



Evaluating the Impact of TDOE's Early Reading Training on the **2022–2023** TN-URS Performance in Grades K–1

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Background

This report is the second in a series evaluating the impact that teachers' participation in different types and combinations of professional development has on their students' reading performance. The [first report](#) addressed the outcomes of the initial kindergarten through Grade 1 (Grades K–1) cohort of students who were beginning their formal reading instruction during the 2021–2022 school year when the professional development was in its first year of implementation. The current report extends upon the earlier findings by examining the outcomes of students in Grades K–1 in the subsequent school year, 2022–2023. Whereas the first report focused on outcomes among the subgroup of students not reading proficiently at the beginning of the school year, the current report examines the outcomes of all K-1 students as well as the subgroups divided by those who were and were not reading proficiently at the beginning of the school year.

Professional Development Offerings

As of August 1, 2023, the 2021 [Tennessee Literacy Success Act](#) (TLSA) required that educators licensed to teach reading in Grades K–5 must complete an approved foundational literacy skills course or demonstrate equivalent knowledge on a test of those skills. To support fulfilling that requirement, the Tennessee Department of Education (TDOE) provided Early Reading Training (ERT) Course 1. This was a series of asynchronous modules totaling 30 hours of self-paced learning designed to increase teacher knowledge of foundational literacy skills instruction.

Teachers who completed ERT Course 1 and scored an 80% or better on the post-training assessment then had the option of participating in an additional 30 hours of ERT Course 2 training on how to use assessment data and appropriately implement high-quality instructional materials.

From 2021 to 2024, ERT Course 2 was offered only as in-person professional development during the summer. Both ERT courses were made available starting in 2021, so the present evaluation concerned the second year of implementation.

Because teachers had until August 2023 to meet the TLSA training requirement, not all teachers in the 2022–2023 school year had completed ERT Course 1. Thus, teachers could be classified into three groups based on their participation in the professional development:

- **NONE:** No participation in ERT Course 1 or 2
- **ERT Course 1:** Completed ERT Course 1
- **ERT Courses 1 + 2:** Completed both ERT Course 1 and 2

Teachers were considered to have completed a course for the 2022–2023 school year if they had finished all components by December 31, 2022.

Purpose

To evaluate the role that participation in the professional development offerings might have on students' literacy performance in the 2022–2023 school year, the primary aim of the present analyses was to compare the universal reading screener (URS) scores of K–1 students who were taught by participants in one or both of the ERT courses with the students of teachers who did not participate in either ERT course (referred to as a Treatment vs. Control comparison). The secondary aim was to compare the performance of K–1 students whose teachers participated in ERT Course 1 only with peers whose teachers also completed ERT Course 2 (referred to as a Between-Treatment Comparison).

Students

Although this evaluation relied upon statewide data, the sample was limited by grade and URS instrument. TLSA requires the URS to be administered to all students in Grades K–3, but this evaluation is limited to Grades K–1 because ERT Courses 1 and 2 emphasized beginning reading skills, which are of particular importance in the earliest grade levels. The sample also was limited by URS instrument. Tennessee has seven approved URS vendors, which have slight variations in what skills are assessed and how their composite scores are determined. The state financially supported one instrument, the TN-URS, and it was adopted by the greatest number of Tennessee districts. Therefore, it was considered the most relevant outcome to how the TLSA was enacted.

The full sample of K–1 students was included in the initial analyses, and then the sample was divided by the performance level into two groups: those who scored at or below the 40th percentile on the TN-URS and those who scored above the 40th percentile. The composite score is provided in a percentile rank ranging from 1 to 99. The 50th percentile represents the normative mean performance, and the 41st percentile is the state-established cut point for proficient reading ability. The TLSA included a particular focus on K–3 students who were not meeting proficiency standards, which was defined as a URS composite score at the 40th percentile or below. These students would have been considered at risk of reading difficulties.

Analytic Approach

After limiting the statewide database to K–1 students who were administered the TN-URS, there were 86 districts in the database with usable data (58.5% of the public school districts in the state). From the TN-URS sample, students with missing demographic or test data were removed (kindergarten $n = 2,258$; Grade 1 $n = 3,004$). Each remaining student was classified by their teacher's professional development group. We applied a statistical procedure called propensity score weighting to equate the groups for the analysis (see the [Technical Appendix](#) for a full description).

