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**Author(s):** Catherine Bradshaw, Elise Pas, Katrina Debnam, & Sarah Lindstrom Johnson

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Comprehensive Assessment of School Climate to  
Improve Safety in Maryland Middle Schools

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PI: Catherine Bradshaw

Final Summary Overview

Authors: Catherine Bradshaw, Elise Pas, Katrina Debnam, & Sarah Lindstrom Johnson

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## **DRAFT Final Summary Overview**

### **Study Purpose**

The major aims of the project were to: 1) To adapt for middle schools and assess the feasibility and acceptability of the Maryland Safe and Supportive Schools (MDS3) Model; 2) To test the efficacy of MDS3 for improving school safety and climate, problem behaviors, engagement, and achievement using a group randomized controlled trial design in 40 middle schools; and 3) To measure the programmatic costs and benefits associated with implementation of the MDS3 model. Toward that end, during spring 2015, we adapted and finalized the middle school version of Maryland Safe and Supportive Schools (MDS3) model, ensuring that it was feasible and acceptable to implement in middle schools, thereby addressing aim 1. We then began a randomized controlled trial (RCT) in summer 2015, whereby we successfully recruited, enrolled, and randomized 40 middle schools to intervention and control conditions. We collected baseline (spring 2015- winter 2016) and annual follow-up data in the spring of the 2015-16, 2016-2017, and 2017-2018 school years including: student, staff, and parent indicators via the online MDS3 School Climate Survey; implementation of positive behavior supports and multi-tiered interventions; classroom and school environment observations using two measures: Assessing School Settings: Interactions of Students & Teachers (ASSIST; Rusby et al., 2001) and School Assessment for Environmental Typology (SAfETy; Bradshaw, Milam, Furr-Holden, & Lindstrom Johnson, 2015); and cost data assessing both cost of program delivery in all 40 schools. Additionally, we collected implementation and data from coaches in the 20 intervention schools on coaching fidelity and ratings of the school engagement.

### **Project Design and Method**

#### **Aim 1: Adaptation of MDS3 Model for Middle Schools**

After making an initial wave of modifications to the existing evidence-based programs (EBPs), we piloted components of the intervention in four local schools in 2015. The feedback about feasibility and acceptability of the EBPs was very positive and provided our team with insights needed to structure the technical assistance process provided by the coaches during the trial. We also sought input from key stakeholders from the MDS3 high school project and PBIS Maryland partnership (e.g., state representatives, implementation providers, and school-based coaches) and our consultants and advisory board members (e.g., Drs. Leaf, Cornell, Gregory). We discussed with these partners the training and technical assistance provided as well as the EBPs to ensure we could capitalize on lessons learned from prior projects. Based on these meetings, we tailored the technical assistance support that we would provide to the schools and participating districts. We made minor modifications to the MDS3 School Climate Surveys and piloted them in a separate set of middle schools, so that the survey was ready for spring 2015 baseline collection. Our team also conducted a focus group with 6 middle school principals who were involved with the survey piloting, at the start of the grant, to engage a broader audience and get additional diverse perspectives about the collection and use of the MDS3 School Climate survey data. Dr. Lindstrom Johnson led the development of the Administrator Walk-through Tool in the spring of 2015. We then met with the four principals of the pilot schools on two occasions (early and end of the pilot) to discuss the development of the Administrator Walk-through Tool. We held a second set of feedback sessions with a larger group of 18 administrators and district staff to discuss the broader utility of walkthrough and observational measures at the end of the 2014-15 school year. Based on this feedback, we further adapted the Administrator Walk-through Tool during the summer, and then conducted an additional round of piloting and focus groups about the measure in the fall of 2015.

## **Aim 2: Efficacy Testing of the MDS3 Program**

**Participants.** As proposed, we recruited 40 middle schools from 4 counties in Maryland for participation in the trial during the spring of the 2014-2015 school year.

**Study Design.** We conducted baseline data collection between April and June of 2015, including the administration of surveys to students ( $n = 25,358$ ), staff ( $n = 2,083$ ), and parents ( $n = 1,391$ ), as well as a baseline data regarding implementation of PBIS and the EBPs at more advanced tiers. The schools were randomized to intervention versus control status and notified of their status at the beginning of July 2015. Specifically, schools were matched into pairs based on county location, key demographic variables (e.g., school size, percent of students receiving free and reduced meals), and baseline discipline and achievement data using a propensity score matching process in the R software and then randomly assigned to intervention condition. Statistical analyses were conducted and demonstrated balance on all available variables. The schools received additional training in PBIS during the summer of 2015.

