

## EXECUTIVE SUMMARY

DECEMBER 2015

A Research Brief  
from the *Study of  
California's Transitional  
Kindergarten Program*

## The Impact of Transitional Kindergarten on Kindergarten Readiness

### A Report From the Study of California's Transitional Kindergarten Program: Executive Summary

Transitional kindergarten (TK)—the first year of a two-year kindergarten program for California children born between September 2 and December 2—is intended to better prepare young five-year-olds for kindergarten and ensure a strong start to their educational career. To determine whether this goal is being achieved, American Institutes for Research (AIR) is conducting an evaluation of the impact of the TK program in California. The goal of this study is to measure the success of the program by determining the impact of TK on students' readiness for kindergarten in several areas. Using a rigorous regression discontinuity (RD) research design,<sup>1</sup> we compared language, literacy, mathematics, executive function, and social-emotional skills at kindergarten entry for students who attended TK and for students who did not attend TK. Overall, we found that TK has a positive impact on students' kindergarten readiness in several domains, controlling for students' age differences. These effects are over and above the experiences children in the comparison group had the year before kindergarten, which for more than 80 percent was some type of preschool program.

#### Transitional Kindergarten in California

In 2010, California passed the Kindergarten Readiness Act, which aligned California's kindergarten enrollment policy with the policies of most other states in the country and then took it one step further. California has historically had young kindergarteners, with up to a quarter of the state's kindergarten population entering school at age 4. The new law changed the kindergarten entry cutoff such that children must turn 5 by September 1 (instead of December 2) to enter kindergarten in that year. In addition, the new law established a new grade level—transitional kindergarten (TK)—for students born between September 2 and December 2. Thus, with this new law, California makes a strong statement about the importance of early education, providing an additional year of early education to young five-year-olds with the goal of promoting their school readiness.

<sup>1</sup> This study uses an RD design to compare the outcomes of students with birthdates on either side of the December 2 cutoff date for TK eligibility. Students born on December 2 or earlier, who are eligible for TK, serve as the treatment group. Students who are too young to have qualified for TK (i.e., those born on December 3 or later) are the comparison group. These similarly aged children will enter kindergarten at the same time as the TK students but without the TK experience. Because children's access to TK is determined by a specific birthdate cutoff (December 2), student and family characteristics that might otherwise influence participation in an education intervention, and thus bias the results (e.g., student learning needs, parent income or education, motivation to participate), do not drive eligibility. Birthdates cannot be manipulated by parents wanting to enroll their child. Thus, this analytical approach is a very strong research design, second only to a randomized controlled trial in which students are randomly assigned to participate in the TK program or not.

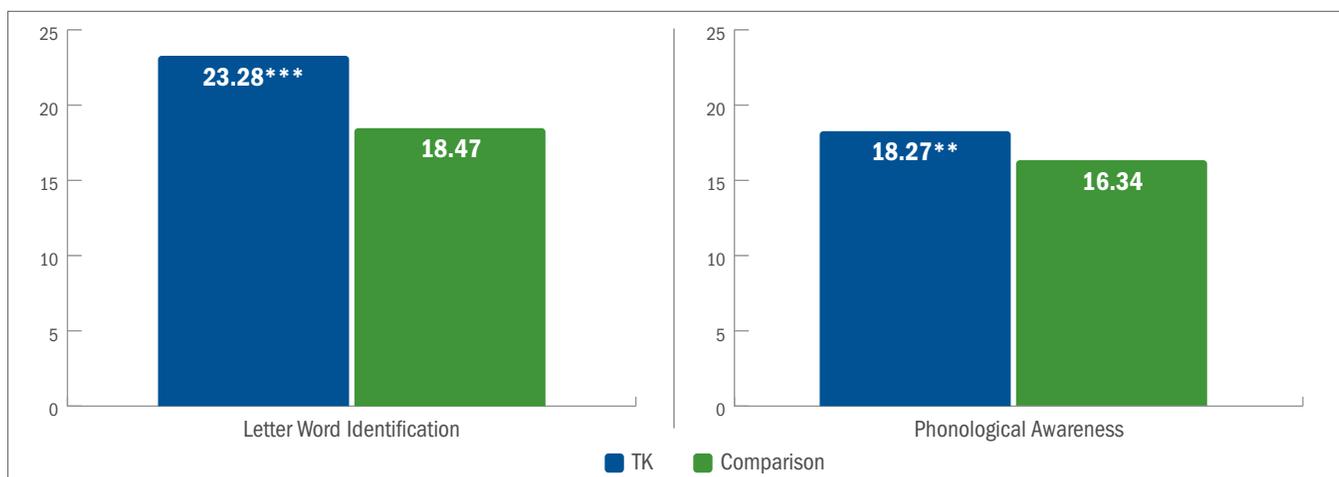
Highlights from the study are presented in this summary; additional detail can be found in the [full report](#). Additional reports presenting the impact of TK on student outcomes at the end of kindergarten, the benefits of TK for particular groups of students (such as English learners), and the characteristics of TK classrooms that are most important for later student learning will be forthcoming in this series.

