

Title: Exploring the role of quality in a statewide population study of children's early learning and care

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Background

Evidence on contemporary early childhood education and care programs is mixed. Whereas universal prekindergarten programs in Oklahoma and Boston positively impacted child outcomes (Phillips, Gormley, & Anderson, 2016; Weiland & Yoshikawa, 2013), Tennessee's Prekindergarten Program had no positive impacts (Lipsey, Farran, & Durkin, 2018). The variation in the quality of contemporary programs could explain these contradictory findings. Indeed, some work finds that differences in children's outcomes across and within programs can be explained in part by commonly-used measures of quality (Bassok, Fitzpatrick, Greenberg, & Loeb, 2016).

Despite the importance of quality for children's development, the evidence on early education and care quality is limited. First, studies rely on measures capturing limited dimensions of quality. Second, most studies focus on a single setting, namely formal, center-based programs. The current study addresses these limitations by answering:

- What is the landscape of early education and care among three and four-year-olds in Massachusetts?
- How does the quality of early education and care vary within and across settings?
- How do children's outcomes vary across different settings?
- To what extent do differences in quality explain differences in children's outcomes across settings?

Methods

Sample

Data come from the first wave of a large-scale longitudinal study of young children's learning and development in Massachusetts. Massachusetts, like many states, has a fragmented early education and care landscape in which families rely on a diverse constellation of formal and informal settings. The study was designed to be representative of the state's population of three- and four-year-olds, offering a unique opportunity to understand the state's complete landscape of early learning and care.

Construction of a representative sample of three- and four-year-olds began with a household survey across the state. We visited approximately 95,000 households in randomly selected block groups, resulting in the recruitment of 841 three- and four-year-old children. Additional children were recruited because they were in the same settings as a child recruited via the household survey or in a randomly sampled center from administrative data. The final sample contains 3,228 children, their parents, and the providers in their early learning and care settings.

Children in the sample were on average 3.92 years old ($SD = 0.56$) and 71.48% of the sample was White, 16.38% was Hispanic, and 8.17% was Black. These children were enrolled in various formal (e.g., public prekindergarten, community-based centers, and Head Start) and informal (e.g., family child care centers, non-relative unlicensed care, and unlicensed relative care) settings, as well as in parent-only care. The use of sample weights makes results from analyses with this sample representative at the state-level.

Procedures and Measures

Quality. Trained observers visited settings and conducted observations using the Teacher and Child Observation in Preschool (TOP/COP), which capture adult- and child-driven features of quality (Bilbrey, Vorhaus, & Farran, 2007; Farran & Anthony, 2014). Observers conducted a series of rapid observations, or “sweeps”, during which adult and child behaviors were noted. We focus on eight particular practices noted in the TOP/COP - the “Magic 8” - shown to relate to children’s development (Farran, Meador, Christopher, Nesbitt, & Bilbrey, 2017).

Child outcomes. Direct assessments evaluated academic, language, and social-emotional skills. Academic measures included the Letter Word Identification and Applied Problems subscales from the Woodcock Johnson (WJ-III; Woodcock, McGrew, & Mather, 2001). Literacy and language measures included the Phonological Awareness Literacy Screener (PALS; Ford & Invernizzi, 2014) and Quick Interactive Language Screener (QUILS; Golinkoff et al., 2017). Social-emotional measures included the Leiter-3 (Roid, Miller, Pomplun, & Koch, 2013), Pencil Tap (Blair, 2002; Diamond & Taylor, 1996), and Minnesota Executive Function Scale (MEFS; Carlson & Zelazo, 2014), which capture regulatory-related skills.

Analysis Plan

To describe the landscape of early education and care in Massachusetts, we use descriptive analyses to classify children’s education and care arrangements. We report the proportion of children enrolled in formal (e.g., center-based) and informal (e.g., home-based) settings. We additionally explore whether child, family, and community features predict education and care utilization.

To determine the association between setting type and quality, we predict quality as a function of early education and care type, controlling for a host of covariates. We employ a similar approach to assess whether education and care type predicts child outcomes, using child assessment measures as our outcome of interest rather than quality. Finally, to test whether setting differences in quality account for differences in child outcomes across education and care types, we examine whether the inclusion of quality indicators ameliorates differences in child

outcomes across types. Final analyses will address selection into different education and types (e.g., using propensity score matching).

Preliminary Results

Results from the household survey ($n = 841$), weighted to be representative of the state, provide an overview of early education and care usage. Among three- and four-year-olds in the state, 55% are in formal settings, 14% are in informal settings, and 14% use a combination of formal and informal care. Across the state, 17% of children rely on parent care only.

Preliminary (unweighted) results provide suggestive evidence on the characteristics of children and families in different education and care types. Children in formal settings are older, on average, are more likely to be Black, and less likely to be White relative to children in either parent or informal care. Families in formal settings tend to have higher incomes relative to families relying on parent care. Children using informal care also tend to have more highly-educated parents and come from higher-income families relative to children in formal or parent care.

We find differences in early literacy across settings. Children in formal and informal settings outperform children in parent care on a range of academic and social-emotional measures. We also find significant differences in children's academic and social-emotional skills among children enrolled in distinct formal and informal settings, suggesting within sector variation in quality.

Conclusion

A comprehensive picture of the contemporary landscape of early education and care can illuminate mechanisms through which such programs impact children's development. Final presentation will discuss the limitations and implications for early education and care policy.

