

Original Research

From Fidelity to Impact: A Longitudinal Study of PBIS Implementation and Student Outcomes in a University–District Whole Child Partnership

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Submitted: 6 June 2026 Revised: 14 July 2026 Accepted: 27 July 2026 Published: 22 August 2026

Abstract

This longitudinal, multi-cohort study examined the first-year implementation of Positive Behavioral Interventions and Supports (PBIS) within a decade-long university–district partnership grounded in the Whole School, Whole Community, Whole Child (WSCC) framework. Using the Schoolwide Evaluation Tool, we assessed Tier 1 PBIS fidelity across three cohorts of schools and analyzed changes in student disciplinary incidents and chronic absenteeism. Schools demonstrated significant improvements in implementation fidelity from fall to spring (Cohen’s $d = 0.79$), with the largest gains observed in data-based decision-making and systems for responding to behavioral violations. Regression analyses revealed that higher Year 1 fidelity significantly predicted reductions in student disciplinary incidents ($\beta = -0.34, p = 0.024$), even after accounting for baseline performance, cohort, and school level. Although chronic absenteeism declined modestly, it was not significantly associated with fidelity. These findings address critical gaps in the literature by linking early implementation quality to student outcomes and highlighting the role of community-engaged partnerships in scaling evidence-based practices. Implications for practice include embedding data routines, aligning PBIS with WSCC supports, and building internal capacity to sustain districtwide improvements.

Keywords: Positive Behavioral Interventions and Supports (PBIS); Whole School, Whole Community, Whole Child (WSCC)

Introduction

Schools across the United States face increasingly complex challenges that extend beyond academic instruction, including student behavioral health, chronic absenteeism, and systemic inequities (Darling-Hammond et al., 2020; Lewallen et al., 2015). These issues are ecological in nature, shaped by interactions among individual, family, school, and community factors (Cantor et al., 2019). Addressing them requires sustained, cross-sector collaboration among schools, families, community organizations, and higher education institutions (Henig et al., 2015; Ramanadhan et al., 2018). Community engagement represents a shift from deficit-based models to partnerships that recognize families and communities as co-creators of educational solutions (Ishimaru, 2020; Warren et al., 2009).

The Centers for Disease Control and Prevention (2011) defines community engagement as collaborative work with groups to address issues affecting their well-being. Authentic engagement exists on a continuum—from outreach to shared leadership—and is characterized by reciprocity, power-sharing, and sustained commitment (Fung, 2015). Research supports the benefits of authentic engagement, including improved trust, cultural responsiveness, and sustainability (O’Mara-Eves et al., 2015; Schlechter et al., 2021). However, gaps persist: many initiatives lack compensation for community members,



fail to address community priorities, or do not evaluate engagement quality (Cooper et al., 2024; Holt & Chambers, 2017). In education, family and community engagement is linked to improved attendance, academic achievement, and school climate (Epstein & Sheldon, 2016; Mapp & Kuttner, 2013), especially when families are involved in decision-making and accountability structures.

School–University Partnerships as Implementation Infrastructure

School–university partnerships, particularly research–practice partnerships (RPPs), exemplify community-engaged implementation. These partnerships emphasize co-learning, shared decision-making, and mutual capacity-building (Bevan & Penuel, 2018; Coburn & Penuel, 2016). Effective RPPs require attention to power dynamics, trust-building, and alignment of institutional incentives (Farrell et al., 2019; Tseng et al., 2017). Universities often serve as backbone organizations, offering coordination, technical assistance, and data infrastructure, while schools contribute contextual knowledge and implementation expertise (Henig, 2013; Wilson, 2025). Although RPPs have demonstrated improvements in organizational capacity and data use, few studies link them directly to student outcomes such as behavior or attendance (Henrick et al., 2017). Longitudinal research is needed to understand how partnership processes influence implementation fidelity and student outcomes.

Whole-Child Frameworks and Community-Centered Approaches

The Whole School, Whole Community, Whole Child (WSCC) model situates student learning within a broader ecology of supports, including health services, family engagement, and school climate (Centers for Disease Control and Prevention, 2024). Chronic absenteeism and disciplinary issues are not isolated school problems but reflect systemic barriers such as poverty, trauma, and lack of access to services (Henderson et al., 2007; Sheldon & Epstein, 2004).

Community schools operationalize WSCC principles through four pillars: integrated student support, expanded learning opportunities, family and community engagement, and collaborative leadership (Maier et al., 2017). Robust evidence shows that well-implemented community schools improve attendance, behavior, academic achievement, and graduation rates, particularly for students from historically marginalized groups (Oakes et al., 2017). However, success depends on implementation fidelity, sustained effort, and authentic partnerships (Maier et al., 2017).

Whole-Child Collective Impact as a Framework for Collaboration

Collective impact offers a structured approach to cross-sector collaboration, defined by five conditions: a common agenda, shared measurement, mutually reinforcing activities, continuous communication, and backbone support (Kania & Kramer, 2011). In education, these conditions support coordinated implementation of initiatives like Positive Behavioral Interventions and Supports (PBIS) and WSCC (Henig, 2013; Turner et al., 2012). Yet, structural alignment alone is insufficient. Effective collective impact requires attention to equity, power-sharing, and trust-building (Cabaj & Weaver, 2016; Wolff et al., 2017). Evaluating collective impact is also challenging due to attribution complexity, evolving membership, and limited use of rigorous methods (Panjwani et al., 2023). Without authentic engagement, collective impact risks reinforcing inequities by marginalizing community voices (Strier, 2014; Wallerstein et al., 2020).

