Executive Summary

Head Start CARES

Impacts of Social-Emotional Curricula on Three-Year-Olds

Exploratory Findings from the Head Start CARES Demonstration

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EXECUTIVE SUMMARY

Impacts of Social-Emotional Curricula on Three-Year-Olds: Exploratory Findings from the Head Start CARES Demonstration

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The Head Start CARES study could not have been completed without a hard-working team devoted to collecting the large amount of data we needed from all around the country. We appreciate the work of our dedicated research partners, including Linda Kuhn and Tony Lavender and their staff at Survey Research Management, who collected the data used in this report, as well as the MDRC and MEF Associates staff and consultants who participated in the site visits.

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The report is a culmination of the joint energy and effort of a large team who supported the site recruitment, data collection, data management, and technical assistance work on this project. At MDRC, Sharon Rowser played a critical role in overseeing the site recruitment and operations effort. Gordon Berlin, Barbara Goldman, Virginia Knox, John Hutchins, Marie-Andrée Somers, and Mike Fishman provided thoughtful input and reviewed the report drafts. We also thank Magdalena Mello for her careful work as a resource manager at all phases of the project; Jo Anna Hunter for acting as our liaison with Survey Research Management; Ximena

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Perhaps most important, we thank the children and families who participated in our study and allowed us access into their lives for a few years. Our research would not have been possible without them.

The Authors

Executive Summary

In recent years, interest has increased in preschool programs that promote low-income children's early learning and development. Although research in this area has focused mostly on 4-year-olds, a growing number of 3-year-olds attend publicly funded preschool. In fact, in Head Start — a federally funded early childhood education program — the percentage of 3-year-olds rose from 24 percent in 1980 to 40 percent in 2013.[1]

Increased attention has also been focused on identifying promising strategies to enhance young children's social, emotional, and behavioral development. A number of mostly small-scale studies demonstrate that classroom-based approaches can improve these outcomes for 4-year-old children.[2] However, a notable gap in the evidence base is whether the benefits of these social-emotional strategies can extend to younger children in the classroom.

This report presents exploratory impact findings for 3-year-old children from the Head Start CARES (Classroom-based Approaches and Resources for Emotion and Social skill promotion) demonstration. The Head Start CARES demonstration was a large-scale randomized controlled trial implemented in Head Start centers across the country. The demonstration tested the effects of three classroom-based approaches that each had a distinct theory, developed by the Head Start CARES research team,[3] of how to improve children's social-emotional competencies. Called "enhancements" because they were intended to complement and to enrich existing Head Start classroom practices, the three approaches are The Incredible Years Teacher Training Program, or "The Incredible Years";[4] Preschool PATHS (Promoting Alternative Thinking Strategies), or "PATHS"; and a one-year version of Tools of the Mind focused on play, or "Tools of the Mind—Play."[5] The demonstration was conceived and sponsored by the Office of Head Start and the Office of Planning, Research and Evaluation in the Administration for Children and Families, U.S. Department of Health and Human Services. MDRC, a nonprof-

[1]Tarullo, Aikens, Moiduddin, and West (2010); Child Trends (2014).

[2]Reid, Webster-Stratton, and Hammond (2003); Domitrovich, Cortes, and Greenberg (2007); Barnett et al. (2008).

[3]The Head Start CARES team developed the theory of change for each approach based on the training and curricular materials and research papers from each one.

[4]The Teacher Training Program is one of three Incredible Years programs; the other two are the child-focused Dinosaur School and the parent-focused Parent Program.

[5]Tools of the Mind—Play, a one-year program that promotes children's learning through structured "make-believe" play, is adapted from the original two-year "Tools of the Mind" program. In Tools of the Mind—Play, teachers were trained for only one year in the model (instead of two years, as is typical in the Tools of the Mind program) and it was implemented as an enhancement to the existing curricula in the Head Start CARES program sites.

it, nonpartisan education and social policy research organization, conducted the demonstration in collaboration with MEF Associates and several academic partners.

