



# IES MTSS-B Trial: Key Takeaways for District and State Leaders

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The purpose of this brief is to review the latest randomized controlled trial (RCT) examining effects of positive behavioral interventions and supports (PBIS), an example of a multi-tiered system of support for behavior (MTSS-B), on a range of student outcomes. The study explored one approach to implementing PBIS and focused on students' behavioral and academic outcomes. Although it did not identify positive behavioral and academic effects for all students, students with the most behavior needs saw improved reading scores and decreased rates of disruptive behavior. Other important outcomes, including those related to classroom management and school climate, also saw some improvements. We share findings and key takeaways from this new study, in the context of the broader research literature, to guide local educational agency (LEAs) and state educational agencies (SEAs) in their use of MTSS to improve student outcomes.

## Key Takeaways

- ▶ Multiple rigorous studies show that PBIS has the potential to improve a range of student outcomes.
- ▶ Tier 1 PBIS can be most effective for the students who need it most.
- ▶ Don't expect PBIS to improve academic achievement without a focus on improving the quality of academic instruction.
- ▶ Supporting teachers' implementation of classroom PBIS practices is critical for improving student outcomes.
- ▶ Establishing district capacity may be necessary for sustainable improvement in outcomes.

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## What is PBIS, and What is the Current Evidence Base?

Positive behavioral interventions and supports (PBIS) is an evidence-based framework for teams to implement data, systems, and practices to support positive behaviors and help schools become safe, predictable, positive, and equitable learning environments. Over the past three decades, its development and use have been informed by science and refined through ongoing research. Many prior research studies have shown that PBIS can (a) improve student behavior, achievement, and climate; and (b) decrease bullying, peer exclusion and the use of exclusionary discipline (e.g., Angus & Nelson, 2021; Bradshaw et al., 2021; Bradshaw et al., 2012; Horner et al., 2009; Sprague et al., 2017; Waasdorp et al., 2012). Although these prior studies were rigorous, further research can help practitioners and leaders learn more about how to improve implementation and student outcomes.

## What was the Latest Study?

The Institute of Education Sciences (IES) planned and conducted an independent RCT (that is, a randomized controlled trial not led by PBIS developers) of PBIS, the most common multi-tiered system of support for behavior (MTSS-B). The study (Condliffe et al., 2022; <https://ies.ed.gov/ncee/pubs/2022008/>) involved 89 elementary schools from nine districts that were not already implementing PBIS. Independent researchers randomly assigned these schools to receive training and coaching to support PBIS implementation (intervention schools) or to continue to use their typical strategies for student support (comparison schools).

Intervention schools received training and coaching in PBIS over a two-year period. During both years, training and coaching supported (a) school teams in monitoring Tier 1 implementation and (b) teachers in implementing classroom PBIS practices. During the second year, training and coaching also focused on school teams' implementation of Check-In Check-Out (CICO) to support students with additional behavior needs.

The trial examined 59 outcomes, including 16 fidelity outcomes, 10 primary student outcomes, and 33 exploratory outcomes. Fidelity

outcomes included PBIS fidelity of implementation at Tier 1 and Tier 2, as well as classroom implementation of PBIS practices. Predetermined primary student outcomes included teacher-rated disruptive behavior and academic achievement (reading and math), both for all students in the school and for the 15% of students with additional behavior support needs at the start of the study. Exploratory outcomes included direct observation of classroom functioning and disruptive behaviors and teacher-rated school climate.

## What were the Findings?

Results showed that educators were able to implement Tier 1 and 2 systems and practices with fidelity, which led to significant improvement in some but not all student outcomes.

- ▶ In terms of primary outcomes for **all students** in the school, teacher-rated behavior and achievement improved, although improvements were not statistically significant.
- ▶ For the **15% of students with additional behavior support needs**, there were statistically significant improvements in teacher-rated behavior and reading (but not math) achievement. Given that without effective support, students with additional behavior support needs experience increased exclusionary discipline and educators experience increased stress and burnout (e.g., Brunsting et al., 2022; Soares et al., 2022; Sullivan et al., 2014), improvements for this group of students are particularly meaningful.
- ▶ In terms of exploratory outcomes **for all students**, there were statistically significant improvements in direct classroom observations of behavior, teacher-rated teacher-student relationships, and staff collegiality.

