Summary Overview Report
For the National Institute of Justice, Office of Research and Evaluation

Trauma-Informed Approaches to Improve School Safety (2015-CK-BX-0020)

Stacy Overstreet[1] and Courtney N. Baker
Department of Psychology
Tulane University

[1] Please address correspondence to Stacy Overstreet at soverst@tulane.edu.

Abstract

The current project examined the effectiveness of a multi-component intervention for the installation of trauma-informed approaches in schools. The intervention was set within the installation stage of program implementation and focused on developing and evaluating tools, trainings, and systems of support necessary to build individual and organizational competencies and support infrastructure in K – 8 schools to integrate trauma-informed approaches into their multitiered systems of student support. Specific installation strategies included foundational professional development in trauma-informed care, teacher skill-development and on-site coaching in the use of trauma-informed approaches, and technical assistance to school leaderships teams to support organizational change. The multiple baseline experimental design utilized in the project provided strong control over extraneous variables and allowed us to demonstrate the extent to which intervention effects were replicated across multiple schools. Findings indicate positive changes in educator and school-level capacity during the intervention year, most of which were maintained or strengthened in subsequent years. Although students did not perceive changes in school climate and in fact, reported small increases in student aggression and victimization during the intervention year, other indicators suggested that student disruptive behavior decreased over time. Taken together, these findings indicate that the intervention offers a promising framework for the installation of trauma-informed approaches in schools. Implications for criminal justice policy and practice in the US are discussed.

Purpose of the Study

The study evaluated the effectiveness of a multi-component strategy for the installation of trauma-informed approaches in urban schools serving low-income, mostly Black youth marginalized due to intersecting discriminatory and oppressive economic, education, policing, and housing policies and practices. The strategies included professional development in trauma and trauma-informed approaches, on-site coaching in the application of trauma-informed approaches in the classroom, and technical assistance for school leadership related to the system-wide adoption of trauma-informed approaches. The overall goal of the study was to determine whether the multi-component strategy increased the capacity of the schools to adopt and implement trauma-informed approaches and ultimately improve school safety. The specific objectives included:

Aim 1: Apply a rigorous experimental design to evaluate the implementation strategy in six schools. Implementation strategy components included a) an initial two-day professional development workshop for all school staff on the core concepts of trauma, traumatic stress responses, and specific trauma-informed strategies for student engagement; b) intensive training and coaching of teachers to increase their capacity to use trauma-informed skills and strategies; and c) ongoing technical support provided to school leadership teams to develop capacity to engage in data-based decision making for the system-wide adoption of trauma-informed approaches. Process data were collected to ensure that the intervention was viewed as acceptable, feasible, and satisfactory and was delivered as planned.

Aim 2: Determine whether the intervention created consensus and capacity for trauma-informed approaches, as indicated by increases in teacher a) understanding of trauma-informed approaches; b) attitudes toward trauma-informed approaches; c) use of explicit trauma-informed strategies for student engagement and classroom management; d) perceptions of system-level support for the intervention; and e) perceptions of organizational capacity to implement trauma-informed approaches.

Aim 3: Determine whether the intervention impacted school safety, as indicated by a) reductions in student aggression, victimization, and suspensions; and b) increases in perceptions of school safety and school climate.

Project Participants

Project schools were located in New Orleans, LA (NOLA), which is a portfolio school district comprised entirely of autonomous charter schools. Six K – 8 schools within the two largest charter management organizations (CMO) were originally recruited to the project. The CMOs collectively served over 5,800 students and had schools located across the city, ensuring the representativeness of the study sample. The blend of primary and middle school students in the K – 8 schools capitalized on the preventative framework of trauma-informed approaches while having the potential to impact students most likely to experience peer victimization and bullying and perceive their school as unsafe (Espelage et al., 2013).

Schools were randomly assigned to receive the intervention during project years 2, 3, and 4, after completing at least one baseline year during project year 1. The project began baseline data collection in 2016-17 and active implementation in 2017-18; the project ended in 2019-20. One school (school A5) was randomized to receive the intervention in year 2, but this did not occur because the school learned that its charter would not be renewed the following year. The decision was made to exclude School A5 from analyses.

The project participants included urban K-8 students who attended one of the study schools, as well as their teachers and other school staff. Students were recruited to the study annually to meet the recruitment target of 40 students per grade per school. Once students were recruited to the study, they remained in the study unless they graduated eighth grade, moved to a new school, or revoked consent/assent. The only inclusion criterion for students was the ability to communicate in English. A total of 2127 students were active in the study in project year 1; 1920 were active in project year 2, 2089 in project year 3, and 1768 in project year 4. The majority of students were identified as Black or African American (91%). Seven percent of students were identified as Hispanic, representing the growing Hispanic population in our geographical area. About half (49%) of the students were identified as male. Teachers and school staff were also recruited to the study annually with the goal of enrolling as many participants from the school as were interested. Once teachers and school staff were recruited to the study, they remained in the study unless they left the school or revoked consent. A total of 462 teachers and other school staff were enrolled in the study and completed self-report measures. A total of 325 classroom teachers participated in classroom observations. About half of the educators identified as Black or African American (48%) or White (47%). Six percent identified as Hispanic. About 75% of the educators identified as female.

Project Design and Methods

Procedure

Intervention Model. The Safe Schools NOLA (SSNOLA) intervention model evaluated in the current project was situated within the installation stage of implementation in which "…new services are not yet being delivered, but the necessary individual and organizational competencies and supporting infrastructure are being established so that the new practice can be successfully put in place" (Metz et al., 2015, p. 12). Thus, our intervention focused on developing and evaluating tools, trainings, and systems of support necessary to build individual and organizational competencies and support infrastructure in K – 8 schools to integrate trauma-informed approaches into their multitiered systems of student support. The intervention was carried out through three core elements: use of teams to lead implementation efforts; data-based decision making; and capacity building to support systems change.

The project was a university-school collaboration. The external project implementation team consisted of social workers who served as teacher support specialist embedded in the school four days a

week to support teacher training and consultation, a school support specialist to support system-level change, and the project director to provide overall guidance in the implementation process. The internal school leadership team typically consisted of the school principal(s) and assistant principals, the dean of students, special education and response to intervention coordinators, the school mental health service provider, and a small group of teachers identified by the school.

Educator capacity building efforts focused on training and support to create a common understanding of trauma and the framework for trauma-informed schools (foundational professional development). In addition, skill-building professional development sessions supported by coaching and consultation allowed teachers and school leaders to understand how trauma-informed practices aligned with existing practices and what additional resources might be needed to implement the practices effectively over time. Skill-building sessions focused on three skill areas to promote the principles of trust and safety at the center of trauma-informed frameworks. The skill areas included 1) establishing safe and supportive classroom environments that prioritize routines for community building and student empowerment through emotional expression and regulation; 2) enhancing teacher emotional regulation skills as a driver of supportive teacher-student relationships; and 3) fostering connected relationships between students and teachers. Following each training, teacher consultation and coaching was provided to increase the effectiveness and sustainability of the training and teachers' use of specific skills in their classrooms. Coaching and consultation was supported by a classroom observation tool aligned to the training content that monitored developing competencies in creating safe and supportive classrooms, teacher and student emotional regulation, and teacher-student relationships.

Organizational capacity was built through technical assistance for needs assessment and data-based decision making to help identify necessary infrastructure elements (e.g., policies, procedures, staffing resources) to support an action plan for the initial implementation of trauma-informed approaches. Each school's action plan was individualized to allow for a true integration of trauma-informed approaches within the school culture, taking into consideration their unique needs, priorities, and resources. Following the active intervention year, schools took on and sustained implementation internally, though they continued to have access to the study team for consultation purposes.

Research Design. The measurement plan included data collection approximately quarterly across the four project years, which included a baseline year in which no schools were implementing the intervention. The study used a planned missingness design, in which participants were randomly assigned to complete surveys and/or classroom observations during two out of the four possible data collection periods each year. Students in grades 3-8 completed paper surveys in small groups. Educators completed surveys via Qualtrics. Classroom observations were 20 minutes long, occurred during academic time, and were completed by trained study team members. Interrater reliability for classroom observations was .88.

