A photograph of a classroom wall covered in children's artwork. The most prominent piece is a large drawing titled 'The Garden Center' with green and blue washes. Above it are several smaller drawings with geometric shapes and patterns. To the left, a window looks out onto trees. In the foreground, there are wooden shelves with colorful toys and a blue storage bin.

What if you miss the first year of an aligned curriculum?

Boston Public Schools' Pre-K non-attenders made equivalent learning gains whether or not their kindergarten was aligned with Pre-K

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Key Findings

- 1 Aligning Pre-K and kindergarten may be an important strategy for sustaining the Pre-K boost. However, it is possible that efforts to align kindergarten with Pre-K might disadvantage students who did not attend the aligned Pre-K year.
- 2 We used data from 290 students who did not attend Boston Public Schools' (BPS) Pre-K program (Pre-K non-attenders) and then enrolled in public kindergarten that was either aligned or unaligned with the Pre-K curriculum.
- 3 We found that BPS Pre-K non-attenders made equivalent gains in their math, language, literacy, and executive function skills regardless of whether or not they attended an aligned kindergarten program.
- 4 While attending both an aligned Pre-K and kindergarten is ideal for helping students smoothly transition from one grade to the next, our descriptive findings suggest that efforts to sustain the Pre-K boost for those who attend do not systematically disadvantage Pre-K non-attenders.

The Problem: Pre-K Convergence

On average, children who enroll in pre-kindergarten (Pre-K) programs score higher on assessments of language, math, and executive functioning skills at the beginning of kindergarten than children who do not attend Pre-K.¹ However, the Pre-K boost diminishes during kindergarten and first grade, sometimes partially and sometimes fully.² This phenomenon has commonly been described both as convergence, referring to how children who do not attend Pre-K eventually “catch up” to those who do, and as fadeout, wherein the initial Pre-K boost is not sustained across time.³

A Proposed Solution to Convergence: Curriculum Alignment

Redundancy of instructional content in kindergarten is a leading hypothesis for explaining convergence.⁴ Vertical instructional alignment across Pre-K and elementary school—or standards, curriculum, and assessments building on each other from one grade to the next—has emerged as a promising strategy for promoting better continuity in instruction and supporting consistent developmental learning trajectories for children, as evidenced in randomized trials of aligned math curricula.⁵ Read our policy brief on [what sustains the Pre-K boost](#) for further information on the potential benefits of alignment.

Will Instructional Alignment Benefit Every Student?

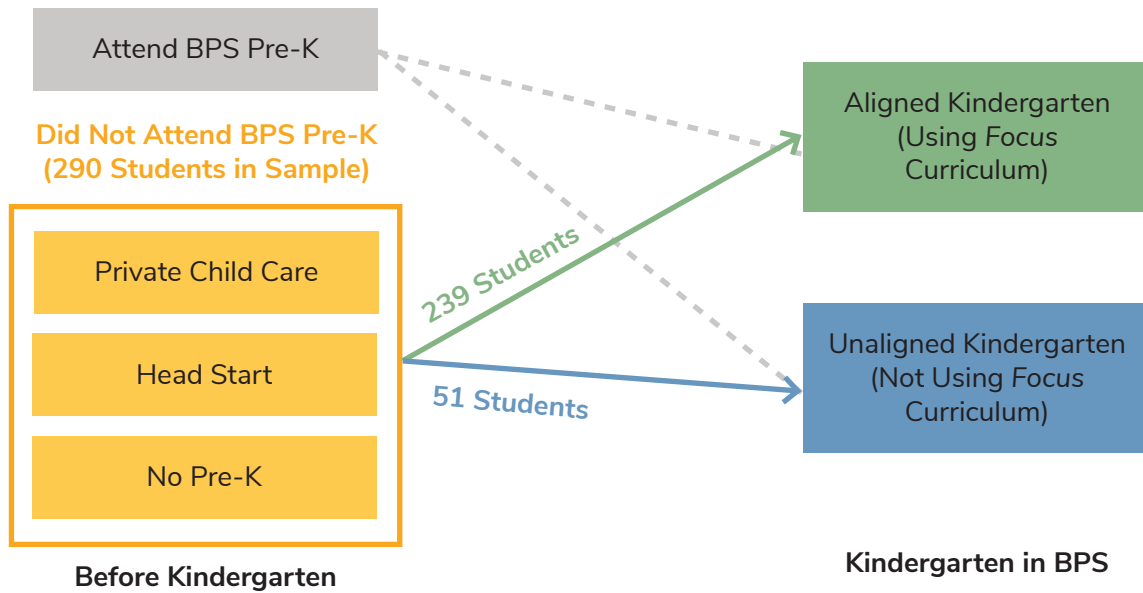
Because Pre-K is likely to always be voluntary in the U.S., there will always be children who enter kindergarten without having attended a Pre-K program and who would miss the first year of the aligned programming. These non-attenders could be negatively affected by alignment efforts if kindergarten instruction is so focused on building on earlier Pre-K instruction that it skips teaching foundational skills that non-attenders might not have learned yet or repeats content that they already learned as a four-year old while attending a different program or staying home with a caregiver. Such patterns could be particularly salient for children from historically marginalized groups, who are generally less likely than their peers to enroll in Pre-K programs.⁶