**Data Collection.** During the fall of 2015, observations were conducted in all 40 schools for baseline data collection. Specifically, we administered the Assessing School Settings: Interactions of Students & Teachers (ASSIST; Rusby et al., 2001) which is a measure conducted in classrooms to document teacher behavior and use of proactive behavior management and student behavior (e.g., aggression and disruptive behavior). This measure was administered in 720 classrooms. Also, the School Assessment for Environmental Typology (SAfETy; Bradshaw, Milam, Furr-Holden, & Lindstrom Johnson, 2015) was administered over the course of a full school day, in each of the 40 schools, to collect data regarding school layout, school ownership, disorder, and surveillance in all non-classroom environments (e.g., outside property, stairwells, hallways, etc.).

First-year post-test data were collected between April and June 2016 in all 40 schools, and again in between April and June 2017 and April and June 2018. Specifically, this included the administration of surveys to students ( $n = 28,069$  in 2016, 24,405 in 2017, 27,579 in 2018), staff ( $n = 2,386$  in 2016, 2,276 in 2017, and 1,948 in 2018), and parents ( $n = 1,905$  in 2016, 1,477 in 2017, and 1,284 in 2018); the assessment of implementation of PBIS and the EBPs at more advanced tiers; and classroom and school environment observations utilizing the ASSIST classroom observations (i.e., in 736 classrooms in 2016, 737 classrooms in 2017, and 739 classrooms in 2018) and SAFETY in each of the 40 schools.

**Intervention Supports.** The MDS3 intervention is a training and coaching model provided to schools to promote their universal, school-wide implementation of the Positive Behavioral Interventions and Supports (PBIS) framework and to integrate a comprehensive school safety assessment into their data-based decision-making to select and use tailored evidence-based programs (EBPs). The intervention includes the data tools to comprehensively assess school safety (i.e., climate measures, measures of the school environment, and classroom measures); coaching support on a weekly basis to utilize these data as well as for individual teachers on promoting positive behavioral supports using the *Classroom Check-Up* coaching model (Reinke, Herman, & Sprick, 2011), and in the selection and implementation of a menu of EBPs. The menu of EBPs includes *Botvin's LifeSkills* (a universal substance abuse prevention program; (Botvin et al., 1998)), *Restorative Practices* (practices that can be conducted universally or in a targeted/intensive fashion to build community and relationship, manage conflict, and decrease behavioral incidents), *Check-In/Check-Out* (Horner et al., 2009; a targeted student engagement model specifically addressing PBIS expectations), *Check & Connect* (Christenson et al., 2004; a targeted daily monitoring and mentoring system to increase engagement), the *Early*

*Adolescent Coping Power* (Lochman & Wells, 2002; a targeted group counseling intervention to address youth aggressive behaviors), and *Threat Assessment* (Cornell, 2006, 2018; an assessment framework to analyze dangerous situations, such as a threat of a violent act). Beginning at the start of the 2015-16 school year through June 2018, the coaches visited the intervention schools on a weekly basis. The focus of the first school year was largely on the universal behavior management systems and the introduction of the comprehensive school safety assessment with a transition into rolling out the evidence-based programs at the close of the school year and into the summer. Specifically, administrators and PBIS teams were provided presentations regarding the evidence-based programs that they could select from and schools made their selections; the first trainings offered were (1) a workshop on integrating some elements of restorative practices principles into the universal behavior management system, (2) Check-In/Check-Out, (3) Check & Connect, and (4) Coping Power. The former two were offered in the spring 2016 and latter two were offered in July and August of 2016. Additional trainings (e.g., Part 2 training for Coping Power, covering the parent and teacher component content as well as additional opportunities for schools that missed summer training) were provided in September and October of 2016 of the second year. During the second year, coaches continued to support universal behavior management, deepened the integration of school safety and climate data into decision-making, and assisted in the rolling out of evidence-based programs. During the fall of 2017, a Check & Connect training was provided to a second set of schools. During the summer (2017), additional trainings for Coping Power for all 3 components (i.e., student, teacher, and parent) were provided to new schools and booster trainings were provided for Coping Power and Check & Connect to schools trained in the prior year. The focus of the final study school year (2018-18) was the start or continue implementation of EBPs and to assist schools in putting sustainable data, systems, and practices in place. For

example, coaches were planning and providing sustainability trainings in PBIS and the classroom coaching they provided (i.e., Classroom Check-Up) and worked with EBP teams to compile virtual and hard copy files for their implemented EBPs (including items such as background information, information and consent forms for parents, intervention materials). In the case of a few schools that launched their EBPs in the final school year of the study, sustainability procedures were put in place in tandem with the implementation process.