## How do these Findings Relate to those from Previous Studies?

This study is one of over five RCTs showing positive effects of PBIS on valued student outcomes. A notable finding (consistent with a previous RCT; Bradshaw et al., 2015), was that PBIS was most effective for students with the most behavior support needs. In that previous study, however, there were also significant positive effects for all students, not simply for students with the

most needs [Bradshaw et al., 2012; Waasdorp et al., 2012]. One possible reason for the non-significant findings for all students in the current study could be because most students had low rates of disruptive behavior before the trial, meaning that there was less need for support and less room for improvement. Taken together, PBIS does seem to be most effective for students with elevated behavior support needs. In addition, the improvements in school climate and teacher behaviors are also consistent with prior studies [Bradshaw et al., 2008; 2009], further highlighting that high quality PBIS implementation improves important organizational and classroom systems [Bradshaw et al., 2021].

### What are the Key Takeaways?

Along with the broader research base on PBIS, there are some important key takeaways for leaders at the LEA and SEA levels to support implementation of MTSS-B:

- 1. Multiple rigorous studies show that PBIS can improve a range of student outcomes.** When implemented with fidelity, research teams from different organizations have demonstrated that PBIS can improve student behavior, emotional regulation, and achievement. PBIS also reduces disruptions, the use of exclusionary discipline, and racial disparities in exclusionary discipline (<https://www.pbis.org/resource/references-for-the-evidence-base-of-pbis>). These outcomes have been demonstrated to be relatively rapid (e.g., within one or two years), despite the complexity of systems change.
- 2. Tier 1 PBIS can be most effective for the students who need it most.** Across multiple studies, outcomes appear to be strongest for students with the greatest social, emotional, and behavioral support needs. That is, effective Tier 1 systems provide preventive support for all students and those who need more support without pulling out, labeling, or stigmatizing students. Furthermore, simple Tier 2 approaches, like CICO, can be layered on top of Tier 1 practices to support students with unmet needs, in the least restrictive environment.
- 3. Don't expect PBIS to improve academic achievement without a focus on improving the quality of academic instruction.** Although PBIS can lead to improved academic outcomes, research findings are mixed [Kim et al., 2018]. Such mixed findings indicate that PBIS may enable academic instruction to take place without disruption, but the academic instruction itself needs to be evidence-based and implemented with fidelity to improve student achievement. Recent research indicates the promise of addressing both academic and behavior support within an integrated MTSS model [Chaparro et al., 2016; Scott et al., 2019; Swain-Bradway et al., 2019]. Recently, IES funded an Integrated MTSS Research Network to further explore the promise of integrating academic and behavior support within an MTSS framework through rigorous studies conducted by four funded research teams. [See [www.mtss.org](http://www.mtss.org) to learn more about current and future projects of the I-MTSS Research Network and the four research teams].
- 4. Supporting teachers' implementation of classroom PBIS practices is critical for improving student outcomes.** Classroom PBIS implementation has been associated with improved student outcomes, racial equity in student outcomes, and sustained implementation of PBIS over time [Childs et al., 2016; Mathews et al., 2014; Tobin & Vincent, 2011]. With the support of the coaches in this study, teachers improved their implementation of classroom practices, as evidenced by increased fidelity, improved classroom functioning, improved teacher-student relationships, and decreased observed disruptive behaviors.
- 5. Establishing district capacity may be necessary for sustainable improvement in outcomes.** Due to the constraints of the trial's design, it was not possible for the trainers and coaches to work with district leadership teams to install district-level systems to support schools' implementation efforts. This lack of district systems may

have led to the lack of sustained effects seen in the trial. In other studies, district capacity has been shown to be associated with durable implementation of PBIS (Kittelman et al., in press; McIntosh et al., 2018).

