Two-Generation Approach to Improving Emotional and Behavioral Regulation

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Project Description

The present study builds on theoretical and empirical prior work indicating that children's executive function (EF) skills are important precursors to emotional and behavioral regulation and that these skills are likely best promoted when addressed across classroom and home contexts. Specifically, the proposed study will exploit a randomized experimental design to evaluate the effects of a direct child training targeting EF on children's emotional and behavioral regulation and the value added of training both children and parents in these areas. The parent-training curriculum is focused on developing strong parent-child interactions with a specific emphasis placed on teaching parents the developmental importance of EF. These interventions will be implemented and evaluated in Head Start centers in Boston and the pathways through which these interventions operate to influence regulation will be examined.

Research Questions

Main Questions:

1. Does a classroom training improve low-income 3- and 4-year-old children's emotional and behavioral regulation and EF?
2. Does classroom training plus parent training lead to added improvement in these domains above and beyond classroom training alone?

Exploratory Questions:

3. Does EF mediate link between the intervention and emotional and behavioral regulation?

Sample

Three- and four-year-old Head Start children and their parents were recruited from 32 Head Start classrooms, leading to an initial sample size of 331 (out of a possible 544). Participating families represented several racial/ethnic backgrounds (see Table 1 for sample details). After attrition, the final sample size was 305.

Table 1

Sample Characteristics Table by Treatment Status

	Full Sample (N=305)		Control (N=92)		Classroom Only (N=108)		Mind Matters (N=105)	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Child characteristics								
Age (months)	49.71	(7.78)	51.11	(7.85) [a]	47.97	(6.59) [c,a]	50.27	(8.50) [c]
Female (%)	53.87	(49.85)	44.57	(49.70) [c]	62.27	(48.47) [c]	53.38	(49.88)
Primary language (%)								
English	54.89	(49.76)	63.04	(48.27) [d]	55.00	(49.75)	47.62	(49.94) [d]
Spanish	22.97	(42.06)	21.74	(41.25)	21.34	(40.97)	25.71	(43.71)
Haitian Creole	9.54	(29.38)	5.43	(22.67)	10.28	(30.36)	12.38	(32.94)
Cape Verdean	5.67	(23.13)	4.35	(20.39)	7.69	(26.62)	4.76	(21.30)
Other	6.93	(25.40)	5.43	(22.67)	5.69	(23.16)	9.52	(29.35)
Race/Ethnicity (%)								
White	8.93	(28.44)	7.83	(26.65)	9.49	(28.92)	9.33	(28.86)
Black	33.36	(47.07)	36.25	(47.87)	34.63	(47.41)	29.52	(45.53)
Hispanic	38.93	(48.67)	40.98	(48.92)	35.23	(47.62)	40.95	(49.05)
Asian	7.20	(25.74)	5.65	(22.69)	7.55	(26.13)	8.19	(27.25)
Other	11.57	(31.87)	9.29	(28.51)	13.10	(33.50)	12.00	(32.35)
Parent characteristics								
Age (years)	33.01	(7.63)	32.24	(6.81)	32.66	(8.31)	34.03	(7.45)
Marital status (%)								
Single	60.08	(48.89)	71.90	(44.72) [d]	59.40	(48.82)	50.43	(49.83) [d]
Cohabitating	13.72	(34.31)	12.66	(32.95)	15.09	(35.50)	13.24	(33.72)
Married	26.20	(43.89)	15.43	(35.87) [d]	25.51	(43.37)	36.33	(47.84) [d]
Parental education (%)								
Less than high school	25.46	(43.43)	20.00	(39.56)	28.66	(44.82)	26.95	(44.15)
High school diploma or GED	27.98	(44.85)	33.80	(47.22)	23.38	(42.23)	27.62	(44.62)
Some college	23.16	(42.09)	21.58	(40.78)	26.76	(44.13)	20.86	(40.38)
Associates degree	11.75	(32.09)	11.58	(31.73)	11.62	(31.87)	12.05	(32.15)
Bacelors degree or higher	11.64	(31.85)	13.04	(33.05)	9.58	(29.04)	12.52	(32.73)