Exceptions to the quarterly data collection schedule include the following a) demographics were collected from educators using a Qualtrics survey upon their first entry into the study and from students annually via school rosters; b) implementation data were collected using educator-completed paper surveys and other process indicators gathered by the study team during the intervention year for intervention schools only; c) Aim 2 outcomes relevant to understanding of trauma-informed approaches (knowledge), perceptions of system-level support for the intervention (system support), and perceptions of organizational capacity to implement trauma-informed approaches (system climate) were gathered using educator-completed paper surveys one time per year for intervention schools only; and d) archival suspension data were reported at the school level on an annual basis and included three additional baseline years.

In addition to the dropout of school A5, three additional deviations from the originally planned study design occurred. First, office discipline referral and expulsion data were not provided by schools and therefore were not included in the study as originally planned. Second, classroom observations

were not collected in a timely manner during the first and second quarters due to challenges with study start-up; this deviation is accommodated by the models fit to the classroom observation data (see Data Analysis). Third, student self-report, student ratings, and classroom observations were not collected during the final quarter due to school closures resulting from the coronavirus pandemic.

Measures

Covariates/Interaction Terms. Covariates are not appropriate for the multiple baseline design, which models outcomes at the school level. Interactions by grade were evaluated for Aims 2 and 3. Grade was coded to represent the following categories for student-reported data: elementary (grades 3-4; coded 1) and middle school (grades 5-8; coded 0). For teacher-reported data, two dummy variables were created: kindergarten (grade 0; coded 1) and elementary (grades 1-4; coded 1), with middle school (grades 5-8; coded 0) as the reference group. Student gender was effect coded (0 = male, 1 = female).

Aim 1: Implementation Outcomes. The *Usage Rating Profile-Intervention Revised* (UR-PIR; Briesch et al., 2013) evaluates six subscales relevant to intervention implementation in schools. The current study used the nine-item acceptability and six-item feasibility subscales to evaluate Aim 1. The UR-PIR was rated on a scale from strongly disagree (1) to strongly agree (6), with higher scores indicating more favorable implementation outcomes. Means were used as summary scores. Internal consistency reliability in the current study was .85 for acceptability and .63 for feasibility. We also used an 8-item generic *satisfaction measure* that we developed internally. A mean score was calculated, with higher scores indicating more satisfaction. Internal consistency reliability for the satisfaction measure was .94. Finally, *fidelity checklists, logs, and other process measures* were also collected to ensure that the intervention elements were implemented as planned.

Aim 2: Teacher Knowledge, Attitudes, Behavior, and School Capacity Outcomes. Understanding of trauma-informed approaches was evaluated using the *Knowledge measure* (Baker et al., 2016; Baker et al., 2020; Brown et al., 2012), a 15-item quiz-style instrument that is administered before and after each PD. This type of instrument detects change in knowledge as a result of the PD. We developed the items internally to match the PD we delivered. Percentage correct at pretest is compared to the same metric at posttest. The *Attitudes Related to Trauma-Informed Care* (ARTIC; Baker et al., 2016; Baker et al., 2020) includes seven subscales that measure the favorable or unfavorable attitudes of educators toward trauma-informed approaches. The 35-item ARTIC-35 total score was used in this study. Respondents used a seven-point bipolar Likert scale to rate items. Summary scores were created using means. Higher scores indicate attitudes more favorable to trauma-informed approaches. Internal consistency reliability in the current study was .89 for the baseline year and .90 for all project years.

The use of explicit trauma-informed strategies for student engagement and classroom management was evaluated using the *Assessing School Settings: Interactions of Students and Teachers Observation System* (ASSIST; Bradshaw et al., 2018; Rusby et al., 2001), an observational coding system that facilitates data gathering relevant to both teacher and student behavior. We used the teacher behavior tallies (Rusby et al., 2001) and global codes (Bradshaw et al., 2018; C. Bradshaw, personal communication, January 19, 2022). Tallies were counts during the 20-minute observation of teacher behavior that represent approvals and disapprovals. We created a positive to negative ratio variable to serve as the summary score, which was calculated by dividing the number of tallied approvals by the sum of the tallied approvals and disapprovals. Values closer to 1.0 or 100% represent a higher ratio of positive versus negative teacher behaviors during the observation period. Global codes were rated by coders after the observation period ended and represent teacher influence (five items), behavior support (six items), monitoring (four items), meaningful engagement (nine items), and responsiveness (six items). Global codes were rated on Likert scales from 0 (never) to 4 (almost continuously). There was an n/a option that was used sparingly and was coded as missing. Summary scores for global codes

are means. Higher scores indicate more of the construct, with all higher scores being better. Internal consistency reliabilities were adequate, ranging from .67-.83 during the baseline year and .77-.89 during all project years. The *Caregiver Interaction Scale* (CIS; Arnett, 1989) was also used to evaluate in-classroom teacher behavior for student engagement and classroom management. The CIS is a 26-item, four-subscale observational measure that captures information about the teachers' relationship with his/her students. The current study used the total score, which represents positive child and caregiver interactions. Following the classroom observation period, coders rated the CIS global codes from not at all true/0-25% of the time or children (1) to very much true/75-100% of the time or children (4). There was an n/a option that was used sparingly and was coded as missing. Summary scores are means. Higher scores indicate better relationships. Internal consistency reliability was .87 for the baseline year and .89 for all project years.

Perceptions of system-level support for the intervention were evaluated using the three-item system support subscale from the *URP-IR* (Briesch et al., 2013), which was rated on a scale from strongly disagree (1) to strongly agree (6). This subscale is reverse scored with higher scores suggesting that more system support is needed to implement the intervention. Means were used as summary scores. Internal consistency reliability in the current study was .78. The five-item *ARTIC* (Baker et al., 2016; Baker et al., 2020) supplemental subscale, system-wide support, was also used to evaluate perceptions of system-level support. Respondents used a seven-point bipolar Likert scale to rate items. Respondents can also select n/a, which is coded as missing. Summary scores were created using means. Higher scores indicate attitudes that the educator views the school as more supportive of trauma-informed approaches. Internal consistency reliability in the current study was .66 for the baseline year and .74 for all project years.

Finally, perceptions of organizational capacity to implement trauma-informed approaches was evaluated using the five-item system climate subscale from the *URP-IR* (Briesch et al., 2013). This subscale was rated in the same manner as previously described, from strongly disagree (1) to strongly agree (6). Higher scores indicate more favorable implementation outcomes. Means were used as summary scores. Internal consistency reliability in the current study was .82. Additionally, the *Trauma-Sensitive Schools Checklist* (TSS Checklist; Lesley University, 2012) was used to evaluate perceptions of organizational capacity. The TSS Checklist evaluates five areas of trauma-informed schools, three of which were evaluated in the current project: school-wide policies and practices, classroom strategies and techniques, and collaborations and linkages with mental health. Items were rated on a 1 to 4 Likert scale. Summary scores for each subscale were created using means. Higher scores indicate that the respondent perceived their school to be implementing more trauma-informed approaches. Internal consistency reliabilities in the current study were good (αs = .90, .93, and .93 for the baseline year and .91, .94, and .93 for all project years, respectively).

Aim 3: Student Aggression and Victimization, School Discipline, and School Safety and Climate Outcomes. Student aggression was evaluated using the *Children's Social Behavior Scale* (CSBS; Crick, 1996), which has two forms – one completed by teachers about individual students, and one completed by students about themselves. The instrument measures physical and relational aggression, as well as additional constructs that were not included in this project. The items were rated from never (1) to all of the time (5). Summary scores were created using means. Higher scores indicate more aggression. The internal consistency reliabilities were excellent for teacher report (i.e., .95-.97 across both baseline and all project years) and were acceptable for student report. For the latter, alphas were .78 for physical aggression and .83 for relational aggression during the baseline year and .72 and .81, respectively, for all project years.

The *Children's Social Experience Questionnaire* (CSEQ; Crick & Grotpeter, 1995), which was used to evaluate student physical and relational victimization. Other subscales were not included in this project, The CSEQ has two forms – one completed by teachers about individual students, and one

completed by students about themselves. The items were rated from never (1) to all of the time (5). Summary scores were created using means. Higher scores indicated more victimization. Internal consistency reliabilities for the teacher report were .95 for physical victimization and .90 for relational victimization during the baseline year. Data from all project years were similar, with alphas of .95 for physical victimization and .91 for relational victimization. For the student report, alphas were .76 for physical victimization and .81 for relational victimization in the baseline year and .74 and .78, respectively, during all project years.

