function of this type of one-on-one support, but also a function of the support from the teacher's environment as a whole (Kress & Elias, 2013). The benefit of this higher level of implementation support is discussed in the results for school climate.

Next, we discuss results for the key hypotheses.

Teacher Behavior Change

Central to Conscious Discipline's approach is the focus on effecting change within the adult as much as it is to promote change within the child. Since seasoned Conscious Discipline teachers participated, their initial (at pretest) behavior and practices in support of social-emotional learning were expected to differ from teachers who had no prior exposure to Conscious Discipline or any other social-emotional learning strategies. Further, these supportive activities should be largely independent of the impact on their children at pretest because teachers and students are just beginning to establish their relationships with each other.

Observation-based results supported Hypothesis 1b & 1c. Intervention group teachers were observed modeling approaches to emotional management, using misbehavior as a teaching opportunity, and using clear, assertive tones than were observed for Comparison group teachers (SEPDO). Intervention group teacher also had more supportive structures and routines in place and operating than were observed in Comparison group teacher classrooms (SRRO). Compared to teachers not implementing Conscious Discipline, Intervention group members already had structures in place that showed the schedules of daily activities, common behaviors (e.g., lining up), methods to resolve conflict and remain calm, and ways to express care or concern for others. Structures consisted of both pictorial representations of the behaviors as well as brief age-appropriate descriptions or instructions. Observations documented that Intervention group teachers engaged in more planned activities that actively engaged student's attention, facilitated their transition between classroom activities, and involved children in the well-being and safety of their classmates.

Teacher's pretest self-report of their own SEL-supportive behaviors (SEPD) and structures and routines (SRRT) showed no differences between Intervention and Comparison group teachers. Both groups indicated engaging in most of these behaviors and nearly fully providing these routines and structures. Regardless of experimental group membership, teachers rated themselves more positively on these behaviors and structures than observers rated the same

elements. Given the natural tendency for self-reported behavior to present the respondent favorably (Moorman & Podsakoff, 1992), this finding was not surprising.

Incremental improvement

When controlling for teacher's pretest levels of SEL-supportive behavior and activities, the positive improvement reported by teachers in the Intervention group was significantly greater than the pre/post change reported by Comparison group teachers. As shown in Tables 32 and 34, mean scores (SRR and SEPD, respectively) remained unchanged over time for Comparison group teachers whereas Intervention group teachers reported significant improvement. Observer results for change over time did not reach significant levels; however, inspection of the mean scores for SEPDO and SRRO reveals relatively no change pre/post for Comparison group teachers, but a similar upward trend for Intervention group teachers. Collectively, these results provide evidence teacher's own actions and practices positively changed as a result of their adoption of Conscious Discipline principles.

In addition, assessment of the implementation of structures, rituals, and routines offer a third layer of support for these hypotheses, separate from their sources (teacher and observer). The SRR and SRRO measures represent artifacts of teacher SEL behavior in a way similar to exams, homework, and other assignments provide convergent evidence of teacher's instructional behavior (Borko, Stecher, Alonzo, Moncure, & McClam, 2005).

Teacher-Student Interactions

When the interaction style between teacher and student was assessed (H1a) using the Teaching Style Rating Scale, strong support was found for Conscious Discipline's impact on two of three subscales, Positive Discipline and Positive Emotional Climate. Observers reported the Intervention group teachers more frequently used positive behavior management strategies and encouraged children to use self-control techniques and validated their feeling. Teacher self-reported interactions with their students provided convergent evidence of these effects, to a significant level for the Positive Emotional Climate scale and to a marginally significant level ($p < .10$) for the Positive Discipline scale.

The self-report bias continued to be descriptive of the teacher's ratings. In this analysis, this effect can be seen by comparing the means for the non-significant Group effect for the teacher reported scales. When compared to the means underlying the Observer's group level effects, uniformly teachers viewed their teaching style as more positive than reported by observers.

