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## The Role of School Improvement Planning in the Implementation of MTSS in Secondary Schools

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**Running head: SCHOOL IMPROVEMENT AND SCHOOL-WIDE INTERVENTIONS**

The Role of School Improvement Planning in the Implementation of MTSS in Secondary  
Schools

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### Abstract

As a result of the Every Student Succeeds Act (ESSA), schools and districts are encouraged to implement school-wide initiatives to improve outcomes for all students. In accordance with the ESSA, this research study investigated the relationship between school improvement planning and the implementation of school-wide interventions. The study examined survey and extant data from five high schools in a Midwestern state to analyze academic and behavior-related school-wide efforts and their relationship to school improvement. The data showed a statistically significant relationship between school improvement planning and the state's school improvement report card of student performance (Kendall Rank-Order Coefficient,  $p = .025$ ). These findings suggest that schools might consider integrating their school-wide efforts into school improvement planning.

Key Words: Implementation, Multi-Tiered Systems of Supports, School Improvement, Secondary Schools, Systems

## Introduction

The Every Student Succeeds Act (ESSA), passed in 2015, sets public education policy in the United States. The ESSA encourages schools to use school-wide supports to improve various outcomes, including student academics and behavior (McCurdy et al., 2019). As referenced in the ESSA, school-wide supports are designed to provide a three-tiered continuum of interventions for students (Horner et al., 2017). School-wide efforts, sometimes referred to as multi-tiered systems of support (MTSS), can allow staff to systematize and streamline intervention implementation to improve outcomes for all students (Lane et al., 2013).

In some cases, busy, overwhelmed educators are asked to implement school-wide interventions related to the ESSA that address academic, behavioral, social and emotional, and mental health domains (Bohanon & Wu, 2011). These interventions involve the development of systems such as teams to guide interventions. School-wide interventions include practices and data which involve fidelity of implementation and student outcomes (Fixsen et al., 2015). For instance, over 23,000 schools across the United States have implemented a school-wide intervention called positive behavior interventions and supports (SWPBIS), an evidence-based school-wide approach (Horner et al., 2017). Researchers have linked the implementation of SWPBIS to reductions in office discipline referrals and suspensions for students (Bradshaw et al., 2010; Childs et al., 2016). There is evidence that school-wide interventions such as MTSS can be effective in elementary school settings (Coyne et al., 2018; Fien et al., 2020). There is a limited but growing body of evidence for the use of MTSS in secondary school settings (Bradshaw, et al., 2015, 2021; Bradshaw et al., 2014; Freeman et al., 2018; Freeman et al., 2016; Lum et al., 2019).(Bradshaw et al., 2015; Bradshaw et al., 2021; Bradshaw et al., 2014; Flannery et al., 2020; Freeman et al., 2018; Freeman et al., 2016; Lum et al., 2019). Some of the critical

components of MTSS, such as the use of teams and data for decision-making, may be similar for elementary and secondary schools. However, secondary schools may require nuanced approaches to reading, behavior, foundational instruction, and supporting graduation (Daye, 2019). Research supports that MTSS related interventions can positively impact high school students' learning outcomes. More research is needed to connect MTSS in secondary settings to the school's overall improvement efforts (Bohanon et al., 2016).

School improvement may help educators integrate their school-wide efforts (Bohanon et al., 2016; Goodman & Bohanon, 2018). School improvement practices can influence how the school operates. A school improvement team guides these practices. These teams consist of individuals who represent the knowledge and stakeholder-base for the school and are charged with leading the school improvement efforts. Sometimes called comprehensive school reform, school improvement addresses all of the setting's functions and programs (Dolph, 2017). Specifically, school improvement focuses on developing comprehensive program design, identifying measurable goals and benchmarks, selecting research-based strategies, obtaining support for interventions from within the school, procuring external support for technical assistance, working with the community and parent partners, and conducting program evaluation (Slavin, 2007).

There has been some research related to the connections between school improvement and MTSS (Bohanon et al., 2016). Researchers consider school-wide MTSS approaches to provide a mechanism for ongoing improvement cycles for schools (Freeman et al., 2015; McIntosh & Goodman, 2016). Further, researchers suggest that everyone involved in implementing MTSS in schools should be aware of the connections with school improvement plan (SIP) processes and language (Dulaney et al., 2013). However, there is limited research on

the relationship between school improvement and MTSS in secondary school settings (Bohanon et al., 2016; Daye, 2019).

This study focused on a specific school improvement model called school-improvement-by-design. This school improvement model addresses at least three contextual factors of the setting during the implementation of improvement efforts (Rowan & Miller, 2007). Factor one, cultural controls, are strategies that ensure that school-wide implementation efforts are guided by the vision and mission of the school improvement plan. For example, the staff's work could be guided by a belief that all students can learn and be successful if provided with support. Factor two, procedural controls, involves managing organizational or procedural systems (e.g., team norms and structures). For instance, schools focusing on teaching school-wide expected behaviors might provide all teachers with lesson plans that guide instruction of social and emotional learning skills. Factor number three, professional controls govern the school improvement plan's workflow (Alin et al., 2013). For example, schools implementing a social and emotional curriculum might expect that all staff, including office and custodial, support the implementation of the specific strategies connected to the SIP. As a result of factor three, the entire organization participates in a process of providing comprehensive support for all students (Lane et al., 2013).