PBIS: A Scalable, Evidence-Based Practice

PBIS is a widely adopted framework for improving school climate and student behavior. As a multi-tiered system of support, PBIS emphasizes proactive instruction, reinforcement of positive behaviors, and data-driven decision-making (Horner et al., 2010; Sugai & Simonsen, 2012). Research shows that PBIS reduces disciplinary incidents and improves attendance and academic engagement when implemented with fidelity (Bradshaw et al., 2010). Family and community engagement is a core PBIS component, yet often underimplemented (Bal et al., 2012; McIntosh et al., 2014). Without authentic engagement, PBIS may inadvertently reinforce exclusionary practices and cultural biases (Annamma et al., 2019; Vincent et al., 2011). School–university partnerships can address these gaps by supporting culturally responsive implementation and shared accountability (Klingner et al., 2013; Sugai et al., 2016).

Implementation Science and Fidelity

Implementation science provides frameworks for understanding how to scale and sustain evidence-based practices. Successful implementation requires attention to fidelity, adaptation, and sustainability across multiple phases: exploration,

installation, initial implementation, full implementation, and sustainability (Fixsen et al., 2005; Nilsen, 2015). Fidelity monitoring ensures that practices are enacted as intended and adapted appropriately (Proctor et al., 2011). Implementation supports, which include coaching, data systems, and leadership, are essential for building capacity and trust in community-engaged partnerships (Farrell et al., 2022; Penuel et al., 2015). However, educational research often lacks longitudinal fidelity data and underrepresents equity considerations (Fagan et al., 2019; Lengnick-Hall et al., 2020). Moreover, implementation resources are often inequitably distributed, limiting impact in high-need schools (Woodbridge et al., 2016). Evidence-based kernels—simple, low-cost behavioral strategies—offer scalable alternatives to complex programs and align with public health approaches (Embry & Biglan, 2008). Kernels such as praise, self-monitoring, and structured transitions can be adopted by educators and families with minimal training, supporting broader implementation goals.

Science of Learning and Development (SoLD)

The SoLD underscores that learning is shaped by relationships, context, and individual variability. Key findings include the malleability of the brain, the integration of cognitive and emotional development, and the importance of culturally responsive environments (Cantor et al., 2019; Darling-Hammond et al., 2020). These insights support whole-child approaches that integrate social-emotional learning, health services, and family engagement. Meta-analyses show that social-emotional learning programs improve academic and behavioral outcomes, particularly for students facing adversity (Taylor et al., 2017). Community schools that align with SoLD principles demonstrate improvements in attendance, behavior, and achievement, especially when implementation is sustained and contextually responsive (Maier et al., 2017).

Partnership Context: Tuscaloosa Whole Child (TWC)

The TWC initiative was launched in May 2021 through a formal partnership between the Tuscaloosa County School System (TCSS) and the University of Alabama's College of Education following an extended period of planning, relationship-building, and readiness work between district and university leaders. This initiative was adapted from the Tacoma Whole Child Initiative, a WSCC-aligned model co-founded by the first author during more than a decade of implementation in Tacoma Public Schools, where the approach contributed to substantial improvements in graduation rates, student well-being, and school climate. Grounded in the WSCC framework, the TWC initiative integrates education, health, and community supports to promote the cognitive, physical, social, and emotional development of all students. The partnership serves 35 schools and about 19,000 students across a large, predominantly rural county, creating both the need and the opportunity for a coordinated, systemwide approach.

The partnership was structured with university functioning as the backbone organization, providing training, implementation coaching, data systems, evaluation support, and continuous improvement facilitation. The TCSS provided the leadership, practice knowledge, and implementation context necessary for districtwide adoption. Co-design, shared decision-making, and joint capacity-building are central features of the collaboration, including a requirement that schools secure substantial staff commitment prior to implementation to promote ownership and sustainability. The TWC follows an 8-year, phased implementation model that progresses from district and school readiness (Year 1), to schoolwide and classroom Tier 1 systems (Years 2–3), to differentiated Tier 2 supports (Years 4–5), to individualized Tier 3 and wraparound supports (Years 6–7), and finally to sustainability and expansion into family and community settings (Year 8). Schools entered the initiative in three cohorts, enabling a staggered rollout across the district and providing a structured context for examining implementation and outcomes over time.

Research Gaps

Despite promising frameworks, several gaps remain. First, limited evidence links specific community engagement practices and collective impact processes to implementation and student outcomes (Coburn et al., 2013; Holt & Chambers, 2017). Second, few longitudinal studies examine early PBIS fidelity as a predictor of student outcomes, particularly in districtwide implementations (Coffey & Horner, 2012; Fagan et al., 2019). Third, research on school-university partnerships often lacks outcome data, especially for behavior and attendance (Henrick et al., 2017). Fourth, equity concerns such as whose voices shape implementation and how resources are distributed, are underexplored (Ishimaru, 2020; Vincent et al., 2011). Finally, most studies focus on short-term outcomes, with limited attention to sustainability and long-term fidelity (Fixsen et al., 2005).