The *Strengths and Difficulties Questionnaire* (SDQ; Goodman et al., 2000) evaluates five subscales relevant to children's mental health and well-being. The current study used the student self-report of the conduct problems subscale. The items are rated from not true (1) to certainly true (3), with a mean score calculated as the summary score. Higher scores indicate more conduct problems. Alphas were for the baseline year and all project years were both .48, suggesting significant measurement error. Therefore, this construct was excluded from analyses.

The *ASSIST* (Bradshaw et al., 2018; Rusby et al., 2001), described above, includes global codes relevant to student disruptive behavior. Global codes for student disruptive behavior were rated from never occurred/0 times (0) to often occurred/6+ times (4). There was an n/a option that was used sparingly and was coded as missing. Means were calculated to represent summary scores. Higher scores indicated more disruptive behavior. Disruptive behavior was moderately skewed; thus, we log transformed the variable. Internal consistency reliabilities were .80 during the baseline year and .76 during all project years.

Aggregated *student suspensions* were gathered from archival data provided by the school. In-school and out-of-school suspensions were summed to represent two separate annual counts at the school level. Annual counts were then divided by the average number of students at the school during that school year to contextualize the counts by school size, resulting in a percentage.

Finally, perceptions of school safety, teacher-student relationships, and school climate were evaluated using the *Delaware School Climate Survey* (DSCS; Bear et al., 2014). The DSCS has two forms – one reported by teachers and one by students. The DSCS evaluates numerous areas of school climate, discipline techniques, student engagement, and bullying, though the current study only includes school safety, teacher-student relations, student-student relations (student-report only), and the total school climate scale. We used items from the 2013-14 version of the scale. Items were rated on a five-point Likert scale from disagree a lot to agree a lot. During project year 1, we added the "neutral" middle point of the Likert scale; the data from the first quarters of the study were transformed to match this revised scaling used in the rest of the project. Higher scores indicate a more favorable school climate. For teacher report, alphas ranged from .73 to .95 for the baseline year and .81 to .96 for all project years. For student report, alphas were .81 to .93 for both the baseline and all project years.

Data Analysis

Before beginning data analyses, data were checked and cleaned, including removing the <2% of respondents who indicated invalid responding on the validity check survey items or who were noted by the study team as responding invalidly.

First, we reported descriptive information related to the Aim 1 outcomes. Likert-scaled outcomes were evaluated based on a benchmark score of 80%; average values were calculated by dividing the mean value by the maximum value. Checklists, logs, and other process measures were used to describe implementation fidelity.

Next, we evaluated most of the Aim 2 and 3 outcomes using Proc Mixed in SAS to model school-level effects within the multiple baseline design (Sullivan et al., 2021). Exceptions are identified in the Procedure section, and their analytic approach is described in detail below. A variety of base models

were considered with the goal of developing a model that best reproduced the observed mean trends and provided a baseline trajectory against which to examine the intervention effects. The model selected for analyses was the one best able to evaluate linear change both within and across school years; unfortunately, however, the selected base model was unable to examine school specific effects. Using hierarchical models, student/teacher observations at specific waves were nested within students/teachers, who were nested within schools; schools were the unit of analysis. We specified random intercepts at Level 2.

Outcomes at each wave were modeled as a function of an intercept, school, time of year (weighted by the median time difference between each of the four waves averaged across the four years of the project; represents linear change across the four waves within each school year centered at the end of the school year), school year (coded 0 to 3; represents linear changes across the school years controlling for the intervention), and intervention phase (dummy coded). School was treated as a teacher/student-level variable and was represented by four dummy coded variables with School C6 as the reference. Schools were labelled such that first character represents the original random assignment order (A = randomized to intervention in project year 2, B = project year 3, C = project year 4); the second character represents the original school ID. School effects represent intercept differences between each school and school C6. Intervention phase was modeled using two dummy-coded variables that indicated if it was the first year of implementation or the second/third year of implementation, both in reference to the baseline year. Intervention year 1 (IntYear1) represents the *average effect across all schools* during intervention year 1 relative to baseline. Intervention years 2/3 (IntYr2&3) represents the *average effect across all schools* during intervention years 2/3 relative to baseline. Intervention phase by time of year interaction terms (IntYear1xTimeofYear and IntYear2&3xTimeofYear) were also included to determine whether the intervention was associated with differential effects across time-of-year slopes during the two intervention phases. Because of problems with the classroom observation data (see Procedure), we excluded school A3 from these analyses; thus subsequent intervention year implementation is modeled with only two schools (instead of three) and for only one year (InYr2; instead of two years).

Separate models were fit for each outcome. Values presented are intercepts and effect size estimates (*d*-coefficients) with standard errors in parentheses. Time of year was coded such that the difference between waves at the beginning and end of the school year represented a one-unit difference. School year was coded such that a one-unit change represented a one-year difference. This let us estimate effect sizes (i.e., Cohen's *d*) by dividing the unstandardized parameters by the *SD* of the outcome measure. We calculated *SD*s by taking the square root of the sum of the Level 1 and residual variance estimates. Cohen's *d* is interpreted as follows: .20 is a small effect, .50 is a medium effect, and .80 is a large effect. Finally, we ran an additional series of models to explore whether intervention effects differed by student/teacher grade and student gender. We examined individual interactions when there was support based on a significant omnibus *F* test that included all interaction terms relevant to that outcome. Only statistically significant grade and gender interactions are reported.

As noted in the Procedure section, three Aim 2 outcomes were gathered one time per year for intervention schools only: understanding of trauma-informed approaches (knowledge), perceptions of system-level support for the intervention (system support), and perceptions of organizational capacity to implement trauma-informed approaches (system climate). We analyzed knowledge by comparing pretest percent correct to posttest percent correct. For system support and system climate, we compared average values to the benchmark of 80% (20% for reverse scored subscale); average values were calculated by dividing the mean value by the maximum value. Archival suspension data were plotted and examined visually.

Findings

Aim 1: Implementation Outcomes.

Participant ratings indicated a high degree of satisfaction (87%) with the professional development sessions. In line with our hypothesis, participant ratings of the acceptability of trauma-informed approaches exceeded our *a priori* benchmark of 80%, with a rating of 85%. Contrary to the hypothesis, feasibility of trauma-informed approaches was rated at 75%. Finally, our process data indicate that sufficient implementation fidelity was achieved for the five schools that remained in the study (see Table 1).

Table 1

Implementation Fidelity

School	Foundational PD	Skill-Building[1] PDs	Coaching & Consultation	Peer Support Team	Needs Assessment[2]	Action Plan
A3	Yes	Yes	Yes	Yes	Yes	Yes (4 hours)
A5[3]	Yes	No	No	Yes	Partial (only Trauma-Informed Checklist and Walk-Through completed)	No
B2	Yes	Yes	Yes	Yes	Yes	Yes (4 hours)
B4	Yes	Yes	Yes	Yes	Partial (all but Parent Focus Group)	Yes (4 hours)
C1	Yes	Yes (One PD delivered online due to COVID-19)	Yes	Yes	Partial (all but Policy Review and Student Focus Group)	Yes (7.5 hours)
C6	Yes	Yes	Yes	Yes	Partial (all but Student Focus Group)	Yes (5.5 hours)

Note. [1] There were three skill-building PDs: Safe and Supportive Classrooms, Preventing Escalation, and Teacher-Student Relationships. [2] There were five needs assessment tools: Trauma-Informed Checklist, Walk-Through, Policy Review, Parent Focus Group, and Student Focus Groups. [3] School charter revoked during implementation year, with the school closure at end of implementation year. The newly reopened school continued to participate in data collection but did not receive the intervention. PD = professional development session.

Aim 2: Teacher Knowledge, Attitudes, Behavior, and School Capacity Outcomes.

