THE IMPACT OF THE INTERCONNECTED SYSTEMS FRAMEWORK (ISF) ON SCHOOL CLIMATE: Results from a Randomized Controlled Trial

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Purpose

Does interconnecting PBIS with school mental health improve school climate above and beyond PBIS alone? School climate encompasses student and school staff’s experience of life at school, including the norms, goals, values, interpersonal relationships, safety, teaching and learning practices, social and physical environments, and organizational structures (Thapa et al., 2012; Voight & Nation, 2016). Its positive influence on student academic performance, school completion, disruptive behavior, bullying experience, and social-emotional wellbeing is well-documented in the research literature (Berkowitz et al., 2017; Thapa et al., 2013; Wang & Degal, 2016). School climate is also a positive influence for many indicators of teacher effectiveness, including instructional and implementation quality, retention, stress levels, self-efficacy, and job satisfaction (Thapa et al., 2012; Malinen & Savolainen, 2016). Given its importance, much attention has been given to efforts that could improve and maintain positive school climates.
Positive Behavioral Intervention and Supports (PBIS) Promotes Positive School Climate

A leading framework for promoting positive school climate for students and school staff is Positive Behavioral Interventions and Supports (PBIS, Ellis et al., 2022). Charlton and colleagues (2021) completed a systematic review of school-wide interventions and their impacts on student and staff perceptions of school climate. The authors identified 28 studies, eight of which focused on the relation between PBIS and school climate; PBIS implementation was associated with a large increase ($d = 0.61$ standard deviation) in positive school climate when compared to schools not implementing the framework. Ellis et al. (2022) documented improved school climate from PBIS including for schools with challenges such as being in highly rural environments and having limited resources.

However, our review indicates studies of PBIS and school climate have emphasized staff perceptions as a measure of school climate, with little inclusion of student or youth voice. Further, there are several other areas where improvements in our understanding of PBIS and school climate are needed. For example, most schools trained to implement PBIS subsequently implement Tier 1 well, but struggle with Tier 2 and Tier 3 systems, limiting effectiveness on students demonstrating problem behavior and/or with more intensive social-emotional-behavioral (SEB) challenges (Lee & Gage, 2020). There is also a pressing need for developing healthy social-emotional coping skills to navigate increasingly stressful life events, indicating the need to expand the lens emphasized by PBIS on overt behavior (Samiji et al., 2022). To address these and other challenges, the Interconnected Systems Framework (ISF) for school mental health (SMH) and PBIS was developed (Barrett et al., 2013; Eber et al., 2020). The ISF represents a strong partnership between education and mental health systems, capitalizing on assets of the two systems and the partnership between them; for example, in providing enhanced mental health resources for schools, and helping the mental health system be more relevant through operation in a more accessible and ecologically valid setting (Swain-Bradway et al., 2015). Thus, a very relevant questions is can positive impacts on school climate be enhanced through a more holistic focus on student functioning and through education-mental health system partnerships as in the ISF. That is the emphasis of this evaluation brief.
Purpose

Given the emerging positive relationship between PBIS and positive school climate, there is a need to explore the potential additive effect of connecting PBIS with SMH in the ISF. ISF is designed to improve delivery and outcomes of SMH via interconnection with PBIS’ three-tiered systems of support model. Among the related positive impacts on SEB in students, ISF should plausibly lead to improvements in school climate. This evaluation brief examines the impact of ISF on school climate compared to PBIS implementation. Specifically, does ISF have an impact on (a) student and (b) teacher perceptions of school climate above and beyond PBIS?

Method: Sample and Procedures

Data for this study come from a multistate, multisite randomized controlled trial study of ISF funded by the National Institute of Justice (Interconnecting PBIS and School Mental Health to Improve School Safety: A Randomized Trial; #2015-CK-BX-0018, 2016-2020). The study included 24 schools from the Southeastern U.S. who were trained and implemented PBIS in the years prior to the study following the guidance and resources of their school district. At the beginning of the study, schools were randomly assigned to one of three conditions described in Figure 1. Eight schools were randomly assigned to each condition with all schools meeting implementation fidelity benchmarks by the end of the two-year study except two in the ISF condition. These two schools were removed from this evaluation following precedence in prior publications reporting primary outcomes of the parent study (see Weist et al., 2022 for details). Thus, the final sample includes 8 schools in the PBIS condition, 8 in PBIS+SMH, and 6 in ISF.