Purpose of the Study

The present study addresses several interrelated gaps in research and practice by examining Tier 1 PBIS implementation fidelity and student outcomes in a districtwide initiative supported by a university–district partnership. Specifically, this work focuses on three gaps by (a) adding to the limited empirical evidence linking implementation processes within community-engaged and collective impact efforts to measurable student outcomes, (b) responding to the need for longitudinal analyses of early implementation fidelity in large-scale PBIS initiatives, and (c) contributing to a relatively underdeveloped literature on the role of school-university partnerships as implementation infrastructure for improving student behavior and engagement outcomes.

The school-university partnership met core collective impact conditions, including a common agenda (PBIS for whole-child development), shared measurement (fidelity and outcome data), mutually reinforcing activities (training and coaching), continuous communication (regular meetings), and backbone support (university coordination) (Kania & Kramer, 2011). By documenting Year 1 implementation trajectories and associated outcomes, the purpose of this study is to provide a context for examining how coordinated, community-engaged partnerships can support implementation quality and early indicators of student impact.

To address gaps, we posed three research questions. (1) To what extent does Tier 1 PBIS implementation fidelity change during schools' first year of districtwide implementation? This responds to the lack of longitudinal evidence on early implementation fidelity during districtwide PBIS scale-up. (2) To what degree do student discipline and chronic absenteeism outcomes change during Year 1? This addresses the limited evidence linking system-level implementation efforts to student behavioral and engagement outcomes. (3) Does Year 1 PBIS fidelity predict changes in student outcomes, controlling for baseline levels and school characteristics? This focuses on the need for empirical evidence connecting early implementation quality to student outcomes, particularly within large-scale, partnership-driven initiatives.

Together, the research questions examined how early implementation processes unfold, whether they are associated with meaningful changes in student outcomes, and the extent to which implementation fidelity serves as a leading indicator of impact within a community-engaged, whole-child framework.

Methods

The method section includes: (1) research design, (2) participants and setting, (3) intervention context, (4) measures, (5) evaluation procedures and data collection, and (6) analytic strategy. We begin by describing the research design used to address our research questions.

Design

This study employed a longitudinal, multi-cohort design to examine PBIS implementation fidelity and student outcomes associated with the TWC initiative. Schools were not randomly assigned; instead, TWC was rolled out in three staggered cohorts phased by year. Thus, this was a quasi-experimental, pre- and post-implementation evaluation. Data were collected at the school level using standardized fidelity assessments and district administrative records to evaluate changes in PBIS implementation quality, student attendance, and student disciplinary offenses in the first year.

Participants and Setting

The study was conducted within the TCSSS, the ninth-largest public school district in the state of the study, which serves a geographically expansive and demographically diverse population. The district comprises 35 schools and one education center, enrolling more than 19,000 students and employing about 2400 faculty and staff members. It serves urban and rural communities, with rural areas experiencing elevated levels of poverty and food insecurity, as well as limited access to health and social services. The student population is ethnically diverse, with more than 47% identifying as non-white, including about 30% African American and 12% Hispanic. Socioeconomic need is substantial; 30 schools qualify for the Community Eligibility Provision, which allows all enrolled students to receive free meals. With these demographic and contextual characteristics, this district is a salient setting for examining districtwide implementation of a whole-child initiative to address inequities in student discipline and engagement.

Intervention Context

TWC Initiative

The TWC initiative represents a districtwide, multi-year professional learning and systems-change effort grounded in the WSCC between TCSS and the University of Alabama College of Education, with the goal of addressing social determinants of health, promoting student well-being, and fostering sustainable system-level improvement across schools. Launched in 2021, the partnership has an 8-year, phased implementation plan to improve school culture, climate, and student outcomes across all schools. It integrates evidence-based practices from education, public health, and implementation science, while strengthening protective factors, building resilience, and cultivating positive school climates through a multi-tiered system of supports. Core features include ongoing professional learning, coaching, collaborative leadership, and the systematic use of data to inform continuous improvements.

Cohort Structure

The initiative's implementation is organized into three cohorts, each at a distinct phase of adoption and support. Schools progress through the implementation plan according to their cohort start year. This staggered cohort structure provides a natural design for examining variation in PBIS implementation fidelity and student outcomes across time, while accounting for differences in school readiness and stage of adoption. Cohort 1 (2022–2023 launch) consists of five schools: four elementary and one alternative/nontraditional secondary setting. The schools completed readiness activities in 2021–2022 and began PBIS intervention in 2022–2023. During this study, these schools were further along in the development of differentiated and sustained supports. Cohort 2 (2023–2024 launch) comprises 15 schools: nine elementary, five middle or intermediate, and one high. The schools started PBIS implementation 1 year after Cohort 1, and during this study were in the intermediate stage of system development. Cohort 3 (2024–2025 launch) includes 15 schools: five elementary/primary, four middle or intermediate, five high, and one alternative/non-traditional educational setting. During the study, these schools were establishing foundational classroom- and schoolwide systems.

