Multi-Tiered Systems of Support and Teacher Turnover in North Carolina During the Covid-19 Pandemic

OVERVIEW

Teacher turnover is a growing issue in the U.S., and it imposes a large financial and academic burden on school districts across the nation.[1] The financial toll alone is significant: replacing just one teacher can cost a large urban district about $25,000, diverting critical funds from instruction and professional development.[1] Teacher turnover has also been linked to lower academic outcomes for students, even though turnover tends to be higher among lower-performing teachers.[2,3] Teachers report that a variety of factors contribute to their decision to leave, including increased professional stress, perceived lack of support and resources, and persistent student behavioral and academic challenges.[4] Multi-Tiered Systems of Support (MTSS) is a framework that has been widely adopted across schools in part due to its ability to address the students' academic and behavioral challenges.[5] As such, it could also have important consequences for teacher burnout and retention as well. In this brief, we analyze whether MTSS protects schools from teacher turnover during challenging times, such as the pandemic, when there are increasingly diverse learning and behavioral needs.

BACKGROUND

MTSS is a school improvement framework that supports academic, behavioral, social, and emotional instruction and support through universal, targeted and intensive instruction.[6] MTSS, when implemented effectively, directly targets the primary non-compensation drivers of teacher turnover.[6] Supportive MTSS frameworks have been found to reduce teacher stress, while providing high-quality training, which can reduce burnout by improving educator efficacy.[6] While there is no research to date on the effects of MTSS on teacher turnover, we hypothesize that well-implemented MTSS structures provide effective and streamlined supports that alleviate teacher burnout that can lead to teacher turnover.[7]

MTSS tackles the challenging school culture and student outcomes associated with teacher turnover.[8] By systemically improving student behavior and academic performance, MTSS has the potential to change the daily teaching experience.[9] Research indicates that a systematically implemented MTSS framework, supported by interventions to shift educator mindsets, helps alleviate staff resistance and ambivalence toward student behavioral challenges.[6,10]

This shift fosters a school context where evidence-based practices make the daily roles of teaching and coaching both easier and more effective.[6] The integration of multi-tiered systems of support targeting students behaviors has been shown to directly enhance the learning environment, [11] as Tier 1 and targeted interventions significantly reduce disruptive behaviors, leading to long-term behavioral improvements.[8] Additionally, social-emotional learning implemented at Tier 1 has been shown to improve both student behavior and academics.[12] When challenging student needs are addressed preemptively and systemically, the emotional and professional burden on the classroom teacher is shown to be dramatically lowered, solidifying retention.[13] This strategic investment is found to be especially valuable in foundational settings, like elementary schools, where MTSS can effectively ensure that when implemented equitably, MTSS reduces reading achievement gaps, creating a positive cycle of success that improves school culture and secures the long-term stability of the educator workforce.[6]

We add to this literature by estimating the effects of improved MTSS on teacher turnover. Most of the evidence to date on MTSS is correlational and often does not address important difficult-to-measure confounds that may be an alternative explanation for the relationship between MTSS and outcomes of interest that could be addressed with randomized control trials, quasi-experimental or longitudinal data methods. We add to the literature by exploiting longitudinal data on MTSS and teacher turnover, which permits us to separate effects of MTSS from time-invariant difficult-to-measure confounds, such as principal quality.

MTSS IN NORTH CAROLINA

In North Carolina, school MTSS teams assess implementation using the (FAM-S), which is typically administered annually through a facilitated process led by district MTSS staff. During this process, school teams review evidence, reach consensus on ratings across six critical components (leadership, building capacity/Implementation Infrstructure, communication and collaboration, problem solving proces, tiers of instruction and intervention model, data/evaluation), and identify priorities for continuous improvement. Results are also used by district MTSS teams to inform professional development, coaching, and implementation supports. The 41 FAM-S items are each rated on a 4-point scale. A score of 0 (Not Implementing) indicates no action toward implementation of the item. Scores of 1 (Emerging/Developing) and 2 (Operationalizing) indicate that the item might be partially in place but continuing to develop.

We will combine information from the FAM-S with information from SHAPE, which is a tool used by school districts to assess school-based mental health supports; it is assessed at the district level. We focus on 3 areas that relate to MTSS: teaming, early intervention & treatment services & support, and mental health promotion. Early intervention and treatment services and supports captures Tier 2 and 3 supports for mental health. Mental health promotion captures tier 1 support. These domains are measured on a 1–6 scale: composite scores from 1.0–2.9 are considered “Emerging,” while scores from 3.0–4.9 are classified as “Progressing”. “Mastery” is achieved at a score of 5.0 or above. *Teaming* captures the idea that schools have sufficient staff, communication and collaboration to address student mental health issues, which is core to MTSS.

