Evaluation of Classroom Management in Action: Online School Staff Training: Establishing Positive Behavior Supports in Elementary School Instructional Settings.

Abstract

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Background: Classroom Management in Action (*CMA*) is a professional development program for elementary school teachers that relies exclusively on individualized technology-mediated instruction in which evidence-based content is delivered via multimedia components and which gives learners (i.e., teachers) significant control over time, place and pace of learning.

Purpose: Our goal was to conduct a pilot test that assessed the feasibility and effectiveness of *CMA*. Previous reports have detailed the iterative development of the program using focus group feedback, discussion with content experts, and evaluation of the program feasibility and acceptance using pretest and posttest data from teachers in 37 classrooms. The purpose of the current report is to discuss the findings of a randomized control trial in 111 classrooms comparing differences in teacher and student outcomes due to the use of the *CMA* program.

Setting: The evaluation was carried out in 111 elementary school classrooms (Grades 1 – 6) across the United States.

Study Sample: The sample consisted of 111 teachers (100 female, 11 male) and their students. Teachers were asked which grades they currently taught (they could select multiple grades); 24 reported teaching first grade, 26 second grade, 17 third grade, 27 fourth grade, and 14 sixth grade.

Intervention: Activities involved accessing 18 components of the *CMA* program and completing weekly instructional activities.

Research Design: The pilot study design consisted of a randomized controlled field trial in which classrooms were randomly assigned either to *CMA* treatment condition (n = 52) or business as usual (BAU) control group (n = 59). Posttest was completed 18 weeks after pretest, with a follow-up to examine maintenance 15-weeks after posttest.

Control or Comparison Condition: BAU classrooms could use any educational and classroom management currently being used in their schools, but they were not allowed to receive the *CMA* program until the completion of the intervention and follow-up periods (33 weeks)

Data Collection and Analysis: At pretest, teachers completed the demographic items (age, years of experience, education, gender, ethnicity, and race) as well as the Teacher Sense of Efficacy Scale-Short Form (TSES; Tschannen-Moran & Woolfolk Hoy, 2001) and program specific self-efficacy. At posttest, teachers completed a second TSES, program self-efficacy, and a knowledge test on best practices for classroom management.

Treatment group teachers also completed measures of consumer satisfaction about the CMA program. At follow-up teachers in both conditions completed the TSES, program self-efficacy, knowledge, and a scale measuring intentions to use classroom management practices in the classroom.

Teachers also completed a universal screening of their students at all three time points using a full class adaptation of the Elementary Social Behavior Assessment (ESBA), a 12-item measure of positive student classroom behavior developed, in part, during the current grant.

Findings: Due to pilot study limitations the tests conducted were underpowered, and intervention duration was shorter than ideal. Hence, we have adopted a more liberal criterion for statistical significance of $\alpha = .10$. Teachers in the treatment group showed a significantly greater improvement in general teaching self-efficacy from pretest to posttest than teachers in the control group, and maintained this effect at follow-up. Program self-efficacy with regards to classroom management differences were in the predicted direction but not significant. At follow-up more teachers in the treatment condition stated that they intended to use classroom management practices than did control teachers. At both posttest and follow-up, teachers in the treatment condition exhibited greater classroom management knowledge than did control teachers. Additionally, student behaviors in the treatment condition showed a greater improvement relative to the control classrooms. Teachers also reported high levels of satisfaction with the quality, content, and use of the program.

Conclusion: Both students and teachers outcomes supported the efficacy and feasibility of the *CMA* program. This is particularly meaningful in light of the significant savings in time and cost-effectiveness involved in delivering CMA using digital media as opposed to costs and time commitment involved in traditional training alternatives. In short, an intervention of this scope in which behavioral consultants would have to train teachers using face-to-face interactions would have been prohibitively expensive and unlikely to have been implemented.

Background and Purpose

Teachers who are skilled in effective classroom management strategies are able to create learning environments that support students' social and academic performance. When school staff manage behavior and maintain a well-developed social climate, the impact on children's social and academic development is considerable (Biglan, Mrazek, Carnine, & Flay, 2003; Gottfredson, Gottfredson, & Skroban, 1996; Hawkins, Von Cleve, & Catalano, 1991). Despite these findings, administrators struggle to provide adequate training for classroom staff in this area (Walker, Colvin, & Ramsey, 1995; Sprague & Golly, 2004; Sprague & Horner, 2006; Sprague & Walker, 2005). To elicit successful and substantial behavior change, targeted professional development is needed (Cuban, 1990; Hall & Hord, 2001; Smylie, 1988; Sugai & Horner, 1999). This training is needed not just for teachers, but for all staff members involved in instruction and supervision. Unfortunately, the standard mechanism for staff professional development, the one-day in-service presentation, is inadequate and fails to result in sustained change. Other alternative approaches that broaden and deepen training are needed. (Bransford, Brown, & Cocking, 2000; Cuban, 1990; Guskey, 1986; Showers, Joyce, & Bennett, 1987; Smylie, 1988; Sparks & Hirsh, 1997). In response to these challenges we have developed an online, interactive training program; *Classroom Management in Action (CMA)*. This program builds upon the Positive Behavior Intervention and Supports (PBIS) literature and resolves many of the common delivery challenges inherent in intervention training.

Educators are positioned to impact the social development of young students. There is compelling support for early intervention efforts to prevent social adjustment problems (Bradshaw, Zmuda, Kellam, & Ialongo, 2009; Wilcox et al., 2008; Zigler, Taussig, & Black, 1992). The earlier that intervention begins, the more likely children are to benefit (Ramey & Ramey, 1992). Ramey, Bryant, and Suarez (1985) conclude that young children are quite responsive to alterations in the quality of their environment and to educational efforts. For young children, problem behavior tends to occur more frequently in the context of social interactions as compared to instructional activities (Del'Homme, et al., 1994). This illustrates the potential benefit of implementing methods for preventing problem behavior in appropriately structured classroom settings. Children's cooperative behavior and their social development require support through daily interactions with adults and other children. Social environments that do not provide reinforcement of appropriate social behaviors permit the development of aggressive and disruptive behaviors that put children at risk for developing ongoing conduct problems. Chronic behavior problems begin when young children learn that aversive behavior (e.g., acting out, whining, taking an article away from another child, hitting) is an effective way to get what they want or avoid doing something they don't want to do (Patterson, Reid, & Dishion, 1992). This coercion process is often maintained in environments that provide low levels of monitoring, and inconsistent or harsh discipline. Since many children spend a substantial amount of their waking hours in school, the quality of staff practices in school settings will likely have a great influence children's social development (Walker et al., 1995). In sum, the development of effective and engaging methods for training educators in promoting positive behaviors should be a high priority.