Head Start CARES: Earlier Findings and a Preview of Findings for 3-Year-Olds

Two prior reports on Head Start CARES looked at all classrooms in the demonstration, which included classrooms with 4-year-olds only and "mixed-age" classrooms with both 3-year-olds and 4-year-olds. This work confirmed that, on average, the enhancements were satisfactorily implemented in the full set of classrooms in the study, leading the research team to conclude that Head Start CARES provided a fair test of large-scale implementation of the three enhancements.[6] Furthermore, impact findings for the full sample of Head Start CARES classrooms indicate that two of the three enhancements — The Incredible Years and PATHS — improved 4-year-old children's social-emotional outcomes, with impacts of small to moderate size.[7]

The findings presented in this report suggest that the benefits of social-emotional enhancements can extend to 3-year-olds in mixed-age Head Start classes that include both 3- and 4-year-old children. When considered as a group, the enhancements produced improvements in teachers' reports of 3-year-olds' social behaviors and closeness with their teachers. These overall impacts appear to have been driven primarily by The Incredible Years, which is consistent with the hypothesis that The Incredible Years may be more accessible to 3-year-olds than are PATHS and Tools of the Mind—Play.

However, as discussed in more detail below, these questions were not the main focus of the study, and the conclusions that can be drawn from this analysis are limited because of the sample sizes, data sources, and measures available for the analysis. In addition, the pattern of impacts on 3-year-olds' social-emotional outcomes does not clearly align with the impacts on teacher practice and classroom climate in the classrooms serving these children. This finding raises questions about the findings that warrant further exploration, including what additional mechanisms might account for the impacts of the enhancements on 3-year-olds' social and emotional competencies.

[6]Mattera, Lloyd, Fishman, and Bangser (2013).

[7]Morris et al. (2014). While the full sample described in Morris et al. (2014) included all the Head Start CARES classrooms, it focused only on the 4-year-olds in those classrooms when discussing the analysis of child outcomes.

The Head Start CARES Demonstration

Head Start CARES used a rigorous random assignment research design in which Head Start centers were randomly assigned to receive one of the three social-emotional enhancements or to a control group in which the curricula used in the Head Start program were carried out as usual without any of the enhancements. The enhancements were implemented between the fall of 2010 and the spring of 2011.

The Head Start CARES enhancements are described in more detail in Box ES.1. They were designed for 4-year-olds, and, accordingly, the theory of change underlying these enhancements is most relevant for this age group.[8] As shown in Figure ES.1, the enhancements share a common goal of improving children's social, emotional, and behavioral competencies. The overarching hypothesis is that the enhancements influence children through changes in teacher practice and, in turn, classroom climate. However, each enhancement is thought to have a different mediating pathway by which it improves young children's social-emotional outcomes. Enhancement-driven improvements in children's social, emotional, and behavioral competencies might, in turn, lead to improvements in children's cognitive and pre-academic skills.[9] However, the enhancements did not directly target those skills.

The Current Analysis: An Opportunity to Explore the Impacts of the Head Start CARES Enhancements on 3-Year-Olds

Head Start CARES provides a unique opportunity to explore the impacts of social-emotional enhancements on 3-year-olds in mixed-age classrooms. Yet, there are limitations to this analysis that have implications for the conclusions that can be drawn:

- **Lack of clear theory and evidence base.** At the outset of the study, it was not clear whether and how 3-year-olds might benefit from the enhancements. Much of the prior theory and intervention research in this area have focused primarily on 4-year-olds, with few insights into how 3-year-olds could be affected. Given this uncertainty, Head Start CARES was not explicitly designed to test the impacts of the enhancements on 3-year-olds. As discussed below, the design of the impact analysis — including the sample sizes and data sources that were available — has several implications for what can be learned from it.

[8] As noted earlier, the theory of change was developed by the Head Start CARES evaluation team.

[9] Pre-academic skills are the early language, literacy, and math skills that underlie learning in elementary school. For example, in preschool, children learn to identify letters and the sounds that letters make, to provide a foundation for reading in kindergarten.

Box ES.1

The Head Start CARES Enhancements

- *The Incredible Years Teacher Training Program* (The Incredible Years) is designed to enhance children's social-emotional development. Teachers are trained to create an organized classroom that supports children's ability to learn by watching others ("social learning") and children's behavior regulation in the context of positive teacher-child relationships. In an Incredible Years classroom, the teacher uses praise, clear commands, and consistent limit-setting to encourage appropriate and positive behaviors instead of singling out children who are misbehaving. For example, during an activity where children are asked to sit quietly, the teacher might say, "I really like the way Juan is sitting with his hands in his lap."