Comprehensive school improvement reform has been implemented since the 1990's (Rowan et al., 2004). School-wide supports, or MTSS, has at least a 14-year history of implementation in the United States (McIntosh & Goodman, 2016). However, neither school reform nor MTSS were necessarily developed with the other in mind. Although the purpose of school-wide approaches is for school improvement, current research that examines the role of



school improvement on the implementation of school-wide MTSS efforts is nascent, or at best in its infancy.

The research previously discussed on school improvement and school-wide interventions highlight significant findings. There is a growing body of research related to the interconnections between school improvement efforts and school-wide interventions (Choi et al., 2020; Choi et al., 2019). However, more research is needed related to how school improvement and school-wide interventions (e.g., MTSS, PBIS) might collectively support improved students' outcomes. With this gap in the literature in mind, additional research is needed to examine the connection between school improvement and school-wide interventions to document how these two approaches support improved outcomes for all students (Bernhardt & Hebert, 2014).

The underlying theory of this study is Activity Theory (Engeström, 2008, 2015). This theory posits activity as the unit of analysis, explaining how different system constituents logically work toward an intended outcome (i.e., controls for culture and procedures). Activity Theory focuses on the interplay between collective activity and individual action within a group (i.e., professional workflow controls). According to Activity Theory, six interrelated components influence student outcomes (see Figure 1). The underlying connection with Activity Theory in this study is that factors such as the school improvement plan, ESSA, MTSS related initiatives, the schools' context, and the roles and missions assigned to the school personnel influence the staff's knowledge and abilities. The staff's knowledge and skills then influence student outcomes. Therefore, Activity Theory provides a framework that accounts for a dynamic relationship between the setting and the group's results. The researchers could not find any application of Activity Theory in the literature related to the connections between school improvement and MTSS.

< Insert Figure 1 here >

### Purpose

The purpose of this descriptive and correlational study was to examine the role of school improvement as a catalyst for schools that were implementing school-wide efforts to improve outcomes for students on a composite measure of student success related to attendance, performance on standardized assessments, and graduation rates. The focus of the school-wide efforts for the participating schools in this study was an integrated MTSS approach that addressed both academic and behavior supports.

The purpose of the research was to determine the use of school-improvement-by-design within the schools under study (questions 1-3); and the connections between school improvement for schools implementing school-wide efforts on performance on the state's scorecard data (question 4).

The 'study's research questions included:

Research Question 1 (RQ1): What percentage of school improvement team members who were part of schools implementing school-wide efforts in high school settings were implementing school-improvement-by-design strategies related to cultural controls?

Research Question 2 (RQ2): What percentage of individuals who were part of schools implementing school-wide efforts in high school settings also were implementing school-improvement-by-design strategies related to procedural controls?

Research Question 3 (RQ3): What percentage of individuals who were part of schools implementing school-wide efforts in high school settings were also implementing school-improvement-by-design strategies related to professional workflow controls?

Research Question 4 (RQ4): What is the relationship between school-improvement-by-design and a state-provided total score for school improvement factors (e.g., attendance rates, graduation rates) for schools that were implementing school-wide efforts to improve outcomes for students?

### Methods

The lead author's human subjects committee reviewed the methods for this study before implementation. The committee reviewed all sampling methods, instruments, data collection processes, letters of support, data storage, and consent forms. They approved the study based on this information.

Researchers used purposive sampling to identify high schools participating in a statewide initiative focusing on academic and behavioral support. The school selection criteria included being a general education setting that served students in grades 9-12 and participation in a statewide initiative related to MTSS. Statewide technical assistance providers identified all general education high schools within their project as potential research settings. At the time of the study, ten high schools were participating in their statewide effort. Participants from five of these high schools (50%) agreed to participate in this study. These schools were actively participating in the state's school-wide MTSS effort, which included SWPBIS. The technical assistance providers set two criteria to indicate if schools were actively participating in their project: (a) attending statewide MTSS training, and (b) submitting data related to the project (e.g., fidelity of implementation data).