There is empirical evidence that school settings that manage behavior effectively and maintain a positive social climate have a great impact, not only on children's social development, but on their academic development as well (Biglan et al., 2003; Gottfredson et al., 2000; Hawkins et al., 2000). Studies demonstrate that effective behavior programs have a positive effect on variables linked to academic performance, e.g. student attendance (Luiselli, Putnam & Sunderland, 2002), time in school due to reduced exclusionary disciplinary practices (Putnam, Handler, & O'Leary-Zonarich, 2003; Scott & Barrett, 2004), classroom instructional time (Putnam, et al., 2002), academic performance (Horner et al., 2009; Horner, et al., 2005, Larsen, et al., 2006) and academic engagement (Putnam, et al., 2003). The long-term benefits of behavioral supports will greatly exceed the costs of providing these supports (Altenbaugh, Engel, & Martin, 1995; Blonigen et al., 2008).

The growing acceptance of PBIS strategies for managing behavior is a welcome step towards developing school environments that promote behavior competencies and learning. PBIS is a framework that blends the principles of behavior analysis with student-centered values to promote a desirable school life (Carr & Durand, 1985; Dunlap, et al., 1993; Fox, Conroy, & Heckaman, 1998; Lewis, Sugai, & Colvin, 1998; Meyer & Evans, 1989; Taylor-Greene, et al., 1997). PBS is distinguished by a number of key features: a) proactive approaches to teaching and improving social behaviors, b) conceptually sound and empirically-validated practices, c) positive behaviorally-based interventions, and d) data-based decision making (Sugai, et al,. 2000). Evidence shows that specific PBS teacher strategies such as (a) clear communication of expectations for student behavior, (b) ongoing positive and corrective feedback, (c) treating all students fairly and consistently, (d) systematically teaching and reinforcing student self-monitoring, and (e) encouraging parent interaction and involvement, contribute to reductions in classroom problem behavior (Blum, 2005). Behavior analysis, the foundation of positive behavior support, is a systematic process for describing behaviors, identifying environmental factors and events that lead to behaviors, and developing data-based behavior plans that help educators teach appropriate behaviors. Rather than focusing only on problem behaviors and reactive response

techniques, PBIS prescribes interventions that equips the school staff with ways to change the environment such that students achieve social and academic competence, and hence the acceptance and respect of the peers and adults in their lives. Use of PBIS has improved academic and social climates of the school, and created a more positive learning environment for both students and teachers (Colvin, Kame'enui, & Sugai, 1993; Horner et al., 2005; Sugai & Horner, 1999; Sugai et al., 2000). A meta-analysis of 165 studies of school-based prevention activities that employ PBIS approaches to encourage self-control and social competency (behavioral modeling methods, tracking specific behaviors over time, setting behavioral goals, using feedback and positive reinforcement to change behavior) showed consistently positive results (Wilson, Gottfredson, & Najaka, 2001). PBIS preventative practices have also been used effectively in the home for children with behavioral problems (Jolivette, et al., 2002).

The majority of school interventions (including PBIS) are delivered using in-service presentations. This traditional method of staff development has tended to emphasize the delivery of episodic or one-shot presentations that are often expensive and inefficient (Fixsen, et al., 2005; Guskey, 2000, Joyce and Showers, 2002). Much of the criticism leveled at the half-day workshop and other traditional types of professional development is that they fail in both content and duration to address new ideas in teaching and learning, and thus do not modify educators' practices in any meaningful way. When done well, programs to improve teaching should address content areas central to educators' needs and be of sufficient duration to allow them time to absorb new ideas and test them in their classrooms as well as get feedback from their colleagues peers (e.g. exemplary teachers) and others about how they are managing; and then encourage the educators to practice new skills (Little et al. 1987; Little, 1993; Salas, Tannenbaum, Kraiger, & Smith-Jentsch, 2012).

Traditional professional development trainings, however, such as conferences, presentations and workshops have significant limitations. Generally they (a) fail to result in durable teacher change and the relationship between training and implementation of new skills is weak at best (Bransford, et al., 2000; Cuban, 1990; Guskey, 1986; Showers, et al., 1987; Smylie, 1988; Sparks & Hirsh, 1997); (b) dedicate only a small amount of time to professional development on any one content area in a school year (Parsad, Lewis, & Farris, 2001); (c) infrequently address the individual needs of teachers (Bransford, et al., 2000); and (d) do not adequately differentiate contextual variations (i.e., school location, grade level, experience, and subject matter). Additionally, traditional inservice trainings are often one-time events that leave the attendees with very little tangible materials that can assist with review.

The Internet has long been viewed as a promising alternative to traditional methods of in-service training (Karchmer, 2000; National Staff Development Council, 2001). Online professional development offers the potential for delivering training that is widely available and highly accessible. Internet training can be designed to offer learners unparalleled access to instructional resources, far surpassing the reach of the conventional in-service. Web delivery can provide opportunities for learning experiences that are open, flexible, engaging, and interactive (Kahn, 2001). Unlike the fixed resources in conventional computer-based instruction, web-based instruction can be conveniently modified and redistributed, readily accessed, and quickly linked to related sources of knowledge. The Internet include opportunities for structuring of content (scaffolding), expansion of content (scalability), and efficient methods for conducting study and data management (Cradler & Cradler, 1995; Darling-Hammond and McLaughlin, 1995; Fraley, 2004; Lim, 2002; Rodes et al., 2000).

Most importantly, Internet training can be designed to redress noted failings of traditional in-service. Online training can be programmed with automated refreshers, reviews, and assessments designed to provide a

continuum of flexible, formal and informal processes rather than one-shot injections of information (e.g., Rodes et al., 2000). Using interactive practice exercise, discussion forums, journaling, etc., web-based programs can be designed to optimize the Internet's potential for individual engagement, exploration, and feedback (e.g., Darling-Hammond, 1998; Smylie et al., 2001; National Staff Development Council, 2001). Online programs, while designed for individual study, can be adapted by coaches and teams to deliver the focused, long-term professional development that is critically lacking (e.g., Cuban, 1990; Hall & Hord, 2001; Smylie, 1988; Sugai & Horner, 1999).

