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## Early Childhood Obesity Prevention in Low-Income, Urban Communities

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### Abstract

Given the disproportionately high rates of obesity-related morbidity among low-income, ethnic minority youth, obesity prevention in this population is critical. Prior efforts to curb childhood obesity have had limited public health impact. The present study evaluates an innovative approach to obesity prevention by promoting foundational parenting and child behavioral regulation. This pre–post intervention study evaluated an enhanced version of ParentCorps with 91 families of pre-Kindergarten students in low-income, urban communities. Assessments included tests of knowledge and parent report. Consistent with findings from two randomized controlled trials of ParentCorps, parent knowledge and use of foundational parenting practices increased and child behavior problems decreased. Child nutrition knowledge and physical activity increased and television watching decreased; for boys, sleep problems decreased. Comparable benefits occurred for children at high risk for obesity based on child dysregulation, child overweight, and parent overweight. Results support a “whole child,” family-centered approach to health promotion in early childhood.

### Keywords

early childhood; obesity; parenting; prevention community

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Across the lifespan, obesity rates are higher among racial/ethnic minorities and those from low-income communities (Ogden, Carroll, Curtin, Lamb, & Flegal, 2010). Residents of disadvantaged, urban areas are disproportionately affected by obesity (Black & Macinko, 2010), attributed, in part, to the greater burden of stressors related to poverty, such as community violence, discrimination and housing insecurity, and neighborhood variations in the availability of healthful food and safe opportunities for physical activity. The link between chronic stress and obesity is well established in adults and was documented recently in young children (e.g., Garasky, Stewart, Gundersen, Lohman, & Eisenmann, 2009), underscoring the importance of community-based efforts to support families who experience stress on a daily basis and face significant obstacles to raising healthy children.

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## PREVENTION IN EARLY CHILDHOOD

Advances in neuroscience, developmental psychology, and prevention science provide compelling evidence that the foundation for healthy development is established in early childhood through emerging biological processes that impact health across the lifespan (Shonkoff & Garner, 2012). Several empirical findings identify early childhood as a crucial period for obesity prevention in particular. First, the adiposity rebound typically occurs between ages 3 and 7, and children with an earlier rebound are at risk for obesity. Second, children's innate ability to regulate their eating in response to physiological satiety cues may be undermined during early childhood as the influence of environmental factors (e.g., portion size, prompts from adults) increases. Third, health behaviors (e.g., physical activity, sleep) begin to stabilize in early childhood.

In recognition of the importance of preventing obesity in young children, the Institute of Medicine (2011) made a series of policy recommendations directed at institutions that interface with parents and govern children's first environments outside the home. The report emphasized the importance of "counseling" parents to improve children's eating, activity and sleep, and yet strategies for doing so have not been specified. A meta-analysis of 64 rigorously evaluated obesity prevention programs revealed few that actively involved parents and identified only three programs for young children (Stice, Shaw, & Marti, 2006). A more recent review of programs for children under age 5 concluded that none of the seven randomized controlled trials (RCTs) provided evidence for an effect on obesity (Monasta et al., 2011). Hip Hop to Health Jr. prevented increases in body mass index (BMI) in African-American children attending Head Start but not in Latino children from similar backgrounds (Fitzgibbon et al., 2005, 2006). Several other programs developed specifically for families of young ethnic minority children show promise (e.g., Barkin, Gesell, Po'e, Escarfuller, & Tempesti, 2012; Winter & Sass, 2011), although to date, none have demonstrated sustained effects on obesity. Existing interventions have focused primarily on altering eating and exercise through school-based policies and programs aimed directly at children (e.g., mandated increases in physical activity at school, nutrition curricula) and often include newsletters with recommendations for parents. The limited impact of these interventions suggests the importance of considering children's health more broadly, involving parents more meaningfully, and equipping parents with strategies to make sustained, positive changes at home.