### Demographics

Ten schools were mailed surveys for this study, with responses coming from five schools. Overall, student enrollment in the five schools with respondents averaged 787 ( $SD = 496.95$ ) and

617 ( $SD = 422.99$ ) for the non-responding schools. The sites ranged in size from 364 to 1,315 students for responding schools and 169 to 1142 for non-responding schools. The average distribution of student ethnicity across schools was 91.06% ( $SD = 4.81$ ) white for responding schools and 89.98% ( $SD = 9.08$ ) for non-responding schools, 1.68% African American ( $SD = 1.79$ ) for responding schools and 4.97% ( $SD = 6.79$ ) for non-responding schools, 2.47% Hispanic ( $SD = 1.2$ ) for responding schools and 3.09% ( $SD = 1.9$ ) for non-responding schools, 1.93% Asian American and Pacific Islander ( $SD = .48$ ) for responding schools and 1.58% ( $SD = 1.71$ ) for non-responding schools, and 1.66 two or more races ( $SD = .97$ ) for responding schools and 2.49% ( $SD = 2.51$ ) for non-responding schools. The average percent of economically disadvantaged students, based on the need for free or reduced lunch, was 40.72% ( $SD = 14.05$ ) for responding schools and 49.75% ( $SD = 15.1$ ) for non-responding schools. The non-responding schools appeared to be slightly smaller in size and more diverse than the responding schools. In addition to the five high schools in this study, we conducted a comparative analysis with 20 randomly selected high schools from the rest of the state. A non-parametric permutation test indicated that the selected schools in this study were not significantly different from randomly selected schools in the state on the variables previously mentioned.

Table 1 provides demographic information regarding the self-reported makeup of the school improvement teams for the responding schools. Also, Table 1 includes descriptive information regarding the knowledge base represented on the school improvement teams.

< Insert Table 1 here >

#### Survey Sampling Strategy

School sites were selected using critical case sampling (i.e., selecting participants who had the most information and most significant impact on knowledge development) (Patton,

2014). Researchers mailed a packet directly to principals, which included invitations, a survey (i.e., Tiered Inventory of Effective Resources in Schools, TIERS), a \$10 incentive, a cover letter explaining the survey, and a letter from the statewide MTSS initiative director stating his support for the research. The principals then shared the materials associated with the survey with their school improvement team members. The participants had the choice of completing the survey in paper-pencil format or online using a link provided in the email that was forwarded to them by the principal. The school administrators did not share any information about the names or number of school improvement team members at each site with the researchers.

In addition, the human subjects committee at the lead researcher's university required that we did not have direct contact with the participants. Therefore, we could not determine a response rate for individual respondents. However, the school level response rate was 50% (N=5). Researchers who conducted a preliminary synthesis of online surveys suggested that the average response rate is 35.1%, 95% CI [34.9, 35.3] in educational settings (Wu et al., 2012).

Tiered Inventory of Effective Resources in Schools. Based on a literature review, we could not find any valid or reliable tools that addressed both school improvement and MTSS. While there are tools that address school improvement and MTSS separately, none specifically integrated these constructs efficiently into one survey. Also, combining existing tools into one instrument may have led to a lengthy measure that might have discouraged staff from participating in the study. Further, schools may already have some level of survey fatigue if they participate in multiple MTSS approaches that required the completion of numerous fidelity of implementation measures (Bohanon & Wu, 2019). As a result of these issues, we attempted to create a brief instrument that would provide insights into the MTSS and school improvement

efforts without overburdening that staff. Therefore, we developed a tool to be used for this study (see Appendix).

The Tiered Inventory of Effective Resources in Schools (TIERS), designed for this study, was used to measure school-improvement-by-design implementation and components of MTSS. The TIERS included four sections (described below). Most items were scaled using both nominal and ordinal response options depending on the nature of the prompts (see Tables 2-4). The items were defined using constructs from both school improvement and MTSS. Construct validity was addressed by assessing the items' content validity. We addressed content validity using two methods. First, we developed the TIERS items from a review of the literature on school-improvement-by-design. Second, an expert in the field of school-wide support and one in psychometrics reviewed the TIERS. The expert reviewers judged that the survey's content addressed school-improvement-by-design (i.e., cultural controls, procedural controls, professional workflow controls), systems and data factors related to MTSS, and that the scaling was appropriate to measure the survey constructs (Adams & Lawrence, 2018; Forman & Crystal, 2015).

**Cultural Controls.** Participants were asked in this section to provide ratings on the current levels of cultural controls within their schools. Items were scored using nominal and ordinal scales (see Table 2 and Appendix for examples of the scaling). The focus of these items was on knowledge of the school improvement teams' behavior, frequency of use of data, and likelihood of engaging in activities related to cultural controls.

<Insert Table 2 here>

**Procedural Controls.** Nine questions dealt with procedural controls involving team preparation and use of data for planning and evaluation related to school improvement. Also,

these items included nominal and ordinal scales (see Table 3 for examples of the scaling).

Questions in this section involved issues of team member's knowledge of procedures, frequency of improvement tasks, and focus areas for improvement.

<Insert Table 3 here>

Professional Workflow Controls. Four questions were related to professional workflow controls, including how schools implemented practices and the intensity of services and supports for students. Items were scored using both nominal and ordinal scales (see Table 4 for examples of the scaling). Questions from this section involved the respondents' knowledge and perceptions of actions related to professional workflow.

<Insert Table 4 here>

#### School Improvement Scorecard Data

The state board of education provided a scorecard for schools based on several measures for school improvement. The data scorecard included: (a) the percentage of students who participate in standardized assessments; (b) student proficiency on standardized assessments; (c) attendance rates; (d) graduation rates; (e) educator evaluations; and (f) compliance factors (e.g., submitting a school improvement plan). The state provided a raw score and total points possible for each school based on the scorecard data set.