Present Study

Beginning in 2012, the Boston Public Schools (BPS) Department of Early Childhood rolled out a curricular and professional development approach called *Focus on Early Learning* that aimed to align content, instruction, and teachers' training and coaching from Pre-K to 2nd grade. To experience full curricular alignment from Pre-K to kindergarten, students must attend both a BPS Pre-K and a BPS kindergarten implementing *Focus on Early Learning*. However, enrollment in a BPS Pre-K is optional and not all children attend a BPS Pre-K before entering kindergarten. Additionally, school adoption of *Focus on Early Learning* is optional.⁷ This means that BPS Pre-K non-attenders make up two groups – those who experienced aligned kindergarten and those who did not. In all, our sample includes a total of 290 BPS Pre-K non-attenders who attended kindergarten in BPS in the 2017-2018 school year. Out of the 290 non-attenders, 239 students in 40 different schools attended an aligned kindergarten program, and 51 students in 7 different schools attended an unaligned kindergarten program (Figure 1).



Figure 1. Pathways to BPS Kindergarten



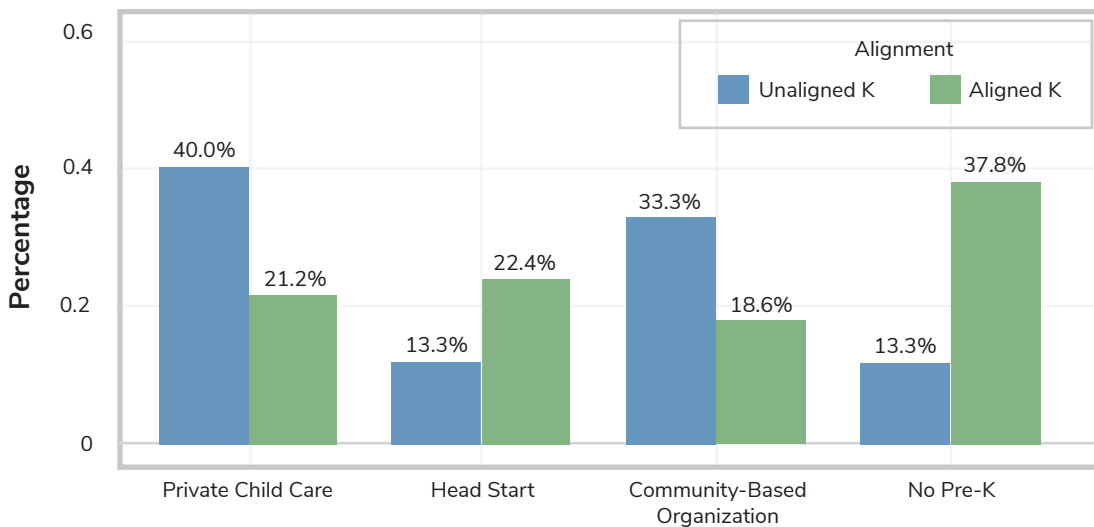
We first compare the demographic characteristics of Pre-K non-attenders who experience aligned and unaligned kindergarten. We then answer the question: Do BPS Pre-K non-attenders make larger gains in their math, language, literacy, and executive function skills in an aligned or unaligned kindergarten program?

Findings

In both aligned and unaligned kindergarten programs, most BPS Pre-K non-attenders attended other Pre-K programs beforehand.

Children mostly attended a private child care or a community-based Pre-K program before starting kindergarten in BPS, although some students—particularly those who ended up attending an aligned kindergarten program—had no formal Pre-K experience (Figure 2).

Figure 2. Where Did BPS Pre-K Non-Attenders Go Before Kindergarten?