## Conclusions

This most recent study led by IES adds to a large literature base showing that when implemented with fidelity, PBIS can lead to improvements in valued student outcomes and that students with the highest behavior support needs may benefit the most. However, it is important to note that PBIS, as a framework, is only as good as the practices implemented within it. Not all practices implemented within an MTSS framework are equally effective—some similar looking interventions are more effective than others (Durlak et al., 2011). With any interventions, it is critically important to select those that are most likely to work (Epstein et al., 2008; Nisar et al., 2022), as well as monitor implementation and outcomes to assess and ensure effectiveness. Also, to improve academic and behavior outcomes, it is important to (a) prioritize effective academic and behavior support and (b) consider integrating supports within an integrated MTSS framework. Finally, in this study, the students with the most need benefited the most—both behaviorally and academically—from the supports provided. Future research can further explore various aspects of PBIS implementation in relation to overall student outcomes, as well as essential elements necessary for achieving sustained outcomes.

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## References

- Angus, G., & Nelson, R. B. (2021). School-wide positive behavior interventions and supports and student academic achievement. *Contemporary School Psychology, 25*(4), 443-465.
- Bradshaw, C. P., Koth, C. W., Thornton, L. A., & Leaf, P. J. (2009). Altering school climate through School-wide Positive Behavioral Interventions and Supports: Findings from a group-randomized effectiveness trial. *Prevention Science, 10*, 100-115.
- Bradshaw, C. P., Koth, K., Bevans, K. B., Jalongo, N., & Leaf, P. J. (2008). The impact of school-wide positive behavioral interventions and supports on the organizational health of elementary schools. *School Psychology Quarterly, 23*, 462-473.
- Bradshaw, C. P., Pas, E. T., Debnam, K. J., & Johnson, S. L. (2021). A randomized controlled trial of MTSS-B in high schools: Improving classroom management to prevent EBDs. *Remedial and Special Education, 42*(1), 44-59. <https://doi.org/10.1177/0741932520966727>
- Bradshaw, C. P., Waasdorp, T. E., & Leaf, P. J. (2012). Effects of school-wide positive behavioral interventions and supports on child behavior problems and adjustment. *Pediatrics, e1136-e1145*. <https://doi.org/10.1542/peds.2012-0243>
- Bradshaw, C. P., Waasdorp, T. E., & Leaf, P. J. (2015). Examining variation in the impact of school-wide positive behavioral interventions and supports: Findings from a randomized controlled effectiveness trial. *Journal of Educational Psychology, 107*(2), 546-557. <https://doi.org/10.1037/a0037630>
- Brunsting, N. C., Bettini, E., Rock, M., Common, E. A., Royer, D. J., Lane, K. L., Xie, F., Chen, A., & Zeng, F. (2022). Working Conditions and Burnout of Special Educators of Students With EBD: Longitudinal Outcomes. *Teacher Education and Special Education*. Manuscript published online first. <https://doi.org/10.1177/08884064221076159>
- Chaparro, E. A., Helton, S., & Sadler, C. A. (2016). Oregon Effective Behavioral and Instructional Support Systems initiative: Implementation from district and state level perspectives. In K. McIntosh & S. Goodman (Eds.), *Integrated multi-tiered systems of support: Blending RTI and PBIS* (pp. 267-286). Guilford.
- Childs, K. E., Kincaid, D., George, H. P., & Gage, N. A. (2016). The relationship between school-wide implementation of positive behavior intervention and supports and student discipline outcomes. *Journal of Positive Behavior Interventions, 18*(2), 89-99. <https://doi.org/10.1177/1098300715590398>
- Condliffe, B., Zhu, P., Doolittle, F., van Dok, M., Power, H., Denison, D., & Kurki, A. (2022). *Study of Training in Multi-Tiered Systems of Support for Behavior: Impacts on Elementary School Students' Outcomes* (NCEE 2022-008). U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance. <http://ies.ed.gov/ncee>
- Durlak, J. A., Weissburg, R. P., Dymnicki, A. B., Taylor, R. D., & Schellinger, K. B. (2011). The impact of enhancing students' social and emotional learning: A meta-analysis of school-based universal interventions. *Child Development, 82*, 405-432.
- Epstein, M., Atkins, M., Cullinan, D., Kutash, K., & Weaver, R. (2008). *Reducing Behavior Problems in the Elementary School Classroom: A Practice Guide* (NCEE #2008-012). National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education. Retrieved from <http://ies.ed.gov/ncee/wwc/publications/practiceguides>.
- Flannery, K. B., Fenning, P., Kato, M. M., & McIntosh, K. (2014). Effects of School-wide Positive Behavioral Interventions and Supports and fidelity of implementation on problem behavior in high schools. *School Psychology Quarterly, 29*, 111-124. <https://doi.org/10.1037/spq0000039>