#### Analysis

We used descriptive and inferential statistics to answer our research questions. Descriptive statistics allowed for the analysis of questions related to the implementation of school-improvement-by-design and the personnel makeup on the SIP teams. These data were analyzed by reviewing the percent of respondents for each question by 'respondents' ratings. We examined the question related to the connection between school-improvement-by-design and

statewide ranking by comparing the means of rankings using the median score for the TIERS total score. Within the schools, the mean was the more appropriate statistic given the distribution of the scores. Across the schools, the median score was the more appropriate statistic for comparison to avoid issues related to the lack of normality and small sample size of the data. The state-level school improvement data were ordered by the total scores on the TIERS. Next, we compared the average of the total scorecard points for the schools above and below the median score for the TIERS. The Kendall Rank-Order Coefficient (Kendall, 1938) was used to determine if there was a correlation between the two scores. This non-parametric statistic was appropriate due to the small sample size as it does not require assumptions about the normality of the data (Siegel & Castellan, 1988).

### Results

Tables 1 provides respondents' demographic information in terms of the school improvement teams' knowledge and skills. The final sample for the survey included 34 respondents across five high schools. Respondents had been at their schools for an average of 13.62 years (min = 1, max = 30). In terms of the number of people on their school improvement teams, 9.7 % (n = 3) of the respondents reported having between 1 to 5, 71% (n = 22) had between 6 to 10, and 19.4% (n = 6) had between 11 to 15. Three respondents did not respond to this question.

RQ1: What percentage of individuals who were part of school-wide efforts in high school settings were implementing school-improvement-by-design strategies related to cultural controls?

We present the findings related to RQ1 according to two themes: (1) the purpose of the school improvement team, and (2) the prioritization of efforts related to the SIP (see Table 2).



One hundred percent of the survey respondents reported having a school improvement team (SIT). Eighty-six percent of these respondents indicated that their SIT addressed school improvement. Sixty-one percent of the respondents said the SIT had a written purpose statement to guide their efforts. Twenty-five percent of the respondents agreed they discussed the SIP during their hiring process. Concerning prioritizing efforts related to the SIP, 84% of the respondents indicated that they reviewed standing initiatives before adopting new ones. More than 54% of the respondents indicated they were likely or extremely likely to stop current practices before starting new ones, with a mean score of 2.40 ( $SD = .881$ ). Fifty-six percent of the respondents indicated that they review SIP data at least once every three months. The mean score was above the midpoint for reviewing data ( $M = 2.75$ ,  $SD = 1.317$ ).

RQ2: What percentage of individuals who were part of school-wide efforts in high school settings also were implementing school-improvement-by-design strategies related to procedural controls?

The data related to RQ2 included procedural controls for preparing the team for implementing the SIP and using data for planning and evaluation (see Table 3). The following average responses were all above the midpoint of the item's scale: staff being prepared for the need for invention ( $M = 2.56$ ,  $SD = .824$ ), tasks related to the SIP are assigned by multiple factors ( $M = 2.31$ ,  $SD = 1.142$ ) and SIP is reviewed quarterly ( $M = 3.75$ ,  $SD = 1.628$ ). Regarding the use of data for evaluation and planning, the majority of the respondents reported their SIP included goals for academics (100%) and behavior (91%). Fewer respondents reported having goals related to students' social or emotional needs (47%) or mental health (24%). The majority of the participants (76%) agreed or strongly agreed that they reviewed data related to their specific school improvement goals at least three times per year ( $M = 3.89$ ,  $SD = .9$ ).

RQ3: What percentage of individuals who were part of school-wide efforts in high school settings were also implementing school-improvement-by-design strategies related to professional workflow controls?

The data for RQ3 involved workflow controls. These workflow controls included the practices for and intensity of services and supports implemented by the school improvement team to address their SIP (see Table 4). Fifty percent of the respondents agreed that practices were implemented only if support systems were in place ( $M = 2.17$ ,  $SD = .910$ ). More than 50% of the respondents said it was sometimes true that they took time to pilot interventions before full implementation ( $M = 3.25$ ,  $SD = 1.519$ ). Only 22% indicated that it was usually true that the school piloted interventions before adoption. Concerning the intensity of supports and service, the prompt asked if general education is the best setting for all students. This construct was significant because creating a welcoming environment for all students was considered a vital component of the statewide model. Sixty-seven percent of the respondents believed that the general education setting was the best environment for all students ( $M = 2.69$ ,  $SD = .786$ ). Fifty percent of the respondents agreed that all interventions were monitored using data ( $M = 2.17$ ,  $SD = .941$ ). Thirty-one percent of the participants disagreed that all interventions were monitored using data. The average for all participant responses in this section was above the midpoint line for each item.

RQ4: What is the relationship between school-improvement-by-design and a state-provided total score for school improvement factors (e.g., attendance rates, graduation rates)?