Table 1 provides the counts of teachers and their students by professional development group. The two ERT training groups were each compared to the NONE control group to determine the value of participating in the state training. Then, the ERT Courses 1 + 2 group was compared to the ERT Course 1 group to determine the difference made by participating in the additional training beyond what the TLSA would require.

Table 1*2022–2023 Distribution of Teachers and Students Across the Professional Development Groups*

Participant Group	Kindergarten		Grade 1		Total	
	Teachers	Students	Teachers	Students	Teachers	Students
Full Sample						
NONE	385	6,024	377	5,920	762	11,944
ERT Course 1	403	6,315	384	6,234	787	12,549
ERT Courses 1 + 2	789	12,722	772	12,700	1,561	25,422
TOTAL	1,577	25,061	1,533	24,854	3,110	49,915
At or Below the 40th Percentile on the TN-URS						
NONE	376	2,561	367	2,872	743	5,433
ERT Course 1	385	2,384	377	2,840	762	5,224
ERT Courses 1 + 2	752	4,830	755	5,949	1,507	10,779
TOTAL	1,513	9,775	1,499	11,661	3,012	21,436
Above the 40th Percentile on the TN-URS						
NONE	335	1,699	338	2,032	673	3,731
ERT Course 1	351	1,825	356	2,187	707	4,012
ERT Courses 1 + 2	722	3,647	728	4,067	1,450	7,714
TOTAL	1,408	7,171	1,422	8,286	2,830	15,457

Note. The counts of students in the table reflect only the data from districts administering the TN-URS. The counts of teachers in the table were based on ERT course completions by December 31, 2022.

The TN-URS is administered three times per year: fall, winter, and spring. The fall 2022 scores were used to control for baseline performance, and the spring 2023 scores were used for determining the outcomes of being taught by teachers with different levels of state-sponsored training.

2022–2023 Results: Full Sample

The average TN-URS performance among the full sample of K–1 students was significantly higher when they were taught by teachers who completed one or both ERT courses compared to their peers in the control group taught by teachers who did not participate in training. The Estimate column in Table 2 shows the number of percentile ranks the average composite score increased (above the average score shown for the NONE control group) when students were taught by teachers in each of the professional development groups. These increases were significant for both ERT Course 1 and ERT Courses 1 + 2. The final row of the results for each grade indicates that students' baseline performance on the TN-URS was a significant predictor of how they would perform at the end of the year. The results shown in the preceding rows for each grade controlled for students' Fall TN-URS scores.

Table 2

Treatment vs. Control Comparison of Spring 2023 TN-URS Scores in Grades K–1: Full Sample

Teacher PD Group	Estimate	Std. Error	t-value	p-value
Grade K Full sample				
NONE	22.362	1.076	20.783	<0.001
ERT Course 1 vs. NONE	3.720	1.158	3.213	0.002
ERT Courses 1 + 2 vs. NONE	4.794	0.990	4.845	<0.001
Pretest (Fall TN-URS scores)	0.608	0.010	58.619	<0.001
Grade 1 Full sample				
NONE	12.896	0.588	21.926	<0.001
ERT Course 1 vs. NONE	1.714	0.681	2.518	0.013
ERT Courses 1 + 2 vs. NONE	3.156	0.566	5.578	<0.001
Pretest (Fall TN-URS scores)	0.837	0.005	176.929	<0.001

Note. Bolded results for the professional development groups indicate significant differences.

The results of directly comparing the two professional development groups were mixed by grade level. As shown in Table 3, there was no significant difference in kindergarten TN-URS performance. That is, whether teachers had the minimum 30 hours of the TLSA-required ERT Course 1 or the additional 30 hours of optional ERT Course 2 did not impact Spring TN-URS scores in kindergarten, after controlling for students' baseline performance. However, the first graders of teachers who had completed both ERT Courses 1 and 2 were significantly higher compared to peers whose teachers completed only ERT Course 1.