- Horner, R. H., Sugai, G., Smolkowski, K., Eber, L., Nakasato, J., Todd, A. W., & Esparanza, J. (2009). A randomized, wait-list controlled effectiveness trial assessing school-wide positive behavior support in elementary schools. *Journal of Positive Behavior Interventions*, 11, 133-144.
- Kim, J., McIntosh, K., Mercer, S. H., & Nese, R. N. T. (2018). Longitudinal associations between SWPBIS fidelity of implementation and behavior and academic outcomes. *Behavioral Disorders*, 43, 357-369. <https://doi.org/https://doi.org/10.1177%2F0198742917747589>
- Kittelman, A., Mercer, S. H., McIntosh, K., Morris, K. R., & Hatton, H. L. (in press). Validation of a measure of district systems implementation of positive behavioral interventions and supports. *Remedial and Special Education*.
- Mathews, S., McIntosh, K., Frank, J. L., & May, S. L. (2014). Critical features predicting sustained implementation of school-wide positive behavior support. *Journal of Positive Behavior Interventions*, 16, 168-178.
- McIntosh, K., Mercer, S. H., Nese, R. N. T., Strickland-Cohen, M. K., Kittelman, A., Hoselton, R., & Horner, R. H. (2018). Factors predicting sustained implementation of a universal behavior support framework. *Educational Researcher*, 47(5), 307-316. <https://doi.org/10.3102%2F0013189X18776975>
- Nisar, H., Elgin, D., Bradshaw, C., Dolan, V., Frey, A., Horner, R., Owens, J., Perales, K., & Sutherland, K. (2022). *Promoting Social and Behavioral Success for Learning in Elementary Schools: Practice Recommendations for Elementary School Educators, School and District Administrators, and Parents Research Services*. Contract No. 92990019F0319. Arlington, TX.
- Scott, T. M., Gage, N. A., Hirn, R. G., Lingo, A. S., & Burt, J. (2019). An examination of the association between MTSS implementation fidelity measures and student outcomes. Preventing School Failure: *Alternative Education for Children and Youth*, 63(4), 308-316. <https://doi.org/10.1080/1045988X.2019.1605971>
- Soares, D. A., Harrison, J. R., Melloy, K., Baran, A., & Mohlmann, M. (2022). *Practice-to-Research: Responding to the Complexities of Inclusion for Students with Emotional and Behavioral Disorders with Recommendations for Schools*. NASSP Bulletin, 106(2), 77-108. <https://doi.org/10.1177/01926365221097434>
- Sprague, J. R., Biglan, A., Rusby, J. C., Gau, J. M., & Vincent, C. G. (2017). Implementing school wide pbis in middle schools: Results of a randomized trial. *Journal of Health Science & Education*, 1(2), 1-10.
- Sullivan, A. L., Van Norman, E. R., & Klingbeil, D. A. (2014). Exclusionary discipline of students with disabilities: Student and school characteristics predicting suspension. *Remedial and Special Education*, 35(4), 199-210.
- Swain-Bradway, J., Gulbrandson, K., Galston, A., & McIntosh, K. (2019). *Do Wisconsin schools implementing an integrated academic and behavior support framework improve equity in academic and school discipline outcomes?* Center on Positive Behavioral Interventions and Supports. [www.pbis.org](http://www.pbis.org).
- Tobin, T. J., & Vincent, C. G. (2011). Strategies for preventing disproportionate exclusions of African American students. *Preventing School Failure*, 55, 192-201. <https://doi.org/10.1080/1045988X.2010.532520>
- Waasdorp, T. E., Bradshaw, C. P., & Leaf, P. J. (2012). The impact of schoolwide positive behavioral interventions and supports on bullying and peer rejection. *Archives of Pediatrics & Adolescent Medicine*, 166(2), 149-156.