Table 5 illustrates the connections between the scores on the TIERS and school improvement data related to statewide school ranking for RQ4. The average median total score on the TIERS was 58% across the five schools with participants. The total score on the TIERS

included all responses except for demographic items. The total score consisted of yes and no questions. The average percentage of points earned on school improvement data was 80% for the schools included in this analysis. Only two of the schools with non-respondents (not included in the analysis) had a total score for school improvement data. The two schools' scores were 79% and 81%, which appeared to be in the same range as the schools with responders used for this analysis. Also, the schools with the four highest scores on the TIERS had the four highest percentage points earned on the school improvement scorecard. The school with the lowest score on the TIERS (52%) was the school with the lowest score on the percentage points earned on the school improvement report card (76%). Regarding descriptive statistics, there appeared to be some differentiation on school improvement data based on TIERS. The Kendall Rank-Order Coefficient yielded a statistically significant relationship ( $p = .025$ ) between the score of the TIERS and the school improvement percentage score, meaning the scores on the TIERS had a dependent relationship with the school improvement percentage scores.

<Insert Table 5 Here>

### Discussion

The use of school improvement planning may enhance the application of school-wide efforts to improve the school's culture and functioning. We conducted a study that was designed to determine to what extent schools that were implementing a school-wide intervention included: (a) the use of school-improvement-by-design, (b) structure for school improvement teams, and (c) connections between school improvement and performance on statewide data report card ratings. This study focused on the perspectives of school-improvement team members' self-report. The researcher intended to provide additional insights into the role school improvement can play in implementing school-wide supports. As a result, we hope to continue research related

to the interplay between school improvement and school-wide interventions. This study's outcomes enhance our understanding of the implementation of school improvement and the need for training and support in multiple ways.

#### Use of School Improvement Planning

All respondents reported that they were implementing components of cultural control to some degree. Most of the respondents reported having a school improvement team (100%) that addressed school improvement planning (86%). Greater variability occurred for responses involving a written purpose statement (61%) for the school improvement team. It would be helpful to increase the number of participants who believed their team had a mission to provide a common framework and language for action (Slavin, 2007; McIntosh & Turri, 2014). Also, it is encouraging that many of the respondents indicated they were reviewing all existing initiatives (85%) before adopting new ones. In addition, a majority (54%) of participants said they were likely or extremely likely to consider stopping a current practice before starting a new one. Future training could focus on encouraging staff to review their initiatives (e.g., intervention audit, standardized selection and deselection, and alignment process) in light of their school-wide mission. Further, the team should consider which practices could be stopped or replaced by ones that aligned better with school improvement plans. Data are helpful to teams when deciding which practices to stop implementing. A majority of the participants (55%) reported that they reviewed data related to their school improvement plan at least once every three months. A large proportion of the participants could be encouraged to increase the frequency of data reviews. This analysis might help teams to determine if their efforts were leading towards the goals of their school improvement and school-wide plans (Vermont Reads Institute and Vermont Statewide Steering Committee on RTI (VRIVSSC), 2014).

Many of the teams were implementing components of procedural controls. It was encouraging to see a majority (62%) of the respondents prepared their staff for the necessity of a school-wide approach. Buy-in for school improvement and school-wide initiatives could be increased if all staff sense the urgent need for a strategy (Kotter, 1995). For example, after a team reviewed the school's academic data, they might determine that a large percentage of the freshman class struggles with reading comprehension. Without a change in instructional strategy, many students may be unable to succeed in English 1. In this case, the team can use these data to inform the staff of the critical need for a school-wide literacy strategy. Also, it was promising to see that the majority (61%) of respondents agreed that tasks were assigned to staff based on multiple factors (e.g., experience, knowledgebase).

Rather than relying on professional titles alone, one way to increase the chances that roles will be given based on numerous factors would be for teams to define their membership with written procedural documents or job descriptions. This step entails using a written document that describes the required skills and tasks to accomplish the team's goals. Thus, written protocols are useful for guiding team members' performance. Having clear role assignments may help prepare a diverse group for increased leadership capacity (Fixsen et al., 2009; Forman et al., 2009; Lueck & Kelly, 2010; VRIVSSC, 2014). Knowledge of roles would also help with communication in that team members would know who was responsible for particular school-wide related tasks.

It was promising that many participants (42%) agreed their leadership teams reviewed their school improvement plans quarterly. The quarterly review of the school improvement plan may be vital for ensuring the success of school-wide efforts (VRIVSSC, 2014). The need for ongoing examinations would be beneficial for projects with goals across multiple domains (e.g., academic, behavioral, social). Interestingly, respondents were more likely to have school

improvement goals for addressing academic and behavioral supports than those related to social and emotional functioning or mental health. A large proportion of the respondents (77%) agreed that they reviewed data in each goal area at least three times per year. One suggestion would be to encourage teams to regularly share their data graphically with their stakeholders (Forman et al., 2009; Lueck & Kelly, 2010).