Measures

PBIS Implementation Fidelity: Schoolwide Evaluation Tool (SET)

Implementation fidelity was assessed using the SET (Horner et al., 2004), a validated instrument for evaluating the quality of schoolwide PBIS. It measures the presence and quality of PBIS Tier 1 features across seven domains: (a) expectations defined, (b) expectations taught, (c) reward system for behavioral expectations, (d) violation system for behavioral expectations, (e) monitoring and evaluation, (f) management, and (g) district support (Horner et al., 2004). SET data were collected twice during each school's first year of implementation (fall and spring) by trained external evaluators in collaboration with school leadership teams. Data collection included structured interviews with administrators, staff, and students; direct observations of posted expectations and schoolwide systems; and review of school documents (e.g., discipline handbooks, referral procedures, and action plans). Each item was scored on a 3-point Likert-type scale: 0 (not in place), 1 (partially in place), and 2 (fully in place). Domain scores were averaged and converted to a 0 (no implementation) to 1 (full implementation) scale for analysis. Both domain-level and overall fidelity indices were used for longitudinal analyses of PBIS implementation quality.

Student Outcomes

Student outcome data were extracted from district administrative records for 4 academic years (2021–2022 through 2024–2025): (1) Office Discipline Referrals (ODRs)/Offenses, the annual count of disciplinary incidents recorded at each school, an indicator of student behavior and school climate; and (2) chronic absenteeism, the percentage of students classified as missing 10% or more of instructional days, reflecting student engagement and risk. These data were analyzed to make pre- and post-implementation comparisons for each cohort.

Cohort and Temporal Alignment

To account for the staggered rollout of this initiative, a cohort variable was defined that distinguished schools by implementation start year. An implementation program-year variable was created for each school-year observation, calculated as the difference between the academic year and the school's start year. Program year –1 represented pre-implementation (baseline) year, while values of 0 or higher indicated following years. These variables allowed for longitudinal analyses of

schools' implementation timelines rather than calendar years.

Evaluation Procedures and Data Collection

The study was part of an ongoing program evaluation partnership between a school district in the southern United States and a university. All procedures were reviewed and approved by the University of Alabama Institutional Review Board, and the study was conducted in accordance with ethical standards for research involving human participants (exempt category). A formal data-sharing agreement and memoranda of understanding were established as part of the collaborative relationship between the university and the school district. Designated school liaisons assisted in data collection (e.g., compiling documents, scheduling interviews). The evaluation team consisted of a program coordinator, graduate research assistants, and postdoctoral staff who conducted SET fidelity assessments using standardized protocols to ensure consistency and reliability across schools and years of data collection. All evaluators completed extensive training prior to conducting field observations, including completion of official SET administration modules, detailed review of scoring protocols and exemplar artifacts, guided practice sessions, and mock school scenarios. Observers were required to achieve at least 90% agreement with a master-coded SET protocol before collecting data independently.

Before each assessment, designated school contacts compiled required documents (e.g., discipline handbooks, action plans, referral forms), and interviews were scheduled with administrators, staff, and students. Observations were conducted to verify the posting of behavioral expectations and crisis procedures. SET administration and scoring typically required 2–3 hours per school. To maintain scoring accuracy across the project, fidelity data were collected twice during each school's first year of PBIS implementation, in the fall and spring. Observers reviewed scoring anchors, completed joint scoring exercises, and engaged in reflective discussions to clarify distinctions between “partially in place” and “fully in place” ratings. Any discrepancies were resolved through consensus, and updated examples were incorporated into the project scoring guide to enhance consistency. Mean fidelity scores were calculated at each time point by averaging SET domains, then an overall Year 1 fidelity index was computed by averaging the fall and spring means.

Administrative data for student discipline and absenteeism were obtained from the district's data system and verified by the evaluation team. All data were aggregated and de-identified at the school level to ensure confidentiality and compliance with institutional research ethics guidelines. The analytic sample consisted of all schools having fidelity and student outcome data for at least 1 full year of PBIS implementation. Schools with incomplete fall and/or spring fidelity data were excluded from within-year change analyses but retained for cross-sectional and cohort-level comparisons.

Analytic Strategy

All analyses were conducted in R (version 4.3.2, R Foundation for Statistical Computing, Vienna, Austria; [R Core Team \(2021\)](#)). Descriptive statistics were computed to examine distributions, central tendencies, and outliers for all variables. Histograms and Q–Q plots were inspected to evaluate normality assumptions. Because student disciplinary counts were highly right-skewed, a logarithmic transformation of the form $\log(1 + \text{offenses})$ was applied to those data to improve normality and homoscedasticity. For hypothesis testing, statistical significance was set at $\alpha = 0.05$ (two-tailed). We report effect sizes (Cohen's d for t test mean differences; standardized β for regression coefficients). Because cohort assignment was nonrandom, inferential models included baseline values of outcomes and cohort indicators as covariates, to account for initial between-school differences. This baseline-controlled approach conforms with best practices for quasi-experimental program evaluations, although it cannot replace randomization. More rigorous causal-inference methods (e.g., multilevel or difference-in-differences models) were considered, but infeasible due to the limited number of cohorts and schools in this study. Analyses were aligned with the study's research questions.

Research Question 1: Change in PBIS Fidelity During Year 1

Descriptive statistics were calculated for all SET domains in both fall and spring of the first implementation year. Paired-sample t tests were conducted to assess whether overall PBIS fidelity and domain scores improved significantly. Domain-level results were summarized to characterize early implementation strengths and gaps.

Research Question 2: Changes in Disciplinary Incidents and Attendance

For each school, baseline (pre-implementation) and final values for key outcomes were identified using program-year alignment. Baseline was defined as the pre-implementation year (program year –1) and final was defined as the most recent year of available data for that school during the study (program year ≥ 0). Change scores (final–baseline) were calculated for each outcome. Paired *t* tests within each cohort evaluated whether disciplinary offenses and chronic absenteeism changed significantly from baseline to the final observation.