The Authoritative School Climate Survey (ASCS) – Student Version and Adult Version were administered to study school students and faculty/staff, respectively, in 2015-16 prior to randomization, at the end of 2016-17 school year after one year of implementation, and again at the end of 2017-18 after two years of implementation. The student version was administered to two cohorts of students starting in 2015-16 and 2016-17, respectively, as they matriculated thru
4th and 5th grades. In Cohort 1, an average of 454 students in PBIS schools, 602 in PBIS+SMH schools, and 417 in ISF schools completed the ASCS-Student Version in 2015-2016 and 2016-2017. In Cohort 2, an average of 432 students in PBIS schools, 548 in PBIS+SMH schools, and 483 in ISF schools completed the ASCS-Student Version in 2016-2017 and 2017-2018. All school staff were invited to anonymously participate in the ASCS – Adult Version with an average of 158 teachers in ISF schools, 240 teachers in PBIS+SMH schools, and 140 teachers in PBIS schools completing the surveys. However, these data were collected anonymously and thus cannot be connected longitudinally at the individual teacher level.

**Key Findings**

Results of a series of multilevel regression models evaluating the impact of ISF on student and teacher perceptions of school climate while controlling for known student and school-level covariates demonstrated several positive and statistically significant impacts. A full summary of outcomes tested is reported in Table 1. A few significant findings emerged.

- Students and teachers in schools implementing ISF reported significantly more positive perceptions of Student Engagement (see Figure 2) than students and teachers in schools only implementing PBIS. As illustrated in Figure 4, the effect size of ISF on students’ perception of Student Engagement was $g = .47$ when compared to PBIS alone. This is considered a medium effect size. The effect size of ISF on teachers’ perception of Student Engagement was $g = .92$ when compared to PBIS alone, which is considered a large effect size.

- Teachers in ISF schools reported more positive perceptions of Discipline Practices (see Figure 2) than teachers in schools only implementing PBIS. As illustrated in Figure 4, the effect size of ISF on Discipline Practices was $g = .91$. This is considered a large effect size.

### TABLE 1. SUMMARY OF STATISTICALLY SIGNIFICANT IMPACTS ON SCHOOL CLIMATE IN SCHOOLS IMPLEMENTING THE INTERCONNECTED SYSTEMS FRAMEWORK (ISF)

<table>
<thead>
<tr>
<th>Scale</th>
<th>Statistically Significant impact in ISF Schools</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Authoritative School Climate — Student Version</strong></td>
<td></td>
</tr>
<tr>
<td>Student Engagement</td>
<td>Yes</td>
</tr>
<tr>
<td>School Disciplinary Structure (Discipline)</td>
<td>No</td>
</tr>
<tr>
<td>Respect for Students</td>
<td>No</td>
</tr>
<tr>
<td>Willingness to Seek Help (Seek Help)</td>
<td>No</td>
</tr>
<tr>
<td>Prevalence of Teasing and Bullying (Bullying)</td>
<td>No</td>
</tr>
<tr>
<td><strong>Authoritative School Climate — Adult Version</strong></td>
<td></td>
</tr>
<tr>
<td>Student Engagement in School (Student Engagement)</td>
<td>Yes</td>
</tr>
<tr>
<td>School Disciplinary Structure (Discipline)</td>
<td>Yes</td>
</tr>
<tr>
<td>Teacher Perceptions of Suspension Practices (Suspensions)</td>
<td>No</td>
</tr>
<tr>
<td>Teacher Respect for Students (Respect for Students)</td>
<td>No</td>
</tr>
<tr>
<td>Prevalence of Teasing and Bullying (Bullying)</td>
<td>No</td>
</tr>
<tr>
<td>Student Willingness to Seek Help from Teacher (Seek Help)</td>
<td>No</td>
</tr>
</tbody>
</table>

Note. Statistically significant defined as $p$-value $< .05$. All results are based on multilevel regression models with student, teacher, and school covariates included.
FIGURE 2. AUTHORITATIVE SCHOOL CLIMATE – STUDENT VERSION SCALE DESCRIPTIONS AND EXEMPLARS (KONOLD ET AL., 2014; KONOLD & CORNELL, 2015)

- **Student Engagement**
  - 6 items
  - I like this school
  - I feel like I belong at this school

- **School Disciplinary Structure (Discipline)**
  - 7 items
  - The school rules are fair.
  - The punishment for breaking school rules is the same for all students

- **Respect for Students**
  - 4 items
  - Most teachers and other adults at this school care about all students, listen to what students have to say

- **Willingness to Seek Help (Seek Help)**
  - 4 items
  - If I tell a teacher that someone is bullying me, the teacher will do something to help.
  - I am comfortable asking my teachers for help with my schoolwork.

- **Prevalence of Teasing and Bullying (Bullying)**
  - 3 items
  - Students in this school are teased about their clothing or physical appearance.
  - Bullying is a problem at this school.