Table 3

Between Treatment Comparison of Spring 2023 TN-URS Scores in Grades K–1: Full Sample

Teacher PD Group	Estimate	Std. Error	t-value	p-value
Grade K Full sample				
ERT Course 1	26.314	1.087	24.200	<0.001
ERT Course 1 vs. ERT Courses 1 + 2	1.073	0.960	1.119	0.266
Pretest (Fall TN-URS scores)	0.601	0.011	52.323	<0.001
Grade 1 Full sample				
ERT Course 1	14.772	0.620	23.844	<0.001
ERT Course 1 vs. ERT Courses 1 + 2	1.441	0.550	2.618	0.010
Pretest (Fall TN-URS scores)	0.832	0.005	160.135	<0.001

Note. Bolded results for the between-treatment comparison indicate significant differences.

Because this evaluation addresses the second year of implementing the TLSA, students in Grade 1 also might be experiencing their second year of instruction influenced by the requirements in the legislation, including the use of TN-URS data to make instructional decisions and the use of high-quality instructional materials (HQIM). The use of data and HQIM are addressed in ERT Course 2. Thus, it could be that, as students mature and accumulate exposure to TLSA components, their teachers benefit from the increased training in how to apply their knowledge to the intellectual preparation for and delivery of classroom reading instruction.

2022–2023 Results: At or Below the 40th Percentile on the TN-URS

Because the TLISA had a particular emphasis on improving the numbers of students reading proficiently, we also examined the subgroup of at-risk readers in Grades K–1 taught by teachers who completed one or both ERT courses. Although baseline TN-URS performance was a significant predictor of spring scores in Grades K–1, the results in Table 4 indicate differences in the type of training that was impactful in each grade. Kindergarteners whose teachers completed ERT Course 1 had significantly higher URS performance compared to their peers taught by teachers who did not participate in any ERT training. This finding suggests that Tennessee's youngest students were the most influenced by whether teachers had the minimum level of knowledge about early literacy instruction required by the TLISA.

However, ERT Course 1 alone did not make a significant difference for at-risk readers in Grade 1. In that grade, significant improvements relative to the control group were demonstrated only when teachers completed both ERT Courses 1 and 2. These findings demonstrate that completing the full 60 hours of ERT training was effective at improving the TN-URS performance of first graders who were at risk of reading difficulties at the beginning of the year.



Table 4

Treatment vs. Control Comparison of Spring 2023 TN-URS Scores in Grades K–1: Students At or Below the 40th Percentile

Teacher PD Group	Estimate	Std. Error	t-value	p-value
Kindergarten At or Below 40th Percentile				
NONE	11.219	0.409	27.413	<0.001
ERT Course 1 vs. NONE	0.873	0.387	2.253	0.026
ERT Courses 1 + 2 vs. NONE	0.404	0.412	0.980	0.329
Pretest (Fall TN-URS scores)	0.403	0.012	32.28	<0.001
Grade 1 At or Below 40th Percentile				
NONE	7.251	0.306	23.692	<0.001
NONE vs. ERT Course 1	0.762	0.427	1.782	0.077
NONE vs. ERT Courses 1 + 2	1.633	0.314	5.202	<0.001
Pretest (Fall TN-URS scores)	0.664	0.015	44.700	<0.001

Note. Bolded results for the professional development groups indicate significant differences.

When directly comparing the two training groups, results again differed by grade level (see Table 5). After controlling for Fall TN-URS scores, kindergarteners taught by teachers who completed both ERT Courses 1 and 2 did not demonstrate significantly different spring performance compared to peers whose teachers completed only ERT Course 1. Although the Estimate value was negative, it was less than a half a percentile rank lower, so it should be considered negligible. In contrast, Grade 1 students whose teachers completed the additional 30 hours of training had significantly higher Spring TN-URS performance than peers whose teachers had the minimum training required by the TLSA.

Table 5

Between-Treatment Comparison of Spring 2023 TN-URS Scores in Grades K–1: Students At or Below the 40th Percentile

Teacher PD Group	Estimate	Std. Error	t-value	p-value
Kindergarten At or Below 40th Percentile				
ERT Course 1	12.406	0.414	29.948	<0.001
ERT Course 1 vs. ERT Courses 1 + 2	-0.472	0.320	-1.475	0.143
Pretest (Fall TN-URS scores)	0.377	0.015	25.749	<0.001
Grade 1 At or Below 40th Percentile				
ERT Course 1	7.987	0.477	16.737	<0.001
ERT Course 1 vs. ERT Courses 1 + 2	0.872	0.413	2.112	0.037
Pretest (Fall TN-URS scores)	0.667	0.017	39.645	<0.001

Note. Bolded results for the between-treatment comparison indicate significant differences.