Knowledge and Attitudes. As hypothesized, educators' understanding of trauma-informed approaches improved from pretest to posttest, from an average of 62% correct on the quiz-style knowledge measure before training to 79% correct after training. This statistically significant improvement was associated with a Cohen's *d* effect size of 1.16, which is considered a large effect,

t(221) = 17.35, *p* < .001. Also as hypothesized, educators' attitudes became more favorable to trauma-informed schools both during the first year and during subsequent years of implementation, and effect sizes were small-medium to medium (*d*s = .38 and .46, respectively; see Table 2).

Table 2

Intercepts and Effect Size Estimates (Standard Errors) from Multilevel Models Predicting Teacher Attitudes across Project Waves

Effect	Attitudes Favorable to TIS
Intercept	**5.16(0.09)**
School A3	-0.26(0.17)
School B2	-0.14(0.16)
School B4	**-0.42**(0.15)**
School C1	-0.15(0.15)
Time of Year	-0.08(0.07)
School Year	-0.07(0.04)
IntYear1	**0.38***(0.1)**
IntYear2&3	**0.46**(0.15)**
IntYear1xTimeofYear	0.19(0.13)
IntYear2&3xTimeofYear	0.2(0.14)

Note. Values are intercepts and effect size estimates (*d*-coefficients) with standard errors in parentheses. School effects represent intercept differences between each school and school C6. School Year represents linear changes across the school years controlling for intervention effects. Time of Year represents linear change within each school year. IntYear1 and IntYear2&3 represent changes in each year of implementing the intervention relative to the baseline. IntYear = intervention year, TIS = trauma-informed schools. Statistically significant effects are bolded.
* *p* < .05; ***p* < .01; ****p* < .001

Teacher Behavior. Also as hypothesized, teachers' ability to engage their students and manage their classrooms improved during the first year of implementation for six of the seven constructs. Specifically, positive to negative ratio, influence, behavior support, monitoring, meaningful engagement, and responsiveness all improved, with effect sizes ranging from medium to large (*d*s = .51-1.24; see Tables 3 and 4). Contrary to our hypothesis, positive child and caregiver interactions did not improve during the first year of implementation. The effects were maintained into the second year of implementation for all constructs except positive to negative ratio. For those that were maintained, effect sizes were very large (*d*s = 1.54-2.95; see Tables 3 and 4). In addition, an effect emerged for positive child and caregiver interactions in year 2 (*d* = 1.44, large effect, see Table 4).

Table 3

Intercepts and Effect Size Estimates (Standard Errors) from Multilevel Models Predicting Teacher Student Engagement and Classroom Management across Project Waves

Effect	Positive to Negative Ratio	Influence	Behavioral Support	Monitoring
Intercept	**0.63(0.05)**	**3.16(0.1)**	**1.85(0.11)**	**2.92(0.1)**
School B2	**-0.58***(0.17)**	-0.20(0.17)	-0.27(0.17)	-0.24(0.16)
School B4	**-0.58***(0.16)**	**-0.44**(0.16)**	**-0.67***(0.16)**	**-0.77***(0.16)**
School C1	-0.11(0.15)	-0.03(0.15)	-0.07(0.15)	0.07(0.14)
Time of Year	-0.16(0.15)	**-0.36*(0.14)**	**-1.03***(0.14)**	**-1.19***(0.15)**
School Year	-0.07(0.09)	**-0.20*(0.08)**	**-0.39***(0.08)**	**-0.52***(0.09)**
IntYear1	**0.78**(0.25)**	**0.51*(0.23)**	**1.24***(0.23)**	**0.83**(0.24)**
IntYear2	0.52(0.46)	**1.54***(0.42)**	**2.02***(0.42)**	**2.14***(0.44)**
IntYear1xTimeofYear	**0.64*(0.3)**	0.40(0.27)	**0.91***(0.27)**	**0.85**(0.29)**
IntYear2xTimeofYear	-0.45(0.54)	**1.07*(0.48)**	**1.25*(0.49)**	**1.63**(0.51)**

Note. Values are intercepts and effect size estimates (*d*-coefficients) with standard errors in parentheses. School effects represent intercept differences between each school and school C6. School Year represents linear changes across the school years controlling for intervention effects. Time of Year represents linear change within each school year. IntYear1 and IntYear2&3 represent changes in each year of implementing the intervention relative to the baseline. IntYear = intervention year. Statistically significant effects are bolded.
* $p < .05$; ** $p < .01$; *** $p < .001$

Table 4

Intercepts and Effect Size Estimates (Standard Errors) from Multilevel Models Predicting Teacher Student Engagement and Classroom Management across Project Waves, Continued

Effect	Meaningful Engagement	Responsiveness	Positive Child and Caregiver Interactions
Intercept	**1.76(0.11)**	**2.67(0.1)**	**3.18(0.06)**
School B2	**-0.63***(0.16)**	**-0.34*(0.17)**	-0.27(0.17)
School B4	**-0.75***(0.16)**	**-0.68***(0.16)**	**-0.55***(0.16)**
School C1	-0.03(0.14)	0.04(0.15)	-0.04(0.15)
Time of Year	**-0.79***(0.15)**	**-1.13***(0.15)**	-0.07(0.14)
School Year	**-0.57***(0.09)**	**-0.55***(0.09)**	-0.05(0.08)
IntYear1	**1.19***(0.24)**	**1.06***(0.23)**	0.35(0.23)
IntYear2	**2.95***(0.44)**	**2.20***(0.43)**	**1.44***(0.42)**
IntYear1xTimeofYear	**0.79**(0.29)**	**0.98***(0.28)**	0.04(0.27)
IntYear2xTimeofYear	**2.26***(0.51)**	**1.30**(0.5)**	**1.00*(0.49)**

Note. Values are intercepts and effect size estimates (*d*-coefficients) with standard errors in parentheses. School effects represent intercept differences between each school and school C6. School Year represents linear changes across the school years controlling for intervention effects. Time of Year

represents linear change within each school year. IntYear1 and IntYear2&3 represent changes in each year of implementing the intervention relative to the baseline. IntYear = intervention year. Statistically significant effects are bolded.
* $p < .05$; ** $p < .01$; *** $p < .001$

School Capacity Outcomes. Contrary to our hypothesis, participants rated system support at 70%. Higher scores indicate that more system support is needed to implement the trauma-informed schools intervention. This rating failed to meet our *a priori* benchmark of 20% (reverse of 80%). However, in support of our hypothesis, our other indicator of system-level support indicated that educators viewed the school as more supportive of trauma-informed approaches as time passed. Relative to the baseline year, scores on this indicator improved during both the first and subsequent years of implementation, with medium to large effect sizes (*d*s =.58 and .80; see Table 5).

Our final set of hypotheses for Aim 2 focused on educators' perceptions of organizational capacity to implement trauma-informed approaches. First, as hypothesized, participants rated system climate at 82%, exceeding our *a priori* benchmark of 80%. Also as hypothesized, we found significant intervention effects during the first year and subsequent years of implementation, relative to baseline, on school-wide policies and practices (*d*s = .51 and .58, respectively), classroom strategies and techniques (*d*s = .34 and .67), and collaborations and linkages with mental health (*d*s = .45 and .52). See Table 6.

