Measuring Implementation Fidelity in the CPC P-3

Agenda/ Objectives

- Intro to CPC
- Program implementation overview
- 3 Research questions
- Methods
- RQ results
- Implications
  - Practice
  - Policy

CPC P-3 Overview

- PK-3rd school reform model that strengthens schools, classrooms, and parents
- 26 sites across Chicago, Evanston, Unit 5, IL; St. Paul, MN
- Over 10,000 students served from 2012-2017
- 6 Elements of Effectiveness

Implementation Fidelity

/impləmənˈtāSH(ə)n/ / fəˈdelədē/

degree to which an intervention, program, or practice is implemented as prescribed

Fidelity components include:

- **Adherence** (how well intervention matched operational expectations)
- **Exposure** (number, length, or frequency of intervention)
- **Quality of delivery**
- **Participant responsiveness** (measures of participant engagement)
- **Program differentiation** (unique contribution of particular components)

(Dane & Schneider, 1998)

Program outcomes depend on implementation quality (Fixsen et al., 2005)

→ Programs with high levels of implementation fidelity = Higher likelihood of achieving outcomes

→ Lower levels of program adherence= Smaller or null program effects (Durlak & DuPre, 2008)

CPC P-3 strikes to balance quality implementation with effective adaption

Research Questions

- How was fidelity defined and measured across each of the 6 elements?
- How was CPC implemented across schools?
- What is the predictive ability of levels of each element on student gains?

How was fidelity defined and measured across each of the 6 CPC P-3 elements?

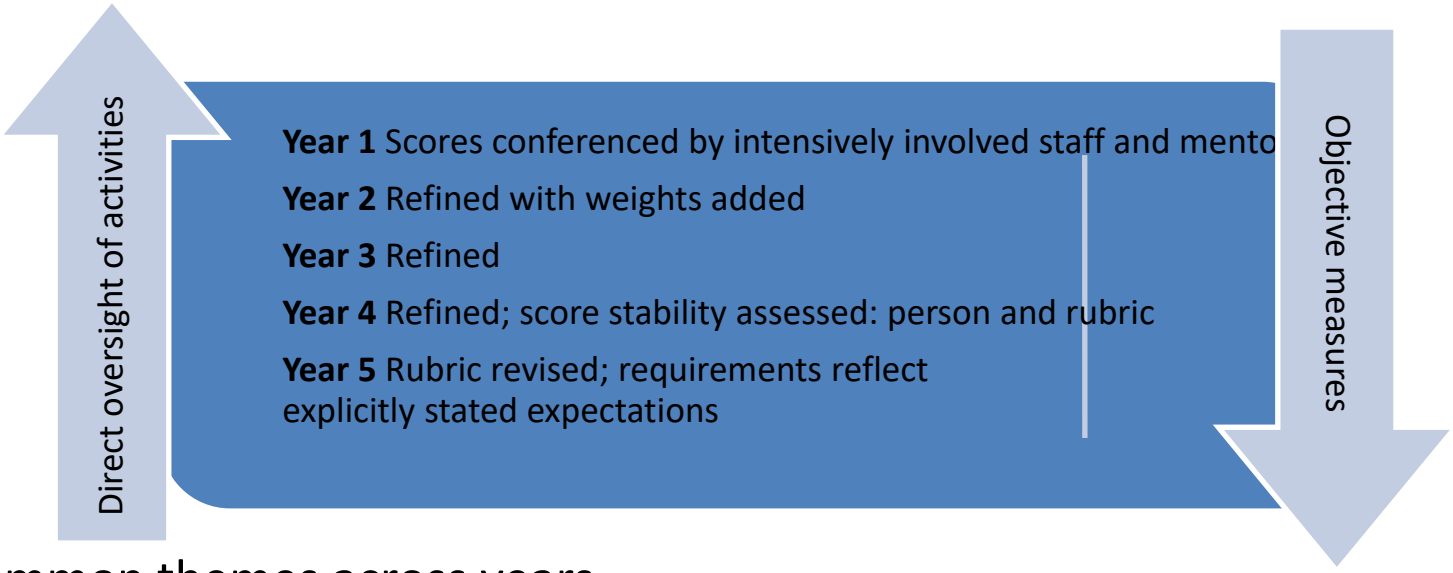
Researchers measure each of the 6 CPC P-3 elements by integrating several sources of data to measure key activities within each of the 6 elements