Most participants reported some level of workflow control in their school improvement processes. For example, 50% of the participants agreed that their practices were only put into place if there were systems to support them. The fidelity of implementing school-wide initiatives might be enhanced if school improvement teams were encouraged not to implement practices until they had the systems in place to support their efforts (Nelson et al., 2015). Further, 56% of the participants indicated they piloted practices before full-scale implementation. Encouraging participants to test interventions before large-scale deployment can create short-term wins for staff. These wins can help leadership teams scale up the initiative for the rest of the school (Kotter, 1995; Fixsen & Blasé, 2009).

Many participants (67%) supported that general education was an appropriate setting for all students. Some researchers hope that school-wide efforts can increase access to effective support for all students, regardless of individual identification labels (e.g., at-risk, disability) (Lueck & Kelly, 2010). While a continuum of support is needed for students at risk of failure, creating a supportive host environment may improve the staff's ability to provide intensive interventions effectively.

Schools in this study addressed multiple domains of student growth. For example, more than 90% of the respondents were concentrating on student academic and behavioral needs. It seemed that fewer participants stated that their schools were considering factors related to social

and emotional health or school-based mental health. School staff may be increasingly motivated to discuss additional areas of improvement as more states consider ways to look at outcomes in multiple domains (Balu, & Ehrlich, 2018). Also, as staff improve their implementation of school-wide supports, they will develop the capacity to address additional student needs.

### Team Structure

The respondents provided insights into the school improvement teams' membership. The majority of the participants indicated that their school improvement teams included administrators (86%), general education teachers (83%), and school counselors (58%). This membership distribution is understandable in that these individuals would know the core curriculum and schedules for instruction that were most connected to the school improvement plan. Part of the school improvement team's role is to ensure organizational capacity to implement successful school-wide interventions (Horner et al., 2017; Kotter, 1995; VRIVSSC, 2014). It would be useful to encourage teams to increase the membership diversity of the team proportionally. For example, special education teachers, school psychologists, social workers, parents, and support staff bring unique perspectives. Further, teams would benefit from a designated coordinator that assumes a lead role in identifying agenda topics, facilitating meetings, and monitoring the completion of assigned tasks.

Perhaps as teams begin to expand their interventions to include social and emotional or mental health-related components, there will be an increase in representation of individuals with additional knowledge of student supports. This new knowledgebase would help develop interventions that addressed needs beyond academic and behavioral domains. For example, the team may require more ability to manage school resources. This need could be addressed by

including district or school board representatives on the SIP or MTSS teams (Goodman & Bohanon, 2018).

Participant responses indicated interesting patterns for the knowledge-based representation of the school improvement teams. While we previously stated that respondents less frequently reported the inclusion of some individuals with specific titles, a majority of the participants indicated that their teams represented a wide range of knowledge of student domains. A majority of the participants stated their teams included knowledge representation in behavior interventions, curriculum, assessment, supporting students with special needs, learning standards, and mental health. While participants reported smaller proportions of individuals with titles typically associated with some of these roles (e.g., special education), the respondents seemed to suggest they could address these areas within their team's current knowledge base. By assigning tasks based on knowledge (Goodman & Bohanon, 2018), rather than the title alone, teams could ensure they have a diverse knowledge base that prepares them to work effectively (Alin et al., 2013; Fixsen & Blasé, 2009; Forman et al., 2009; Lueck & Kelly, 2010). In addition, teams can be encouraged to increase their knowledgebase as it relates to school safety and students who are English learners.

#### Connections with School Improvement and Outcomes

Extreme variability did not appear within the distribution of the scores on the TIERS or the school improvement scorecard data. However, the relationship between both data sets was statistically significant. The lowest score on the TIERS was the lowest score on the school improvement scorecard. Based on these data, some underlying dynamic may exist between the school staff's interconnected activity and student outcomes (Engeström, 2008, 2015). Specifically, Activity Theory may be a useful framework to consider how school improvement



and school-wide efforts may be mutually beneficial enterprises. Following Activity Theory logic, school improvement and school-wide interventions (e.g., MTSS), the specific roles and missions assigned to staff, and staff's knowledge and abilities may positively impact student outcomes. Further research is needed to determine if there is a significant relationship between school improvement as measured and understood by the TIERS, school improvement outcomes, and Activity Theory.

Also, while non-parametric statistics are appropriate for data with small sample sizes (Siegel & Castellan, 1988), we could not describe the magnitude of this significance by calculating an effect size. Data from a larger sample might help determine the magnitude of the connection between student educational outcomes and cultural, procedural, workflow controls, and MTSS. Further research should study the relationship between school improvement, the fidelity of implementing school-wide efforts, and student-level outcome data. None of the schools carried out SWPBIS at full implementation levels within this study (Mercer et al., 2017). Future research should focus on the relationship between the TIERS, the level of fidelity of implementation of specific school-wide interventions (e.g., SWPBIS), and student outcomes.

#### Limitations of Study and Future Implications

It is essential to see this study's findings with caution and through the lens of its limitations. First, the TIERS instrument results are based on school improvement team members' self-reports. Future research should collect additional information, including reviewing actual products to determine if school improvement components are in place (Horner et al., 2004). Second, to keep the survey brief, the TIERS did not include every element of school-improvement-by-design or MTSS. Future studies should identify ways to capture

implementation nuances by reviewing other sources such as permanent products (e.g., professional development calendars, interviews, observations) (Horner et al., 2004).