## TK Improves Preliteracy and Literacy Skills

TK had a notable impact on students' literacy and preliteracy skills (Exhibit 1). For example, children who attended TK were significantly better able to identify letters and words in kindergarten than their peers who did not attend TK (effect size = .502).<sup>2</sup>

This advantage was equivalent to approximately five months of learning. Students who attended TK also had greater phonological awareness (an understanding of the sounds of letters and syllables that make up words) in kindergarten than did students who did not attend TK (effect size = .307). The advantage shown by students who attended TK on these skills, which are fundamental for learning to read, places them approximately three months ahead of their peers who did not attend TK. The effect of TK on expressive vocabulary was smaller and only marginally significant (effect size = .157; not shown), which is not unexpected; very few early literacy interventions have been successful in increasing children's vocabulary.<sup>3</sup>

**Exhibit 1. Mean Scores for TK and Non-TK Students on Literacy and Preliteracy Measures<sup>4</sup>**



† =  $p < .1$ , \*\* =  $p < .01$ , \*\*\* =  $p < .001$

Note: Effect sizes: .502 for Letter-Word Identification and .307 for Phonological Awareness.

Source: Authors' analysis of student scores on the Woodcock-Johnson Letter-Word Identification test and the Clinical Evaluation of Language Fundamentals Phonological Awareness test.

<sup>2</sup> Effect sizes are the standardized mean differences in the outcomes between the students who attended TK and those who did not as estimated by the RD model. Effect sizes are computed by dividing the mean difference in the outcome by the overall standard deviation. Effect sizes of 0.2 are considered small, 0.5 moderate, and 0.8 high.

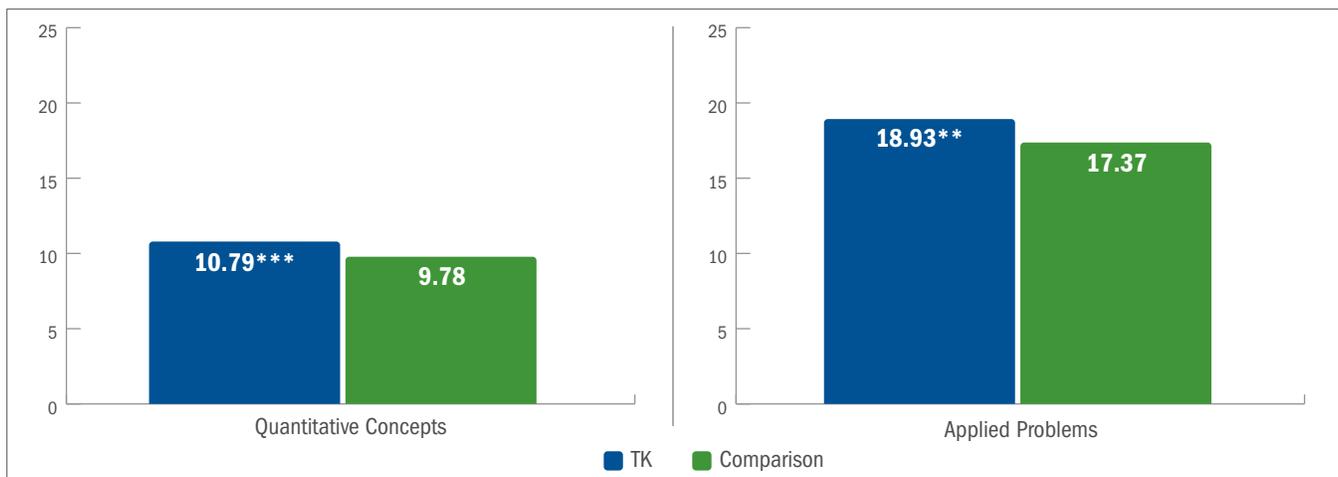
<sup>3</sup> Wasik, B. A. (2010). What teachers can do to promote preschoolers' vocabulary development: Strategies from an effective language and literacy professional development coaching model. *Reading Teacher*, 63(8), 621–633.