Data include:

- Observations
- Interviews
- Site visits
- Administrative records
- Plans
- Other documentation

Each sites receives a rating for each of the six sites where: 1= poor; 2= below average; 3= average; 4= above average; and 5= excellent. An overall rating is provided by year as well as averages across the five years of the project.

How was fidelity defined and measured across each of the 6 CPC P-3 elements?



- Common themes across years
  - Requirements guided scoring scheme
  - Scores reflect the parts and the whole of the element
  - Balance of activities across school
  - Reliability estimates indicate few differences across person (CA); some differences across Y3 and Y4 rubric (on Y4 data) (CLT, PI, ELE).

CPC Element: Collaborative Leadership Team (CLT) scoring example

Requirement 1 (of 4): Under the direction of the HT, the site Leadership Team meets regularly. Team members in the same job position at neighboring CPCs also meet regularly (virtually or physically)	
Indicator 1: **Site Leadership Team meets regularly**	**Indicator 2:** **Team members in the same job position at neighboring CPC s meet regularly**
1= No meeting scheduled	1 = Meetings did not occur/ 1 or fewer staff attended 1 or fewer meetings
2	2
3= Meetings scheduled to occur 1x month	3 = Meetings occurred 4-5 times
4	4
5 = Meetings scheduled to occur weekly	5 = Meetings occurred monthly (at least 10 times)
Data Sources: Curriculum & Parent Involvement plans; site interviews	**Data Sources:** Attendance at monthly CLT meetings, mentor interviews; site interviews

How was CPC implemented across schools? Scoring trends

Fidelity Averages Across Years by Element					
	Year 1	Year 2	Year 3	Year 4	Year 5
Effective Learning Experiences	3.6	4.0	3.6	4.3	3.8
Collaborative Leadership Team	4.0	4.4	3.9	4.4	4.1
Aligned Curriculum	3.6	3.6	4.2	3.9	4.0
Parent Involvement	3.9	4.8	4.2	3.7	4.2
Professional Development	3.4	4.2	3.0	3.2	3.2
Continuity and Stability	4.3	3.5	4.4	4.3	4.0
Overall	3.8	4.1	3.9	4.0	3.9

How was CPC implemented across schools? Correlations among CPC elements

Correlation Matrix of CPC Elements- average of Year 1- Year 5					
	1	2	3	4	5
1. Effective Learning Experiences	--				
2. Collaborative Leadership Team	0.22	--			
3. Aligned Curriculum	0.31	0.45*	--		
4. Parent Involvement	-0.11	0.71***	0.09	--	
5. Continuity & Stability	0.03	0.45*	0.70***	0.19	--
6. Professional Development	0.39*	0.12	0.23	-0.18	-0.23
* $p < .05$, *** $p < .001$					

- Correlations suggest that overall elements are providing unique information about programming adherence.
- CLT correlates with 3 CPC elements