Analysis of covariance models examined differences in final-year outcomes across the three cohorts while controlling for baseline levels. A separate model was specified for each student outcome. For disciplinary offenses, the log-transformed final count was the dependent variable, with log-transformed baseline values and cohort (1, 2, or 3) entered as predictors. For absenteeism, the final-year chronic absence rate was the dependent variable, with baseline rate and cohort as predictors. These models tested whether schools with longer exposure to the intervention outperformed later cohorts on outcomes, after adjusting for start dates.

Research Question 3: Change in Fidelity as a Predictor of Change in Student Outcomes

Multiple regression analyses examined whether change in Year 1 PBIS fidelity predicted change in student outcomes, after accounting for baseline performance, cohort, and school level (elementary, middle, high/other). In separate models for disciplinary offenses and chronic absenteeism, the dependent variable was change in the outcome (final–baseline). Predictors included the school's Year 1 grand-mean-centered SET mean fidelity score, the baseline value of the outcome, cohort (entered as dummy variables or a continuous coded effect), and school level. The finding of a significant positive coefficient for PBIS fidelity would be interpreted to mean that early implementation quality is a leading indicator of positive student behavior.

Results

Research Question 1: Change in PBIS Fidelity During Year 1

PBIS implementation fidelity improved significantly during schools' first implementation year (Tables 1 and 2). Overall mean fidelity, as measured by the SET, increased from Mean = 0.74 (Standard Deviation (SD) = 0.14) in fall to Mean = 0.86 (SD = 0.09) in spring, a statistically significant and educationally meaningful gain ($t(df = 32) = 4.62, p < 0.001$, Cohen's $d = 0.79$). According to empirically grounded benchmarks from Kraft (2020) and Hill et al. (2008), this constitutes a large effect in the context of education interventions. Domain-level gains were strongest for monitoring and decision-making ($d = 0.73$) and response to behavioral violations ($d = 0.69$), both of which represent large effects. Other domains showed moderate to large improvements (e.g., reward system, $d = 0.65$; behavioral expectations taught, $d = 0.60$), while district-level support showed a small, nonsignificant change ($d = 0.21, p = 0.233$). These results indicate that schools made substantial progress toward full implementation of Tier 1 PBIS features within the first year, particularly in areas most proximal to daily practice and decision-making.

Research Question 2: Changes in Disciplinary Incidents and Attendance

Analyses indicated that earlier-cohort schools, with longer exposure to the intervention, experienced more pronounced improvements in student outcomes, particularly in student discipline. Cohort 1 schools reduced their total disciplinary offenses by 32.4% and lowered chronic absenteeism by 28.7% from pre-implementation to their latest year. Cohort 2 schools showed a modest reduction in offenses (about 10%) and a small decline in chronic absenteeism (about 5%); neither change was statistically significant. Cohort 3, in its first year, showed no consistent trend, with disciplinary offense counts slightly increasing and chronic absenteeism remaining flat. Baseline-controlled analyses of covariance models revealed significant cohort effects for both student outcomes: $F(df = 3, 30) = 6.48, p = 0.001$ for disciplinary offenses and $F(df = 3, 30) = 5.72, p = 0.003$ for absenteeism. The models explained substantial portions of variance ($R^2 = 0.39$ for disciplinary offenses; $R^2 = 0.36$ for absenteeism), indicating that early and sustained participation in the initiative was associated with stronger improvements in student behavior. These findings align with implementation science expectations that longer exposure and deeper system integration yield greater benefits.

Table 1. Descriptive statistics for PBIS fidelity and student outcome variables across schools (N = 35).

Variables	Mean	SD	Range
PBIS fidelity variables			
Expectations defined (fall)	0.74	0.17	0.40–1
Behavioral expectations taught (fall)	0.70	0.16	0.33–1
Reward system (fall)	0.65	0.18	0.33–1
Response to behavioral interventions (fall)	0.66	0.19	0.33–1
Monitoring and decision-making (fall)	0.64	0.20	0.25–1
Management (fall)	0.78	0.15	0.50–1
District-level support (fall)	0.85	0.11	0.50–1
Mean fidelity (fall)	0.74	0.14	0.42–0.98
Mean fidelity (spring)	0.86	0.09	0.68–0.98
Change in fidelity (difference score)	0.12	0.08	–0.01–0.27
Student outcome variables			
Disciplinary offenses (pre-implementation)	545.9	515.6	6–2253
Disciplinary offenses (final year)	464.3	498.1	12–2141
Chronic absenteeism (pre-implementation)	17.2	6.5	0–28
Chronic absenteeism (final year)	14.1	6.1	0–19

SD, Standard Deviation; PBIS, Positive Behavioral Interventions and Supports. Values reflect school-level aggregates. Individual school fidelity scores ranged from 0 (no implementation) to 1 (full implementation).

Table 2. Paired-sample comparisons of PBIS fidelity domains from fall to spring.