Results for the Classroom Management scale followed the same trend as the other two teaching style scales, but not to a statistically significant level. Both the self-reported and observed interactions evidenced similar positive trends. A marginally significant improvement over pretest levels was noted for the Intervention Group ($p < .10$). When eliciting feedback from observers concerning the observation procedures and measure, all observers expressed that they noticed that the focus of this scale was on tasks rather than process. Observers noted that management of the classroom was defined by the classroom's consistency, routine, and organization as well as the teacher's preparedness and control of the children. They noted that the qualitative process of achieving that management was not considered. We examined this feedback in light of the scale wording. The prompts provided to observers (and teachers on their version) adhered closely to the original wording of the scale, but explanation defining control and limit setting (i.e., not overly-controlling or restricting child behavior) was not included, nor was it emphasized in the observer training.

Observers remarked that having a directional element might have addressed how management was effected. For example, one teacher was observed to adhere very rigidly to a time schedule that prematurely ended activities that neared their natural conclusion (e.g., ending a song with one or two stanzas remaining). Observation notes described another teacher's actions where she physically lifted a child and carried him to another place in the classroom so he would be in his seat at the start of the next class activity (the child was reminded once to move prior to this). Observers noted that in both examples, a posted schedule or announced routine was strictly adhered to. Essentially, they achieved the managed schedule; however meeting the schedule appeared more rigid than naturally flowing (as is mainly desired).

Prior to the posttest observations, all observers were instructed to use the Classroom Management scale in the same manner as it was used at pretest, without a mechanism for recording "how" management was achieved. As part of the training refresher, we explained that the qualitative elements they described were subsumed to a great degree under both the Positive Discipline scale and the Positive Emotional Climate scale.

The observers' feedback raises a plausible issue in terms of the way the Classroom Management ratings were conducted. It is possible that observer's heightened awareness of the issue may introduce some form of instrumentation decay (Campbell & Stanley, 1963) specific to that scale. This type of reactivity to the measurement (i.e., observation) could account for some part of the pretest to posttest change, or lack thereof.

However, the potential for instrumentation to negatively impact this study's internal validity is likely mitigated because observer feedback was incorporated into the refresher training held prior to the posttest observation. Instrumentation effects would seem more plausible had this training not been undertaken. Concern for this threat further reduces when one examines

the Classroom Management standard errors. Variability either decreased slightly (teachers) or remained the same (observers), and in both cases, there was no violation of the equal variance assumption.

Children's Social and Emotional Skills

Recall we anticipated that changes in aggregate student behavior (H2a, social and emotional skills; H2b school readiness) in classrooms delivering Conscious Discipline would improve at a significantly greater rate than aggregate student behavior in comparable classrooms.

For social and emotional skills, teachers and parents completed two measures: a discrete measure of social skills (SSB) and a broader, more richly defined measure of social and emotional skills (SEL). Except for minor wording differences that reflect the respondent's unique perspective, the content of the teacher version of these measures was the same as the content of the parent versions. Observers completed a single measure that was a similar combination of the social skill and social-emotional skill measures (CSEB).

Results showed strong evidence that Conscious Discipline-exposed children's prosocial behavior improved at a significantly greater rate than children who did not receive Conscious Discipline. Observer ratings of aggregate child behavior also corroborated these findings in the classroom.

The results showing Conscious Discipline as a means of improving social and emotional skills is supported further by the parent ratings. Parents reported that their child's social-emotional behavior at home improved over the course of the school year at a faster rate if their child was taught by a Conscious Discipline-trained teacher than if taught by a teacher without Conscious Discipline training. Parents reported social skills exhibited at home showed a similar trend whereby social skill improvement was greater if the child's teacher was Conscious Discipline trained; however, this trend was marginally significant ($p < .10$) and should therefore be interpreted with caution.

Viewed collectively, the three viewpoints converged convincingly to demonstrate that while prosocial skill improved over the school year in both groups, children in Conscious Discipline classrooms improved their skills at a greater rate than children in Comparison classroom and further, this accelerated improvement transferred to their behavior at home. Of note, the effect sizes (partial eta-squared) for the children's behavioral improvement was .31 and .20 for the teacher reported social-emotional and social skill behavior measures, respectively. For the observers, the effect size was .24. Effect sizes for the parent social emotional scale was .08. As a rule of thumb, eta-square effect size value greater than .06 are considered medium, whereas values greater than .14 are considered large (Cohen et. al., 2003).