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Tables and Figures

Table 1. Characteristics of children and families using different types of early education and care

	<i>Formal care</i>	Community Center-Based	Head Start	Public Preschool	<i>Informal care</i>	Family Child Care	Unlicensed Non-Relative Care	Unlicensed Relative Care	<i>Parent Care</i>
Child age	3.953 (0.565)	3.884 (0.558)	4.003* (0.554)	4.080*** (0.566)	3.849 (0.538)	3.798 (0.535)	3.930 (0.537)	3.872 (0.539)	3.851 (0.550)
Child race/ethnicity									
Black/African-American	0.124*	0.095	0.215***	0.106	0.102	0.097	0.076	0.117	0.051
Hispanic/Latinx	0.193	0.101*	0.495***	0.119	0.144	0.191	0.076*	0.121	0.179
White	0.715*	0.823	0.367***	0.795	0.827	0.790	0.924*	0.830	0.812
Child gender - Girl	0.513	0.526	0.522	0.473	0.472	0.533	0.370	0.445	0.479
Parent education									
12 th grade or less	0.049	0.012**	0.151***	0.028	0.031	0.034	0.014	0.033	0.066
High school	0.108	0.046	0.265***	0.091	0.043	0.045	0.014	0.050	0.091
Vocational/technical	0.039	0.026	0.066	0.042	0.029	0.027	0.000	0.042	0.050
Some college	0.124	0.072**	0.249**	0.115	0.109	0.148	0.014**	0.096	0.157
Associate's degree	0.082	0.066	0.110	0.091	0.066	0.072	0.014	0.075	0.083
Bachelor's degree or above	0.598	0.778***	0.158***	0.633	0.721***	0.674*	0.946**	0.704**	0.554

Table 1 (Continued)

	<i>Formal care</i>	Community Center-Based	Head Start	Public Preschool	<i>Informal care</i>	Family Child Care	Unlicensed Non-Relative Care	Unlicensed Relative Care	<i>Parent Care</i>
Family income									
\$20k or less	0.136	0.039***	0.438***	0.072*	0.050**	0.065**	0.000***	0.053**	0.153
\$20,001 to \$50k	0.175	0.094*	0.399***	0.148	0.115	0.137	0.022**	0.126	0.178
\$50,001 to \$100k	0.178**	0.155***	0.137***	0.278	0.230	0.252	0.130**	0.244	0.297
\$100,001 to \$200k	0.328	0.437**	0.023***	0.368	0.392	0.389	0.326	0.419*	0.314
\$200,001 or above	0.183**	0.275***	0.003	0.134	0.213***	0.156*	0.522***	0.159*	0.059
Parent primary language is English	0.796	0.867	0.587***	0.844	0.861	0.842	0.924*	0.859	0.800
Number of well child visits since age 2	3.231 (2.444)	2.870 (1.771)	4.126*** (3.863)	3.302 (1.899)	3.318 (4.072)	3.171 (3.579)	2.824 (1.039)	3.658* (5.124)	2.939 (1.934)

Notes: All analyses done at the child level. Asterisks in the indicate p-values from regressions of the row variable on a series of indicators for care type (i.e., formal and informal; or community center-based, Head Start, public preschool, family child care, unlicensed non-relative care, unlicensed relative care), with parent care as the reference category. * $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$.

Table 2 – Differences in child academic and social-emotional outcomes based on enrollment in different types of early education and care

	(1) Pencil Tap (total score)	(2) PALS BSA (total raw score)	(3) PALS RA (total raw score)	(4) Leiter - Cognitive/Soc ial Composite (standardized score)	(5) Leiter - Emotions/ Regulation Composite (standardized score)	(6) MEFS (standar dized score)
<i>Formal vs. Informal care</i>						
Formal care	0.572 (0.558)	0.834* (0.386)	1.595*** (0.338)	5.545* (2.185)	2.349* (1.188)	0.498 (1.033)
Informal care	0.583 (0.585)	0.601 (0.406)	1.521*** (0.355)	6.266** (2.293)	2.506* (1.247)	1.966 (1.085)
<i>N</i>	2544	2471	2475	2703	2703	2234
<i>Micro care type</i>						
Community- Based Center	1.959** *	1.331***	2.364***	9.970***	4.013**	2.447*
	(0.562)	(0.390)	(0.337)	(2.231)	(1.221)	(1.040)
Head Start	- 1.527**	-0.551 (0.410)	-0.014 (0.356)	0.333 (2.328)	0.706 (1.274)	-3.404** (1.086)
Public Preschool	0.116 (0.608)	1.430*** (0.422)	1.720*** (0.366)	2.353 (2.418)	0.691 (1.323)	1.389 (1.132)
Family Child Care	0.015 (0.618)	-0.012 (0.433)	1.032** (0.375)	6.640** (2.456)	2.075 (1.344)	0.549 (1.155)
Unlicensed Non-Relative	1.968* (0.777)	2.121*** (0.539)	2.656*** (0.469)	10.143** (3.131)	4.837** (1.713)	5.651*** (1.437)
Unlicensed Relative	0.795 (0.635)	0.738 (0.443)	1.666*** (0.384)	4.581 (2.524)	2.229 (1.381)	2.338* (1.176)
<i>N</i>	2544	2471	2475	2703	2703	2234

Standard errors in parentheses. Includes controls for child age and language. * $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$.