Variables	Fall mean	Spring mean	Mean change	<i>t</i>	Sig. (<i>p</i>)	Cohen's <i>d</i>
Expectations defined	0.74	0.83	0.09	3.21	0.003	0.56
Behavioral expectations taught	0.70	0.82	0.12	3.45	0.002	0.60
Reward system	0.65	0.79	0.14	3.78	0.001	0.65
Response to behavioral interventions	0.66	0.81	0.15	3.96	<0.001	0.69
Monitoring and decision-making	0.64	0.79	0.15	4.18	<0.001	0.73
Management	0.78	0.86	0.08	2.97	0.006	0.51
District-level support	0.85	0.88	0.03	1.21	0.233	0.21
Mean PBIS fidelity	0.74	0.86	0.12	4.62	<0.001	0.79

PBIS, Positive Behavioral Interventions and Supports. Positive values for mean PBIS fidelity change indicate improvement from fall to spring during schools' first implementation year.

Research Question 3: Year 1 Fidelity as a Predictor of Change in Student Outcomes

Table 3 summarizes results of multiple regression models linking schools' Year 1 PBIS fidelity to changes in student outcomes, controlling for baseline values, cohort, and school level.

Student Disciplinary Incidents

First-year fidelity significantly predicted reductions in student disciplinary incidents ($B = -0.31$, Standard Error (SE) = 0.13; $\beta = -0.34$, $p = 0.024$). This standardized effect size ($\beta = -0.34$) represents a large effect by [Kraft \(2020\)](#)'s benchmarks, indicating that higher fidelity strongly predicted improved student behavior. The model explained 41% of the variance in offense change ($R^2 = 0.41$), underscoring the importance of PBIS implementation quality. In practical terms, a one-standard-deviation increase in first-year fidelity corresponded to a one-third standard-deviation-greater reduction in office discipline referrals—an effect size that, while smaller than a full year of academic learning ([Hill et al., 2008](#)), is highly meaningful in the context of school climate and student behavior.

Chronic Absenteeism

The association between Year 1 PBIS fidelity and change in chronic absenteeism was negative but nonsignificant statistically ($\beta = -0.21$, $p > 0.10$), indicating that short-term attendance improvements were not strongly driven by intervention fidelity alone. This pattern suggests that longer implementation time or additional supports aligned with the broader WSCC framework may be required to impact attendance rates.

Table 3. Year 1 PBIS fidelity as a predictor of change in two student outcomes.

Variables	Change in disciplinary offenses		Change in chronic absenteeism	
	<i>B</i> (SE)	β (<i>p</i>)	<i>B</i> (SE)	β (<i>p</i>)
Intercept	−0.08 (0.07)	—	−0.02 (0.17)	—
Baseline outcome	−0.45 (0.15)	−0.45 (0.006)	−0.38 (0.27)	−0.32 (0.104)
Cohort (1–3)	−0.12 (0.06)	−0.19 (0.057)	−0.09 (0.08)	−0.18 (0.264)
School level (1–3)	0.03 (0.05)	0.07 (0.552)	0.06 (0.07)	0.14 (0.392)
Year 1 mean PBIS fidelity	−0.31 (0.13)	−0.34 (0.024)	−0.18 (0.14)	−0.21 (0.206)
Model <i>R</i> ²	0.41		0.27	

SE, Standard Error. Separate multiple regression models were specified linking schools' first-year PBIS fidelity to change in the two student outcomes, controlling for baseline performance, cohort, and school level. Right-skewed disciplinary offense count data were transformed logarithmically.

Discussion

This longitudinal, multi-cohort study examined Year 1 PBIS implementation fidelity within a districtwide, university–district partnership grounded in the WSCC framework. The project operationalized community engagement through co-designed professional learning, shared decision-making structures, and reciprocal capacity-building, aligning with best practices in community-engaged scholarship (Holt & Chambers, 2017; Ishimaru, 2020). The study aimed to assess the extent to which early implementation fidelity predicted changes in student disciplinary incidents and chronic absenteeism. In doing so, it addressed several critical gaps in the literature, including the need for longitudinal fidelity data, the role of early implementation quality in shaping outcomes, and the function of school-university partnerships in supporting sustainable, equity-centered systems change.

Key Findings

Research Question 1: Change in PBIS Fidelity During Year 1

Several findings warrant discussion. To begin, our first research question examined the change in PBIS fidelity during the first year. We found that participating schools made statistically and practically significant gains in PBIS implementation fidelity during Year 1. The average increase from 74% to 86% of Tier 1 features implemented represents a large effect size ($d = 0.79$), consistent with benchmarks for meaningful educational interventions (Hill et al., 2008; Kraft, 2020). These findings are particularly noteworthy given the short implementation window and the complexity of scaling PBIS across a diverse district.

This result directly addresses a longstanding gap in the literature: the lack of longitudinal data on early implementation fidelity during districtwide PBIS scale-up (Fagan et al., 2019). Most prior studies have focused on mature implementations or single-school case studies, leaving unanswered questions about how quickly schools can build fidelity and which domains improve most rapidly. By measuring two time points (fall and spring) with the SET, this study provides rare insight into the trajectory of early implementation.

Domain-level analyses revealed that the most substantial improvements occurred in monitoring and decision-making ($d = 0.73$) and response to behavioral violations ($d = 0.69$). These domains are central to the PBIS framework and are closely tied to daily school operations and staff behavior. The rapid gains in these areas suggest that with structured coaching, data infrastructure, and leadership support, schools can quickly adopt and institutionalize core PBIS practices. This finding reinforces the importance of implementation supports—such as coaching and data systems—as critical drivers of fidelity (Farrell et al., 2022; Fixsen et al., 2005).