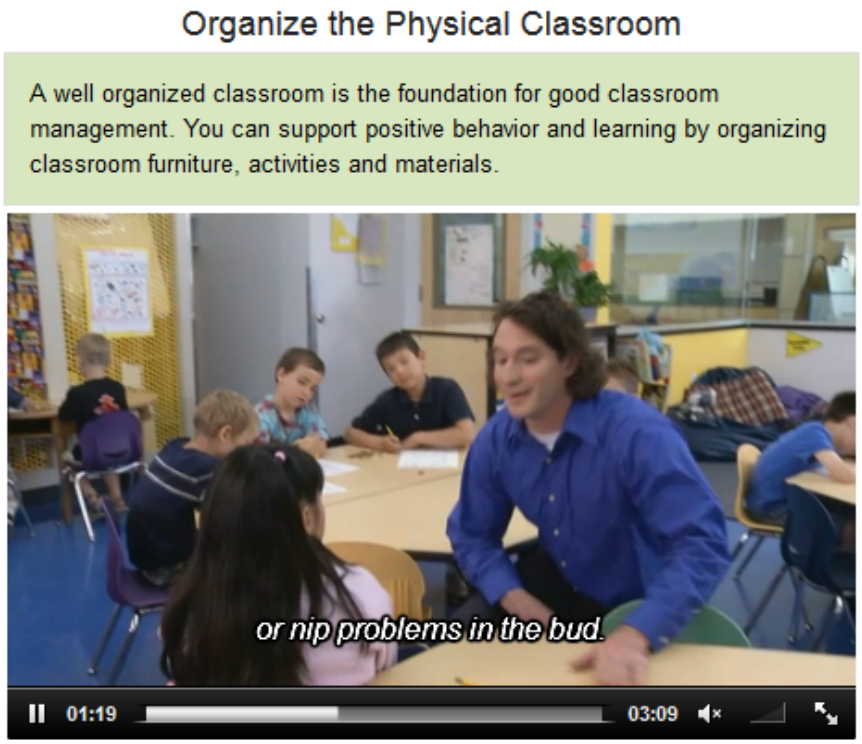
In response to this need for an online, interactive training program focused on giving teachers the skills to create environments in their classroom conducive to learning we developed a three module program that centers on effective classroom management strategies.

The first and primary module is *Classroom Management in Action (CMA)*.

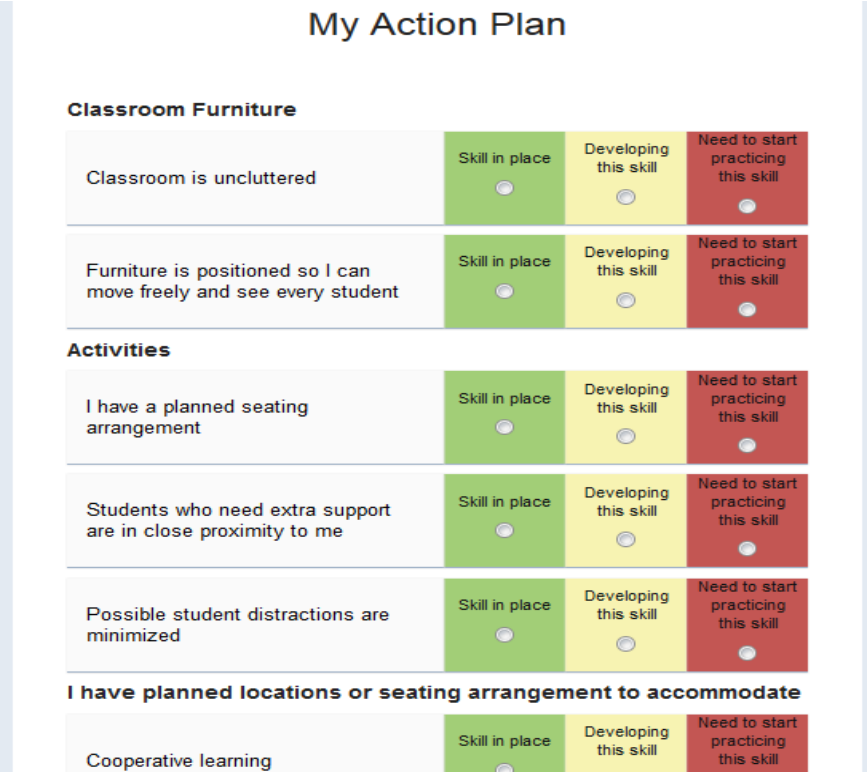
This module addresses basic or *universal strategies* for classroom management and is divided in to three content sections: 1 the first content section deals with *Planning and Organization* Strategies; section 2 covers *Proactive* Strategies, and section 3 addresses strategies for *Responding to Problem Behavior*. Content for these three sections has been derived from decades of empirical study on effective practices. The training materials make ample use of video modeling, electronic assessment, and interactive practice resources. We have endeavored to make the training appealing and engaging, an approach that is based in well-founded instructional practice. We have attempted to accomplish this through realistic situational vignettes, fast-paced presentation, lively graphics, narrative storylines, and humor.

Each section contains an *impact video—The Coaches Corner*—that provides the rationale, motivation, and thematic description for implementing a strategy (e.g., planning and organization). Impact videos are designed to be informative, to draw the audience in, and encourage them to investigate the program more intimately. Following focus group discussion and formative research with teachers, we decided to model *CMA's* three impact videos on a narrative video format based on popular "lifestyle change" reality television shows. In each of the three *CMA* sections, two classroom management coaches pay visits to teachers struggling with a problem. The coaches suggest adoption of specific approaches known to improve classroom behavior and increase student learning.