How was CPC implemented across schools?
CLT across time

Y1-5 CLT average, by site						
	Y1 CLT	Y2 CLT	Y3 CLT	Y4 CLT	Y5 CLT	CLT Overall
1	5.00	3.86	3.00	3.73	2.82	3.68
2	4.00	4.29	4.20	4.82	4.73	4.41
3	3.00	3.57	4.00	4.90	4.63	4.02
4	5.00	5.00	4.60	3.82	2.45	4.17
5	4.00	4.50	2.60	4.10	4.00	3.84
6	4.00	4.60	3.00	4.00	4.00	3.91
7	3.00	5.00	5.00	4.10	4.73	4.36
8	3.00	5.00	5.00	4.64	4.73	4.47
9	4.00	4.71	4.20	4.36	3.45	4.15
10	5.00	5.00	3.40	4.55	4.18	4.43
11	5.00	5.00	4.20	4.64	5.00	4.77
12	5.00	2.43	4.60	4.55	4.27	4.17
13	2.00	4.14	3.40	4.27	4.27	3.62
14	5.00	5.00	4.00	4.81	4.81	4.73
15	3.00	3.17	4.60	4.91	2.18	3.57
16	4.00	5.00	3.00	3.54	4.45	4.00

- No clear pattern across sites/ years; sites' scores varied by year suggesting focus on elements changed over the course of the project

What is the predictive ability of levels of each element on student gains?

- 1,724 Pre-k students in Chicago
- 65 classrooms across 16 sites
- Covariates in model: gender, age, race, ethnicity, free lunch eligibility, special education, baseline learning, assessment date, school quality
- Year-end students learning using TS GOLD (Heroman et al., 2010): overall readiness, literacy, language, math, and socio-emotional learning
- Fidelity scores were conferenced using requirements, indicators, and PI expertise
- Linear regression using fidelity of CPC elements (with covariates) on student readiness at end of Pre-K.

CPC P-3 Element Fidelity on Outcomes

Table xx.
CPC Elements in Linear regression Models Predicting TS GOLD Gains

	Literacy (SE)	Language (SE)	Math (SE)	Socio-emot (SE)	Total (SE)
Effective Learning Experiences	-2.43* (1.06)	-.85 (.69)	-1.11* (.49)	.11 (1.60)	-6.33 (3.91)
Collaborative Leadership Team	3.90*** (.84)	1.92*** (.46)	1.39** (.37)	2.88* (1.10)	13.51*** (2.93)
Aligned Curriculum	.20 (.75)	.02 (.50)	-.79 (.42)	-.27 (1.04)	-.76 (2.86)
Professional Development	.42 (.66)	-.13 (.16)	.24 (.16)	-.47 (.42)	.14 (1.16)
Parent Involvement	-1.78* (.66)	-1.04** (.28)	-.80** (.24)	-1.91* (.75)	-7.27** (1.16)
Continuity & Stability	1.39 (.96)	.17 (.43)	.75 (.49)	.64 (.92)	2.88 (2.93)
R^2	.772	.812	.804	.781	.834

Note. n = 1,724. Standard error adjusted for 16 school-level clusters. Covariates in model: gender, age, race, ethnicity, free lunch eligibility, special education, baseline learning, assessment date, school quality
*** p < .05, ** p < .01, *** p < .001**

Discussion

- Dynamic yet grounded process
- High levels of reliability between years
- CPC element fidelity ratings remained relatively stable across years
- While correlated, each CPC element encompasses distinct school reform activities
- Leadership (CLT) consistently predicted student learning in PK; PI was negatively predicting
- Causes? Laying foundation/ building culture of programming.
  - Leadership team was measured by the presence of staff and plans to collaborate, communicate, etc.
  - PI measures were more difficult– ultimately shaping programming and parenting activities.

Future Directions

- Later impacts of fidelity on K-3 outcomes
- Long-term impacts of exposure of high fidelity across years
- Dismantling: identifying specific elements, activities/ behavior that drive learning
- Continue to refine rubric so sites can self-assess and identify areas of strength and opportunities for targeted support

Implications for practice

1. Imperative to build in measurement system into implementation activities
2. Strategically select data to collect (balance of implementation and collection fatigue)

3. Data from fidelity ought to inform programming via formative feedback cycles

Implications for policy

1.Create data systems that can be used for multiple purposes (administrative, progress monitoring, outcomes)

2. Developing human capital is integral to any effective intervention

3. Understanding active ingredients (via quantitative analysis) is key in understanding what/ how to scale effective practices.

Questions?

Visit us at cpcp3.org or hcrc.umn.edu