Notes: Superscript letters indicate statistically significant differences between the dosage variables and the control group such that a indicates $p < 0.001$; b indicates $p < 0.01$; c indicates $p < 0.05$; d indicates $p < 0.10$

Methods

The study made use of a clustered (classroom-level) randomized design with outcomes measured at the individual child level. Each classroom was randomly assigned to one of three conditions:

1. Control condition (children and families receive standard Head Start intervention components);
2. Classroom-based treatment condition (children take part in teacher-led, classroom exercises designed to improve EF and self-regulation modeled after Tominey and McClelland's [2011] circle time games directly teaching children how to switch between two different sets of rules (i.e., cognitive flexibility) and inhibit automatic responses (i.e., inhibitory control): Red Light, Purple Light; The Freeze Game; Color-Matching Freeze; Sleeping, Sleeping, All the Children Are Sleeping; Conducting an Orchestra; and Drum Beats); and

3. Classroom-based and parent training treatment condition (children receive the classroom-based treatment condition and, in addition, their parents receive the Mind Matters parenting curriculum focused on developing strong parent-child interactions with a specific emphasis placed on teaching parents the developmental importance of EF. Ten, 2-hour sessions, include the following modules: (1) Introduction and Relationships are Important; (2) Building a Foundation; (3) Focus and Self-Control; (4) Perspective Taking; (5) Communication; (6) Making Connections; (7) Critical Thinking; (8) Taking on Challenges; (9) Perseverance; and (10) A Learning Community).

Data Collection and Measures: Baseline data was collected prior to the start of and follow-up data were collected immediately following the end of both interventions (a 10-week duration). Children's emotional and behavioral regulation and EF were measured using: Challenging Situations Task (CST), Head-to-Toes (HT), Pencil Tap (PT), Something's the Same Game (SS), and Adapted Leiter-R Assessor Report (subscales Attentiveness/ Inhibitory Control [IC] and Positive Engagement [PE]). Covariates were collected using parent report and administrative data.

***Analysis*:** Multiple imputation accounted for missing data. For all analyses, standard errors were clustered by classroom (N = 32) to help account for possible correlations among students in the same classroom. Impact analyses were conducted using multilevel analyses accounting for classroom-level clustering of children (and intervention status) and allowing for difference-in-difference estimates of the pre-test/post-test comparisons of the treatment and control groups. For questions 1 and 2, impact analyses were conducted in several steps: (1) unadjusted outcome differences were analyzed; (2) outcome differences were adjusted for baseline scores on EF or positive behavior; (3) the full battery of child and family covariates were included in models; and (4) the variations in treatment dosage with regard to number of classroom activities played and number of parent trainings attended were examined as predictors of child outcomes (this step was primarily descriptive and exploratory given that dosage was not randomly assigned). For exploratory research question 3, mediation analyses were conducted within the multilevel model.

Progress Update

There were no effects of treatment for SS, PT, HT, and PE. However, the difference between the control group and the classroom plus parent group approached significance for IC in the opposite direction of intended effects. For the CST, the classroom-only group displayed better problem-solving strategies than the classroom plus parent group ($b = 0.60$; $p < 0.05$). Treatment on the treated analyses to account for low dosage were similar. There were no effects of treatment for SS, PT, HT, and CST. However, one difference approached significance – the control group displayed better IC than the low dosage classroom plus parent group. For PE, two differences approached significance: the higher dosage classroom-only group displayed more PE than the control group and the low dosage classroom plus parent group showed greater PE than the higher dosage classroom plus parent group. When treating dosage linearly, one effect approached significance – the more parent trainings attended the higher the score on SS game; no other effects were found. Mediation analyses likewise produced no effects.

Implications for Policy/Practice

The present study identifies barriers to participation for parents and the need for buy-in from teachers. The in progress qualitative addition to this study will help identify precisely what these barriers were for parents and what would create more buy-in from teachers to boost participation rates for similar programs in the future.

Implications for Research

The current study addresses critical gaps in the field and our current understanding of Head Start children by highlighting the difficulty in teaching, moving, and assessing EF. Additionally, future research with these data will examine potential moderators (high/low baseline EF, age, gender) and new questions using the parent and teacher surveys (e.g., Does conflict within the home influence child EF?).

For More Information

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