We have data on FAM-S (from 2019/20 to 2021/22) for select school districts who were willing to share their FAM-S data with us and SHAPE measures of MTSS (2017/18-2021/22) for elementary, middle and high schools in districts who completed SHAPE. (N=267-294 schools for FAM-S and 25-1545 schools for SHAPE depending on the year). Our sample is slightly less economically disadvantaged that the population of NC Public Schools over the same time period. Our sample of FAM-S schools is 50% economically disadvantaged compared to 52% for NC public schools that did not share FAM-S. Our sample of schools in districts with SHAPE data are 47% economically disadvantaged compared to 52% for NC public schools that do not report SHAPE data.

Figures 1a and b show average scores on FAM-S and SHAPE measures of MTSS across different domains. Figure 1a shows that on average schools score between 1.5 and 1.8 on different domains, placing them between the emerging/developing level of implementation (1) and operationalizing level (2). The results are similar for SHAPE (Figure 1b), with schools scoring on average in the "Progressing stage" for MTSS-related aspects of mental health services, with scores ranging from 3.1 to 3.3. Leadership is the strongest score for FAM-S. *Leadership* captures aspects such as whether the principal supports MTSS, whether there is a school leadership team for MTSS, the extent to which leadership facilitates implementation of MTSS as part of their school improvement planning, provides professional development for implementing MTSS, creates a teaming structure for implementation across academic and behavioral supports. Relatedly the highest score for SHAPE is in the teaming structure.

Figure 1a: District Team Average Self-Rating on Multi-Tiered Systems of Support (FAM-S) 2019/20 to 2021/22