The added boost in Grade 1 performance associated with ERT Courses 1 + 2 training was consistent with the results from the overall sample. It further suggests that, as students mature and accumulate exposure to TLSA components, their teachers benefit from the increased training in how to use student data and HQIM to intellectually prepare for and deliver classroom reading instruction.



2022–2023 Results: Above the 40th Percentile

Although improving the performance of students not reading proficiently is a statewide goal, it also is important to ensure students who begin the school year with on-grade-level reading ability are not hampered by the kinds of instruction emphasized in the ERT training. Therefore, we examined the subgroup of proficient readers in Grades K-1 taught by teachers who completed one or both ERT courses. Baseline TN-URS performance again was a significant predictor of spring scores in Grades K–1, but the results in Table 6 indicate that only when teachers completed both ERT Courses 1 and 2 was spring performance significantly higher compared to students of teachers who did not participate in any state-provided professional development. These findings demonstrate that completing the full 60 hours of ERT training was effective at improving the TN-URS performance of students in Grades K–1 who were reading proficiently at the beginning of the year.

Table 6

Treatment vs. Control Comparison of Spring 2023 TN-URS Scores in Grades K–1: Students Above the 40th Percentile

Teacher PD Group	Estimate	Std. Error	t-value	p-value
Kindergarten Above the 40th Percentile				
NONE	45.610	1.287	35.436	<0.001
ERT Course 1 vs. NONE	1.167	1.095	1.065	0.289
ERT Courses 1 + 2 vs. NONE	2.359	0.825	2.859	0.005
Pretest (Fall TN-URS scores)	0.389	0.014	28.152	<0.001
Grade 1 Above the 40th Percentile				
NONE	28.410	0.919	30.901	<0.001
ERT Course 1 vs. NONE	0.415	0.639	0.649	0.518
ERT Courses 1 + 2 vs. NONE	1.744	0.521	3.347	0.001
Pretest (Fall TN-URS scores)	0.645	0.011	57.531	<0.001

Note. Bolded results for the professional development groups indicate significant differences.

The significant boost to TN-URS performance provided by ERT Course 2 held in the direct comparison of the two training groups at both grade levels (see Table 7). After controlling for Fall TN-URS scores, K–1 students whose teachers completed the additional 30 hours of training had significantly higher Spring TN-URS performance than peers whose teachers had the minimum training required by the TLSA.

Table 7

Between-Treatment Comparison of Spring 2023 TN-URS Scores in Grades K–1: Students At or Below the 40th Percentile

Teacher PD Group	Estimate	Std. Error	t-value	p-value
Kindergarten Above the 40th Percentile				
ERT Course 1	47.569	1.239	38.400	<0.001
ERT Course 1 vs. ERT Courses 1 + 2	1.194	0.865	1.380	0.170
Pretest (Fall TN-URS scores)	0.377	0.013	28.080	<0.001
Grade 1 Above the 40th Percentile				
ERT Course 1	28.537	0.976	29.241	<0.001
ERT Course 1 vs. ERT Courses 1 + 2	1.329	0.450	2.958	0.004
Pretest (Fall TN-URS scores)	0.649	0.012	56.214	<0.001

Note. Bolded results for the between-treatment comparison indicate significant differences.

These results suggest that students' maturation in reading ability as well as age made it beneficial for their teachers to have the additional training in how to use data and HQIM to intellectually prepare for and deliver classroom reading instruction.

Summary of 2022–2023 Evaluation

In the first year of implementing the ERT (2021–2022), only Course 1 demonstrated a statistically significant impact on the TN-URS performance of at-risk readers in Grades K–1 (see previous [report](#)). The findings from the second year of implementing ERT (2022–2023) provide a more nuanced picture of how state-sponsored professional development impacts the average performance of students overall and in subgroups divided by baseline reading ability, as summarized broadly in Table 8.