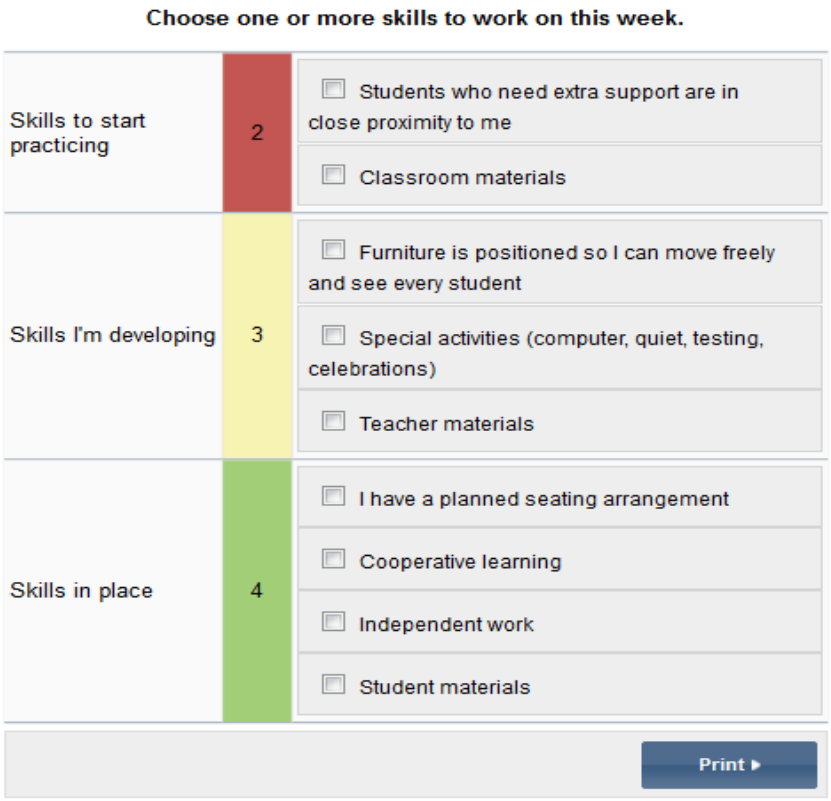
Each of the specific practices recommended by the coaches are presented in brief skill videos, which provide behavioral models, contrasting exemplars of the skill, and a task analysis of each skill.



After viewing each skill video, teachers can complete an Action Plan, an interactive self-assessment that helps them determine to what degree the skill in question is in place. After assessing their readiness using the queries below . . .



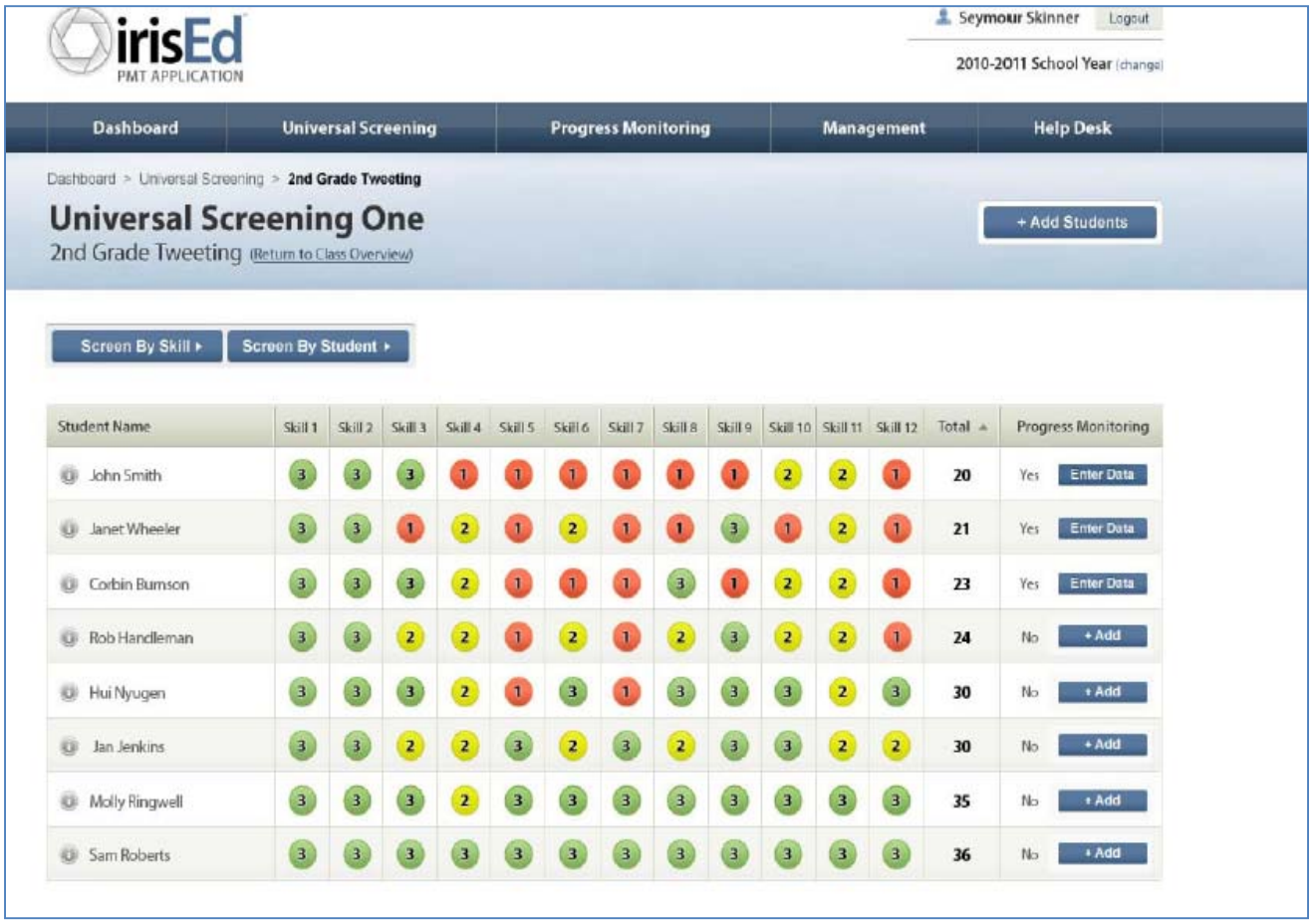
. . . teachers generate a plan which they can print and use as a prompt for action.



Module 2 is an online universal screening/progress monitoring application, the *iris Progress Monitoring Tool (PMT)*.

The *irisPMT* consists of an online behavior assessment tool that tracks, records, and analyzes class wide and individual student behavior. The *irisPMT* is an online software application of considerable scope and complexity. To develop this this electronic application we used an incremental software development approach known as Agile (Cao & Ramesh, 2008; López-Nores et al., 2006, 2009), which has been shown to lend itself to the integration of science into software development through exploratory, iterative and collaborative development (Kane et al., 2006). We also developed and incorporated into the *irisPMT* an instrument for measuring student behavior and by extension the success of classroom management practices.

The *irisPMT* allows teachers to quickly (15 to 20 minutes) and efficiently screen all students in the classroom and to rank order these students in terms of their proficiency.