## CULTURALLY INFORMED INNOVATIONS FOR OBESITY PREVENTION IN EARLY CHILDHOOD

We have pursued a culturally informed, family-centered, "whole child" approach to obesity prevention. First, we focused broadly on children's health and development, including social, emotional and behavioral regulation. Second, we considered the emerging literatures, which suggest the relevance of *foundational parenting* (e.g., parental responsiveness and control) and *child behavioral dysregulation* (e.g., impulsivity, aggression) for the development of child obesity (e.g., Anderson & Whitaker, 2011; Datar & Sturm, 2004; Mamun, O'Callaghan, Cramb, Najman, Williams, & Bor, 2009 ; Rhee, Lumeng, Appugliese,

Kaciroti, & Bradley, 2006; Sleddens, Gerards, Thijs, De Vries, & Kremers, 2011). Third, we built on a series of RCTs of our family intervention, *ParentCorps*, delivered as a universal intervention for all children enrolled in early childhood programs in low-income, urban communities. In two RCTs, *ParentCorps* has been highly engaging to ethnic minority and immigrant families living in stressful environments and resulted in robust improvements in foundational parenting and child behavioral regulation (Brotman et al., 2011; Dawson-McClure et al., in press). We posited that addressing foundational skills may be necessary to create lasting changes in children's health, and expected that this "whole child," universal approach would be more acceptable and engaging to parents than programs focused solely on weight or targeted at high-risk subgroups of children (see Stice et al., 2006).

We took advantage of an ongoing study of *ParentCorps* with pre-kindergarten (pre-k) students in low-income, urban communities to test the hypothesis that family intervention would prevent obesity among children who were behaviorally dysregulated (Brotman et al., 2012). Prospective longitudinal analysis in the control condition supported the focus on this subgroup of children as high risk for obesity. Overall, the rate of obesity (BMI 95th percentile) at age 8 was 23%, which is highly consistent with the rate of 25% for New York City (NYC) Black and Latino 8-year-olds. In contrast, more than half of children with elevated dysregulation were obese, relative to one-fifth of those without dysregulation. Among these high-risk children, *ParentCorps* resulted in clinically meaningful long-term differences in BMI for boys and girls, as well as increased physical activity for boys, and decreased sedentary activity for girls. At age 8, 54% of high-risk children in the control condition were obese relative to 24% of those in the intervention condition. Trajectory analysis revealed this significant prevention effect occurred by age 6, as obesity increased among high-risk children in the control group but remained constant among children in the intervention group. Because this RCT was not originally designed to evaluate obesity prevention outcomes, no definitive conclusions can be drawn and the findings cannot be generalized to other high-risk groups (e.g., children of obese parents). However, these results strongly suggest that early intervention that promotes effective parenting may prevent obesity among low-income minority children at high risk based on early behavioral dysregulation.

To address the needs of children at high risk for obesity based on a range of factors, we enhanced *ParentCorps* to incorporate new basic science findings in the areas of child eating, activity and sleep. We expected that the enhanced program would be engaging and relevant for families of all young children served through a population-level, community-based approach. We carefully reviewed and revised program content and materials with the explicit goal of health promotion; physical health was integrated as one important aspect of child development, along with social, emotional and behavioral regulation. For example, the original session on promoting child self-regulation through parent-child playtime was expanded to include parent facilitation of moderate-to-vigorous activity. The original session on teaching children self-regulation skills such as "calming your body" was expanded to include "noticing your body's response to exercise." New content was based on the translation of basic science findings, such as laboratory studies of parent behaviors that inadvertently undermine children's self-regulation of eating. Discussions considered barriers to meeting expert guidelines for eating, activity, and sleep in early childhood (e.g., 1 hour of

active play per day). Consistent with the emerging literature on responsive feeding (e.g., Black & Aboud, 2011; Engle & Pelto, 2011), we developed recommendations for family meals and new procedures for meals served to children during the intervention to facilitate exploration of new foods and to support children's attention to satiety cues. Dinner menus were revised with the explicit goal of introducing children and parents to a variety of healthful, culturally acceptable foods. To incorporate the new content and procedures, we added one new *ParentCorps* session (for a total of fourteen 2-hour sessions) and developed new training procedures, manuals and materials for program implementers.

We sought feedback on the enhanced program from community members, educators and parents. We introduced the enhanced *ParentCorps* to hundreds of early childhood administrators and educators through professional development activities and implemented the new fourteen session program for families in collaboration with pre-k teachers in two elementary schools serving primarily low-income families. These experiences resulted in further revisions to program content and procedures, and provided the opportunity to pilot test new measures of child nutrition and activity knowledge and preferences with ethnically diverse preschoolers.