- *Preschool PATHS* (PATHS) is an instructional approach to enhancing children's social-emotional development through lessons and activities focused on children's understanding of emotions ("emotion knowledge") and social problem-solving skills, as well as through teacher modeling and support. In a PATHS classroom, teachers talk about their feelings and encourage children to think about their and others' feelings in order to help children understand and learn about emotions in the context of social interactions. For example, in a group activity, the teacher might point out facial cues, like a smile, that show that children are feeling happy.

- *Tools of the Mind—Play* requires teachers to restructure the room and school day, with large blocks of time devoted to supporting and structuring (scaffolding*) children's make-believe play and role-playing games. By scaffolding students' play, teachers aim to enhance the children's planning skills, understanding of social roles, memory and capacity for focused attention, and social-emotional understanding. For the Head Start CARES study, Tools of the Mind developers compressed the original two-year curriculum into a one-year enhancement focused on play, the central element of Tools of the Mind. For example, in a Tools of the Mind—Play classroom, a child might draw a picture showing that she intends to play house and will be the mother. Through a series of exchanges with the child, the teacher would seek to expand the complexity of the child's role play by asking questions like, "What will you do as the mother? How could you make dinner for your child? How would you get the food to cook dinner?" In doing so, the teacher helps to build the child's self-regulation skills, planning skills, and ability to assume various perspectives through the role-playing activity.

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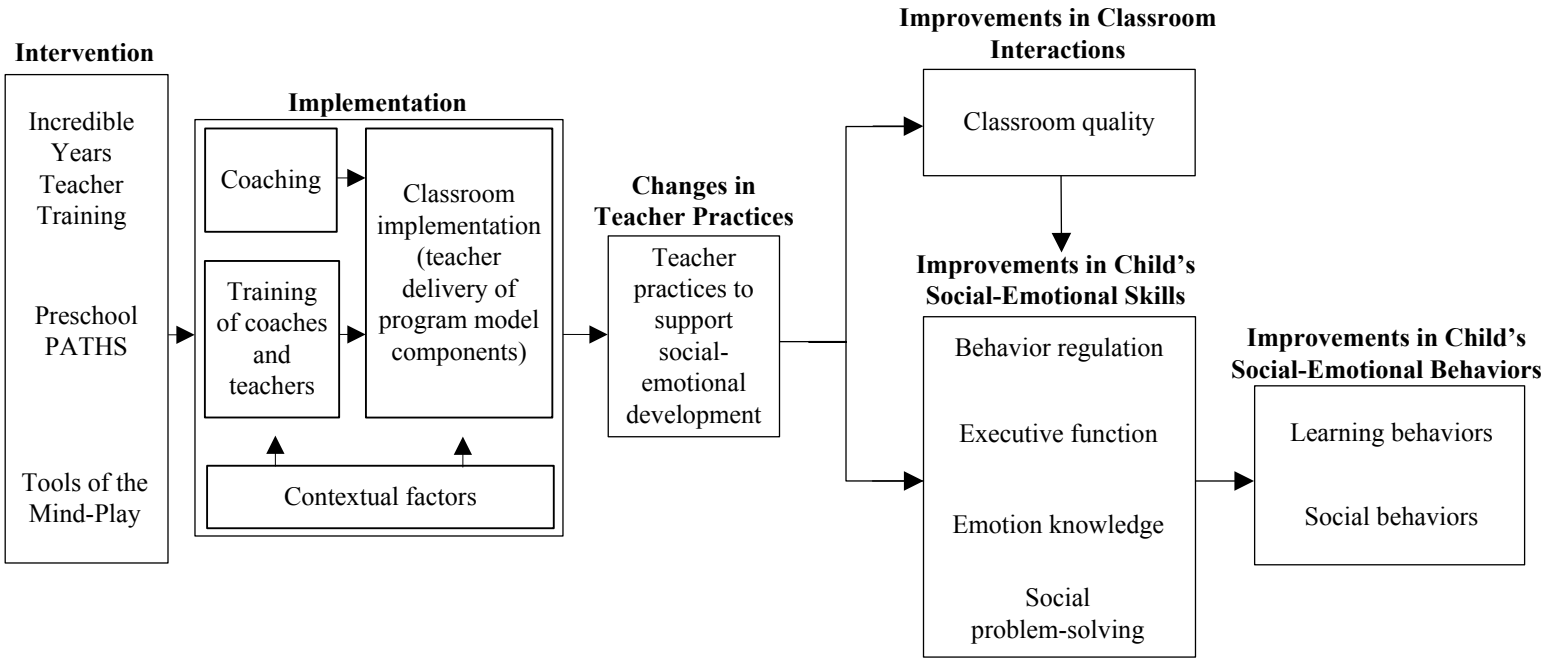
*Scaffolding is the act of helping a child accomplish a challenging task or acquire a skill that is just beyond the child's current ability level.