The target focus of PMT screening and progress monitoring is social-academic behavior defined as teachable-learnable forms of student behavior that enhance the quality of teacher-student relationships, academic engagement, and support the development of friendships and peer social networks. The scale items (n=12) assessed by the PMT have been socially validated through extensive research conducted by Walker and his colleagues in documenting the forms of student social behavior that are considered by teachers as important to a successful adjustment in their classrooms (See Hersh & Walker, 1983; Walker, 1986; Walker & Rankin, 1983). These forms of social behavior are considered to be academic enablers, as conceptualized and defined by Elliott, Diperna and their colleagues, which support and facilitate academic performance as well (e.g., listening to teacher instructions, cooperating with peers on assigned tasks, and so forth) (See Elliott, DiPerna, Mroch, & Lang (2004). The PMT incorporates the three big ideas that Merrell (2010) articulated are essential for moving behavioral assessment forward. These are 1) universal screening, 2) assessing student strengths, and 3) linking assessment to effective interventions.

Until now, screening and behavioral monitoring solutions have been limited to four options: (a) permanent products (any behavioral data already existing in schools); (b) behavior rating scales; (c) systematic direct observation; and (d) behavior report cards (Riley-Tillman, Kalberer, & Chafouleas, 2005). The *irisPMT* represents a new character on this stage, one that combines universal screening and progress monitoring solutions that are linked to a multi-tiered model of prevention.

Universal screening measures involve administration of brief assessments that are designed to be strongly predictive of positive and negative outcomes. A primary purpose of behavioral screens is to identify those students who without additional support are likely to develop behavioral problems from those who are not at risk and need less support. Much of the research involving universal screening and progress monitoring has its origins in reading assessment. Jenkins (2003) identifies three criteria (e.g. classification accuracy, efficiency, and consequential validity) that need to be met by universal screening systems, all of which the irisPMT is designed to meet. In regard to the first criteria, the *irisPMT* accurately classifies students as needing or not needing intensified behavioral interventions. Because screening involves an assessment of an entire class by teachers who are pressed for time, the administration, scoring, and interpretation of the screen needs to be economical, time-efficient, and simple. Finally, the value of a screen's consequential validity rests in its power to drive instruction; students identified by the screen as needing support should be able to receive timely and effective intervention, assisted by a system that provides a seamless transition into progress monitoring.

Lane and colleagues (2010) identified three main benefits provided by screening tools. They give school personnel reliable alerts about which students will fail without support. They make it more likely that students who have behavior problems can be indentified at early enough stage so the help that is available to then provided to them can be successful (e.g., Walker et al., 2004). Finally, they allow the maintenance of historical data on student performance and provide personnel with an assessment of risk over time.

If the purpose of screening is to identify those students who would benefit from additional supports, then a truly efficient screening tool should also contain progress monitoring capabilities. Progress monitoring is needed because, as Gresham (2010) points out the resulting progress monitoring data can quantify rates of improvement, identify students who don't respond adequately to an intervention, and to use students responses as a basis for making decisions about continuing, altering, or terminating an intervention.

The purpose of the *irisPMT* is to evaluate the behavioral skills mastery and performance of elementary school students. After teachers deliver a universal intervention for behavioral improvement, the PMT can be used to universally screen their classes, document outcomes, and problem solve appropriate interventions. The goal of the universal screen is to quickly and accurately identify students and content areas where additional attention is needed. Data obtained in this screening can be used to: (1) identify students who need additional assistance, (2) identify specific areas the class as a whole could use additional instruction on, and (3) communicate these needs to behavioral support teams, administration, parents, and students themselves. The universal screening of a class will allow the teacher to make better decisions on how to allocate limited instructional time.

The final module of the program is an online multimedia training program that guides elementary school instructional staff on how to efficiently use the behavioral assessment capabilities of the *Progress Monitoring Tool (PMT)* with strategies presented in *Classroom Management in Action (CMA)* in order to intervene with students who need more intensive behavioral support.

Summary of Previous Research

We engaged in extensive iterative development and testing of the program prior to the final randomized control trial pilot study. We held a number of focus group and discussion sessions to evaluate the social validity of the program. As part of our iterative development design, we conducted an early, rigorous feasibility evaluation of the first module of the program.

Study 1: Feasibility of Module 1

In the Spring of 2011 we performed a single sample pre-posttest study with 37 K-6 teachers to evaluate the feasibility and social validity of module 1.

Sample: Thirty-seven K-6 teachers (32 female, 5 male) at schools throughout the United States and two English language teachers in Thailand participated. Ages ranged from 24 to 59, with an average of 41. Teaching experience ranged from 1 to 32 years, with an average of 12.32 years.

Research Design/Procedures: The study employed a single-condition, pretest-posttest design. Despite the fact that this single-condition design does not control for potential threats to internal validity (i.e., extraneous factors; Shadish, Cook, & Campbell, 2002) it allowed for evaluation of each module as they were developed, offered the most cost-effective method for evaluating program feasibility, and is appropriate for program development.

Recruited nationally, potential participants were directed to the recruitment website where the requirements and goals of the study were explained and teachers were screened for eligibility (teach in a K-6 setting, were willing to devote 2 hours to the study, had access to internet). Participating teachers were then consented and directed to the online pretest questionnaire. Upon completing the pretest participants were given a link to access module 1 on the irisED.com website. Participants had 2 weeks to complete module 1 at which time they were sent a link to the posttest survey. Posttest participants were paid $75 for completing the study and given a certificate of completion.

Data Collection and Analysis: Pretest questionnaires inquired about self-efficacy, knowledge, concern, and attitudes towards internet technology. The post-test questionnaire asked the participants about self-efficacy, satisfaction with the program, and usability.

Findings / Results: A paired t-test evaluating the teachers' ratings of self-efficacy as measured by the Teacher (TSES; Tschannen-Moran & Woolfolk Hoy, 2001) found a significant increase in teacher self-efficacy from pretest (mean = 7.41) to posttest (mean = 7.96), $t_{(36)} = 3.71$, $p < .001$. Changes in self-efficacy were not predicted by age ($p = .161$), years teaching ($p = .271$), education level ($p = .68$), and technological acceptance ($p = .329$). Participant knowledge increased significantly, $t_{(36)} = 4.95$, $p < .001$, with participants answering an average of 1.54 more questions (out of 13) correctly at posttest.

We found high social validity and usability results for Module 1. Teachers were very positive about the content, with 92% stating that they would recommend the program to other teachers, 97% agreed with the ideas presented in the program, 86% reported that the program met their expectations, 92% were satisfied with the quality of the program, and 92% would recommend the training to other educators. Eighty-four percent of teachers reported that they were currently implementing the training is their classroom and 81% said the training was effective for influencing student behavior. Satisfaction with the irisEd.com training site was also

very positive, with 100% of teachers fining it visually appealing, 97% finding it easy to use, and 94% reporting they would recommend the site to a colleague or friend.