School Readiness

Results for the Frog Street Press' school readiness further supported Conscious Discipline's positive impact on children. For pre-kindergarten aged-youth, this is a time of steep growth. Therefore, it was not surprising to see the very large improvement for children from pretest to posttest periods. That said, in the classrooms where teachers delivered Conscious Discipline, the rate of growth in Language/Literacy and Mathematics was significantly higher than children with teachers who did not implement Conscious Discipline. Social-Emotional results (a domain score of the school readiness measure) showed children's skills improved significantly faster if they received Conscious Discipline. These social-emotional results paralleled the results for social and emotional skills discussed above.

Comparable school readiness data were not available for all teachers. Therefore, the school readiness results are based on a subset of teachers (n=30) from the analytic sample (n=66). Attrition analyses (see Table 17) revealed differences significant between teacher characteristics. Compared to those teachers without school readiness data, teachers providing school readiness data were more likely to be Hispanic, provide bilingual instruction, and have less teaching experience. The ethnic and language differences suggest the generalizability of the school readiness results is less broad and may more closely generalize to Hispanic language classrooms and staff. Teachers in this subset of data had less overall teaching experience which also may reduce generalizability of these findings.

In addition, we analyzed the school readiness data for evidence that these sample differences affected the pretest equivalence of the Intervention and Comparison group members. We conducted chi-square analyses comparing the composition of the Intervention and Comparison group members by whether they provided school readiness or did not provide it. The chi-square results indicated that the Intervention and Comparison group composition did not differ based on availability of school readiness data for gender [$\chi^2 = .85, p = .36$], ethnicity [$\chi^2 = .46, p = .50$], race [$\chi^2 = 2.40, p = .49$], or years of teaching experience [$\chi^2 = 2.01, p = .37$]. When we compared the pretest equivalence of the Intervention and Comparison group school readiness scores, no significant differences were found for the Total score [$t(28) = .81, p = .43$] or the Social-emotional domain score [$t(28) = 1.21, p = .24$].

Therefore, while the biographical characteristics suggest a shift in the generalizability of the school readiness, the internal validity of the results is supported.

School Climate

School climate, in broadest terms, refers to the quality and character of school life (National School Climate Council, 2007). To the extent that the school environment provides warmth, a sense of caring and family, and a supportive infrastructure, learning and growth are expected to be facilitated. A core outcome of Conscious Discipline is to support the creation of a school family which encourages all school family members (administration, staff, and youth). School environments achieving school-wide implementation of Conscious Discipline were expected to show higher levels of school climate. The relationship between Conscious Discipline's implementation and school climate also was expected to be moderated by the level of exposure to the target environment.

Results from the climate analyses demonstrated that positive effects of Conscious Discipline have the clearest impact when school-wide implementation is achieved. Similar results showing Conscious Discipline's positive impact on school climate were found across several school climate conceptualizations. By using multiple climate measures, a broad picture of climate was assessed (e.g., interpersonal, institutional, pedagogy, and leadership).

Moderated regression analysis was central to demonstrating that school-wide implementation of Conscious Discipline impacted school climate. Final regression models found that Conscious Discipline's school-wide implementation contributed positively to teacher perceptions of school climate in four of the five areas assessed: organizational support, relational support, collective problem solving, and sense of belonging and friendship. For two measures (organizational and relational support) parents perceptions also were collected. Parent perceptions of organizational and relational support were significantly higher in an environment with full implementation of Conscious Discipline than the view of those climate areas expressed by parents of children in non-Conscious Discipline sites.

The other two climate measures completed by teacher (but not by parents), collective problem solving and belonging/friendship produced findings similar to those for organizational and relational support.

Since the regression analyses allowed for the separate testing of effects for full implementation and partial implementation over no Conscious Discipline, it is interesting to note that climate was rated higher as well for Partial implementation sites in the parent's view of relationship support. Teacher's ratings for Organizational Support also were higher, but only to a marginal level ($p < .10$).