## THE PRESENT STUDY

The present study had four primary goals: (1) evaluate the acceptability of the enhanced *ParentCorps* program, with consideration of participation and satisfaction among families of children at highest risk for obesity; (2) confirm expected change in parent knowledge and use of effective parenting practices and child behavior problems as benchmarked against the magnitude of change from previous RCTs of the original *ParentCorps*; (3) estimate change on child nutrition and activity knowledge, preferences and behaviors, given that several obesity programs have had differential effects for boys and girls; and (4) estimate change for three subgroups at high risk for obesity: (a) behaviorally dysregulated children; (b) overweight children; and (c) children of overweight parents. BMI was also measured, although pre–post intervention differences were not expected over the short time frame of this study given the pattern of findings in our previous work (i.e., effect on BMI was evident 2 years after intervention as rates increased among controls).

## METHOD

### Study Design and Context

This study took place in six public elementary schools in low-income communities in NYC. These schools were among the ten engaged in a completed RCT. Schools were initially selected based on an index of student poverty (>70% free lunch eligible) and minority status (>80% Black). The present study used a one-group pre-intervention (T1) and post-intervention (T2) design; the enhanced *ParentCorps* was implemented in all six schools.

**PARTICIPANTS**—All parents of children enrolled in pre-K were invited to participate in the intervention. Parents who came to one of the initial sessions were asked to participate in the study; all parents agreed and provided informed consent (N= 91). Children were an average of 4.63 years old ( $SD= 0.7$ ) at T1 and 52.7% were girls. Nearly a quarter of the parents were

single (23.4%), 47.2% were unemployed, 45% reported an annual household income of less than \$30,000, and 28.9% had a high school diploma, General Equivalency Diploma (GED), or less; 75.6% of parents were AfroCaribbean, 12.8% were African American, 5.1% Latino, and 6.4% other race=ethnicity.

**PARENTCORPS (ENHANCED FOR HEALTH PROMOTION)**—As described in published reports (Brotman et al., 2011; Brotman et al., 2012), *ParentCorps* is a culturally informed intervention that was developed with extensive input and collaboration from community stakeholders, parents and early childhood educators to promote effective parenting in the context of the multitude of stressors associated with living in disadvantaged, urban communities. *ParentCorps* includes a weekly group series for parents (typically 15–20 parents) and a concurrent group for children implemented at the child’s school during early evening hours by mental health professionals, teachers and educational assistants. Group structure and process is designed to empower parents and enhance existing strengths. There are numerous opportunities for shared experiences and collaboration between teachers, parents, and children, thereby promoting a sense of school community. Teachers played a key role in introducing the program as a valuable experience for children’s school success (“Helping Children Succeed and Grow up Healthy and Strong”) and repeatedly welcomed families to attend. To reduce barriers for participation, childcare and programming are provided for siblings, culturally acceptable, healthful meals were served, and materials were provided to implement new parenting strategies at home (e.g., stickers for positive reinforcement). The enhanced version was implemented in 14 2-hour sessions over a 5-month period.

## Measures

**PARENT ENGAGEMENT**—Attendance was recorded at each session. Parents rated their satisfaction on five Likert items ranging from 1 (“Strongly Disagree”) to 7 (“Strongly Agree”) (e.g., “I found today’s group to be useful,” “The group leader made me feel comfortable and confident in today’s group”). A total score was computed as an average across the 14 sessions.

**PARENT KNOWLEDGE AND USE OF FOUNDATIONAL PARENTING PRACTICES**—Parenting was assessed using two measures employed in previous studies of *ParentCorps*: the Effective Practices Test (EPT; Calzada & Brotman, 2002) and the Parenting Practices Interview (PPI; Webster-Stratton, 1998). The EPT assesses knowledge of effective behavior management practices with 10 vignettes. The score is the number of correct responses. The PPI *Effective Discipline* subscale was used to assess parents’ use of various discipline strategies on a 5-point Likert scale (18 items;  $\alpha = .78$ ; e.g., praise, set rules for behavior).

**CHILD BEHAVIOR PROBLEMS**—Parents rated child behavior via the Behavior Assessment System for Children, Second Edition (BASC-II; Reynolds & Kamphaus, 2004) *Externalizing Behavior* composite (22 items;  $\alpha = .94$ ; e.g., acts out of control, throws tantrums). T-scores were computed based on national norms.