Figure ES.1

Head Start CARES Theory of Change



- **Limited statistical power.** All of the classes in Head Start CARES served 4-year-olds, but only a subset served both 3- and 4-year-old children. The impact analysis therefore has somewhat limited power to detect statistically significant impacts on mixed-age classrooms and the 3-year-olds in those classrooms, especially impacts that are small or moderate in magnitude.[10] This is particularly relevant for separate tests of the impacts of the individual enhancements on teachers' practices and other class-level outcomes.

- **Small set of child outcomes.** Data were not collected on 3-year-old children's executive function skills,[11] understanding of emotions (emotion knowledge), or social problem-solving skills — key outcomes that are the foci of the PATHS and Tools of the Mind—Play enhancements.[12] This yields uneven information about the potential effectiveness of the enhancements for 3-year-olds.

- **Reliance on teacher reports.** Last, all the social-emotional outcomes explored for 3-year-olds in this analysis were measured by teacher reports. Teacher reports are informative because the way in which teachers see the children in their classes and build relationships with them can shape children's early schooling experiences. However, exclusive reliance on teacher reports can be a limitation; teachers' ratings may be influenced by their own perceptions, and teachers who were trained in the Head Start CARES enhancements might perceive children's behavior differently from those who did not receive this training, regardless of whether children's *actual* behaviors changed.

In light of these limitations, the impact results presented here are viewed as an opportunity to add to the literature and to generate hypotheses to guide future intervention research in this area. The findings are not yet intended to be used to inform policy or practice.

[10]Statistically significant impacts are those that are unlikely to have occurred by chance alone.

[11]Executive function skills consist of the ability to flexibly shift attention from one piece of information to another, the ability to control one's immediate or automatic response in favor of a planned response (inhibitory control), and working (or short-term) memory.

[12]The Incredible Years also targeted executive function skills. However, because data were collected for two out of the three key outcomes targeted by The Incredible Years, the lack of information about executive function skills is thought to be less of an issue for establishing the effects of the enhancement on 3-year-olds.

Characteristics of Grantees, Centers, Classrooms, and Children in the Current Sample

This impact analysis uses a subset of grantees, centers, classrooms, and children from the full sample in the Head Start CARES study.[13] The sample for the larger Head Start CARES study was designed to reflect the racial, ethnic, and cultural diversity of Head Start children across the country, but was not selected to be statistically representative of all Head Start grantees in the United States. The 3-year-old children included in this analysis were served in 155 mixed-age classrooms located in 56 Head Start centers within 9 of the 17 grantees in the full Head Start CARES sample. These nine grantees were located in five states spread across three regions of the country (Midwest/Plains, West, and South) and varied on such characteristics as size, racial or ethnic composition of the children served, and number of participating centers.

A typical Head Start CARES mixed-age classroom had a minimum of one lead teacher and one assistant teacher. The Head Start CARES classrooms that served 3-year-olds were similar to classrooms in a nationally representative sample of Head Start centers on levels of emotional support, but had somewhat higher levels of classroom organization and instructional support, as measured by the Classroom Assessment Scoring System (CLASS), a widely used measure of classroom climate.[14] Head Start CARES teachers in classrooms that served 3-year-olds, however, looked similar to the general population of Head Start teachers on characteristics like educational attainment and years of teaching experience.[15] In the current sample of mixed-age classrooms, an average of three classrooms per center participated in the Head Start CARES demonstration.

Impacts of Head Start CARES Enhancements on Teacher Practice, Classroom Climate, and 3-Year-Olds' Social-Emotional and Pre-Academic Outcomes

In the absence of strong *a priori* hypotheses about how each enhancement would affect 3-year-olds and because greater statistical power can be leveraged with pooled research questions (that is, the statistical significance of smaller effect sizes can be detected with more certainty when tested with a larger sample), the analysis first tested for impacts with the data combined across

[13]A grantee is the local public or private nonprofit agency that has been designated a Head Start agency.