## **Findings**

### **Aims 1 and 2:**

**Implementation of the MDS3 Model.** The coaches logged their intervention contact time provided to each school throughout the entire study, as a means of both tracking implementation activities as well as cost. For the entire first school year (i.e., indicated as ending at the end of July 2016), coaches logged 857 visits to the 20 intervention schools and provided about 3,141 hours of active contact time (i.e., about 157 hours per school on average). During the second year of implementation (i.e., August 1, 2016 through July 2017), coaches made 1,096 visits to the 20 intervention schools and provided about 3,599 hours of active contact time (i.e., about 180 hours per school on average). During the third year of implementation, coaches made 934 visits to the 20 intervention schools and provided about 3,067 hours of active contact time (i.e., about 153 hours per school on average).

These data indicated that coaches spent the largest proportion of time logged in relationship building within the school (36%), followed by participation in school-level meetings (e.g., PBIS, grade level teams; 22%). Taken together, time spent in school-level meetings and in meetings with individual school staff members (i.e., 12% of time) totaled the time spent in relationship building. Coaches also engaged in preparation tasks for about 12% of the time overall, but this time

allotment decreased from year 1 (17%) in years 2 (8%) and 3 (10%). As expected, there was fluctuation in how time was spent over time with regard to support of evidence-based programs, whereby the time dedicated was 2% in Year 1, 8% in Year 2, and 7% in Year 3.

When attending PBIS meetings, coaches provided data about (up to) three activities they engaged upon when there. Data indicate that coaches helped guide the team's use of data and assisted with action planning to support implementation (i.e., at Tiers 1 and 2/3) during the majority of meetings; they also focused on the development of PBIS trainings in close to one-fifth of the meetings. Outside of meetings, coaches provided training and assistance in accessing specific components of the comprehensive school safety assessment and synthesized the available data elements and provided formalized feedback to the school administrator regarding data in the first year. Over the years, additional training support was provided and the school teams (e.g., PBIS, leadership) took over the task of synthesizing the data about PBIS, safety, environment, and engagement.

Additionally, coaches identified teachers in need of support in classroom management, who may also have a broad impact on the school climate or student behavior (e.g., teachers making a large number of referrals; teachers in leadership positions on the PBIS team or within their department) and coached them using the Classroom Check-Up model both years. In total, 48 teachers were coached in the first year and 50 were coached during the second year of implementation. During the last school year (i.e., year 3), coaches continued to provide coaching support to teachers, but largely worked with schools to identify teams of school personnel to receive training in the Classroom Check-Up model (e.g., administrators, leadership teams, department chairs) and providing the training and supports. On average, coaches spent 9% of their time coaching individual teachers.

**Summary of Primary Outcome Analyses and Results:** This study spanned three full years and included data from four time points and thus, we have conducted repeated measures analyses using generalized linear models (GLMs) to examine the both implementation and outcomes over time. We hypothesized that both universal PBIS (i.e., as measured by the Schoolwide Evaluation Tool) and advanced tier interventions (i.e., as measured by the ISSET) would improve over time for the intervention schools, relative to the controls. Data indicated that implementation fidelity fluctuated over time, whereby schools, on average, showed improvements followed by declines and then more improvements over the course of the four years. In examining the end-of-trial ISSET scores, there were significant differences on the scores for targeted (i.e., Tier 2) interventions, such that the intervention schools that received the MDS3 coaching had higher fidelity scores for Tier 2 interventions. Given the non-linear nature of the implementation measures, additional analyses which can account for this non-linearity and capture all four years of data are being conducted and finalized.

With regard to measured outcomes, the ASSIST classroom observations indicated that intervention schools had significant improvements on the use of approvals (e.g., praise) in the classroom over the course of the four-year study (i.e., utilizing repeated measures GLMs). However, these data are also non-linear (e.g., where there are improvements followed by declines and improvements), and thus additional analyses to account for non-linearity are also being conducted on all tallies collected on the ASSIST. With regard to the climate measures, our team recently finalized abbreviated scales for safety, engagement, and environment, using an item-response theory approach. These scales are being calculated and analyzed as key outcomes from the survey measures to examine whether perceptions of school climate improved in the intervention schools, relative to the comparison schools.