**CHILD NUTRITION AND ACTIVITY KNOWLEDGE, PREFERENCES, AND HEALTH BEHAVIORS**—Child knowledge of nutrition and physical activity was assessed via the Child Nutrition and Activity Questionnaire (CNAQ; Dawson-McClure, Theise, & Brotman, 2007). The measure addresses knowledge in two areas. *Healthful Food Identification* includes 10 pairs of pictures of healthful and less healthful foods (e.g., banana and cake) and children were asked to either point to or name the foods that are “healthy and good for your body.” *Healthful Activity Identification* includes five pairs of pictures of healthful and unhealthful activities (e.g., playing videogames and playing basketball) and children identified the activity that is “healthy and good for your body.” A mean score was calculated for the number of correct items for each index (KR-20 = .64 and .54, respectively).

Child physical and sedentary activity were assessed via parent report. Parents reported on: (1) child preference for physical versus sedentary activities (1–5; “Almost always chooses ‘sitting down’ activities” to “Almost always chooses physical activities”); (2) the frequency of walking and (3) moderateto-vigorous activity (3 items; e.g., dancing, jumping rope) over the past week; (4) the amount of time children spent outdoors on a typical school and weekend day (1–5; “Less than 30 minutes” through “3–4 hours per day”;  $\alpha = .67$ ); (5) whether their child gets enough physical activity to maintain health and fitness (1–5; “Strongly disagree” to “Strongly agree.”); and (6) the amount of time children spent watching television on a typical school day and weekend day (1–5; “Less than 1 hour” to “4 or more hours”;  $\alpha = .60$ ). Child sleep problems over a typical week were assessed by parent ratings on the *Bedtime Resistance* subscale (6 items;  $\alpha = .66$ ; e.g., “Your child struggled at bedtime, cried or refused to stay in bed”) from the Children’s Sleep Habits Questionnaire (CSHQ; Owens, Spirito, & McGuinn, 2000).

**BMI**—Height was assessed with a portable stadiometer and weight was assessed with an electronic scale. BMI z scores was calculated based on norms for age and sex.

**DEMOGRAPHIC CHARACTERISTICS AND RISK GROUPS**—Parents reported on demographic characteristics (e.g., sex, race=ethnicity, age, household income, marital status) and their own weight status by responding to the question, “Do you think you are overweight?” on a 4-point scale from “Not at all” (0) to “Very much” (3). This item was used to define the high-risk subgroup of children of overweight parents (ratings greater than 0). Child overweight was defined as BMI 85th percentile. The subgroup at high risk due to behavioral dysregulation was defined based on *T* scores  $\geq 50$  on the BASC *Aggression* subscale (11 items;  $\alpha = .89$ ; e.g., breaks other children’s things, hits others), consistent with previous work (Brotman et al., 2012).

## RESULTS

### Sample Characteristics and High-Risk Subgroups

At baseline, 36% of children were dysregulated, 31% of children were overweight (BMI 85th percentile) and 62% of parents rated themselves as overweight. These three high-risk groups were related, but not redundant; only 8% of the children had all three risk factors (child dysregulation, child overweight, and parent overweight), 23% had two, 42% had one, and 28% had none.

### Parent Engagement in *ParentCorps* (Enhanced for Health Promotion)

The 91 participating families attended an average of 9 ( $SD= 3.6$ ) of 14 *ParentCorps* group sessions. This rate of 64% (9/14 sessions) is highly consistent with rates from two RCTs of the original 13-session *ParentCorps* (51% and 55% for participating families; Brotman et al., 2011; Dawson-McClure et al., in press). As in the RCTs, demographic characteristics and baseline levels of parent knowledge, effective discipline and child behavioral dysregulation did not predict attendance. Importantly, families with an overweight parent or child attended at the same rate as families without these specific risk factors. Taken together, findings indicate that enhanced *ParentCorps* is engaging for families with a range of risk factors for obesity.

Parents reported high levels of satisfaction with the enhanced version of *ParentCorps*, with an average rating of 6.74 ( $SD= 0.45$ ,  $Med= 7$  on a 7- point scale) across the 14 sessions. Satisfaction ratings were equally positive across group topics (e.g., health, parent-child relationship building, positive reinforcement, and effective discipline).