[14]In the sample of mixed-age Head Start CARES classrooms, average CLASS scores were 5.32 for Emotional Support, 4.84 for Classroom Organization, and 2.70 for Instructional Support. By comparison, in the nationally representative Head Start Family and Child Experiences Survey (FACES) sample, which included classrooms that served 4-year-olds only and mixed-age classrooms that served both 3- and 4-year-olds, average CLASS scores were 5.30 for Emotional Support, 4.70 for Classroom Organization, and 2.30 for Instructional Support (Moiduddin et al., 2012).

[15]U.S. Department of Health and Human Services, Administration for Children and Families (2012).

all three enhancements rather than for each enhancement individually. This analysis was conducted to assess whether the delivery of *any* social-emotional enhancement in mixed-age classrooms might improve 3-year-olds' social and emotional competencies. The results indicate the following:

- **When tested as a group, the enhancements increased levels of teachers' social-emotional instruction but did not affect other aspects of teacher practice or classroom climate in mixed-age classrooms.**

As shown in Table ES.1, teachers in enhancement classrooms showed statistically significantly higher levels of social-emotional instruction than their control group counterparts. However, these impacts did not translate into statistically significant impacts on other aspects of teacher practice, such as classroom management and scaffolding, or classroom climate.

- **When considered as a group, the enhancements improved teacher reports of 3-year-olds' social behaviors and closeness with their teachers.**

However, as shown in Table ES.1, no statistically significant impacts were found on teacher reports of 3-year-old children's behavior problems, interpersonal skills, learning behaviors, or conflict with their teacher when data were pooled across the enhancements.

To isolate the impacts of the individual enhancements, separate analyses tested the impacts of each enhancement on teacher practice, classroom climate, and teacher reports of 3-year-olds' social-emotional outcomes. The results, shown in Table ES.2, indicate the following:

- **The Incredible Years did not produce the expected statistically significant impacts on teachers' use of classroom and behavior management strategies in mixed-age classrooms. The Incredible Years did, however, improve teacher reports of 3-year-olds' social behaviors and closeness with teachers.**

The absence of statistically significant impacts on teachers' use of classroom and behavior management strategies is surprising, since these are central foci of The Incredible Years training, and The Incredible Years significantly improved teachers' classroom management practices in the full Head Start CARES sample.[16] Despite the absence of statistically significant impacts on Incredible Years teachers' classroom management practices in mixed-age classrooms, Incredible Years teachers still reported statistically significantly higher levels of 3-year-

[16]Morris et al. (2014). The analysis did not test for whether there are statistically significantly different impacts between the full (4-year-old and mixed-age) and mixed-age-only samples of classrooms. Moreover, because the mixed-age classrooms differ from the full sample of classrooms on a number of characteristics, it is not clear what might be driving any differences in the impact estimates.

Head Start CARES Demonstration

Table ES.1

Summary of Impacts on Outcomes for Mixed-Age Classrooms and 3-Year-Old Children, Enhancements Pooled

Outcome[a]	Control Group Mean[b]	Program Group Mean	Difference (Program vs. Control)	Standard Error	Effect Size[c]
Observed teacher practice outcomes[d]					
Classroom management (1-5)	4.00	3.94	-0.06	0.12	-0.10
Social-emotional instruction (1-5)	1.84	2.08	0.24 *	0.14	0.39
Scaffolding (1-5)	1.49	1.59	0.11	0.11	0.23
Observed classroom climate outcomes[d]					
Emotional support (1-7)	5.52	5.41	-0.12	0.13	-0.19
Classroom organization (1-7)	5.07	4.91	-0.16	0.16	-0.20
Instructional support (1-7)	2.45	2.47	0.03	0.14	0.03
Literacy focus (1-7)	1.49	1.57	0.08	0.08	0.17
Teacher-reported child outcomes					
Social-emotional outcomes[e]					
Behavior problems (0-52)	6.55	6.20	-0.35	0.92	-0.04
Social behaviors: social skills (0-60)	38.61	41.50	2.89 **	1.29	0.27
Social behaviors: interpersonal skills (1-7)	5.34	5.39	0.06	0.09	0.06
Learning behaviors (1-7)	4.42	4.58	0.16	0.11	0.17
Closeness with the teacher (1-5)	4.14	4.28	0.15 **	0.07	0.22
Conflict with the teacher (1-5)	1.81	1.74	-0.06	0.09	-0.08
Pre-academic skills[f]					
General knowledge (1-5)	2.43	2.60	0.17	0.15	0.18
Language and literacy (1-5)	2.15	2.30	0.15	0.12	0.15
Mathematical thinking (1-5)	2.14	2.25	0.11	0.14	0.13
Sample size[g]					
Centers	14	42			
Classrooms	40	115			
Children	220	713			

SOURCES: MDRC calculations based on the observational assessments and teachers' reports.