Table 5

Intercepts and Effect Size Estimates (Standard Errors) from Multilevel Models Predicting Teacher Ratings of System-Wide Support for the Intervention Approaches across Project Waves

Effect	System-Wide Support
Intercept	**3.95(0.21)**
School A3	0.3(0.19)
School B2	0.14(0.16)
School B4	0.04(0.17)
School C1	0.08(0.16)
Time of Year	**-0.44***(0.12)**
School Year	-0.08(0.06)
IntYear1	**0.58***(0.15)**
IntYear2&3	**0.80***(0.22)**
IntYear1xTimeofYear	**0.57**(0.19)**
IntYear2&3xTimeofYear	**0.45*(0.2)**

Note. Values are intercepts and effect size estimates (*d*-coefficients) with standard errors in parentheses. School effects represent intercept differences between each school and school C6. School Year represents linear changes across the school years controlling for intervention effects. Time of Year represents linear change within each school year. IntYear1 and IntYear2&3 represent changes in each year of implementing the intervention relative to the baseline. IntYear = intervention year. Statistically significant effects are bolded.
* $p < .05$; ** $p < .01$; *** $p < .001$

Table 6

Intercepts and Effect Size Estimates (Standard Errors) from Multilevel Models Predicting Teacher Ratings of Organizational Capacity to Implement Trauma-Informed Approaches across Project Waves

Effect	School-Wide Policies and Practices	Classroom Strategies and Techniques	Collaborations and Linkages with Mental Health
Intercept	**2.13(0.09)**	**2.46(0.09)**	**2.17(0.1)**
School A3	**0.4*(0.17)**	0.22(0.17)	-0.05(0.17)
School B2	**0.54***(0.15)**	**0.37*(0.15)**	0.27(0.15)
School B4	**0.38*(0.15)**	0.26(0.15)	0.21(0.15)
School C1	**0.34*(0.14)**	0.18(0.14)	0.19(0.14)
Time of Year	**-0.41***(0.08)**	**-0.22*(0.09)**	**-0.28**(0.08)**
School Year	0.03(0.05)	-0.04(0.05)	0.02(0.05)
IntYear1	**0.51***(0.12)**	**0.34**(0.13)**	**0.45***(0.12)**
IntYear2&3	**0.58***(0.17)**	**0.67***(0.18)**	**0.52**(0.17)**
IntYear1xTimeofYear	**0.57***(0.16)**	0.27(0.16)	**0.48**(0.16)**
IntYear2&3xTimeofYear	0.09(0.17)	0.08(0.17)	0.1(0.17)

Note. Values are intercepts and effect size estimates (*d*-coefficients) with standard errors in parentheses. School effects represent intercept differences between each school and school C6. School Year represents linear changes across the school years controlling for intervention effects. Time of Year represents linear change within each school year. IntYear1 and IntYear2&3 represent changes in each year of implementing the intervention relative to the baseline. IntYear = intervention year. Statistically significant effects are bolded.
* $p < .05$; ** $p < .01$; *** $p < .001$

Aim 3: Student Aggression and Victimization, School Discipline, and School Safety and Climate Outcomes.

Teacher-Reported Student Aggression and Victimization. Results from teacher ratings of students indicated that neither physical or relational aggression decreased during the first year. During subsequent intervention years, however, physical aggression did decrease, although the effect size was small. Year 2 and 3 effects were not found for relational aggression.

Teachers reported an increase in both physical and relational victimization during the first year. Effect sizes were small (*d*s = .13 and .14, respectively; see Table 7) and moderated by grade. Specifically, the increases in physical and relational victimization were only present for younger students (grades K and 1 – 4), not for older students (grades 5 – 8). There were no effects in subsequent years for either type of victimization.

Student-Reported Aggression and Victimization. Results from student self-report indicated a small increase (*d* = .14, see Table 8), rather than the hypothesized decrease, in relational aggression. Subsequent intervention years were associated with additional, statistically significant increases in self-reported physical and relational aggression (*d*s = .15, .27, respectively; see Table 8).

Students also reported a small increase in relational victimization during the first year of implementation relative to baseline (*d* = .10; see Table 8). Subsequent intervention years were associated with additional, statistically significant increases in self-reported physical and relational

victimization (*d*s = .23, .25, respectively; see Table 8). Intervention effects were also moderated by grade for student-reported physical victimization, suggesting that the increase in physical victimization was greater for younger students (grades 3-4) than older students (grades 5-8), and that these increases occurred during the second and third years of the intervention.

Student Disruptive Behavior. We also evaluated student disruptive behavior as observed in the classroom. Although the intervention was not associated with a statistically significant decrease in disruptive behavior during the first year of implementation, we did find a decrease in the second year. This second-year decrease was associated with a large effect size (*d* = -1.01, see Table 9).

Table 7

Intercepts and Effect Size Estimates (Standard Errors) from Multilevel Models Predicting Teacher Ratings of Students' Aggression and Victimization across Project Waves

Effect	Physical Aggression	Relational Aggression	Physical Victimization	Relational Victimization
Intercept	**1.81(0.04)**	**1.9(0.04)**	**1.69(0.04)**	**1.86(0.04)**
School A3	0.1(0.06)	**0.13*(0.06)**	**0.15**(0.06)**	**0.12*(0.06)**
School B2	-0.05(0.06)	0.02(0.05)	**0.11*(0.05)**	**0.12*(0.05)**
School B4	**0.28***(0.05)**	**0.22***(0.05)**	**0.45***(0.05)**	**0.27***(0.05)**
School C1	-0.02(0.05)	**0.21***(0.05)**	**0.17***(0.05)**	**0.33***(0.05)**
Time of Year	**0.22***(0.03)**	**0.17***(0.03)**	**0.23***(0.04)**	**0.14***(0.04)**
School Year	**0.06***(0.02)**	0.03(0.02)	0(0.02)	-0.02(0.02)
IntYear1	0.09(0.05)	0.07(0.05)	**0.13*(0.05)**	**0.14**(0.05)**
IntYear2&3	**-0.25***(0.07)**	-0.11(0.08)	-0.13(0.08)	-0.05(0.08)
IntYear1xTimeofYear	**0.15*(0.06)**	**0.19**(0.07)**	**0.14*(0.07)**	**0.2**(0.07)**
IntYear2&3xTimeofYear	**-0.21**(0.08)**	**1.9(0.04)**	**-0.2*(0.09)**	-0.07(0.09)

Note. Values are intercepts and effect size estimates (*d*-coefficients) with standard errors in parentheses. School effects represent intercept differences between each school and school C6. School Year represents linear changes across the school years controlling for intervention effects. Time of Year represents linear change within each school year. IntYear1 and IntYear2&3 represent changes in each year of implementing the intervention relative to the baseline. IntYear = intervention year. Statistically significant effects are bolded.

* $p < .05$; ** $p < .01$; *** $p < .001$

Table 8

Intercepts and Effect Size Estimates (Standard Errors) from Multilevel Models Predicting Student Self-Report of Aggression and Victimization across Project Waves

Effect	Physical Aggression	Relational Aggression	Physical Victimization	Relational Victimization
Intercept	2.13(0.04)	1.84(0.04)	2.17(0.05)	2.20(0.04)
School A3	-0.08(0.06)	**-0.14*(0.06)**	0.02(0.06)	-0.04(0.06)
School B2	0.05(0.06)	-0.02(0.05)	**0.13*(0.06)**	0.04(0.06)
School B4	0.04(0.05)	0.05(0.05)	**0.23***(0.06)**	**0.15**(0.06)**
School C1	0.04(0.05)	0.07(0.05)	0.03(0.05)	0.06(0.06)
Season	0.07(0.03)	**0.1**(0.03)**	**0.10**(0.03)**	0(0.03)
Time of Year	**-0.15***(0.02)**	**-0.2***(0.02)**	**-0.05*(0.02)**	**-0.20***(0.02)**
IntYear1	0.1(0.05)	**0.14*(0.05)**	0.02(0.05)	**0.10*(0.05)**
IntYear2&3	**0.15*(0.08)**	**0.27***(0.08)**	**0.23**(0.08)**	**0.25***(0.07)**
IntYear1xTimeofYear	-0.04(0.07)	**-0.14*(0.07)**	**-0.13*(0.06)**	-0.06(0.06)
IntYear2&3xTimeofYear	-0.15(0.08)	-0.12(0.08)	0.1(0.08)	0.04(0.08)

Note. Values are intercepts and effect size estimates (*d*-coefficients) with standard errors in parentheses. School effects represent intercept differences between each school and school C6. School Year represents linear changes across the school years controlling for intervention effects. Time of Year represents linear change within each school year. IntYear1 and IntYear2&3 represent changes in each year of implementing the intervention relative to the baseline. IntYear = intervention year. Statistically significant effects are bolded.
* $p < .05$; ** $p < .01$; *** $p < .001$

Table 9

Intercepts and Effect Size Estimates (Standard Errors) from Multilevel Models Predicting Classroom Observations of Student Disruptive Behavior across Project Waves