### Change on Parent Knowledge and Use of Foundational Parenting Practices

Consistent with documented effects from two RCTs, there were significant improvements in parent knowledge and use of effective practices (Table 1). The magnitude of change is consistent with previously described effects. For example, in the current study parent knowledge of effective practices increased from 48% to 58% correct; the RCTs documented similar 10% increases in knowledge pre- to post-intervention in contrast to no change in the control condition. Furthermore, consistent with trials, examination of the dose-response relation through linear regression analysis revealed that increases in knowledge were related to the number of *ParentCorps* sessions attended ( $b= 0.19$ ,  $SE= 0.07$ ,  $p= .006$ ).

Examination of pre- to post-intervention changes in parenting among the subgroup of overweight parents demonstrated significant gains in knowledge (T1  $M= 4.95$ ,  $SD= 1.20$  vs. T2  $M= 5.95$ ,  $SD= 1.52$ ,  $t(43) = 3.85$ ,  $p < .001$ ) and use of effective practices (T1  $M= 3.70$ ,  $SD= 0.45$  vs. T2  $M= 3.82$ ,  $SD= 0.43$ ,  $t(43) = 2.37$ ,  $p= .022$ ). Similar improvements in knowledge also occurred among parents of overweight children and dysregulated children.

### Change on Child Behavior Problems

Consistent with the RCTs, there was a significant decrease in behavior problems from pre- to post-intervention (Table 1). Reductions in behavior problems were also documented among the three high-risk subgroups: dysregulated child (T1  $M= 58.13$ ,  $SD= 9.23$  vs. T2  $M= 52.58$ ,  $SD= 8.51$ ,  $t(23) = 5.53$ ,  $p < .001$ ); overweight child (T1  $M= 52.78$ ,  $SD= 14.64$  vs. T2  $M= 48.67$ ,  $SD= 12.39$ ,  $t(17) = 2.92$ ,  $p= .010$ ); and overweight parent (T1  $M= 47.93$ ,  $SD= 11.46$  vs. T2  $M= 46.02$ ,  $SD= 8.93$ ,  $t(41) = 2.19$ ,  $p= .034$ ).

### Change on Child Nutrition and Activity Knowledge, Preferences and Health Behaviors

As shown in Table 2, there were significant pre- to post-intervention improvements on measures of child nutrition knowledge, preference for physical versus sedentary activity, and time spent walking, engaged in outdoor activities, and watching television. Boys and girls had similar patterns of change with regard to increased ability to identify healthful versus

less healthful foods, increased time spent outdoors and decreased time spent watching television. With regard to sleep, there was a significant reduction in bedtime resistance among boys, consistent with the reduction in behavior problems.

Among all three subgroups at high risk for obesity, there were significant increases in physical activity (time spent in outdoor activities): child dysregulation (T1  $M=2.65$ ,  $SD=1.20$  vs. T2  $M=3.54$ ,  $SD=1.09$ ,  $t(25)=4.07$ ,  $p<.001$ ), child overweight (T1  $M=2.30$ ,  $SD=1.29$  vs. T2  $M=3.25$ ,  $SD=1.41$ ,  $t(19)=4.96$ ,  $p<.001$ ) and parent overweight (T1  $M=2.83$ ,  $SD=1.05$  vs. T2  $M=3.52$ ,  $SD=0.99$ ,  $t(44)=3.69$ ,  $p=.001$ ). There were also significant decreases in sedentary activity (time spent watching television): child dysregulation (T1  $M=2.21$ ,  $SD=0.73$  vs. T2  $M=1.94$ ,  $SD=0.74$ ,  $t(24)=2.88$ ,  $p=.008$ ), child overweight (T1  $M=2.31$ ,  $SD=0.80$  vs. T2  $M=2.06$ ,  $SD=0.81$ ,  $t(17)=2.12$ ,  $p=.049$ ) and parent overweight (T1  $M=2.23$ ,  $SD=0.68$  vs. T2  $M=1.93$ ,  $SD=0.70$ ,  $t(42)=3.36$ ,  $p=.002$ ).

### Change in Body Mass Index

There was no change in percent overweight or on BMI z scores from pre- ( $M=0.61$ ,  $SD=1.08$ ) to post-intervention ( $M=0.64$ ,  $SD=1.16$ ,  $t(85)=-0.90$ ,  $p=.37$ ) overall, by gender or for any of the three high-risk groups.