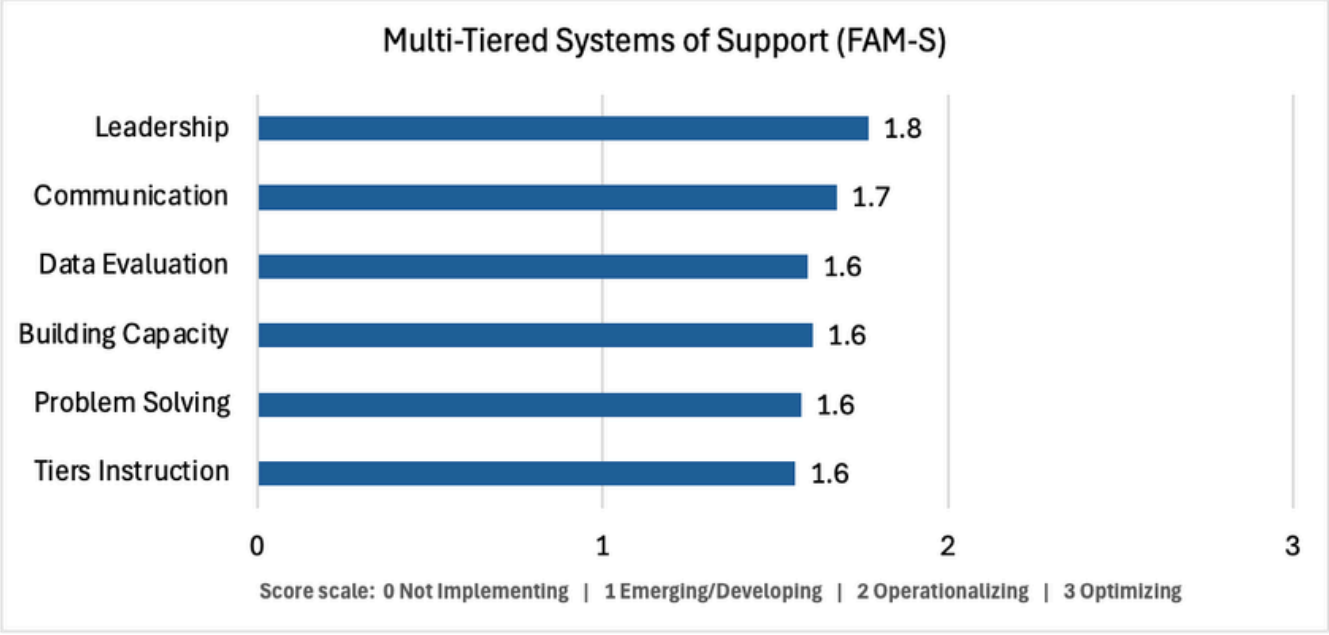
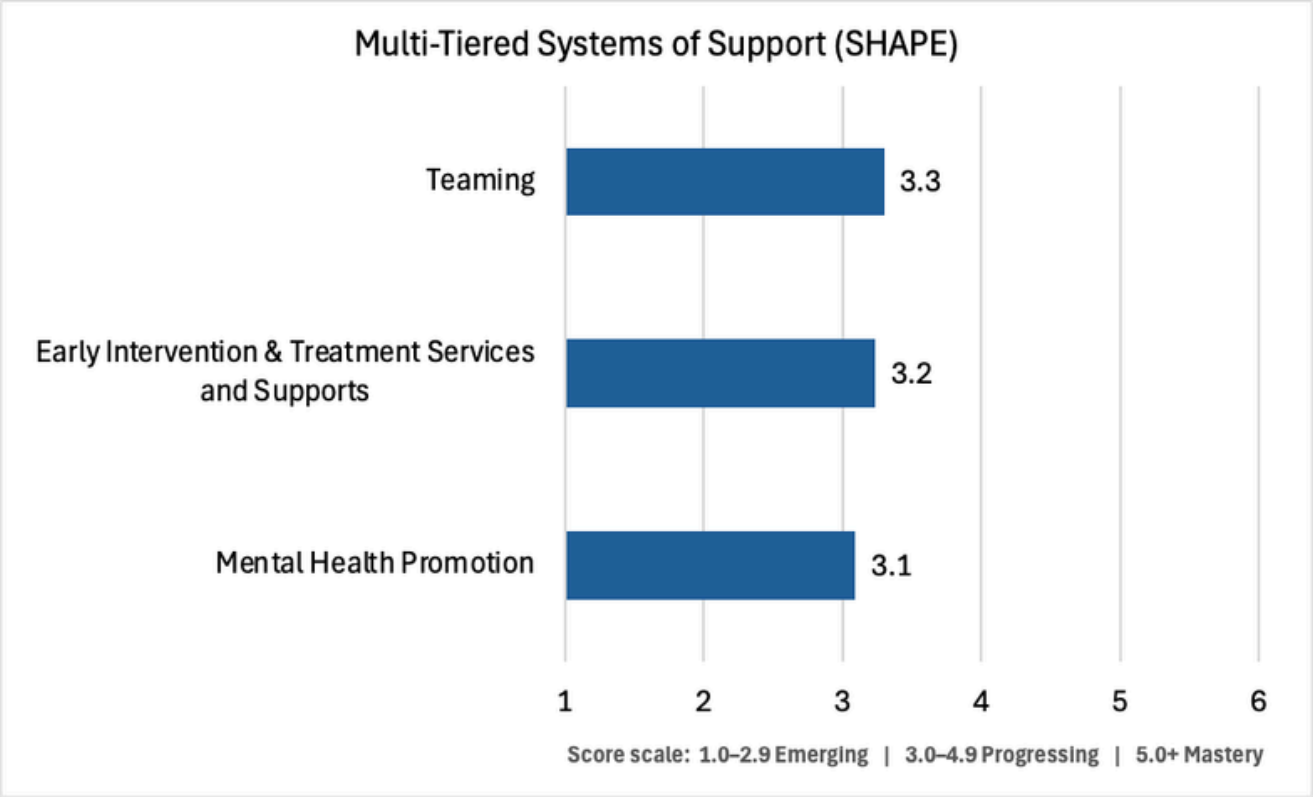


Figure 1b: District Team Average Self-Rating on Multi-Tiered Systems of Support (SHAPE) 2017/18 to 2021/22



Figures 2a and 2b show the average scores on FAM-S and SHAPE measures contrasting schools that are above and below the median percentage economic disadvantage (ED). While we might be concerned that schools serving more economically disadvantaged students may be more under-resourced to implement MTSS, we find that FAM-S and SHAPE scores are very similar across more and less economically disadvantaged schools.

Figure 2a: District Team Average Self-Rating on MTSS by Above/Below Median Economic Disadvantage (FAM-S)