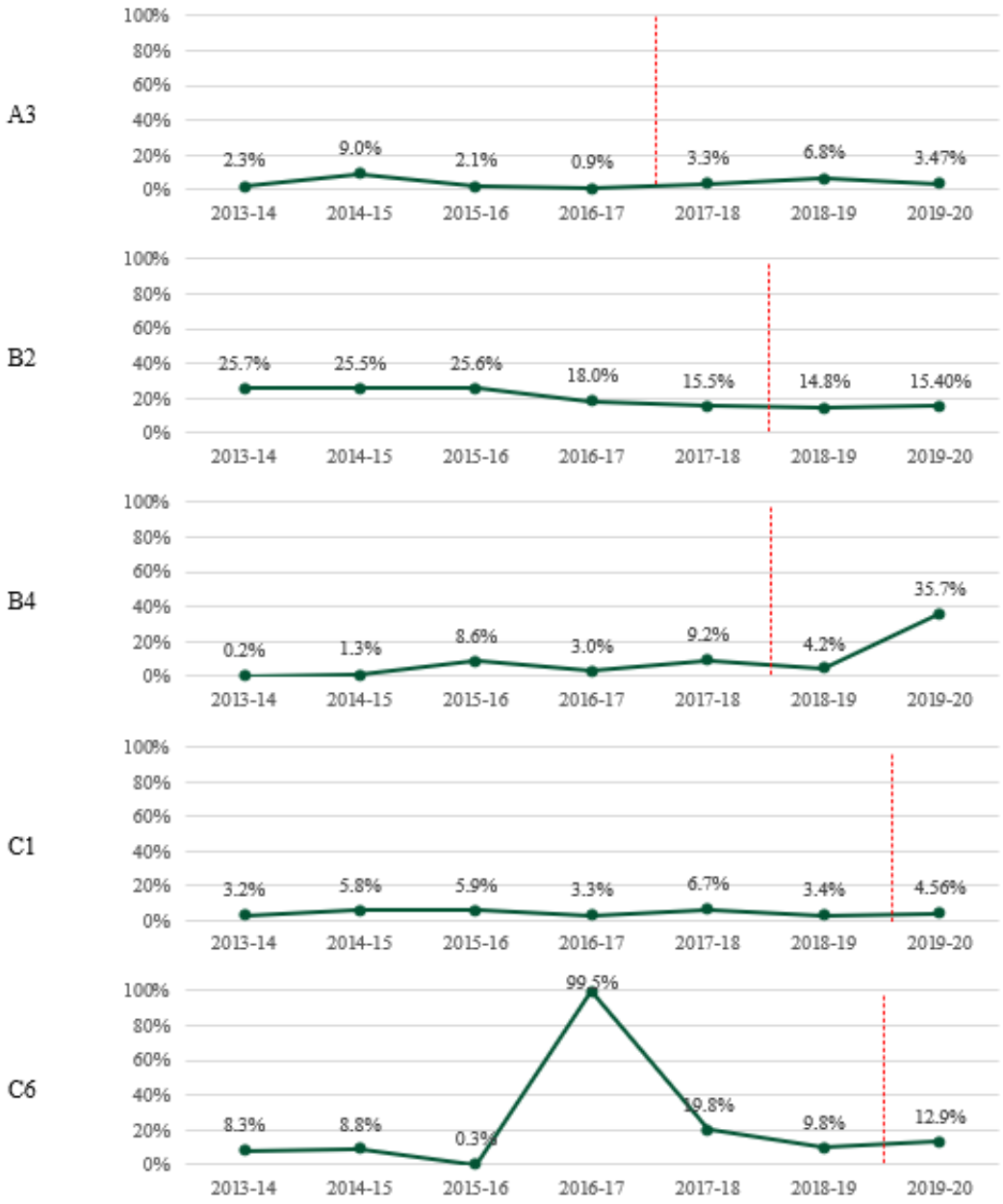
Effect	Student Disruptive Behavior (log)
Intercept	**0.39(0.04)**
School B2	0.11(0.17)
School B4	**0.44**(0.16)**
School C1	-0.10(0.15)
Time of Year	-0.05(0.14)
School Year	-0.11(0.08)
IntYear1	-0.23(0.23)
IntYear2	**-1.01*(0.42)**
IntYear1xTimeofYear	0.17(0.27)
IntYear2xTimeofYear	-0.17(0.48)

Note. Values are intercepts and effect size estimates (*d*-coefficients) with standard errors in parentheses. School effects represent intercept differences between each school and school C6. School Year represents linear changes across the school years controlling for intervention effects. Time of Year represents linear change within each school year. IntYear1 and IntYear2&3 represent changes in each year of implementing the intervention relative to the baseline. IntYear = intervention year. Statistically significant effects are bolded.
* $p < .05$; ** $p < .01$; *** $p < .001$

School Discipline. Our second set of Aim 3 analyses focused on student discipline as gathered from archival school records. Visual inspection of in-school suspension data failed to demonstrate a discernable pattern, with some schools showing minimal changes from pre-intervention levels and some showing increases (see Figure 1). Out-of-school suspensions, on the other hand, showed a downward trend after the intervention was implemented, with all sites demonstrating a decline in out-of-school suspensions after the intervention began, and all timepoints but one showing a decline rather than an increase during the intervention phase (see Figure 2).

Figure 1

In-School Suspensions by Number of Students as a Function of Year



Note. Dotted red line denotes start of intervention.

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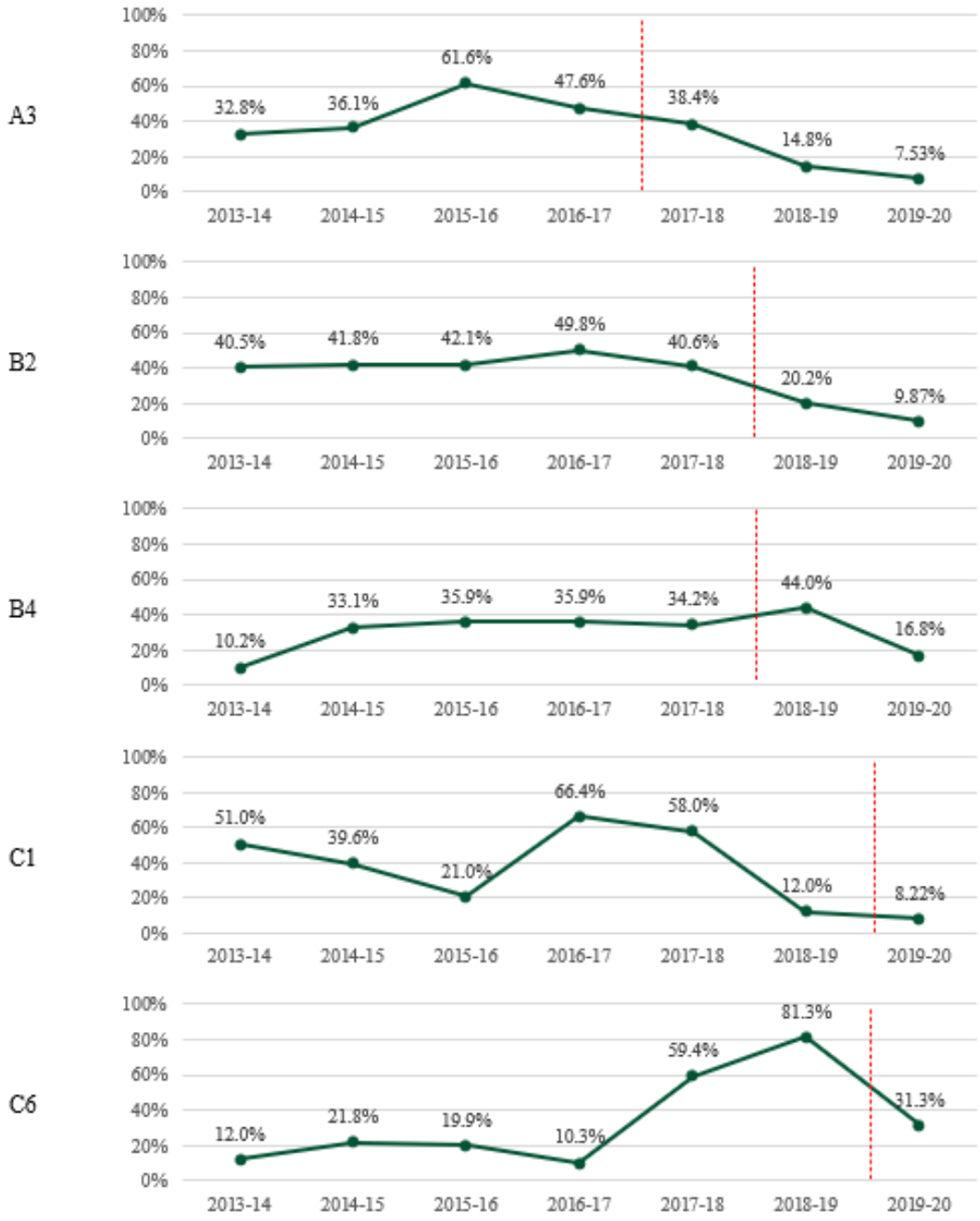
Figure 2

Out-of-School Suspensions by Number of Students as a Function of Year



Note. Dotted red line denotes start of intervention.