### **Aim 3: Cost Study**

**Overview of Data Collected.** We engaged a team of economists and finalized all measures for use during the trial to capture the costs. Dr. Lindstrom Johnson, the Co-PI responsible for the cost analysis, attended a weeklong methods training from the Center for Cost-Benefit Studies of Education in spring 2015 in New York to further inform our cost evaluation. Following this, specific measures (e.g., the coach log of time spent on specific activities; documentation of time spent on coach training; administrative costs) were developed with program costs collected in the summer of 2015 through June 2018. Drs. Lindstrom Johnson and Bradshaw co-hosted a first mini cost conference on October 2, 2015 at the Maryland State Department of Education focused on cost evaluation with our economist consultants (e.g., Drs. Bowden, Player, and Alfonso). This mini-conference included both an educational and planning component, with regard to the cost aim of the study and was instrumental in aligning all partners in their understanding of and buy-in for the cost evaluation. Following this mini-conference, the final measure, which assesses the cost of the intervention to the schools, was completed and administered across all 40 schools in spring 2016. This measure was embedded within the SET/ISSET PBIS Implementation fidelity assessment, which is a widely-used tool across the state, and administered in 2016, 2017, and 2018 to all 40 schools. District-level interviews were held in spring 2017 and state-level interviews were held in winter and spring 2018 to understand costs of supporting PBIS from these perspectives. Data were coded, analyzed, and summarized.

**Findings.** We concluded that the average per school cost of PBIS was \$53,216 (median = \$36,698), with an average per pupil cost of \$90 (median = \$58), which is considerably less than other school-based prevention models. The cost did, however, differ by implementation level, such that high-fidelity implementation tended to cost more than low fidelity implementation. As

anticipated, the majority of costs were associated with personnel time. Coach activity log data were utilized to generate the per-school coaching costs (i.e., in the 20 intervention schools) of \$7,918, \$9,059, and \$7,623 in years 1-3. School personnel time for coaching cost \$2,420, \$3,647, and \$3,018. District costs were limited to salary support for a district coordinator and averaged \$50,000. Districts, on average, spent as much on PBIS as the state did and the costs were the highest for Sheppard Pratt Health System (i.e., the technical assistance provider). We have two peer-reviewed articles pertaining to costs under review currently (see reference list), and will be submitting a third paper as part of a special issue to the *School Psychology Review* due in November 2019. We are developing a fourth paper, also for a special issue, that will examine these cost data in concert with statewide PBIS data, to estimate the costs of the state-wide scale-up and outcomes.

### **Implications for Criminal Justice Policy and Practice in the US**

This project has important implications for school safety, policy, and practice as it contributes knowledge regarding the impacts of the use of a data-based, multi-tiered approach to implement EBPs in middle schools. Currently, the field lacks experimental knowledge and readily-available information for middle schools regarding evidence-based interventions. The sharing of data was a core component of the intervention in this study, and thus it was a natural opportunity to disseminate project findings. The MDS3 School Climate Survey reporting system provided schools with real time results and the five reporting options provided data in user-friendly formats that could be used to make decisions. The 40 schools involved in the study had access to their survey data since the summer of 2015 and at a minimum, accumulated four data points and were offered the option to continue using the survey system in subsequent years. Schools and districts were also provided with four reports of the fidelity data and observational data as part of this study;

these were distributed to the participating schools and districts annually. We met with state and district partners regularly and briefed them on the findings from the study. As the papers summarizing the outcome analyses are completed, we will continue to brief partners and provide a practitioner-friendly summary of the results. Drs. Bradshaw, Debnam, Leaf, and/or Pas participated in bi-weekly meetings with the partners at the Maryland State Department of Education and Sheppard Pratt Health System to update them on the project's progress; additional project updates and research briefs were shared more broadly at the monthly State Management and bi-monthly State Leadership Team Meetings.

As proposed, we developed a comprehensive training series on the use of multiple forms of school climate data to inform the selection and implementation of a continuum of evidence-based programs, and a sustainable school climate survey system for use state-wide in middle schools and professional development and implementation materials to support the EBPs that were adopted by schools. We have released a series of webinars and online training materials based on these products and the findings from this study to schools across the state of Maryland. This project also resulted in the development of the Administrator Walk-through Tool; Dr. Lindstrom Johnson secured seed funding from another source at Arizona State University to create an electronic version of the Administrator Walkthrough measure (i.e., an app) which will allow for broader dissemination. An application is currently under consideration through an SBIR mechanism at the CDC for additional funding to conduct a more systematic study of the tool. Dr. Lindstrom Johnson has also created a "trainer of trainers" protocol for the SAFETY; this training was piloted in the fall of 2017, and was used in spring 2018 to train other research teams that are interested in using the SAFETY for other projects.

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