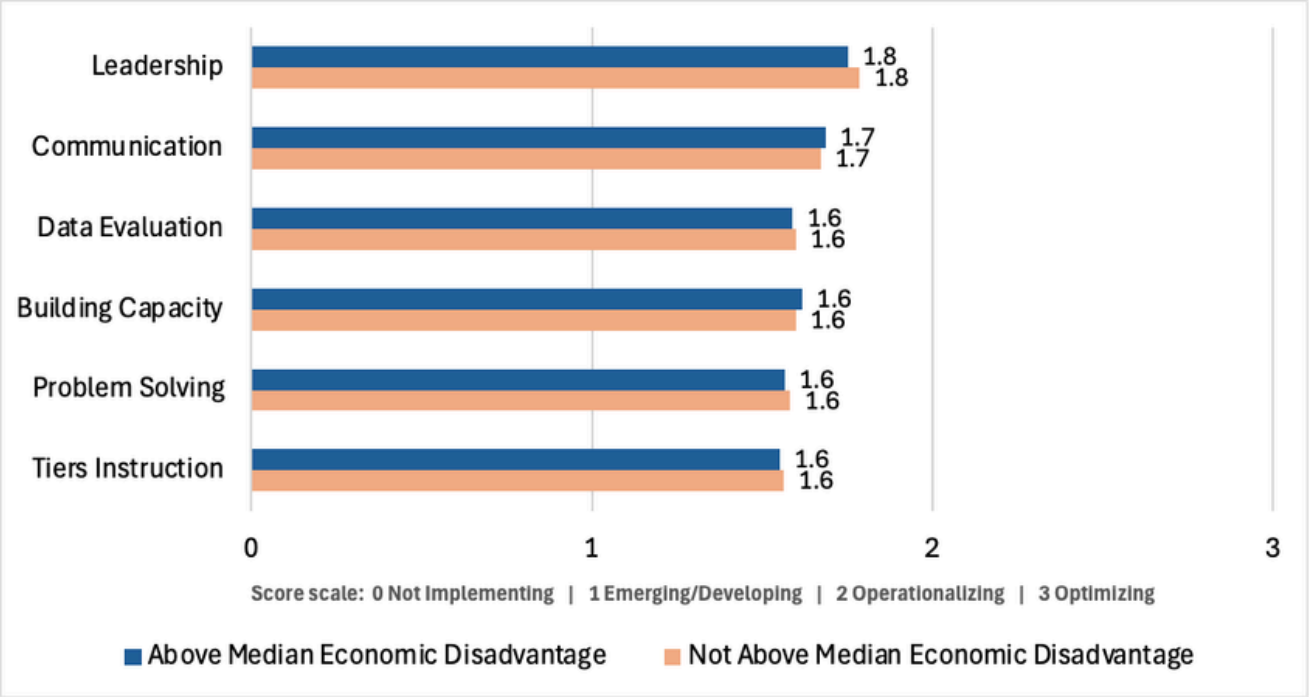
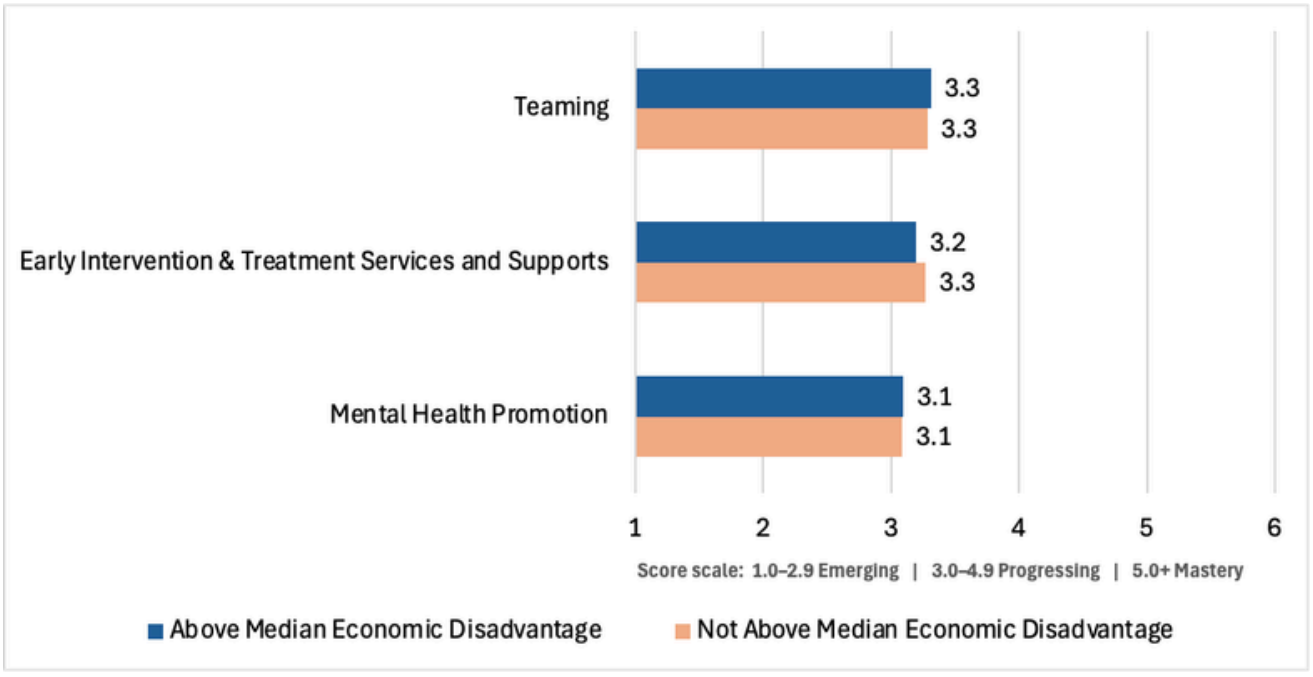