School Safety, Relationships, and Climate. Our third set of Aim 3 analyses investigated the impact of the intervention on teacher and student perceptions of school safety, relationships, and climate. As hypothesized, educators reported statistically significant improvements in school safety and school climate during the first year of implementation, with small-medium to medium effect sizes (*d*s =

.50 and .30, respectively; see Table 10). Intervention effects continued to grow in subsequent years of implementation, with medium-large and large effect sizes (*d*s = .89 and .71, respectively; see Table 10). In addition, although there was no impact during year 1, teachers reported improved teacher-student relations during years two and three of implementation, with a medium-large effect size (*d* = .72, see Table 10). Contrary to hypotheses, however, students did not report any intervention effects on school safety, relationships, or climate, across either year (see Table 11).

Table 10

Intercepts and Effect Size Estimates (Standard Errors) from Multilevel Models Predicting Teacher Ratings of School Safety, Teacher-Student Relationships and Overall Climate across Project Waves

Effect	School Safety	Teacher-Student Relations	Overall School Climate
Intercept	**3.53(0.09)**	**4.11(0.07)**	**3.47(0.07)**
School A3	0.09(0.17)	0.1(0.17)	0.26(0.17)
School B2	0.2(0.15)	-0.12(0.15)	0.26(0.16)
School B4	-0.04(0.15)	-0.19(0.15)	0.01(0.16)
School C1	0.18(0.14)	-0.04(0.14)	0.17(0.15)
Time of Year	**-0.53***(0.09)**	**-0.22*(0.09)**	**-0.44***(0.07)**
School Year	**-0.3***(0.05)**	**-0.17***(0.05)**	**-0.21***(0.04)**
IntYear1	**0.50***(0.12)**	0.08(0.13)	**0.30**(0.11)**
IntYear2&3	**0.89***(0.17)**	**0.72***(0.18)**	**0.71***(0.15)**
IntYear1xTimeofYear	**0.41**(0.16)**	0.03(0.17)	0.23(0.14)
IntYear2&3xTimeofYear	0.29(0.17)	0.32(0.18)	0.22(0.15)

Note. Values are intercepts and effect size estimates (*d*-coefficients) with standard errors in parentheses. School effects represent intercept differences between each school and school C6. School Year represents linear changes across the school years controlling for intervention effects. Time of Year represents linear change within each school year. IntYear1 and IntYear2&3 represent changes in each year of implementing the intervention relative to the baseline. IntYear = Intervention Year. Statistically significant effects are bolded.

* $p < .05$; ** $p < .01$; *** $p < .001$

Table 11

Intercepts and Effect Size Estimates (Standard Errors) from Multilevel Models Predicting Student Ratings of School Safety, Interpersonal Relationships and Overall Climate across Project Waves

Effect	School Safety	Teacher-Student Relations	Student-Student Relations	Overall School Climate
Intercept	**3.49(0.05)**	**3.93(0.05)**	**3.24(0.05)**	**3.6(0.03)**
School A3	0.12(0.06)	0.08(0.06)	0.06(0.06)	0.07(0.06)
School B2	0.05(0.06)	-0.05(0.06)	-0.1(0.06)	-0.05(0.06)
School B4	-0.03(0.06)	0.02(0.06)	-0.1(0.06)	-0.05(0.06)
School C1	0.01(0.05)	-0.04(0.06)	0.06(0.05)	-0.09(0.06)
Time of Year	**-0.17***(0.03)**	-0.05(0.03)	-0.06(0.03)	**-0.09**(0.03)**
School Year	**-0.09***(0.02)**	**-0.06***(0.02)**	-0.01(0.02)	**-0.06***(0.02)**
IntYear1	0.1(0.05)	-0.02(0.05)	-0.01(0.05)	0.02(0.05)
IntYear2&3	0.09(0.08)	0.01(0.07)	0.02(0.08)	0.06(0.07)
IntYear1xTimeofYear	0.08(0.06)	-0.04(0.06)	-0.02(0.06)	0(0.06)
IntYear2&3xTimeofYear	0.11(0.08)	0.05(0.08)	0.06(0.08)	0.1(0.07)

Note. Values are intercepts and effect size estimates (*d*-coefficients) with standard errors in parentheses. School effects represent intercept differences between each school and school C6. School Year represents linear changes across the school years controlling for intervention effects. Time of Year represents linear change within each school year. IntYear1 and IntYear2&3 represent changes in each year of implementing the intervention relative to the baseline. IntYear = Intervention Year. Statistically significant effects are bolded.
* $p < .05$; ** $p < .01$; *** $p < .001$

Discussion

The current project evaluated the effectiveness of a multi-component intervention for the installation of trauma-informed approaches (Safe Schools NOLA) in urban schools serving low-income, mostly Black youth marginalized by intersecting discriminatory and oppressive economic, education, policing, and housing policies and practices. Despite the wide variation in approaches to trauma-informed schools (Simon et al., 2020), we know that successful implementation of any educational approach occurs in discernible stages and is supported by key implementation elements that help drive educational system changes from exploration to installation to initial and full implementation (Metz et al., 2015). Safe Schools NOLA was set within the installation stage of program implementation, in which "…new services are not yet being delivered, but the necessary individual and organizational competencies and supporting infrastructure are being established so that the new practice can be successfully put in place" (Metz et al., 2015, p. 12). Installation strategies included foundational professional development in trauma-informed care, teacher skill-development and on-site coaching in the use of trauma-informed approaches, and technical assistance to school leaderships teams to support organizational change. These strategies are key to fostering a capable and committed context for schools to adopt and implement trauma-informed approaches efficiently and effectively (Fixsen et al., 2014; Nutt, 2001).

Based on recent systematic reviews of the peer-reviewed literature, the current project is one of the first (Berger et al., 2019), if not the first (Maynard et al., 2019), to rigorously evaluate a set of installation strategies that can be used to help schools successfully integrate trauma-informed approaches within existing multitiered systems of student support. The multiple baseline experimental design utilized in the project provided strong control over extraneous variables and allowed us to demonstrate the extent to which intervention effects were replicated across multiple schools (Biglan et al., 2000; Sullivan et al., 2021). Findings indicate positive changes in educator and school-level capacity during the intervention year, most of which were maintained or strengthened in subsequent years. Although students did not perceive changes in school climate and in fact, reported small increases in student aggression and victimization during the intervention year, other indicators suggested that student disruptive behavior decreased over time. The following is a discussion of key study findings related to implementation processes, educator and school capacity, and school safety.

Implementation Processes

Among the schools that completed the project, there was a high degree of fidelity to the designed intervention. Fidelity to the needs assessment demonstrated the most variability, particularly in the completion of parent and student focus groups. Two schools were unable to complete student focus groups due to pandemic-related school closures. A third school had difficulty recruiting parents for a focus group. Schools typically waited to carry out focus groups until the Spring, when there were competing demands with standardized testing preparation and administration. Schools may have more success targeting the Fall for focus groups to allow for sufficient time to address barriers to recruitment and/or scheduling.

There was also some variability in how schools chose to carry out action planning. Some leadership teams opted for a “retreat” style planning process where they spent large segments of time over the course of a few days to action plan; others scheduled shorter meetings over a longer period to time to complete their action plan. We felt that it was critical to the integrity of the project to flex to meet the context-specific demands of our schools so that each intervention component could be completed.