Teachers were also asked about how useful a number of classroom management topics would be to them. These topics, the percentage of teachers who reported them as useful, and the average response (out of 5) are reported in the table below:

Topic	% Useful	Mean
Attention Seeking	87%	4.32
Abused/Neglected	81%	4.27
Bullying	86%	4.22
Aggressive Students	89%	4.19
Check in for At Risk Students	81%	4.11
Withdrawn Students	83%	4.09
ADHD/ADD	73%	4.02
Stealing	65%	3.81
Race, Ethnicity, and Culture	62%	3.78
Autism Spectrum	67%	3.75
Property Destruction	65%	3.68
Sexual Harassment	49%	3.32

This study demonstrated that the first module of the program was positively received by teachers. Additionally, the increases in teacher self-efficacy were promising, though since this was a single sample design this result is not definitively due to the use of the program, though our final evaluation found the same results in a randomized control trial.

Study 2: Psychometric Evaluations of the Elementary Social Behavior Assessment (ESBA)

During development of Module 1, we assessed the content validity, reliability, and validity of the ESBA.

Content validity. The 12 items of the ESBA, collected with the irisPMT™, were constructed to measure the student behaviors teachers associate with student success (Hersh & Walker, 1983; Walker & McConnell, 1995; Walker & Rankin, 1980; 1983). We assessed the content validity of the ESBA items through focus groups and interviews with teachers and administrators. Participants found the item content satisfactory, although minor wording changes were made early in the process.

We evaluated the psychometric properties of the ESBA in a study of 9 elementary school teachers and their students (n = 187). The reliability of the ESBA was evaluated through analysis of the internal consistency of the scale items as well as test-retest at 8-weeks. Validity was evaluated externally through correlational analysis between results on the ESBA and the Walker-McConnell Scale of Social Competence and School Adjustment—Elementary Version (WMS; Walker & McConnell, 1995) , factorial analysis, and social validity (Riley-Tillman, Kalberer, & Chafouleas, 2005).

Internal consistency estimates were very high for both the WMS-EV ($\alpha = .99$) and the ESBA ($\alpha = .95$). An exploratory factor analysis produced a single factor that accounted for 66.6% of the variance. All items demonstrated good item-factor coefficients of .54 or greater. Multiple tests indicated a single factor was the best fit for this data (see Pennefather & Smolkowski, 2013 for more details). Most importantly, we found statistically significant validity correlations between the WMS-EV and the ESBA, $r = .84$, $F_{(1, 185)} = 434.9$, $p < .001$. We also found significant correlation between the ESBA and the subscales of the WMS-EV: teacher preferred ($r = .84$, $t_{(185)} = 20.7$, $p < .001$), school adjustment ($r = .83$, $t_{(185)} = 20.0$, $p < .001$), and peer-preferred ($r = .73$, $t_{(185)} = 15.5$, $p < .001$). We conclude that the ESBA adequately captured the constructs of child classroom behavior measured on the much more time-intensive WMS-EV. On a consumer satisfaction survey, Teachers reported that they most valued the speed at which they could screen their students with the ESBA administered via the irisPMT™. One principal indicated, anecdotally, that teachers screened their students with the ESBA in about 15 to 20 minutes per classroom, while the WMS-EV took 3 to 5 minutes per student (60 to 100 minutes per class).

These results support our hypothesis that the ESBA scale is measuring student school behavior as evidenced by a strong relationship between it and the normed and validated WMS. While there are a number of other psychometrically sound measures of classroom behavior, the ESBA is unique in that it addresses the most common criticisms of classroom screeners. The ESBA is designed (a) to measure the skills teacher identify as most preferred, (b) consists of positive rather than negative student behaviors, (c) uses a scale of measurements that teachers are expert at making, (d) reduces the time and effort needed to complete the screening, and (e) is sensitive to change due to intervention.

Study 3: Pilot Test (Evaluation of Complete Classroom Management Program)

In the Fall of 2012 we evaluated the program in a randomized control trial in 111 classrooms. Teachers in the treatment classrooms used the program for 18 weeks, followed by a maintenance period of 15 weeks. The evaluation was designed to address the following questions: 1) Did use of *CMA* increase teacher self-efficacy, 2) Did use of *CMA* lead to improvement in student classroom behaviors, 3) Did the classroom environment change in response to the program, 4) Did teachers learn the classroom management skills, 5) Were teachers able to use the program as requested (feasibility), and 6) Did teachers enjoy using the program?

Study Setting: 85 1st-6th grade classrooms from across the country during the 2012-2013 school year.

Sample: Participants were 111 teachers (100 female, 11 male) in 1st -6th grade classrooms, as well as their students. Teachers were informed about the study requirements and those who consented to participate were randomly assigned at pretest to either the treatment condition (n = 52) or control condition (n = 59).

Demographics were collected from all teachers at pretest. Teacher age ranged from 24 to 65, with an average of 42 years. Teaching experience ranged from 1 to 42 years, with an average age of 13.6 years. Teachers educational background included Bachelor's degrees (n = 20), post-graduate work (n = 23), and graduate degrees (n = 68). 102 of the teachers were Caucasian, 3 African America, 3 reported being more than one race, and 3 did not report. There were 8 teachers who identified as Hispanic. Teachers were asked which grades they currently taught (they could select multiple grades); 24 reported teaching first grade, 26 second grade, 17 third grade, 27 fourth grade, and 14 sixth grade.

Procedure: Teachers visited an online screening site which explained the study and requirements and screened interested teachers for eligibility. Eligible teachers were then sent a link to an online data collection site

(Qualtrics) to complete informed consent and pretest measures (see Measures below), after which they were randomly assigned to receive the *Classroom Management in Action* (*CMA*) training and use the intervention in their classrooms, or to the Control group who would receive the training and program at the completion of the evaluation. Assignment to condition was done at the teacher/classroom level by a random number table generated by the research team to protect against intentional or unintentional manipulation of the process. The assignment to condition was not blocked on any criteria. At pretest there were 52 teachers assigned to the Treatment, with 32 completing the program requirements and the posttest and 27 completing the follow-up assessment. At pretest 59 were assigned to the Control condition with 53 completing posttest, and 44 completing the follow-up assessment. To help control program contamination the research staff emphasized the important of scientific rigor and the need for the training provided to the Treatment group not being made available to the Control group until after the evaluation period.