Moreover, the study's cohort-aligned design allowed for comparisons across schools at different stages of implementation. This design feature responds to calls in the literature for more nuanced analyses of how implementation unfolds over time and across contexts (Pas & Bradshaw, 2012). The findings suggest that even within the first year, schools can achieve meaningful fidelity gains, laying the groundwork for improved student outcomes.

Research Question 2: Changes in Disciplinary Incidents and Attendance

Our second research question focused on changes in disciplinary incidents and attendance. We found that student disciplinary incidents declined most in schools with longer exposure to the initiative. Cohort 1 schools, which had the earliest start and longest duration of implementation, reduced office-managed disciplinary incidents by 32.4% and chronic absenteeism by 28.7%. These improvements were both statistically significant and practically meaningful, aligning with implementation science literature that emphasizes the importance of sustained participation and iterative improvement cycles (Fixsen et al., 2005).

Cohort 2 schools, with 1 fewer year of exposure, showed more modest reductions in disciplinary offenses (about 10%) and absenteeism (about 5%). Cohort 3 schools, in their first year of implementation, showed no consistent trends. These findings support the hypothesis that implementation duration is a key factor in achieving desired outcomes, and address the research gap concerning how the timing and depth of implementation influence student behavior and engagement (Bradshaw et al., 2010).

The study's alignment of outcome data with each school's implementation timeline—rather than calendar year—allowed for a more accurate assessment of change. This methodological approach responds to critiques in the literature about the limitations of cross-sectional or calendar-based analyses in implementation research (Penuel et al., 2017). By using program-year alignment, the study offers a more precise understanding of how outcomes evolve in relation to implementation milestones.

Research Question 3: Year 1 Fidelity as a Predictor of Change in Student Outcomes

The study found that Year 1 PBIS fidelity was a significant predictor of reductions in student disciplinary incidents, even after accounting for baseline performance, cohort, and school level. The standardized regression coefficient ($\beta = -0.34$) represents a large effect size, reinforcing the premise that implementation quality is a key driver of student behavior. This finding aligns with prior research showing that higher PBIS fidelity is associated with improved school climate and reduced exclusionary discipline (Bradshaw et al., 2010; Horner et al., 2010). This result addresses a critical gap in the literature: the need for empirical evidence linking early implementation fidelity to student-level outcomes in districtwide PBIS initiatives. While previous studies have established the importance of fidelity, few have examined its predictive value during the first year of implementation (Coffey & Horner, 2012). By demonstrating that early fidelity can serve as a leading indicator of behavioral improvement, this study provides actionable insights for practitioners and policymakers.

In contrast, the study found no statistically significant relationship between Year 1 PBIS fidelity and chronic absenteeism. Although attendance rates improved modestly across the district, intervention fidelity did not emerge as a strong predictor. This finding underscores the multifactorial nature of attendance, which is influenced by a range of ecological factors—including health, transportation, family engagement, and community supports—that extend beyond the scope of PBIS alone (Johnson et al., 2025).

This result reinforces the WSCC framework's emphasis on integrated, multi-tiered supports. While PBIS may contribute to a more supportive and predictable school climate, it is likely insufficient on its own to drive substantial changes in attendance. The finding addresses calls in the literature for integrated interventions that combine behavioral supports with wraparound services, health initiatives, and family engagement strategies (Darling-Hammond et al., 2020; Maier et al., 2017).

University–District Partnership as a Catalyst for Change

The observed improvements in PBIS fidelity and student discipline occurred within the context of a robust university–district partnership. The initiative provided intensive coaching, data analysis, and implementation support, which likely accelerated capacity-building and fidelity gains. This engaged approach aligns with best practices in implementation science and mirrors the experiences of other districts investing in strong leadership teams, coaching systems, and data-driven decision-making (Derian-Toth et al., 2025; Estrapala & Lewis, 2025).

The partnership also operationalized key elements of the collective impact framework, including a common agenda, shared measurement, mutually reinforcing activities, continuous communication, and backbone support (Kania & Kramer, 2011). These structural features were not merely symbolic; they were embedded in the day-to-day operations of the initia-

tive, from co-designed professional learning to regular data review meetings. This level of integration addresses critiques in the literature that collective impact efforts often lack depth and fail to address power dynamics or equity concerns (Henig et al., 2015; Wolff et al., 2017).

Moreover, the partnership's emphasis on authentic community engagement—through shared decision-making, reciprocal learning, and sustained commitment—responds to calls for more equitable and community-centered implementation models (Ishimaru, 2020; Wallerstein et al., 2020). By positioning schools as full partners and embedding community voice in implementation decisions, the initiative exemplifies how RPPs can serve as catalysts for system-level change.

Limitations

Despite its contributions, the study has several limitations. The observational, single-district design limits causal inference and generalizability. Schools were not randomly assigned to cohorts, and unmeasured contextual factors—such as leadership stability, concurrent initiatives, or community-level influences—may have confounded results. Although statistical controls were applied, the potential for selection bias remains.

The study focused exclusively on Tier 1 PBIS fidelity and did not assess classroom-level practices, Tier 2 or Tier 3 supports, or multi-year fidelity trajectories. These omissions limit understanding of long-term sustainability and scalability. Additionally, the modest sample size ($N = 35$ schools) constrained the use of more complex analytic techniques, such as multilevel modeling or mediation analysis.