Table 8
Overview of Results

Teacher PD Group	Full Sample	≤40th Percentile on the TN-URS	>40th Percentile on the TN-URS
Kindergarten			
ERT Course 1 vs. NONE	Significant	Significant	Not Significant
ERT Courses 1 + 2 vs. NONE	Significant	Not Significant	Significant
ERT Course 1 vs. ERT Courses 1 + 2	No difference	No difference	No difference
Grade 1			
ERT Course 1 vs. NONE	Significant	Not Significant	Not Significant
ERT Courses 1 + 2 vs. NONE	Significant	Significant	Significant
ERT Course 1 vs. ERT Courses 1 + 2	1 + 2 significantly better than 1 alone	1 + 2 significantly better than 1 alone	1 + 2 significantly better than 1 alone

Consistent with the Year 1 (2021–2022) report, ERT Course 1 remained significant in the full K–1 samples and for kindergarteners who started the 2022–2023 school year not reading proficiently. However, Year 2 findings revealed that teachers' participation in the follow-up ERT Course 2 professional development contributed to additional improvements in all first-grade groups' Spring TN-URS performance as well as in the performance of the full sample and proficient readers in kindergarten. These findings are consistent with research that suggests combining knowledge with application-based learning is most beneficial for creating meaningful changes in teacher practice (Sims et al., 2023).

The TLSA requires all K–5 reading teachers to have completed ERT Course 1 by August 2023 (or prior to initial licensure thereafter), so evaluations of the third year of implementation (2023–2024) and forward will not have a NONE control group against which to compare the benefits of ERT. When all teachers have the minimum expected knowledge of early reading training (i.e., ERT Course 1 or the equivalent), the importance of application-based learning through ERT Course 2 might become elevated. Therefore, it is encouraging that an additional boost in performance was observed among higher ability kindergarteners and all first-grade groups when their teachers had completed ERT Course 2.

Overall, there are promising indicators that the teacher training requirement under the TLSA is on track to improve reading performance for Tennessee's youngest students, regardless of their reading abilities at the beginning of the school year. To accelerate progress, educators and leaders can take the steps identified on the next two pages to enhance instructional practices and strengthen student literacy outcomes.

State Leaders:

- Periodically supplement the training with ongoing professional development that addresses new research findings and ensures the relevancy of all components to the changing educator workforce and student population.
- Consider ways to refine ERT Course 2 to better tailor the application portions to the needs of kindergarteners not reading proficiently.

District Leaders:

- Offer annual refresher training in early literacy instruction.
- Continue to prioritize early literacy by actively engaging in state literacy networks and leveraging TDOE's Centers of Regional Excellence (CORE) representatives to support and drive ongoing improvement efforts.
- Establish the district's vision for high-quality literacy instruction by providing meaningful professional learning, implementing HQIM, and engaging in the Cycle of Continuous Improvement.

School Leaders:

- Complete training on how to use the Foundational Skills Instructional Practice Guides (IPGs) to improve the implementation of evidence-based literacy instruction. The modules offered by TDOE will assist leaders with moving what teachers learn in ERT into practice.
- Conduct learning walks using the IPG to provide teachers with meaningful feedback as they implement foundational skills instruction through their HQIM.
- Design intentional schedules that create opportunities for collaboration between classroom teachers and support staff.

Educators:

- Complete ERT Course 2 or other professional development opportunities that help apply the knowledge gained in ERT Course 1 to preparing and delivering lessons with HQIM.
- Engage in intellectual preparation to apply their professional learning through HQIM, using student work and individual data to drive improved outcomes.

Community Organizations:

- Encourage those providing literacy support to children in out-of-school programs to complete ERT and reinforce the approaches when appropriate.
- Review the materials they are using in literacy tutoring or other activities to ensure they facilitate the delivery of evidence-based literacy support.

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Technical Appendix

Statistical Approach

Because assignment to the groups was not random, propensity score weighting was applied to equate the students whose teachers of record were in the different professional development (PD) treatment groups with the students whose teachers were in the control or NONE group. Weighting can include all students, whereas propensity score matching would eliminate students from the treatment or control groups if their scores could not be matched. The approach used here “weighted” students to make the treatment group and comparison groups more similar to each other without eliminating data. The treatment (teacher participation in PD) was assigned at the teacher level, but outcomes were measured at the student level.