After pretest Treatment participants were given access to the CMA program and instructed to view one video a week and implement the skills in their classrooms over a 15 week period. At the completion of the 15-week intervention period teachers in both conditions were instructed to complete a second universal screening of their students and a second set of questions about themselves (see Measures below). Fifteen-weeks after the posttest teachers in both conditions completed a follow-up assessment to evaluate skill maintenance.

Measures: Teachers in both conditions completed all of the teacher and student outcome measures, with the exception of the consumer satisfaction scale. The assessments were collected online via Qualtrics an online data collection website.

Teacher Measures. At pretest teachers completed the demographic items (age, years of experience, education, gender, ethnicity, and race).

Self-Efficacy. Teachers in both conditions completed the Teacher Sense of Efficacy Scale-Short Form (TSES; Tschannen-Moran & Woolfolk Hoy, 2001) and program specific self-efficacy items at all three time points. The TSES is a 12-item scale with three moderately correlated factors: efficacy for student engagement, efficacy for instructional practices, and efficacy for classroom management (Tschannen-Moran & Woolfolk Hoy, 2001). This instrument has shown strong internal reliability (coefficient alpha = .90) and construct validity (Tschannen-Moran & Woolfolk Hoy, 2001), and has been related to a variety of outcomes including student achievement (Moore & Esselman, 1992; Ross, 1992), teacher planning and organization (Allinder, 1994), inclination to refer students to special education (Soodak & Podell, 1993), and commitment to teaching (Trentham, Silvern, & Brogon, 1985). In the current study the scale showed good internal reliability at all three time points (α = .93 at pretest, .91 at posttest, and .91 at follow-up). The program specific self-efficacy scale measured the teachers confidence in using classroom management and was designed using guidelines for creating self-efficacy scales (Bandura, 2006) and consisted of 13-items using a nine-point Likert scale ranging from 1 –" Not at all confident" to 9 – "Fully confident". Internal reliability for this scale was strong at all 3 times (α = .93 at pretest, 93 at posttest, and .92 at follow-up. The scale was correlated with the TSES at each time point (r = .68 at pretest, .64 at posttest, and .43 at follow-up; all correlations significant at $p < .01$).

Classroom Environment. Pretest classroom environment was measured using the My Class Inventory for Teachers (TCMI; Sink & Spencer, 2007; modified from Fraser & Fisher, 1983) a 30-item Likert scale ranging from 1 "Strongly disagree" to 5 "Strongly agree". The internal reliability was α = .73 at pretest, α = .70 at posttest, and α = .74 at follow-up. The TCMI was used in analyses as a covariate to control for pre-existing classroom relationships.

Knowledge. To test participant knowledge of best practices in classroom management we developed a 31 item multiple choice/true-false achievement test that teachers in both conditions completed at posttest and follow-up.

Behavioral Intentions. At follow-up teachers in both conditions completed a 16-item scale measuring intentions to use classroom management in their own classrooms. We used a Likert scale ranging from 1 "Definitely will not" to 5 'Definitely will' perform the skills. Analysis showed high internal reliability (α = .82).

Student Measure. Teachers in both conditions completed a universal screening of their students using a full class adaptation of the Elementary Social Behavior Assessment (ESBA). For the current evaluation at each time point teachers indicated for each skill (12 total) how many of their students had mastered the skill (green), needed improvement (yellow), and were a cause for concern (red). An average score for each skill was calculated assigning by multiplying each green by 3, yellow by 2, and red by 1 and dividing the total by the number of students in the classroom. This allowed an average classroom level assessment of student behaviors. The 12-item averages had good internal reliability (α = .94 at pretest, .91 at posttest, and .94 at follow-up). The 12-items were then combined to obtain a scale average for each teacher.

Treatment group teachers also completed measures of consumer satisfaction about the CMA program at posttest.

Data Analysis: Analysis of the data was conducted on each outcome variable at posttest and follow-up using an Analysis of Covariance (ANCOVA) with condition as a factor, controlling for pretest (where applicable).

Results: To examine whether teacher demographics differed between conditions we ran a series of tests with condition as independent variable. Because this report describes the results of our pilot study, the tests are underpowered and the intervention duration was shorter than ideal. Hence, we have adopted a more liberal criterion for statistical significance of α = .10.

Teacher differences. We found no significant differences between the Treatment and Control conditions on teacher age [$t(81) = -0.3$, $p = .75$], years teaching [$t(73) = -0.6$, $p = .56$], and education level [$\chi^2 = 4.5$, $p = .21$].

Condition effects at posttest. As expected, controlling for pretest TSES a significant condition effects on general teacher self-efficacy F (1, 80) = 8.83, p = .004. Treatment teachers showed significant improvement in program specific self-efficacy compared to control teachers (p = .09. At posttest teachers in the treatment condition exhibited significantly more knowledge on classroom management best practice $F_{(1, 80)} = 6.74$, p = .011 (see Table 1 for descriptive statistics and effect sizes). Student behaviors did not differ significantly between conditions at posttest.

Table 1. Pretest-Posttest Descriptive Statistics and ANCOVA Results for Condition Effects

Measure / condition	Pretest *M* *(SD)*	Posttest *M* *(SD)*	*F* test	*p*-value	Partial Eta^2
Teacher Self-Efficacy (TSES)			8.83	.004	.099
Treatment	7.15 (0.80)	7.49 (0.63)			
Control	7.12 (1.13)	7.04 (0.92)			
Program Self-efficacy			2.82	.097	.034
Treatment	6.90 (0.83)	7.44 (0.79)			
Control	6.83 (1.07)	7.09 (1.03)			
Knowledge					
Treatment	NA	13.50 (1.80)	6.73	.011	.077
Control	NA	12.33 (2.23)			
Student Behaviors			1.33	.252	.016
Treatment	2.62 (0.18)	2.75 (0.16)			
Control	2.61 (0.26)	2.71 (0.18)			

Note. Analyses controlling for pretest (if applicable). *N* = 83; 34 Treatment and 49 Control participants. Univariate *F*-test *df* = 1, 80. Eta-square of .14, .06, and .01 are considered large, medium, small effect sizes, respectively (Cohen, 1988).

Condition effects at Follow-up. As expected, controlling for pretest TSES scores we found a significant condition effects on general teacher self-efficacy $F_{(1, 67)} = 2.99$, $p < .05$. As at posttest, treatment teachers showed a marginal improvement in program specific self-efficacy compared to control teachers ($p = .09$). At follow-up teachers in the treatment condition continued to exhibited significantly more knowledge on classroom management best practice $F_{(1,68)} = 9.88$, $p < .01$. Student behaviors in the treatment condition showed a marginal improvement relative to the control classrooms ($p = .09$; see Table 2 for descriptive statistics and effect sizes).