For the analyses involving teachers, years of teaching experience and years of experience at their current site were expected to play an intervening role in the relationship between Conscious Discipline and climate. Only marginal support was found for their effects. Years of teaching experience had marginal, negative influence on the relationship. That is, teachers with lengthier teaching careers tended to rate climate lower than teachers with less overall teaching experience.

When teaching experience was added to the models (Parent's Organizational Support and Relational Support, Teacher's Collective Problem Solving), the effects of school-wide Conscious Discipline implementation strengthened. However, in each case, teaching experience was only a marginal effect ($p < .10$).

Parent's self-report interaction with their child's teacher was expected to moderate the relationship between Conscious Discipline and climate because parents with more teacher contact, and thereby school contact, would be in a better position to accurately reflect on climate. Parent-teacher contact was related positively, albeit at a marginal level ($p < .10$) to parent's report of Organizational Support, but did not influence the relationship of Relational Support or School Connectedness.

Teachers and parents completed different versions of a measure that focused on their attachment to the site. This type of school bonding did not produce any differential effects relating to Conscious Discipline's implementation. The trends for these results paralleled the other climate results, but were not significant. It may be instructive to note that the wording of these measures differed in one way from the other climate measures, perspective taking. While the bonding measure and other climate measures elicit the respondent's personal view, the bonding items are written as first person "I feel" phrasing. The other climate measures are phrased in a more amorphous, detached manner. This phrasing may have caused respondents to think of the items differently. Without a second, similarly phrased measure, it is difficult to draw any particular conclusion with regard to the phrasing.

Summarizing the climate results, full, school-wide implementation of Conscious Discipline was related to significantly higher (over no Conscious Discipline) reported school climate. Climate was somewhat higher under partial implementation, but results were not consistently significant higher than Comparison group responses.

Other Intervening Factors

Lastly, we hypothesized that other factors could moderate the relationship between Conscious Discipline implementation and teacher or child outcomes (H4). Specifically, we examined implementation fidelity, instructional language, and teaching experience. Teaching experience also was explicitly included in the climate analyses (H3), so those results will not be repeated

here. The effects did not produce significant effects when entered individually (i.e., as an intercept difference) or as an interaction with the experimental conditions.

Of note, the lack of influence for implementation fidelity at first was surprising. Implementation fidelity can frequently explain differences in outcomes. This author's prior research with Conscious Discipline demonstrated a relationship between the adherence to implementation standards and outcome (Rain, 2012).

Limitation

The results of this study provide support for the effectiveness of Conscious Discipline for pre-kindergarten teachers and the children in their classrooms. However, these promising results should be replicated through additional studies. One limitation of this study was the reliance upon teachers who delivered Conscious Discipline for behavior ratings (of their own behavior and that of the children in their classes). Potential problems with this source of rating are not unique to this study. It is a mainstay of educational and child development research. The inclusion of additional rating sources (i.e., observer, parent, and student records) mitigates common method variance and the inherent self-report bias. Further, the patterns of results from these alternative sources were similar to the teacher-based findings, and therefore provide more convincing argument in support of the overall results. These alternative sources are not without critique in terms of their frequency of sampling behaviors of interest. Using trained observers removed some concern for this rating source as the inter-rater reliability was very high, averaging .73 based on an intraclass correlation coefficient. Still, observers and parents had far less opportunity to view day-to-day teacher and class activities.

Another limitation of the present study is the sample size. While the analytic sample was sufficient for detecting modest effect sizes, some analyses, such as the school readiness data, were based on a further restricted sample. Re-analysis of some findings using child as the unit of analysis rather than teacher as the unit of analysis was considered. Since matched (de-identified) pre-post school readiness data were available, analysis at the child level would have substantially increased statistical power. However, we opted to retain teacher as the unit of analysis because of the potential for mis-interpretation of disaggregated data, but at the expense of the additional power.

Lastly, a longer time period for the study would inform the sustainability of these effects. In the present study, the time between the pretest and posttest assessments was one school year, or about nine months. While the time period is longer than many similar studies which last only three or four months, following children's performance in advanced grades would contribute to the confidence in maintenance of these results. As well, examining teacher implementation over time would allow assessment of how much training or coaching is necessary to sustain the teacher's behavior changes.

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