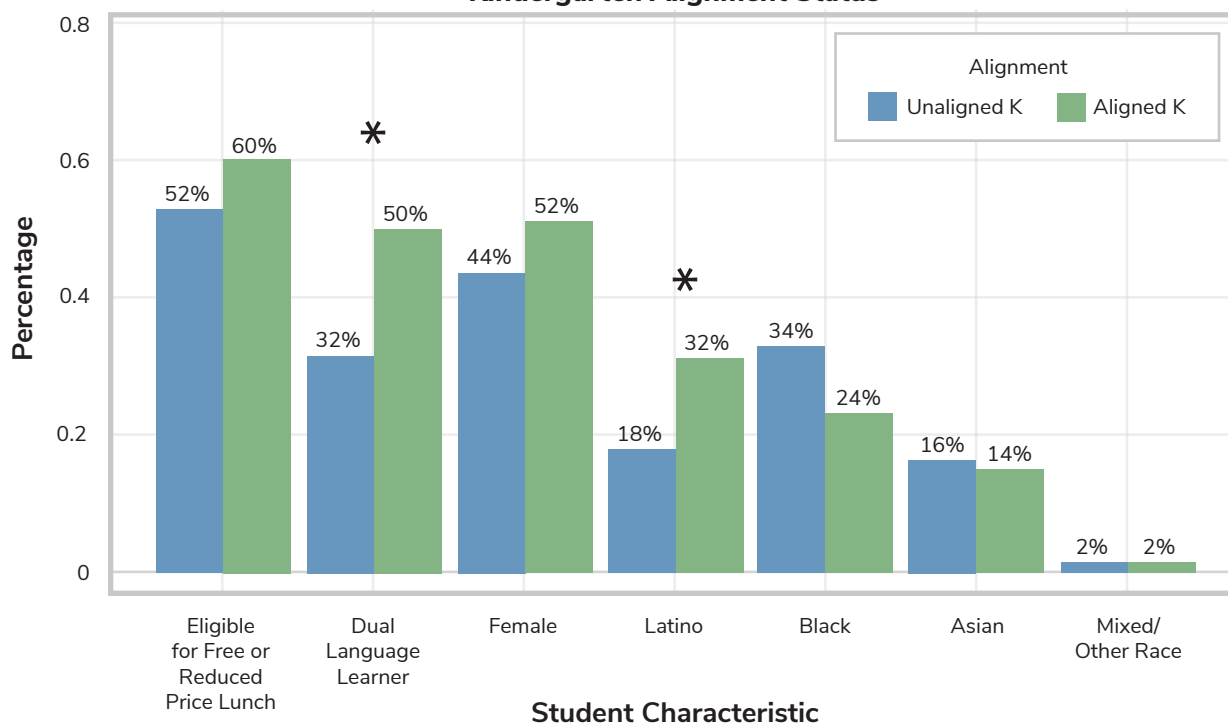


Note: N = 171 for this figure. We only report prior care for a subset of students whose parents were asked to report on this in a survey; funding was not available to survey all parents. Please refer to McCormick et al. (2021)⁸ for further information on this sample.

BPS Pre-K non-attenders who enrolled in an aligned kindergarten were more likely to be Latino and to be a Dual Language Learner (DLL).

As shown in Figure 3, our sample was diverse in terms of race/ethnicity and most students were eligible for free-or-reduced-price lunch. Students who attended an aligned kindergarten were 19 percentage points more likely to be a dual language learner ($p < 0.05$) and 15 percentage points more likely to be Latino ($p < 0.05$) compared with students who attended an unaligned kindergarten.

Figure 3. Background Characteristics for BPS Pre-K Non-Attenders by Kindergarten Alignment Status