The propensity score model was estimated at the level of treatment assignment (teacher level), using covariates aggregated from student-level data. Because direct teacher-level covariates were not available in the dataset, student-level covariates were aggregated to the teacher level to serve as proxies of teacher-level covariates. This approach of using aggregated individual-level covariates as proxies for cluster-level confounders in propensity score analysis of clustered data is consistent with the approach described by Nickodem (2020). As in cluster-level treatment designs, only confounders at the cluster or higher levels are relevant (Leite, 2017). Propensity scores were estimated using generalized boosted modeling (GBM) with the teacher-level covariates, producing weights that were subsequently applied to student-level data.

After confirming the groups were balanced by the covariates, models were estimated to compare the Spring TN-URS composite scores of students taught by educators in the professional development treatment groups with those taught by educators in the NONE control group. Recall that the primary focus of the analyses was on determining whether participation in the ERT course offerings was associated with students’ TN-URS outcomes, after controlling for students’ baseline performance in the same year. Secondly, we examined whether participation in more training (i.e., ERT Courses 1 + 2) was associated with a significant difference in student performance compared to participation in the minimum training that would become required under the TLSA (i.e., ERT Course 1). We specified a two-stage complex survey design to estimate the average treatment effects, treating students as analysis units within teacher clusters nested in schools (Leite, 2017).

A survey-weighted outcome model then accounted for this clustering, adjusting for the pretest (Fall TN-URS scores) to examine the impact of teacher PD participation on student posttest performance (Spring TN-URS scores).

Table A1 shows the 2022–2023 distributions of all students in K–1 before and after propensity score weighting. Tables A2 and A3 show the distributions of the subgroups ($\leq 40^{\text{th}}$ percentile and $> 40^{\text{th}}$ percentile, respectively) before and after propensity score weighting. Covariate balance typically is considered adequate if the absolute values of standardized mean differences (SMDs) between treatment and control groups were smaller than 0.05 (What Works Clearinghouse, 2022). Before the weighting, some SMDs indicated the treatment and control groups were significantly different. After weighting, all covariates were adequately balanced.



Table A1

2022–2023 Distribution of Grades K–1 Students in the Treatment and Control Groups Before and After Propensity Score Weighting: Full Sample

Comparison	Covariates	Before Propensity Score Weighting			After Propensity Score Weighting		
		Treated Mean	Control Mean	SMD	Treated Mean	Control Mean	SMD
Full Sample of Kindergarten Students (N = 25,061)							
ERT Course 1 vs. NONE	TN-URS	33.265	33.624	-0.013	32.848	33.236	-0.014
	Economically Disadvantaged	0.268	0.258	0.024	0.269	0.264	0.011
	BHN	0.271	0.235	0.083	0.234	0.222	0.028
	Special Ed	0.148	0.148	0.002	0.150	0.152	-0.005
ERT Courses 1 + 2 vs. NONE	TN-URS	33.265	32.798	0.016	32.848	33.112	-0.009
	Economically Disadvantaged	0.268	0.276	-0.017	0.269	0.267	0.004
	BHN	0.271	0.202	0.163	0.234	0.220	0.032
	Special Ed	0.148	0.158	-0.026	0.150	0.152	-0.006
ERT Course 1 vs. ERT Courses 1 + 2	TN-URS	33.624	32.798	0.029	33.236	33.112	0.004
	Economically Disadvantaged	0.258	0.276	-0.040	0.264	0.267	-0.007
	BHN	0.235	0.202	0.080	0.222	0.220	0.004
	Special Ed	0.148	0.158	-0.028	0.152	0.152	0.000

Note. TN-URS = the Tennessee universal reading screener; BHN = students identified as Black, Hispanic, and/or Native American; SMD = standardized mean difference.

Table A1, cont.