Third, we did not use the TIERS to determine if supports were in place that would encourage successful school improvement planning and school-wide efforts. Future research should identify how the implementation of school improvement efforts can be enhanced through effective school-wide implementation efforts (Horner et al., 2017). Fourth, given the small sample size of this study, it was impossible to determine the magnitude of the relationship between the TIERS and state-reported school improvement data. Future research should increase the sample size by working with additional states providing statewide technical assistance for school-wide endeavors. Fifth, given the study's small sample size, it was impossible to quantitatively determine the TIERS' validity as a measure of school improvement and MTSS. The study did include a process for determining the TIERS' content validity using qualitative efforts (e.g., expert review, grounding items in the research literature). Future studies should include a larger sample that would allow for determining the psychometric properties of the TIERS. Sixth, while we took steps to develop construct validity for the TIERS, additional work is needed to improve the instrument's overall validity and reliability. For example, cognitive pretesting (Lenzner et al., 2016) could be used to determine how respondents perceived the items on the TIERS. While we did try to address respondent fatigue issues by keeping the instrument shorter, more work is needed to identify any other underlying problems with the tool from the participants' perspective. Caution should be used when reviewing these results due to these limitations. Readers of this research should consider how these ideas may qualitatively transfer to their setting based on knowledge of their school's characteristics, rather than attempting to generalize them to all settings.

### Significance of the Study and Conclusion

We desired that the findings from a survey of schools that were implementing school improvement practices with an integrated school-wide approach would: (a) identify factors for further study related to the relationship between school improvement and school-wide initiatives; and (b) provide insights into training, professional development, and coaching that enhance the functioning of school improvement teams. By better understanding the relationship between school improvement and school-wide efforts, perhaps schools can integrate support across multiple student domains more efficiently. If schools can see how: (a) all of their actions are intertwined with collective goals, (b) organizations structures can be put in place to support interventions, and (c) workflow assignments could be based on skill sets aligned with both, perhaps we will see improved outcomes for all students. We encourage additional research around combining school improvement with school-wide efforts. We hope that increased knowledge about the relationship between the two will facilitate the implementation of school-wide efforts across various student domains.

There is overlap in many of the components of both school-improvement-by-design and school-wide efforts (e.g., use of teams, data-based decision making). The MTSS related coaching the participating schools received may have led to increased scores on the TIERS compared to schools that did not receive this support. When technical assistant providers begin to work with schools on school-wide efforts, their coaching could be improved by building upon the setting's current efforts and their language around school improvement. Helping staff see that their school improvement efforts could be enhanced through school-wide efforts may be one step towards buy-in and adoption of MTSS.

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**Table 1***Professional Titles and Knowledge Represented on School Improvement Teams*

Titles of School Improvement Team Members			Professional Knowledge Represented on School Improvement Teams		
Professional Title	Number of Responses	Percent	Professional Knowledge	Number of Responses	Percent
Administrator	31	86%	Behavior Intervention	33	92%
General Education Teacher	30	83%	Student Learning	29	81%
School Counselor	21	58%	Curriculum Development	27	75%
Special Education Teacher	17	47%	Assessing Student Learning	27	75%
External coach	13	36%	Special Education	25	69%
Social worker	10	28%	College and Career Readiness	22	61%
Parent/family member	6	17%	Student Mental Health	19	53%
Student	6	17%	Safety/School Crisis Planning	18	50%
Support Staff	4	11%	Limited English Proficiency	6	17%
Dean of students	2	1%	Art	1	3%
Community member	1	.03%			
Regional support personnel	1	.03%			
District consultant	1	.03%			
Literacy coach	1	.03%			
School board member	1	.03%			
Title I Teacher, Assessment Coordinator, Special Ed District Rep, Homeless Liaison	1	.03%			

**Table 2**

*Level of Cultural Controls in Place*

Cultural controls (Established purpose): Degree of implementation (% of responding)							
Item	No		Not sure		Yes		Total ( <i>N</i> = 34) <i>M</i> ( <i>SD</i> )
School leadership team (SLT) exists	0.00		0.00		100.00		2.00 (0.00)
SLT addressed school improvement planning (SIP)	8.30		5.60		86.10		1.78 (.591)
SLT has a written purpose statement	6.10		33.30		60.60		1.53 (.617)
SIP reviewed when I was hired	61.10		13.90		25.00		0.64 (.878)
Cultural controls (Prioritization) Degree of implementation (% of responding)							
Item	No		Not sure		Yes		Total ( <i>N</i> = 34) <i>M</i> ( <i>SD</i> )
SLT reviews all existing initiatives	15.20		0.00		84.80		.85 (.364)
	Never	1 x per year	2x per year	1x3 per month	1 x month	1 x week	<i>M</i> ( <i>SD</i> )
Frequency for seeing SIP data	5.60	13.90	25.00	11.10	44.40	0.00	2.75 (1.317)
	Extremely unlikely	Unlikely	Neutral	Likely	Extremely Likely	<i>M</i> ( <i>SD</i> )	
SLT considers stopping current practices before adopting new ones	0.00	20.00	25.70	48.60	5.70	2.40 (.881)	