<sup>4</sup> All means reported are adjusted for age, race/ethnicity, gender, English learner status, family income, students' eligibility for free and reduced-price lunch, parents' education, and students' participation in early education programs during the year before TK.

## TK Improves Students' Mathematical Knowledge and Problem-Solving Skills

TK graduates also outperformed their peers who did not attend TK on measures of mathematics knowledge and skills (Exhibit 2). In particular, TK participation improved students' knowledge of basic mathematical concepts and symbols (such as the equals sign) in kindergarten (Quantitative Concepts assessment, effect size = .356). Students who had attended TK also exhibited stronger mathematics problem-solving skills in kindergarten, such as counting objects, understanding measurement, conducting basic mathematical operations (such as addition or subtraction), and solving mathematical word problems, although the effect is somewhat smaller than for mathematical concepts and symbols (Applied Problems subtest, effect size = .260); this gave TK graduates a three-month advantage in learning over students who did not attend TK.

**Exhibit 2. Mean Scores for TK and Non-TK Students on Mathematics Measures**



\*\* =  $p < .01$ , \*\*\* =  $p < .001$

Note: Effect sizes: .356 for Quantitative Concepts and .260 for Applied Problems.

Source: Authors' analysis of student scores on the Woodcock-Johnson Applied Problems and Quantitative Concepts tests.

## TK Supports Children's Executive Function; No Detectable Impact on Social-Emotional Skills

Participation in TK gave students a relative advantage on executive function (effect size = .197) as well, meaning that TK graduates outperformed their peers on their ability to regulate their behavior, remember rules, and think flexibly—skills that support a solid foundation for school achievement.<sup>5</sup> The study did not find evidence that TK improved other aspects of students' social-emotional skills, however, such as increasing cooperation or engagement or decreasing problem behaviors (as reported by their teachers).

<sup>5</sup> Schmitt, S. A., Pratt, M. E., & McClelland, M. M. (2014). Examining the validity of behavioral self-regulation tools in predicting preschoolers' academic achievement. *Early Education and Development*, 25(5), 641–660. doi: 10.1080/10409289.2014.850397

## Conclusions and Next Steps

This study demonstrates that students who attended TK were better prepared for kindergarten than were similar students who did not attend TK, independent of age. We found that TK broadly benefited enrolled students, improving their reading and mathematics outcomes as well as their executive function. The effects we found are over and above the learning experiences comparison children received prior to entering kindergarten, which for more than 80 percent of the comparison group was some form of center-based preschool.

This unique approach to early education in California—which serves children in a narrow age range on elementary school campuses, with credentialed teachers holding bachelor’s degrees and a curriculum aligned with kindergarten—appears to better prepare students for kindergarten than what they might have received in the absence of the program. It is important to note that this study reports results for one cohort of students—those participating in the second year of the rollout of TK (2013–14); results for a second cohort of students who participated in the third year of TK (2014–15), now being collected, may differ as schools and districts refine their approach to implementing TK. Future analyses will investigate the extent to which the TK advantage is sustained through the end of kindergarten, for which groups of students TK is most beneficial, and which TK program characteristics are most supportive of student learning.

### Study Approach

The study determines the impact of the TK program by comparing a range of school-readiness outcomes of 2,864 kindergartners, approximately half of whom had access to TK and half of whom did not. Twenty California school districts and 164 elementary schools participated in the study. These districts and schools were sampled to be broadly representative of California and were drawn from all geographic regions of the state. The demographic characteristics of the student sample are comparable to those of California kindergartners overall. (See **full technical report and appendix** for details of the study’s sampling approach.)

Information about students’ skills in kindergarten was obtained from both direct student assessments—of expressive vocabulary, letter, and word recognition; phonological awareness; mathematical concept knowledge; problem solving; and executive function—and surveys of teachers, who rated students’ behaviors and social skills.

Using a rigorous RD framework, the performance of students who were and were not eligible for TK was compared controlling for age, whether eligible students actually attended TK, and other demographic characteristics.

For more information about the Study of California’s Transitional Kindergarten Program, please visit <http://tkstudy.airprojects.org/> or contact Heather Quick, Principal Investigator, at [hquick@air.org](mailto:hquick@air.org) or 650-843-8130.

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## About AIR

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