2022–2023 Distribution of Grades K–1 Students in the Treatment and Control Groups Before and After Propensity Score Weighting: Full Sample

Comparison	Covariates	Before Propensity Score Weighting			After Propensity Score Weighting		
		Treated Mean	Control Mean	SMD	Treated Mean	Control Mean	SMD
Full Sample of Grade 1 Students (N = 24,854)							
ERT Course 1 vs. NONE	TN-URS	33.534	34.698	-0.037	32.480	33.156	-0.022
	Economically Disadvantaged	0.267	0.268	-0.004	0.281	0.277	0.011
	BHN	0.276	0.261	0.032	0.236	0.227	0.022
	Special Ed	0.157	0.155	0.005	0.160	0.163	-0.008
ERT Courses 1 + 2 vs. NONE	TN-URS	33.534	31.788	0.057	32.480	32.961	-0.016
	Economically Disadvantaged	0.267	0.295	-0.063	0.281	0.281	0.001
	BHN	0.276	0.193	0.196	0.236	0.219	0.040
	Special Ed	0.157	0.174	-0.044	0.160	0.168	-0.022
ERT Course 1 vs. ERT Courses 1 + 2	TN-URS	34.698	31.788	0.095	33.156	32.961	0.006
	Economically Disadvantaged	0.268	0.295	-0.059	0.277	0.281	-0.010
	TN-URS	0.261	0.193	0.164	0.227	0.219	0.018
	Special Ed	0.155	0.174	-0.050	0.163	0.168	-0.014

Note. TN-URS = the Tennessee universal reading screener; BHN = students identified as Black, Hispanic, and/or Native American; SMD = standardized mean difference.

Table A2

2022–2023 Distribution of Grades K–2 Students in the Treatment and Control Groups Before and After Propensity Score Weighting: Subgroup Scoring At or Below the 40th Percentile

Comparison Covariates		Before Propensity Score Weighting			After Propensity Score Weighting		
		Treated Mean	Control Mean	SMD	Treated Mean	Control Mean	SMD
Kindergarten Students at the 40th Percentile and Below on the TN-URS (n = 9,775)							
ERT Course 1 vs. NONE	TN-URS	12.015	12.294	-0.027	12.098	12.113	-0.001
	Economically Disadvantaged	0.351	0.362	-0.022	0.360	0.365	-0.011
	BHN	0.317	0.276	0.088	0.274	0.269	0.010
	Special Ed	0.232	0.229	0.007	0.235	0.232	0.006
ERT Courses 1 + 2 vs. NONE	TN-URS	12.015	11.895	0.012	12.098	11.983	0.011
	Economically Disadvantaged	0.351	0.384	-0.069	0.360	0.375	-0.031
	BHN	0.317	0.240	0.172	0.274	0.260	0.032
	Special Ed	0.232	0.245	-0.031	0.235	0.238	-0.008
ERT Course 1 vs. ERT Courses 1 + 2	TN-URS	12.294	11.895	0.039	12.113	11.983	0.013
	Economically Disadvantaged	0.362	0.384	-0.047	0.365	0.375	-0.020
	BHN	0.276	0.240	0.083	0.269	0.260	0.022
	Special Ed	0.229	0.245	-0.038	0.232	0.238	-0.014

Note. TN-URS = the Tennessee universal reading screener; BHN = students identified as Black, Hispanic, and/or Native American; SMD = standardized mean difference.

Table A2, cont.

2022–2023 Distribution of Grades K–2 Students in the Treatment and Control Groups Before and After Propensity Score Weighting: Subgroup Scoring At or Below the 40th Percentile

Comparison Covariates		Before Propensity Score Weighting			After Propensity Score Weighting		
		Treated Mean	Control Mean	SMD	Treated Mean	Control Mean	SMD
Grade 1 Students at the 40th Percentile and Below on the TN-URS (n = 11,661)							
ERT Course 1 vs. NONE	TN-URS	9.107	9.601	-0.050	8.948	9.172	-0.023
	Economically Disadvantaged	0.366	0.362	0.010	0.377	0.366	0.021
	BHN	0.352	0.332	0.042	0.293	0.300	-0.015
	Special Ed	0.226	0.222	0.009	0.235	0.232	0.007
ERT Courses 1 + 2 vs. NONE	TN-URS	9.107	8.684	0.044	8.948	8.929	0.002
	Economically Disadvantaged	0.366	0.382	-0.033	0.377	0.371	0.012
	BHN	0.352	0.226	0.280	0.293	0.268	0.055
	Special Ed	0.226	0.253	-0.064	0.235	0.243	-0.019
ERT Course 1 vs. ERT Courses 1 + 2	TN-URS	9.601	8.684	0.095	9.172	8.929	0.025
	Economically Disadvantaged	0.362	0.382	-0.042	0.366	0.371	-0.009
	TN-URS	0.332	0.226	0.238	0.300	0.268	0.070
	Special Ed	0.222	0.253	-0.074	0.232	0.243	-0.027