Finally, the study did not disaggregate outcomes by student subgroup, limiting insight into equity-related impacts. This remains a critical gap in PBIS research, particularly given persistent disparities in discipline and attendance by race, disability status, and socioeconomic background (Annamma et al., 2019; Vincent et al., 2011).

Implications for Research

This study contributes to the growing evidence base linking PBIS fidelity to improved student behavior and school climate. By documenting early fidelity gains and their predictive value for student discipline, the study addresses the need for longitudinal, cohort-aligned research on early implementation quality and its role in shaping outcomes (Fagan et al., 2019).

Future research should explore how PBIS fidelity and student behaviors co-evolve over time and identify the conditions under which PBIS is most effective. This includes examining the role of implementation supports—such as coaching, leadership, and data systems—in sustaining fidelity and outcomes over multiple years (Farrell et al., 2022; Fixsen et al., 2005).

The lack of a significant relationship between PBIS fidelity and absenteeism suggests that attendance outcomes may require longer implementation timelines and integration with other WSCC components. Researchers should examine how PBIS interacts with wraparound services, family and community engagement, and health supports to influence attendance and other whole-child outcomes (Darling-Hammond et al., 2020; Maier et al., 2017).

Future studies should also examine mediators and moderators of PBIS effectiveness. For example, changes in adult behavior—such as increased use of positive reinforcement or consistent discipline practices—may mediate the relationship between fidelity and student outcomes. Mixed-methods research that combines intervention fidelity data with classroom observations, student surveys, and qualitative interviews could provide deeper insights into the mechanisms through which PBIS influences school climate and student behavior.

Equity remains a pressing research priority. Future studies should incorporate student-level analyses and equity-focused fidelity measures to assess whether PBIS benefits are equitably distributed. This includes examining how implementation supports can be tailored to address disparities and ensure culturally responsive practices (Ishimaru, 2020; Klingner et al., 2013).

Implications for Practice

The study offers actionable guidance for school and district leaders seeking to scale PBIS within a whole-child framework. First, the rapid fidelity gains observed suggest that schools can make meaningful progress in the first year when

supported by structured coaching, collaborative leadership, and data-driven decision-making. These findings reinforce the importance of building internal capacity for implementation supports and embedding fidelity monitoring into routine practice. Second, the use of validated tools such as the SET enables schools to track progress, identify areas for improvement, and celebrate early wins. Partner debriefs and data reflection sessions can help translate fidelity data into actionable strategies and foster a culture of continuous improvement. Third, the findings support the integration of PBIS within broader WSCC initiatives. Aligning behavioral expectations with attendance campaigns, health services, and community engagement can create more cohesive and supportive environments. Districts should position PBIS as a foundational component of a multi-tiered system of support that advances whole-child success. Finally, the initiative illustrates the value of RPPs in promoting implementation fidelity and accelerating student behavioral improvements. By leveraging university expertise and community engagement, districts can enhance their capacity to implement and evaluate PBIS effectively. This model offers a replicable framework for other districts seeking to scale evidence-based practices through authentic, equity-centered collaboration.

Conclusions

Engaged scholarship and collaborative partnerships can drive system-level change. This project addressed key research gaps—particularly around early implementation fidelity, student outcomes, and partnership infrastructure—to provide a roadmap for districts seeking to implement PBIS and whole-child strategies. The findings affirm that high-quality PBIS implementation can yield rapid improvements in student behavior and lay the foundation for broader systems transformation.

Author Contributions

Conceptualization, GJB, BS, and JH; methodology, GJB and YW; validation, GJB, JH, BS, and YW; formal analysis, YW; investigation, GJB, JH, BS, and YW; resources, JH; data curation, YW; writing—original draft preparation, GJB, YW, CK, and LS; writing—review and editing, GJB, ML, and LS; visualization, GJB and BS; supervision, GJB; project administration, GJB; funding acquisition, GJB, JH, and BS. All authors have read and agreed to the published version of the manuscript. All authors contributed substantially to the work reported. All authors read and approved the final manuscript. All authors have participated sufficiently in the work and agree to be accountable for all aspects of the work.

Ethics Approval and Consent to Participate

This study was conducted within the ongoing Tuscaloosa Whole Child partnership between the Tuscaloosa County School System (TCSS) and the University of Alabama (UA) (see <https://www.bamawholechild.com/>). All procedures were reviewed and approved by the University of Alabama Institutional Review Board, and the study was carried out in accordance with ethical standards for research involving human participants under an exempt category. The IRB determined that the protocol qualified for exemption from review (IRB ID: 25-06-8793). A formal data-sharing agreement and memoranda of understanding were also established as part of the collaborative partnership between UA and TCSS.

Funding

This research was funded by Tuscaloosa County Board of Education, grant numbers A21-0446-001, A21-0446-002, A21-0446-003, and A21-0446-004.

Availability of Data and Materials

A formal data-sharing agreement and memoranda of understanding were established as part of the collaborative relationship between the UA and TCSS. Per our data-sharing agreement, research data cannot be shared without permission from the Tuscaloosa County Board of Education.

Conflict of Interest

The authors declare no conflict of interest.

Declaration of AI and AI-Assisted Technologies in the Writing Process

The authors have not used AI tools in drafting the manuscript, production of images or graphical elements of the paper, or in the collection and analysis of data.

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