## DISCUSSION

The purpose of the present study was to evaluate the acceptability and potential efficacy of a culturally informed obesity prevention program for young minority children from disadvantaged urban communities. *ParentCorps*, an effective preventive intervention designed to promote foundational parenting and child behavioral regulation (Brotman et al., 2011; Brotman et al., 2013), was enhanced to include content directly relevant to physical health. The program was delivered universally for all children enrolled in early childhood programs and aimed to equip parents with foundational parenting skills to promote children's social, emotional, behavioral, and physical health. Rates of parent engagement and pre- to post-intervention changes on foundational parenting and child behavior problems were benchmarked against results from two previous RCTs of the original *ParentCorps* (Brotman et al., 2011; Dawson-McClure et al., in press) and confirmed that the enhancements did not compromise the key content. High rates of parent engagement and satisfaction demonstrate that this "whole child" approach to promoting children's health and development is highly engaging to diverse families, including those with children at high risk for obesity. Importantly, the extent of engagement and the magnitude of change in foundational parenting in high-risk families were comparable to that in a previous trial of *ParentCorps*, which yielded long-term obesity prevention effects among dysregulated children (Brotman et al., 2012). The present study extends these findings by documenting improvements in physical and sedentary activity overall and for the three high risk subgroups that were examined. Decreased sleep problems were also observed in boys. Taken together, *ParentCorps* appears to be engaging and holds promise for obesity prevention among children at high risk for obesity based on a range of factors. As such, *ParentCorps* may prove to be an effective population-level and community-based approach for improving public health.



Findings from this study are highly encouraging but must be interpreted in light of limitations. Most importantly, this was a pre- to post-intervention study without a control group. Study participants were a select group who chose to attend the family intervention, although their demographic characteristics and baseline risk factors were similar to those of participants in the RCT previously conducted in the same schools. Changes could be related to maturation (over the 5-month span), opportunities for outdoor play due to seasonal changes (from winter to spring), or demand characteristics related to parent report. Confidence in findings is increased by benchmarking change to two RCTs and documentation of a dose–response relation for parent knowledge. Nonetheless, conclusions about impact must be based on an RCT with long-term follow-up of BMI and health behavior.

## POLICY IMPLICATIONS

Most obesity prevention efforts have involved school-based policies and programs and have not yielded meaningful reductions in obesity rates. Even substantial changes to the school food environment appear to have only minimal impact without additional supports for behavior change. This pattern of findings attests to the challenges inherent in altering behavioral risks for childhood obesity and suggests the need for a paradigm shift away from the predominant strategy that focuses narrowly on nutrition and exercise. Improvements in the food and built environments are necessary but not sufficient strategies for curbing the obesity epidemic.

Instead, strengthening foundational parenting in early childhood may be an effective strategy for promoting lifelong health. Converging evidence implicates parenting in the development of children’s health in general and obesity in particular, and requires evidence-based investment to strengthen parenting in early childhood (Center on the Developing Child, 2012). The Institute of Medicine report (2011) echoes the importance of helping families raise healthy children and yet the potential actions for implementation detailed in the report are almost entirely limited to child care/school settings. The field offers little guidance on how to engage parents and support them in promoting healthy child behavior. In part, this may reflect a concern that such efforts may be perceived as blaming parents whose options for healthful living are curtailed by an obesogenic environment. In the absence of progress in this area, however, parents are routinely reminded of expert recommendations for children’s health, without regard for the substantial barriers they face in shaping children’s behavior to comply with such recommendations. Policy and programming that supports parents in the development of foundational parenting skills is likely to be more empowering and more effective. The development of family-centered policy that incorporates parent voices and the perspectives of institutions that influence children’s early environments is particularly important to addressing the needs of children experiencing the multitude of stressors associated with poverty.

*ParentCorps* may provide communities with one practical strategy for engaging families and strengthening foundational parenting skills to offset the impact of stress and promote healthy child behavior. By embedding *ParentCorps* in existing early childhood programs that enroll a broad range of children, the entire population of children may be served, including those at

highest risk for obesity. Other articles in this special issue demonstrate the potential for collaborative, culturally informed approaches to successfully engage families in school-based initiatives (McKinney et al., 2014; Wright, Suro, Norris, & Newman-Giger, 2014). Taken together, our findings highlight the essential role that parents may play in promoting health from early childhood through adolescence.