NOTES: Statistical significance levels are indicated as follows: *** = 1 percent; ** = 5 percent; * = 10 percent.
Rounding may cause slight discrepancies in sums and differences.
[a]The rating scale for each outcome measure is shown in parentheses, from low to high.

(continued)

Table ES.1 (continued)

[b]The control group means reported in this table are covariate-adjusted and were estimated using models in which data for all three enhancements were pooled. Separate indicators for each of the enhancements were not included as covariates in the models. Some discrepancies in control group means may appear across tables due to differences in model estimation for the pooled and by-enhancement impacts.

[c]Effect size is calculated by dividing the impact of the program (the difference between the means for the program group and the control group) by the standard deviation for the control group.

[d]All observed teacher practice outcomes were measured using the Adapted Teaching Style Rating Scale (Raver et al., 2012). All observed classroom climate outcomes were measured using the Classroom Assessment Scoring System (Pianta, La Paro, and Hamre, 2008).

[e]The behavior problems outcome was measured using the Behavior Problems Index (Zill, 1990); social behaviors: social skills were measured using the Social Skills Rating Scale (Gresham and Elliot, 1990); social behaviors: interpersonal skills were measured using the Interpersonal Skills subscale of the Cooper-Farran Behavioral Rating Scales (Cooper and Farran, 1991); learning behaviors were measured using the Work-Related Skills subscale of the Cooper-Farran Behavioral Rating Scales; and closeness with the teacher and conflict with the teacher were measured using the Student-Teacher Relationship Scale (Pianta, 2001).

[f]Pre-academic skills were measured using the Academic Rating Scale (National Center for Education Statistics, n.d.)

[g]For all variables in the table, data are available for at least 96 percent of the sample.

olds' social behaviors in mixed-age classrooms, including cooperation, assertion, and self-control (not shown in table), as well as closeness with their teachers. These impacts were moderate to large in magnitude. However, no statistically significant effects were found on classroom climate or teacher reports of 3-year-olds' behavior problems, interpersonal skills, learning behaviors, or conflict with their teachers.

- **As expected, PATHS and Tools of the Mind—Play improved teachers' social-emotional instruction and scaffolding of children's play, respectively, in mixed-age classrooms. But there is little evidence to suggest that either enhancement improved teacher reports of 3-year-olds' social-emotional outcomes.**

As shown in Table ES.2, teachers in PATHS mixed-age classrooms engaged in statistically significantly higher levels of social-emotional instruction compared with their control group counterparts. This included teaching children about emotions, supporting children's expression and regulation of emotions, and facilitating children's social problem-solving and understanding of their peers' emotions (not shown in table) — all of which is consistent with PATHS training. Teachers in Tools of the Mind—Play classrooms also showed higher levels of overall scaffolding of children's play. These impacts are consistent with the central focus of Tools of the Mind—Play. However, these improvements in teacher practice did not lead to changes in overall classroom climate for either enhancement, nor did they translate into a consistent pattern of impacts on 3-year-olds' teacher-reported social-emotional outcomes.

Head Start CARES Demonstration

Table ES.2

Summary of Impacts on Outcomes for Mixed-Age Classrooms and 3-Year-Old Children, by Enhancement