Table 2. Pretest-Follow-Up Descriptive Statistics and ANCOVA Results for Condition Effects

Measure / condition	Pretest *M* *(SD)*	Follow-Up *M* *(SD)*	*F* test	*p*-value	Partial Eta^2
Teacher Self-Efficacy (TSES)			5.68	.020	.078
Treatment	7.15 (0.80)	7.40 (0.65)			
Control	7.12 (1.13)	7.00 (0.85)			
Program Self-efficacy			2.69	.106	.039
Treatment	6.90 (0.83)	7.46 (0.68)			
Control	6.83 (1.07)	7.18 (0.91)			
Knowledge			9.88	.002	.127
Treatment	NA	13.67 (1.21)			
Control	NA	12.39 (1.40)			
Behavioral intentions			4.08	.047	.057
Treatment	NA	4.71 (0.21)			
Control	NA	4.57 (0.34)			
Student Behaviors					
Treatment	2.62 (0.18)	2.77 (0.16)			
Control	2.61 (0.26)	2.70 (0.23)			

Note. Analyses controlling for pretest (if applicable). $N = 71$; 27 Treatment and 44 Control participants. Univariate *F*-test $df = 1, 67$. Eta-square of .14, .06, and .01 are considered large, medium, small effect sizes, respectively (Cohen, 1988).

Consumer Satisfaction. A six point Likert scale (ranging from 1 – strongly disagree to 6 – strongly agree), as well as open ended responses were used to assess teacher satisfaction with the CMA program at posttest. Teachers had an overwhelmingly positive response to the program on both the quantitative and qualitative items. Means for the individual Likert scale items are reported below (N = 34).

	Mean	SD
Overall, I was satisfied with the quality of this training.	6.00	1.10
I was satisfied with the quality of the information.	5.09	1.06
The training met my expectations.	4.94	1.01
I would recommend the program to other educators.	4.85	1.13
The training content was well organized.	5.24	1.18
It was easy to understand the ideas presented in the program.	5.32	1.20
I agree with the ideas presented in the program.	5.09	1.39
I am likely to use many of the strategies described in the program.	5.18	1.11
The program was engaging.	4.85	1.13
It will be easy for me to implement this approach.	4.94	1.13

Discussion: *CMA* was developed from the theoretical and empirical research on behavior management. We adopted the principles of applied behavior analysis (Carr et al., 2002; Malott & Suarez, 2008; Mayer, 1995) and the methods of application incorporated into positive behavior interventions and supports (e.g., Horner et al., 2005). Unlike most empirically supported behavior management programs, frequently delivered through inservice trainings, *CMA* was provided through an online video-based framework that allowed teachers to view the materials at their own pace, rewatch key pieces, practice behavior management skills, and revisit materials as a self-check on their implementation.

For the research evaluation, we conducted a small randomized controlled trial that resulted in approximately 40 classrooms in each condition. The intervention duration—or more specifically, the time between the beginning of the intervention and our data collection—was shorter than ideal. Teachers usually need more time to implement the recommended changes in their environment and procedures. For these reasons, we have adopted a more liberal criterion for statistical significance, allowing for an α of .10 rather than the conventional .05. This sample and Type I error rate allows us to detect effects of $\eta^2 = .056$, or condition effects that explain about 5.6% of the variance, assuming a pretest covariate of .50. This translates into a d-value of .47. The evaluation of CMA led to improved teacher general self-efficacy, program efficacy, and knowledge. Teachers were also satisfied with the program and found it helpful. Implementation may also have led to improvements in student behavior.

Teachers who implemented *CMA* found the program valuable. It improved their self-efficacy with the *CMA* program and increased their knowledge about behavior management. We also found improvements in general self-efficacy, as teachers learned how to organize the classroom, deliver positive reinforcement, teach behavior skills, make clear requests, use attention signals, de-escalate problem behavior, develop routines, develop behavior expectations, and more.

Teachers also found the program engaging, well-organized, and delivered high-quality information. Ever single teacher who received the intervention gave it the high score on the quality of the training. Reports from teachers using *CMA* are overwhelmingly positive:

- "I liked how the videos showed examples of what to do and what not to do, so that we got to see it in action."
- 'It reminded me of things to reevaluate. I became more conscientious of my strengths & weaknesses. Some strategies I did naturally and others I needed to tweak in order to be a more efficient classroom manager. I loved the videos. I am visual and hands on. The videos allowed me to see the actual behaviors and a resolution that is applicable and efficient. This is the best classroom management training I have ever had."
- "I liked the video clips that showed teachers using the strategies. Also, the ideas were short and sweet (2-step), which made them easy to remember when I was engaged with a student."
- "I thought the training gave great strategies on how to use positive reactions rather than negative ones, and I found it interesting to see the methods implemented in a classroom. I particularly found the two-step method and the 4 to 1 ratio of positive to negative reinforcement to be helpful information."

The study provided evidence for reduced student behavior associated with *CMA*. The items on the ESBA cover skills such as following directions, listening, working with effort, completing seatwork, resolving conflict, getting along with others, and asking for help. This scale has been shown to correlate highly with the Walker-McConnell scale of Social Competence and School Adjustment (Pennefather & Smolkowski, 2013), and captures many student behaviors preferred by teachers. Hence, *CMA* implementation led to improved student outcomes on a range of variables important to teachers.

The evidence from behavior management interventions indicates that early efforts to improve school and classroom behavior can lead to long-term benefits (Bradshaw et al., 2009; Ialongo, Poduska, Werthamer, & Kellam, 2001; Kellam et al., 2008; Wilcox et al., 2008). Although we do not have long term impacts on student behavior, we have believe the improvements in teacher self-efficacy, knowledge of behavior management, and satisfaction has led to improved student behavior. Confirmation of such beliefs must await a full efficacy trial. Nonetheless, the improvements in student behavior, if they generalize to the findings of other behavior management prevention studies, may lead to improved long-term benefits in school and social adjustment.

Next, we have plans to seek funding for a full-scale efficacy evaluation, which will allow for a longer intervention duration, additional measures of student behavior, and the assessment of longer-term impacts on students and teachers. We believe our current study demonstrates more than just promise of an effective intervention, but a uniquely valuable approach to improving classroom management that can reach teachers in any school with an Internet connection.

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