**Table 3***Level of Procedural Controls in Place*

Procedural controls (Preparing the team): Degree of implementation (% of responding)								
Item	Never	Almost never	Occasionally/ Sometimes	Almost every time	Every time	Total ( <i>N</i> = 34) <i>M</i> ( <i>SD</i> )		
Prepare staff for need of new approach	2.90	5.90	29.40	55.90	5.90	2.56 (.824)		
Procedural controls (Using data for planning and evaluation): Degree of implementation (% of responding)								
Item	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	Total ( <i>N</i> = 34) <i>M</i> ( <i>SD</i> )		
Tasks related to SIP assigned by multiple factors	11.10	13.90	13.90	55.60	5.60	2.31 (1.142)		
Item	Never true	Rarely True	Sometimes but infrequently true	Neutral	Sometimes true	Usually true	Always true	Total ( <i>N</i> = 34) <i>M</i> ( <i>SD</i> )
SIP is reviewed quarterly	0.00	8.30	19.40	19.40	11.10	25.00	16.70	3.75 (1.628)
Procedural controls (Using data for planning and evaluation): Degree of implementation (% of responding)								
Item	Social	Behavioral	Academic	Mental	Other	None apply		
Areas included in SIP Goals (check all that apply)	47.00	91.18	100.00	23.53	0.00	0.00		
Item	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	Total ( <i>N</i> = 34) <i>M</i> ( <i>SD</i> )		
SIP data reviewed for each area 3 x per year	0.00	11.40	11.40	54.30	22.90	3.89 (.900)		

**Table 4***Level of Workflow Controls in Place*

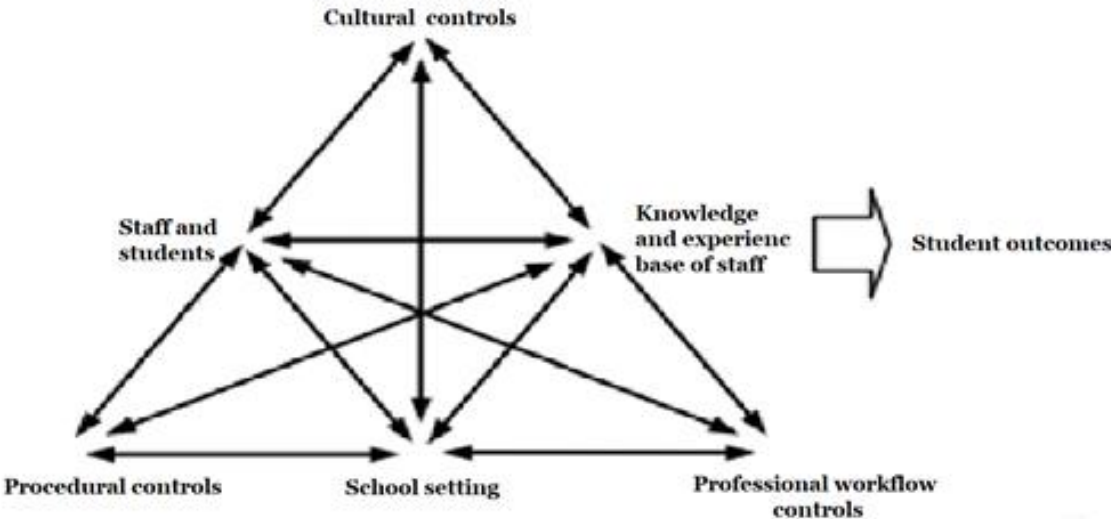
Procedural workflow controls (Practices): Degree of implementation (% of responding)								
Item	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	Total (N = 34) (M SD)		
Practices only implemented if support systems are in place	0.00	33.30	16.70	50.00	0.00	2.17 (.910)		
	Never true	Rarely True	Sometimes but infrequently true	Neutral	Sometimes true	Usually true	Always true	Total (N = 34) (M SD)
Piloting occurs prior to full implementation	5.60	11.10	13.90	13.90	33.30	22.20	0.00	3.25 (1.519)
Procedural workflow controls (Intensity of services and supports): Degree of implementation (% of responding)								
Item	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	Total (N = 34) (M SD)		
General education is the best setting for all students	0	8.30	25.00	55.60	11.10	2.69 (.786)		
All interventions are monitored by data	2.80	27.80	19.40	50.00	0.00	2.17 (.941)		



**Table 5***Connection Between School Improvement and School Ranking Data*

Responding	Median score on TIERS	Score on State School
School ID	for Each School	Improvement Score Card Data
School 1	63 %	80 %
School 2	59 %	81 %
School 3	58 %	81 %
School 6	57 %	81 %
School 9	52 %	76 %

Figure 1. The six interrelated components within Activity Theory



Note. Figure 1 was adapted from Engeström (2015).