Outcome[a]	Control Group Mean[b]	The Incredible Years (IY) Program Group Mean	IY Difference (IY vs. Control)		IY SE	IY Effect Size[c]	Preschool PATHS Program Group Mean	PATHS Difference (PATHS vs. Control)		PATHS SE	PATHS Effect Size[c]	Tools of the Mind – Play Program Group Mean	Tools Difference (Tools vs. Control)		Tools SE	Tools Effect Size[c]
Observed teacher practice outcomes[d]																
Classroom management (1-5)	4.00	4.11	0.11		0.15	0.20	3.89	-0.11		0.15	-0.21	3.82	-0.18		0.15	-0.32
Social-emotional instruction (1-5)	1.85	1.97	0.12		0.15	0.20	2.42	0.58	***	0.16	0.94	1.85	0.00		0.16	0.00
Scaffolding (1-5)	1.48	1.43	-0.06		0.13	-0.12	1.60	0.11		0.14	0.24	1.76	0.28	*	0.14	0.59
Observed classroom climate outcomes[d]																
Emotional support (1-7)	5.53	5.47	-0.06		0.16	-0.09	5.45	-0.07		0.16	-0.12	5.30	-0.23		0.17	-0.37
Classroom organization (1-7)	5.07	5.08	0.01		0.19	0.01	4.88	-0.19		0.19	-0.24	4.76	-0.30		0.20	-0.38
Instructional support (1-7)	2.45	2.39	-0.06		0.17	-0.08	2.70	0.25		0.18	0.31	2.36	-0.09		0.18	-0.12
Literacy focus (1-7)	1.49	1.51	0.02		0.10	0.04	1.55	0.06		0.10	0.12	1.66	0.17		0.10	0.34
Teacher-reported child outcomes																
Social-emotional outcomes[e]																
Behavior problems (0-52)	6.54	5.89	-0.65		1.12	-0.08	5.96	-0.59		1.13	-0.07	6.74	0.19		1.13	0.02
Social behaviors: social skills (0-60)	38.63	44.41	5.78	***	1.45	0.55	40.94	2.31		1.46	0.22	39.16	0.53		1.46	0.05
Social behaviors: interpersonal skills (1-7)	5.34	5.46	0.12		0.11	0.13	5.34	0.00		0.12	0.00	5.38	0.04		0.11	0.05

(continued)

Table ES.2 (continued)

Outcome[a]	Control Group Mean[b]	The Incredible Years (IY) Program Group Mean	Difference (IY vs. Control)		SE	Effect Size[b]	Preschool PATHS Program Group Mean	Difference (PATHS vs. Control)		SE	Effect Size[b]	Tools of the Mind – Play Program Group Mean	Difference (Tools vs. Control)		SE	Effect Size[b]
Learning behaviors (1-7)	4.42	4.64	0.22		0.14	0.23	4.60	0.18		0.14	0.19	4.51	0.09		0.14	0.09
Closeness with the teacher (1-5)	4.14	4.41	0.27	***	0.08	0.40	4.25	0.11		0.08	0.16	4.20	0.06		0.08	0.09
Conflict with the teacher (1-5)	1.81	1.65	-0.15		0.11	-0.19	1.81	0.00		0.11	0.00	1.77	-0.04		0.11	-0.05
Pre-academic skills[f]																
General knowledge (1-5)	2.44	3.02	0.58	***	0.16	0.62	2.49	0.06		0.16	0.06	2.30	-0.14		0.16	-0.15
Language and literacy (1-5)	2.15	2.47	0.32	**	0.14	0.33	2.26	0.11		0.14	0.11	2.15	0.00		0.14	0.00
Mathematical thinking (1-5)	2.14	2.55	0.40	**	0.15	0.49	2.18	0.04		0.15	0.05	2.01	-0.14		0.15	-0.16
Sample size[g]																
Centers	14	14					14					14				
Classrooms	40	41					37					37				
Children	220	246					226					241				

SOURCES: MDRC calculations based on the observational assessments and teachers' reports.

NOTES: Statistical significance levels are indicated as follows: *** = 1 percent; ** = 5 percent; * = 10 percent.

Rounding may cause slight discrepancies in sums and differences.

SE represents standard error.

[a]The rating scale for each outcome measure is shown in parentheses, from low to high.

[b]The control group means reported in this table are covariate-adjusted and were estimated using models in which data for all three enhancements were pooled and a treatment indicator for each enhancement was included. Some discrepancies in control group means may appear across tables due to differences in model estimation for the pooled and by-enhancement impacts.

[c]Effect size is calculated by dividing the impact of the program (the difference between the means for the program group and the control group) by the standard deviation for the control group.

(continued)

Table ES.2 (continued)

[d]All observed teacher practice outcomes were measured using the Adapted Teaching Style Rating Scale (Raver et al., 2012). All observed classroom climate outcomes were measured using the Classroom Assessment Scoring System (Pianta, La Paro, and Hamre, 2008).

[e]The behavior problems outcome was measured using the Behavior Problems Index (Zill, 1990); social behaviors: social skills were measured using the Social Skills Rating Scale (Gresham and Elliot, 1990); social behaviors: interpersonal skills were measured using the Interpersonal Skills subscale of the Cooper-Farran Behavioral Rating Scale (Cooper and Farran, 1991); learning behaviors were measured using the Work-Related Skills subscale of the Cooper-Farran Behavioral Rating Scale; and closeness with the teacher and conflict with the teacher were measured using the Student-Teacher Relationship Scale (Pianta, 2001).