Note. TN-URS = the Tennessee universal reading screener; BHN = students identified as Black, Hispanic, and/or Native American; SMD = standardized mean difference.

Table A3

2022–2023 Distribution of Grades K–1 Students in the Treatment and Control Groups Before and After Propensity Score Weighting: Subgroup Scoring Above the 40th Percentile

Comparison	Covariates	Before Propensity Score Weighting			After Propensity Score Weighting		
		Treated Mean	Control Mean	SMD	Treated Mean	Control Mean	SMD
Kindergarten Students Above 40th Percentile on the TN-URS (n = 7,171)							
ERT Course 1 vs. NONE	TN-URS	69.529	69.516	0.001	69.422	69.277	0.009
	Economically Disadvantaged	0.145	0.144	0.002	0.137	0.145	-0.022
	BHN	0.195	0.168	0.069	0.169	0.165	0.011
	Special Ed	0.066	0.085	-0.074	0.074	0.083	-0.033
ERT Courses 1 + 2 vs. NONE	TN-URS	69.529	69.194	0.021	69.422	69.371	0.003
	Economically Disadvantaged	0.145	0.150	-0.015	0.137	0.148	-0.029
	BHN	0.195	0.162	0.086	0.169	0.169	0.001
	Special Ed	0.066	0.092	-0.097	0.074	0.085	-0.037
ERT Course 1 vs. ERT Courses 1 + 2	TN-URS	69.516	69.194	0.020	69.277	69.371	-0.006
	Economically Disadvantaged	0.144	0.150	-0.017	0.145	0.148	-0.007
	BHN	0.168	0.162	0.017	0.165	0.169	-0.010
	Special Ed	0.085	0.092	-0.023	0.083	0.085	-0.005

Note. TN-URS = the Tennessee universal reading screener; BHN = students identified as Black, Hispanic, and/or Native American; SMD = standardized mean difference.

Table A3, cont.

2022–2023 Distribution of Grades K–1 Students in the Treatment and Control Groups Before and After Propensity Score Weighting: Subgroup Scoring Above the 40th Percentile

Comparison Covariates		Before Propensity Score Weighting			After Propensity Score Weighting		
		Treated Mean	Control Mean	SMD	Treated Mean	Control Mean	SMD
Grade 1 Students Above 40th Percentile on the TN-URS (n = 8,286)							
ERT Course 1 vs. NONE	TN-URS	71.510	72.119	-0.039	71.224	71.239	-0.001
	Economically Disadvantaged	0.139	0.155	-0.047	0.151	0.161	-0.026
	BHN	0.169	0.181	-0.031	0.167	0.164	0.009
	Special Ed	0.093	0.091	0.004	0.087	0.086	0.002
ERT Courses 1 + 2 vs. NONE	TN-URS	71.510	70.686	0.053	71.224	71.227	0.000
	Economically Disadvantaged	0.139	0.180	-0.113	0.151	0.167	-0.043
	BHN	0.169	0.157	0.032	0.167	0.167	0.001
	Special Ed	0.093	0.092	0.000	0.087	0.094	-0.024
ERT Course 1 vs. ERT Courses 1 + 2	TN-URS	72.119	70.686	0.093	71.239	71.227	0.001
	Economically Disadvantaged	0.155	0.180	-0.066	0.161	0.167	-0.017
	BHN	0.181	0.157	0.063	0.164	0.167	-0.008
	Special Ed	0.091	0.092	-0.003	0.086	0.094	-0.026

Note. TN-URS = the Tennessee universal reading screener; BHN = students identified as Black, Hispanic, and/or Native American; SMD = standardized mean difference.



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