Figure 2b: District Team Average Self-Rating on MTSS by Above/Below Median Economic Disadvantage (SHAPE)



Figures 3a and 3b present average scores on FAM-S and SHAPE measures of MTSS, comparing schools with above-median teacher turnover to those that have below-median turnover. Our hypothesis is that schools with higher turnover would have lower MTSS scores, given that MTSS would serve as a protective factor for teacher turnover. Figure 3a shows that across the board schools with higher turnover have lower ratings on the FAM-S. Similar gaps are not present in SHAPE (Figure 3b), possibly because measurement at the district level may obscure some of the differences across schools in MTSS implementation.

Figure 3a: District Team Average Self-Rating on MTSS by Above/Below Median Teacher Turnover (FAM-S)

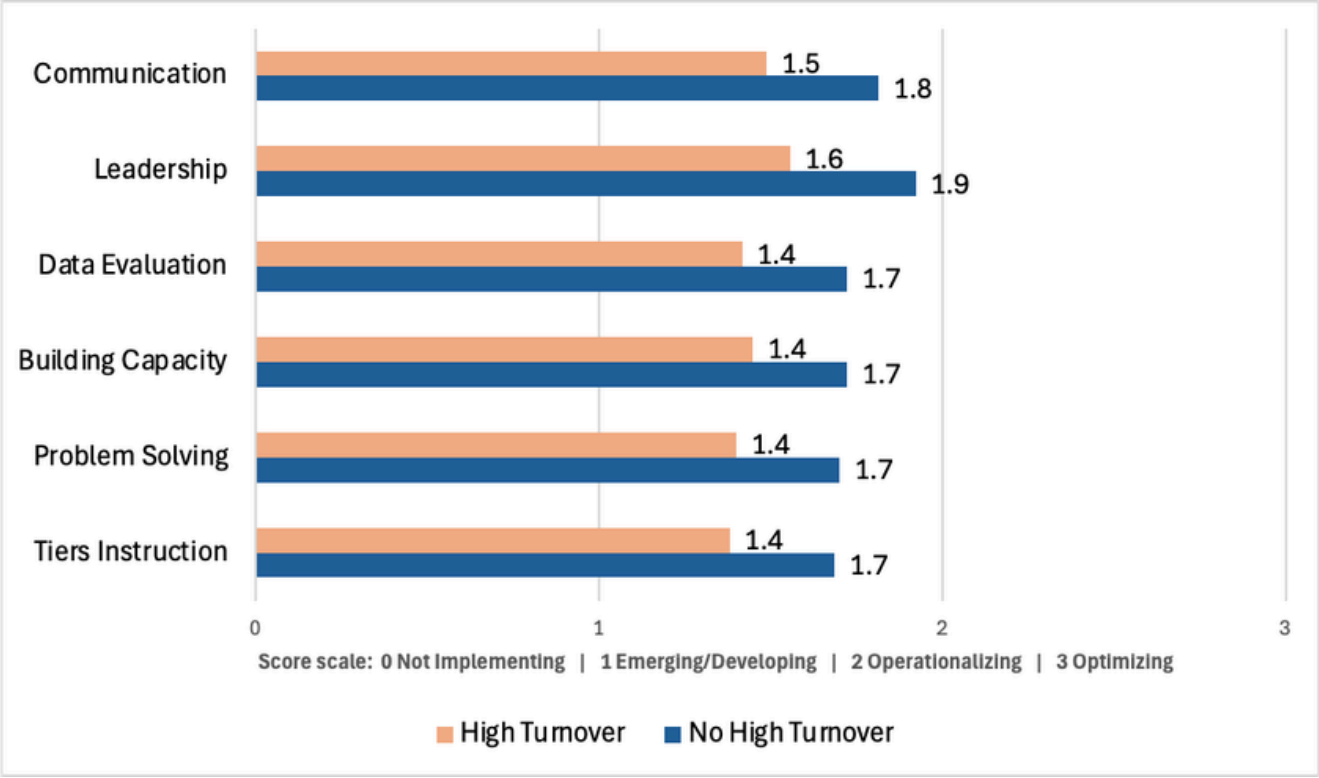
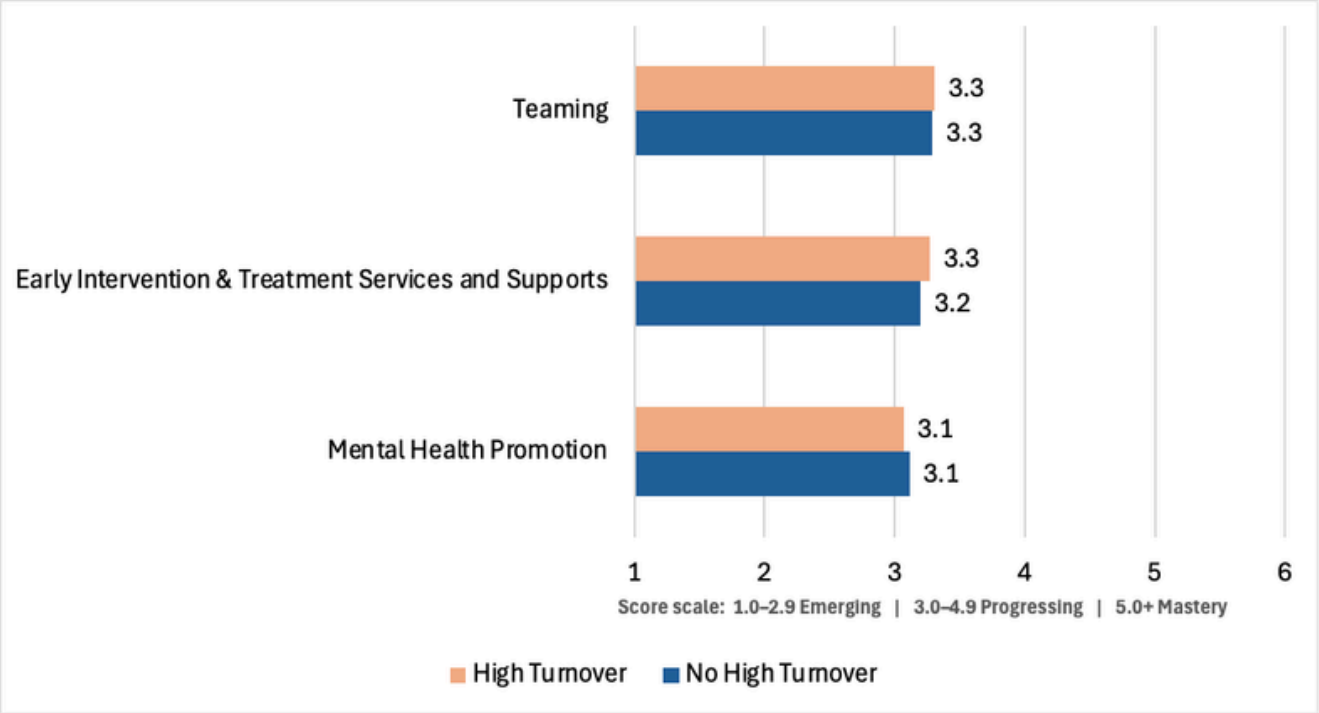


Figure 3b: District Team Average Self-Rating on MTSS by Above/Below Median Teacher Turnover (SHAPE)



EFFECT OF MTSS ON TEACHER TURNOVER

We now consider whether improvements in MTSS are associated with lower teacher turnover. We use a regression framework to control for other factors that could be associated with MTSS and lower turnover, like teacher characteristics and school composition.[i] We exploit the longitudinal nature of the data to take us a step closer to understanding causal effects of MTSS, by controlling for difficult to measure fixed school attributes that may contribute to higher MTSS and lower turnover (for the case of SHAPE) and fixed teacher attributes (for the case of FAM-S). We consider effects of the overall index of MTSS (which combines all domains) and then a separate regression where we control for all domains to see if some domains are more protective than others. Findings from both regressions are reported in Figure 3 for FAM-S and Figure 4 for SHAPE data. MTSS measures are standardized, so that findings can be interpreted as effects of a standard deviation increase in the given measure, as is common in the literature. Thick lines denote 95% confidence intervals and thin lines 90% confidence intervals.