[f]Pre-academic skills were measured using the Academic Rating Scale (National Center for Education Statistics, n.d.).

[g]For all variables in the table, data are available for at least 96 percent of the sample.

Last, analyses explored whether enhancement-driven improvements in 3-year-olds' social-emotional competencies led to improvements in their pre-academic skills, first for the set of enhancements as a group (Table ES.1) and then separately for each enhancement (Table ES.2).

- **When considered together, the enhancements did not affect teacher reports of 3-year-olds' pre-academic skills. Although teachers reported statistically significantly stronger pre-academic skills for 3-year-olds in Incredible Years classrooms than for their counterparts in control group classrooms, these findings are somewhat uncertain.**

As shown in Table ES.2, The Incredible Years' impact estimates were consistent across teacher reports of three pre-academic skill domains — general knowledge, language and literacy, and mathematical thinking. It is important to consider the results of the full Head Start CARES impact analysis for 4-year-olds when interpreting these impacts on 3-year-olds because information about 4-year-olds' pre-academic skills was collected from both teacher reports and direct assessments. Incredible Years teachers also reported statistically significant improvements in 4-year-olds' pre-academic skills, but no statistically significant impacts were found on direct assessments of these skills.[17] The lack of convergence in findings across these two data sources and the potential for bias in teacher reports suggest that the impacts on 3-year-olds' teacher-reported pre-academic skills should be interpreted with caution.

Discussion

In sum, the findings suggest that it is possible for the benefits of social-emotional preschool interventions to extend to 3-year-olds, even if the interventions are primarily designed for 4-year-old children. When considered together, the Head Start CARES enhancements produced posi-

[17]Morris et al. (2014).

tive, statistically significant impacts on teacher reports of 3-year-olds' social behaviors and closeness with their teachers. The exploration of impacts by enhancement further suggests that these impacts were primarily driven by The Incredible Years, and to a lesser extent by the other enhancements. The findings for social-emotional outcomes are generally consistent with the pattern of impacts on teacher-reported outcomes that were identified for 4-year-olds in earlier analyses from Head Start CARES. Furthermore, the impact results for 3-year-olds are consistent with the hypothesis that the behavioral focus of the Incredible Years enhancement may have been more accessible to 3-year-olds than the other two enhancements, which are more cognitively demanding. However, the expected statistically significant improvements in teacher practice were not found in Incredible Years classrooms, making the mechanisms that might account for these effects less clear.

These findings raise a number of questions for the field. First, can future studies replicate the findings presented here with other data sources, such as independent assessments of children's behaviors? And, do the findings hold up in other contexts and classroom configurations? It will be important to learn whether future studies can confirm the findings discussed in this report before making decisions about appropriate policy and practice.

Second, assuming that the results found here are replicated in future trials, what mechanisms might account for the impacts of the enhancements, and The Incredible Years in particular, on 3-year-olds? It may be, for example, that mixed-age classrooms enhance children's socialization through peer learning and promote child development by bringing children together who have different skill levels and capabilities. These dynamics might provide a strong platform for promoting young children's social and emotional development when coupled with a classroom-based intervention.

Third, do the PATHS or Tools of the Mind—Play enhancements improve social and emotional competencies for 3-year-olds that were not measured here? Measures of emotion knowledge, social problem-solving, and executive function — key outcomes targeted by the PATHS and Tools of the Mind—Play enhancements — were not available in this analysis. Indeed, earlier findings from Head Start CARES demonstrated that PATHS had small to moderate impacts on direct assessments of 4-year-old children's knowledge of emotions and social problem-solving skills — two of its primary hypothesized outcomes. Therefore, it will be important to investigate impacts on these outcomes for 3-year-olds before drawing conclusions about the effectiveness of the programs for younger children.

Despite some shortcomings in the analysis and measures, these results based on a rigorous random assignment research design point to new potential directions for future research and the development of preschool interventions to enhance young children's social-emotional com-

petencies. Since a substantial number of 3-year-olds attend preschool programs, the findings suggest that social-emotional interventions may be a strategy that deserves further investigation. Moreover, finding that 3-year-olds can benefit from such curricula suggests that there may be opportunities to augment these benefits for children who remain in preschool at age 4. Thus, future efforts might seek to develop and test social-emotional preschool program enhancements that include a second year of intervention.

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