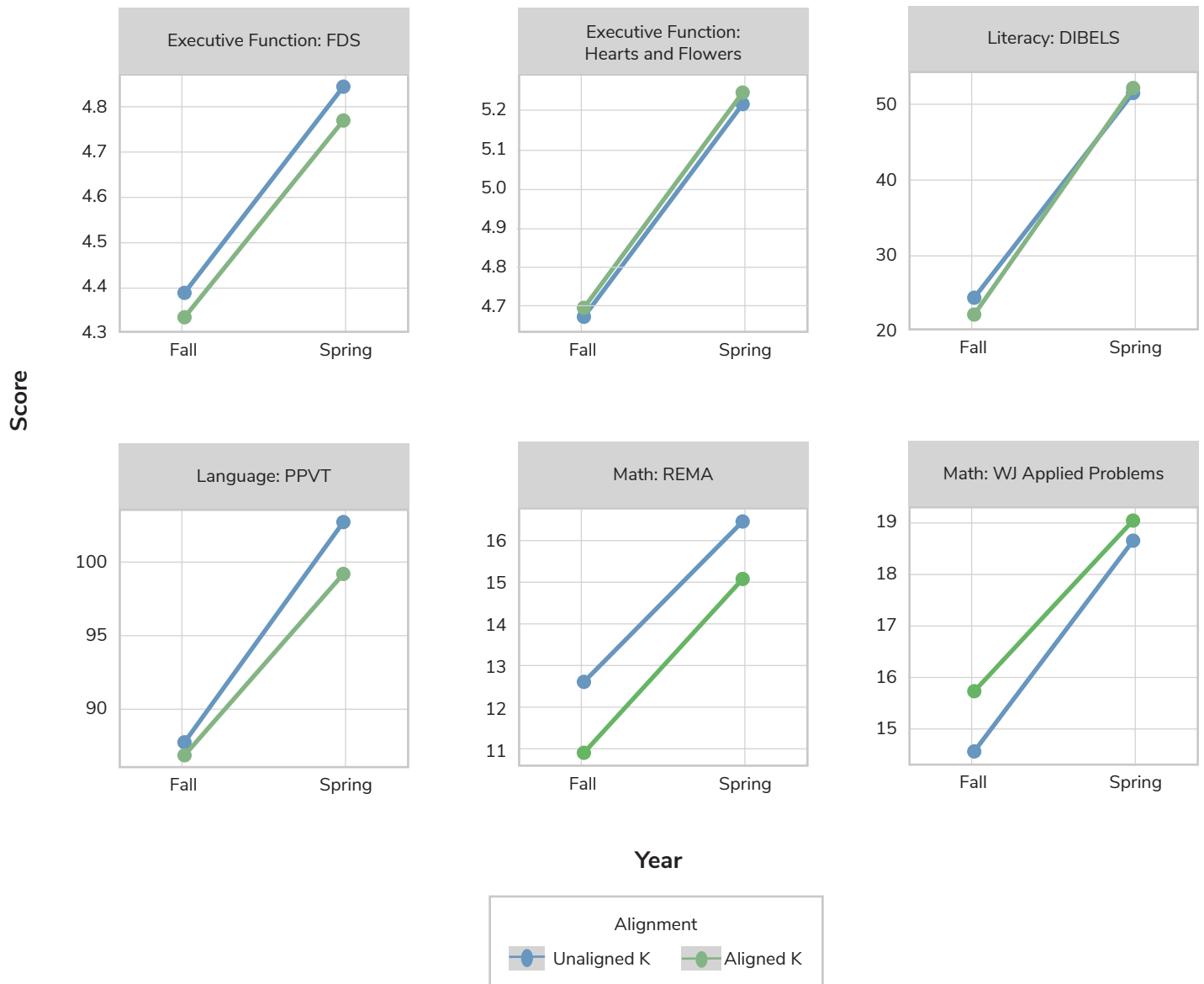
Note: N = 290 for this figure. Asterisk on top of bar indicates a statistically significant ($p < 0.05$) difference in background characteristics by alignment status. Differences were estimated using OLS models.

BPS Pre-K non-attenders who enrolled in aligned and unaligned kindergarten settings had similar gains in academic skills across the school year.

To answer our research question – whether BPS Pre-K non-attenders make equivalent gains in aligned and unaligned kindergarten programs – we used residualized gains models to predict children’s skills in the spring of kindergarten while controlling for student background characteristics and skills in the fall of kindergarten (race, sex, whether the student was a dual language learner, and whether the student was eligible for subsidized lunch). We used direct assessments to measure children’s language (Peabody Picture Vocabulary Test IV; PPVT), literacy (Dynamic Indicators of Basic Early Literacy Skills; DIBELS), math (Research Based Early Math Assessment; REMA and Woodcock Johnson Applied Problems), and executive functioning (Forward Digit Span and Hearts & Flowers). We used raw scores for the math, language, and literacy assessments along with the Forward Digit Span. We used a two-vector average score that accounted for both accuracy and reaction time for the Hearts & Flowers task.⁹ There were no differences in gains in these outcomes between Pre-K non-attenders who experienced kindergarten alignment and those who did not.

Figure 4 illustrates the association between alignment and gains in assessment scores for all six outcomes. Although there were some small differences between fall (2017) and spring (2018) mean scores between students who attended an unaligned versus aligned kindergarten, these differences were not statistically significant and were not consistent in direction.

Figure 4. Association between Kindergarten Alignment and Kindergarten Score Gains for BPS Pre-K Non-Attenders



Conclusion

Our findings suggest that efforts to sustain the Pre-K boost in kindergarten do not systematically disadvantage Pre-K non-attenders. BPS Pre-K non-attenders made equivalent gains in their math, language, literacy, and executive function skills regardless of kindergarten alignment. This is good news for policymakers and practitioners interested in alignment as a strategy to sustain the Pre-K boost. Yet, it is important to remember that this study is relatively small and descriptive (not causal). Future research should examine the effects of curriculum alignment for all students.

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