

School Readiness in the Midwest Child-Parent Center Expansion: Year 1 Main Effects and Differences for Full-Day vs. Part-Day Preschool

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Historical and Current Context

The **Child-Parent Center (CPC)** program is a comprehensive PreK-3rd grade intervention targeting low-income children and their families. Cost-benefit analyses of the CPC model have demonstrated returns of more than \$8 per dollar invested. The CPC program has proven effects on cognitive, socio-emotional, and economic outcomes throughout the life course (Reynolds et al., 2011).

The **Midwest Child-Parent Center (MCPC) Expansion Project** began in 2012 to scale a revised CPC model to 30 schools across the Midwest through an Investing in Innovation grant from the US Department of Education. **Core Program Elements** include: effective learning experiences-PreK-3rd, aligned curriculum, parent involvement and engagement, a collaborative leadership team, continuity and stability, and a professional development system (HCRC, 2015).

Research Questions

What is the impact of MCPC participation on school readiness skills and attendance?

Are there differential effects of the program for full-day and part-day enrollment?

Methodology

Given the significant differences in the groups at baseline, we use propensity score analysis (Rosenbaum and Rubin, 1983) to reduce bias due to the differential distribution of observed characteristics between treatment and controls from matched sites.

- Estimate the propensity score for treatment participation.
- Compute the inverse probability weights and estimate weighted regression models to obtain predicted outcomes for each treatment level (Arteaga et al., 2015).
- Using these outcomes, estimate the Average Treatment Effect (ATE).

Advantages of Inverse Probability Weighting (IPW):

- Allows flexibility in estimating both the probability model and the outcome model. This allows us to include variables that may influence the outcome, but that do not influence the probability of treatment participation.
- Doubly robust approach in that only the specification of one of the two models needs to be correct for consistent estimation.
- Allows for multilevel treatment variables, so that we can compare the impacts of full-day MCPC participation and part-day MCPC participation to the comparison group.

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Sample

Characteristic	MCPC (N=1,724)	Comparison (N=906)	p-value
Female child, %	51.6	50.2	.51
Black, %	64.1	45.6	<.01
Hispanic, %	34.1	54.8	<.01
Home language is Spanish, %	27.2	48.9	<.01
School-level proficiency at state assessment (grades 3-8), %	62.4	60.8	.03
Age in months on Sept 1, 2012, mean	48.4	48.6	.60
Enrolled as 3-year-olds on Sept. 1, 2012, %	40.4	39.5	.65
Special education status (IEP), %	9.6	9.2	.70
Child eligible for fully subsidized meals, %	85.4	83.2	.13
Single-parent family status, %	48.8	46.7	.53
TS-GOLD Literacy, fall mean (SD)	34.2 (16.5)	31.2(14.2)	<.01
TS-GOLD Math, fall mean (SD)	22.9 (9.3)	23.2 (7.9)	.49
TS-GOLD Total, fall mean (SD)	258.6 (80.6)	255.9 (65.8)	.49

Note: TS-GOLD is Teaching Strategies GOLD™ assessment system.

Unadjusted Mean Differences

Outcome	MCPC (N=1,724)	Comparison (N=906)	p-value
School Readiness Measures			
TS-GOLD Math, (spring mean)	37.8	33.4	<.01
At national norm TS-GOLD Math, %	74.7	56.8	<.01
TS-GOLD Literacy, (spring mean)	60.6	50.4	<.01
At national norm TS-GOLD Literacy, %	78.0	53.1	<.01
TS-GOLD Total score, (spring mean)	287.8	255.1	<.01
At national norm TS-GOLD Total, %	69.8	47.5	<.01
Attendance Measures			
Yearly attendance rate, %	84.0	87.6	<.01
Chronic absence (>=10% days missed), %	62.0	44.4	<.01

IPW Model

Outcome	MCPC vs. Comparison	Std. Error	p-value
TS-GOLD Math (spring)	3.9	.37	<.01
At national norm TS-GOLD Math, %	8.4	.03	.01
TS-GOLD Literacy (spring)	8.3	.85	<.01
At national norm TS-GOLD Literacy, %	18.3	.05	<.01
TS-GOLD Total score, (spring)	21.5	2.42	<.01
At national norm TS-GOLD Total, %	11.4	.05	.01
Yearly attendance rate, %	-1.0	.002	.05
Chronic absence (>=10% days missed), %	5.7	.02	<.01

Dosage Effects, IPW

Outcome	MCPC Full-Day vs. MCPC Part-Day	Std. Error	p-value	MCPC Part-Day vs. Comparison	Std. Error	p-value
TS-GOLD Math (spring)	2.0	.99	.05	3.3	.37	<.01
At national norm TS-GOLD Math, %	10.8	.07	.13	3.9	.04	.33
TS-GOLD Literacy (spring)	4.6	1.36	<.01	7.6	.88	<.01
At national norm TS-GOLD Lit., %	18.3	.04	<.01	17.2	.05	<.01
TS-GOLD Total score, (spring)	11.5	5.31	.03	18.0	2.44	<.01
At national norm TS-GOLD Total, %	18.6	.07	0.01	9.4	.049	.05
Yearly attendance rate, %	<.01	.01	.99	-1.0	<.01	<.01
Chronic absence %	-6.1	.03	.05	7.7	.02	<.01

Policy Implications

- Compared to children enrolled in the usual school-based preschool, MCPC children had greater school readiness skills in math, literacy, and on the total score, which includes measures of socio-emotional development and physical health. Findings indicate the value added by investing in high-quality, well-aligned pre-k services over treatment-as-usual services.
- Full-day services produce the greatest effects for children, but there are significant impacts of part-day services as well. Efforts should be made to make full-day options more available to families.



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