On average, educators agreed that trauma-informed approaches were acceptable strategies to address the needs of their students, although they also indicated some agreement that the strategies may not be feasible in the absence of additional supports. The perceived need for ongoing support to utilize trauma-informed strategies is not surprising because most school personnel have not had any prior training on the prevalence or impact of trauma on students, the strategies necessary to support students exposed to trauma to achieve better educational outcomes, or the resources needed to implement such strategies (Ko et al., 2008; Thomas et al. 2019). Fortunately, because the implementation team included a teacher support specialist embedded in the school four days a week to provide coaching and consultation, we were able to provide the additional supports educators needed.

Educator and School Capacity

The intervention resulted in several positive changes in educator capacity to utilize trauma-informed approaches. Educators demonstrated large improvements in their knowledge about trauma and trauma-informed principles following the foundational professional development training. This finding aligns with subjective educator reports of knowledge growth in trauma-informed approaches from prior studies (Anderson et al., 2015; Dorado et al., 2016; Perry & Daniels, 2016) and findings from our previous work using an objective knowledge measure and a pre-posttest design (McIntyre et al., 2019). Educators also became more favorable in their attitudes toward trauma-informed approaches

following the intervention year and those changes were maintained in subsequent years. Prior research has demonstrated that circumscribed training in trauma and trauma-informed approaches is associated with more favorable staff attitudes (Purtle, 2020). However, the current findings are the first to demonstrate that participation in a multi-component installation intervention that also included coaching and consultation resulted in more favorable attitudes toward trauma-informed approaches that were sustained over time.

Knowledge of and favorable attitudes towards a new approach are associated with adoption efforts, fidelity of implementation, and sustainability of the approach over time (Allinder & Oates, 1997; Han & Weiss 2005; Harris & Fallot, 2001; Vereb & DiPerna, 2004). Therefore, it is not surprising that educators in the current project demonstrated positive changes in their ability to engage their students and manage their classrooms during the intervention year and in subsequent years. Specifically, during the intervention year, observers rated teachers as more responsive to and meaningfully engaged with their students compared to baseline. In subsequent years, those positive changes were sustained, and observers also rated more positive student-teacher interactions. Positive relationships with teachers are particularly important for students exposed to trauma. For example, a recent study found that among students exposed to one or more Adverse Childhood Experiences (ACE), positive student-teacher relationships significantly reduced the likelihood students would engage in at-risk behaviors (Forster et al., 2017). In addition, positive teacher-student relationships can diminish the alarm response of students exposed to trauma (Perry et al., 1995).

Educator attitudes and behavior do not occur in a vacuum. Perceived organizational capacity to support trauma-informed approaches and administrator support for trauma-informed approaches are critical determinants of teacher implementation behaviors (e.g., Beets et al., 2008; Wanless et al., 2013). Educators in the current project viewed the school as more supportive of trauma-informed approaches as time passed. Relative to the baseline year, scores on this indicator improved during both the first and subsequent years of the intervention, with medium to large effect sizes. In addition, significant intervention effects were observed during the first year and subsequent years of the intervention, relative to baseline, on trauma-informed school-wide policies and practices and classroom strategies and techniques.

Taken together, these findings indicate that the intervention offers a promising framework for the installation of trauma-informed approaches in schools. Compared to the baseline year, we observed increased educator capacity in their knowledge of and facility with trauma-informed classroom practices to support student well-being. We also observed increased school capacity in school-wide policies and practices supportive of trauma-informed approaches.

School Safety

Reports of student aggression and victimization varied by reporter, student grade, and intervention year, but the overall pattern of reporting suggests small increases across all types of aggression and victimization. Specifically, student self-reports indicated small increases, compared to baseline, in all types of aggression and victimization, sometimes emerging during the intervention year and other times in subsequent years. Teachers also reported small increases in student victimization, particularly among younger students. They did not report increases in student aggression; in fact, they reported small decreases in student physical aggression in the years subsequent to the intervention. Interestingly, observer ratings indicated a large decrease in disruptive student behavior in the second and third years of the intervention.

Although the trend toward small increases in aggression was contrary to our hypotheses, previous research examining school-based strategies to reduce student aggression by changing school norms has also yielded inconsistent findings (MACS, 2002; MVPP, 2009). Small increases in aggression

could represent increased awareness and reporting of aggression and victimization. Teacher skill-building trainings focused on increasing student emotional awareness and regulation as well as creating opportunities for students to learn about and practice relationship building. These experiences could make both teachers and students more aware of relational aggression and victimization and more attuned to experiences of aggression and thus increase the reporting of these behaviors.

Variability was also observed in teacher and student perceptions of school safety, teacher-student relationships, and school climate. Teachers reported significant improvements in school safety and school climate during the first year of the intervention, which continued to grow in subsequent years. In addition, although there was no impact during year 1, teachers reported improved teacher-student relations during years two and three of the intervention. In contrast, students did not report any intervention effects on school safety, teacher-student relationships, or climate, regardless of study year.

The discrepancy between teacher and student perceptions of school climate highlight the critical need for student perspectives on trauma-informed approaches, especially for Black students. Black students consistently report more negative school experiences than their white peers, including negative school climate and lower levels of school equity and personal belongingness (Bottiani, et al., 2017; Konold et al., 2017; Richards-Schuster et al., 2021). Results from a study of New Orleans public schools (Weixler et al., 2020) found that Black students rated their teachers as less likely to show concern for their well-being and less likely to value their ideas and views than white students. Although trauma-informed approaches are designed to promote feelings of physical, social, and emotional safety in students, positive student-teacher relationships, and positive and culturally responsive discipline policies and practices, few studies include student perceptions of these constructs. Thus, future research must engage youth voice to determine whether trauma-informed schools are meeting their needs in the ways intended, and if not, to gain insight into how approaches may need to be modified to achieve their desired impact.

Despite the mixed findings related to student aggression and victimization and the discrepancies between teacher and student perceptions of school climate, findings did indicate a downward trend in out-of-school suspensions, with all sites demonstrating a decline in out-of-school suspensions after the intervention began. These findings are consistent with early reports of dramatic reductions in suspensions of students attending trauma-informed schools (Overstreet & Chafouleas, 2016). In fact, a systematic review of school-wide trauma-informed approaches found that policy changes related to discipline are often seen as a key feature of a trauma-informed schools (Avery et al., 2020). In the models they reviewed, discipline changes focused on moving away from punitive, reactive discipline and moving toward strength-based and skill-building discipline strategies that focus on maintaining relational connection, developing self-regulation skills, and supporting time in class.

Implications for Criminal Justice Policy and Practice in the US

Students exposed to ongoing trauma experience neurobiological and psychological adaptions that create a profound sense of danger, leaving youth in a constant state of alarm and vulnerable to acts of violence. Students carry this vulnerability into the school environment, increasing the risk of disruptive behavior, which can result in increased suspensions and involvement with the juvenile justice system. Recognition of the prevalence and educational consequences of childhood trauma has led to national discourse in education regarding best practices in pedagogy and policy to support the needs of students who have experienced trauma. Schools across the country are adopting trauma-informed pedagogies and policies to infuse foundational knowledge of trauma and its impacts into the staff knowledge base, school culture, and multitiered systems of student supports. Despite the potential of a multitiered trauma-informed approach, a recent systematic review (Berger, 2019) found that just 7% of the published and unpublished literature on trauma-informed schools provided evidence of a

multitiered approach. It is possible that this finding points to problems with the initial installation of the trauma-informed approaches. We know from implementation science that intentional strategies to build stage-appropriate implementation capacity can lead to more successful results (Moir, 2018).

The SSNOLA intervention offers a promising framework for the effective installation of trauma-informed approaches in schools. More research is needed to replicate our findings and identify other essential installation strategies that engender attitudes, beliefs, and behaviors conducive to the adoption of system-wide trauma-informed approaches in schools as a model to improve school safety. Moving forward with scale up efforts in the absence of sound, objective knowledge of effective installation strategies risks failed implementation of trauma-informed approaches and the misallocation of valuable resources and time, ultimately failing to achieve a fundamental goal of trauma-informed schools—increased school safety.

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