FIGURE 4. INTERCONNECTED SYSTEMS FRAMEWORK IMPACT ON STUDENT AND TEACHERS’ PERCEPTIONS OF SCHOOL CLIMATE

- **Student Engagement**
  - Medium effect size ($g = .50$)
  - Large effect size ($g \geq .80$)

- **School Disciplinary Structure (Discipline)**
  - Small effect size ($g \leq .20$)
  - Medium effect size ($g = .50$)
  - Large effect size ($g \geq .80$)

- **Respect for Students**
  - Small effect size ($g \leq .20$)
  - Medium effect size ($g = .50$)
  - Large effect size ($g \geq .80$)

- **Willingness to Seek Help (Seek Help)**
  - Small effect size ($g \leq .20$)
  - Medium effect size ($g = .50$)
  - Large effect size ($g \geq .80$)

- **Prevalence of Teasing and Bullying (Bullying)**
  - Small effect size ($g \leq .20$)
  - Medium effect size ($g = .50$)
  - Large effect size ($g \geq .80$)
Key Take-Aways

PBIS is successfully implemented in thousands of schools across the globe and has evidence of success reducing student discipline, including office discipline referrals and out-of-school suspensions (Lee & Gage, 2020), as well as positively influencing school climate (Charlton et al., 2020). With the increased interest in improving school mental health services and the proliferation of the ISF, we investigated whether ISF impacts student and teacher perceptions of school climate above and beyond PBIS. Overall, we found students and teachers in schools implementing ISF report students being more engaged, an important indicator for their academic success (Thepa et al., 2009). Importantly, students and teachers agreed on this outcome suggesting the finding is robust and a reliable impact of the ISF. Further, teachers in schools implementing ISF also feel more positively about their disciplinary practices being used appropriately, an important indicator for teachers' effectiveness. Thus, schools interconnecting their PBIS and SMH frameworks may realize improvements in their students and teachers’ perceptions of school climate above and beyond that achieved by implementing PBIS alone.

More research is needed to understand the mechanisms of ISF that are directly impacting student engagement. It is possible that the implementation of universal, social-emotional, evidence-based practices or systematically screening for social-emotional well-being have an impact on student engagement. Students may feel that school personnel are more invested in their social wellbeing because of these practices, and, as a result, become more involved in the classroom and beyond.

The other important finding is that teachers in schools implementing ISF rated discipline practices as being equitable and fair. This suggests that these teachers perceive their colleagues as addressing behavior appropriately across the school community, as well as doing so themselves. Given that PBIS directly addresses discipline practices as part of the universal training, it is interesting that this finding only emerged in ISF schools. It may be that teachers in ISF schools are more attuned to the social and emotional needs of their students, including internalizing concerns, and as
Positive school climate is an important characteristic of a healthy and safe school and is associated with a myriad of positive student and teacher outcomes. School-wide interventions designed to improve school climate have demonstrated promising evidence of success. In this evaluation, ISF positively impacted school climate and can have a positive effect on student engagement and disciplinary practices above and beyond the effects of PBIS alone. The key findings here suggest schools should work to connect their PBIS and SMH initiatives to further improve student outcomes. To get started implementing ISF, several resources are available and next steps recommended.

**Recommendations for Getting Started**

1. District and Community Mental Health Leaders can explore materials available at the Center on PBIS website for tips and strategies as they explore how to adopt ISF. There are FACT SHEETS, and VIDEOS that can be useful to leaders who are interested in the steps for getting started with ISF. See the Center on PBIS Mental Health topic page for more details.

2. To get started, vested partners should consider forming a leadership team with a range of leaders who have the authority to make decisions about next steps. The team should also consider having an outside facilitator with experience in providing technical assistance and training. Together, the outside facilitator and team can use resources available at pbis.org to create a realistic action plan (Splett et al., 2022). There is an electronic book with an INSTALLATION GUIDE, which can be useful for leadership teams as they begin to install ISF.

3. Identifying district and mental health coaches who can work with school level teams and clinicians will ensure that installation steps are followed through within schools. A school level INSTALLATION GUIDE is available for coaches to use as they support school teams. In addition, there are two technical assistance briefs with examples of districts and schools who have found some success in their implementation efforts. One brief highlights efforts at the district level and one at the school level.

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* www.pbis.org
‡ https://www.pbis.org/video/the-interconnected-systems-framework-isf-overview-webinar
§ https://www.pbis.org/mental-health-social-emotional-well-being
¶ https://drive.google.com/file/d/11bnIZ_lv5NuvIAjrQWdo6QgJSryx/view
** https://drive.google.com/file/d/12neA1enSrvwq_kQgdjC1yBUHFB1sQKd/view
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