We find that overall improvements in MTSS have a protective effect on teacher turnover. With general MTSS (Figure 3), an improvement of 1 standard deviation, decreases teacher turnover by about 1 percentage point. With MTSS as measured by SHAPE (Figure 4), a 1 standard deviation increase in MTSS lowers teacher turnover by almost 2 percentage points. Among the different domains of MTSS as measured by FAM-S, we find that communication is particularly protective. For SHAPE, we cannot detect differences across the domains of MTSS supports, potentially due to a high degree of correlation.

[i] In particular, we control for number of students in the school, teacher characteristics (experience and experience-squared, novice teacher, Nationally Board Certified, whether the teacher has a license to teach in their subject, teacher salary, tenure and tenure-squared), teacher's average class size, year and grade indicators, student characteristics (percent Asian, Black, Hispanic, other-race/ethnicity, and percent economically disadvantaged), and teacher fixed effects. For SHAPE, we control for school fixed effects rather than teacher fixed effects; effect sizes are very similar but insignificant with teacher fixed effects, likely because SHAPE is measured at the district level and so has less variation to work with than FAM-S. SHAPE estimates are clustered at the district level to account for the fact that it is a district level measure, and similar FAM-S at the school level.

Figure 3 Association of Average MTSS Ratings as Measured by FAM-S with Lower Teacher Turnover (Effect Sizes/Standard Deviation Units)

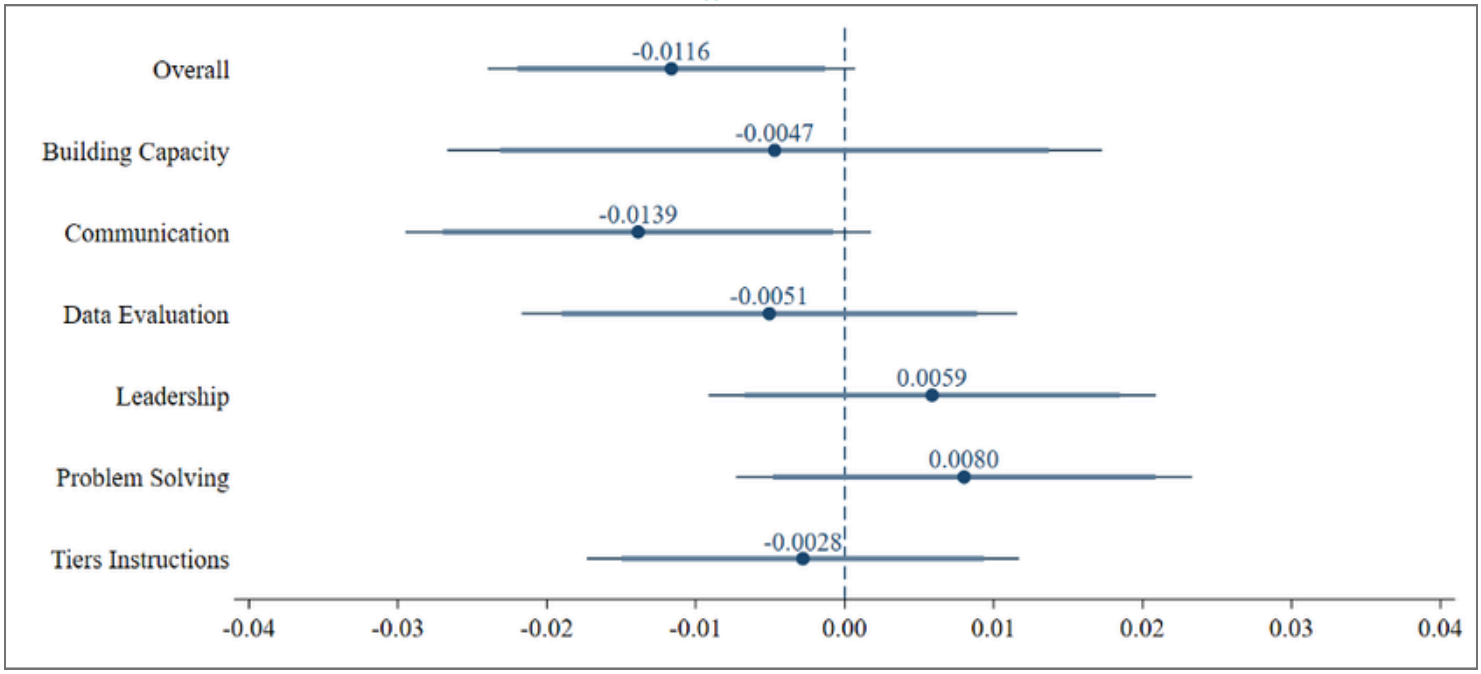
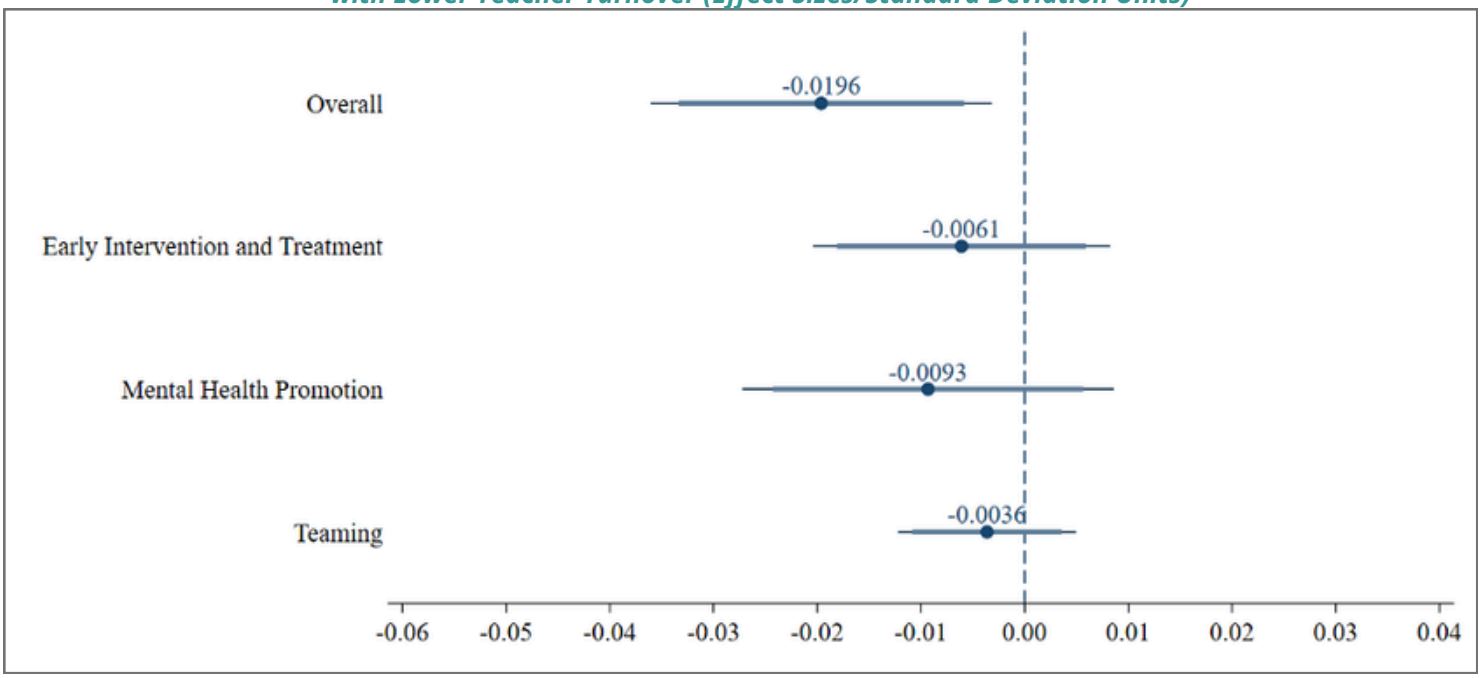


Figure 4. Associations of Average MTSS-Based Mental Health Supports Ratings as Measured by SHAPE with Lower Teacher Turnover (Effect Sizes/Standard Deviation Units)



We find (not reported) that effects are not statistically significantly different across years, but overall MTSS has the strongest protective effects on turnover in the 2021/22 academic year. This suggests that it was a particularly strong protective factor during the return from the pandemic when teachers faced significant increases in student behavioral and academic needs.

We also test for heterogeneity in effects by economic disadvantage, school size and grade (e.g., elementary, middle and high school). These findings are more robust for the SHAPE-based measures of MTSS because the sample is larger, though no results are significantly different from each other. We find larger protective effects in larger schools and schools with more economically disadvantaged students. Interestingly, SHAPE-based MTSS supports are slightly more protective for teachers in schools with less behavioral challenges and learning needs. Results are noisy when comparing across grade-levels and for FAM-S measures of MTSS. With FAM-S measures of MTSS we do find particularly strong protective effects for schools serving more economically disadvantaged students.

CONCLUSION

We provide new evidence that Multi-Tiered Systems of Support may help alleviate teacher turnover in North Carolina, particularly in schools with more economically disadvantaged students. Combined with evidence in other studies of the importance of MTSS for supporting students with diverse learning and behavioral needs, this research underlines the importance of continuing to develop and enhance MTSS supports to foster student well-being and a stable teacher workforce.

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