We are involved in a series of activities to prepare for scale-up, including options for public investment (e.g., Medicaid funds for obesity prevention) and training and supports for implementers. We are also developing program enhancements to help schools adopt effective family engagement policies and to optimize the utilization of improvements in the food environment by linking families to community initiatives. Community stakeholders and parents are involved in the refinements of these strategies and planning for a large-scale evaluation.

In sum, the current study provides further evidence for a “whole child,” family-centered, and culturally informed approach to health promotion in early childhood, and supports continued investigation of *ParentCorps* as an innovative strategy to prevent obesity in children living in disadvantaged urban communities.

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**TABLE 1**Change on Parent Knowledge, Use of Effective Practices, and Child Behavior ( $N=91$ )

Measure	Pre-test <i>M</i> ( <i>SD</i> )	Post-test <i>M</i> ( <i>SD</i> )	<i>t</i> ( <i>df</i> )	<i>p</i>
Parent Knowledge of Effective Practices	4.82 (1.27)	5.75 (1.58)	<i>t</i> (70)=4.67	<.001
Parent Use of Effective Practices	3.69 (0.48)	3.81 (0.46)	<i>t</i> (71)=2.55	.013
Child Behavior Problems	46.92 (11.15)	45.25 (8.74)	<i>t</i> (62)=2.35	.022

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TABLE 2

Change on Child Knowledge, Preferences, and Health Behaviors

Measure		Pretest <i>M</i> ( <i>SD</i> )	Posttest <i>M</i> ( <i>SD</i> )	<i>t</i> ( <i>df</i> )	<i>p</i>
Knowledge of Healthful Food	Total	0.68 (0.22)	0.76 (0.25)	<i>t</i> (86)=-3.74	<.001
	Boys	0.63 (0.22)	0.70 (0.26)	<i>t</i> (40)=-1.80	.080
	Girls	0.72 (0.20)	0.81 (0.23)	<i>t</i> (45)=-4.00	<.001
Knowledge of Healthful Activity	Total	0.71 (0.27)	0.74 (0.25)	<i>t</i> (86)=-0.85	.401
	Boys	0.65 (0.30)	0.70 (0.25)	<i>t</i> (39)=-0.94	.352
	Girls	0.76 (0.23)	0.76 (0.25)	<i>t</i> (44)=-0.22	.824
Walking	Total	4.59 (2.18)	5.17 (1.85)	<i>t</i> (70)=-2.56	.013
	Boys	4.25 (2.37)	5.25 (1.80)	<i>t</i> (31)=-2.95	.006
	Girls	4.87 (2.00)	5.10 (1.92)	<i>t</i> (38)=-0.78	.439
Moderate-to-Vigorous Activity	Total	1.31 (2.16)	1.46 (2.04)	<i>t</i> (66)=-0.64	.528
	Boys	1.97 (2.41)	1.81 (2.15)	<i>t</i> (31)=0.43	.673
	Girls	0.70 (1.72)	1.14 (1.90)	<i>t</i> (34)=-1.34	.189
Outdoor Time	Total	2.67 (1.17)	3.36 (1.21)	<i>t</i> (76)=-5.26	<.001
	Boys	2.90 (1.16)	3.60 (1.23)	<i>t</i> (34)=-3.74	.001
	Girls	2.48 (1.15)	3.17 (1.18)	<i>t</i> (41)=-3.68	.001
Preference for Physical Activity *	Total	3.58 (1.12)	3.89 (0.77)	<i>Z</i> =-2.27	.023
	Boys	3.64 (1.31)	3.86 (0.97)	<i>Z</i> =-0.90	.368
	Girls	3.53 (0.98)	3.92 (0.59)	<i>Z</i> =-2.15	.032
Physically Active Enough for Good Health *	Total	4.00 (1.22)	4.30 (1.09)	<i>Z</i> =-1.71	.088
	Boys	3.88 (1.34)	4.35 (1.01)	<i>Z</i> =-1.70	.089
	Girls	4.11 (1.10)	4.24 (1.64)	<i>Z</i> =-0.68	.496
Television Viewing	Total	2.74 (0.90)	2.28 (0.91)	<i>t</i> (71)=5.47	<.001
	Boys	2.71 (0.87)	2.26 (0.94)	<i>t</i> (33)=3.45	.002
	Girls	2.76 (0.94)	2.29 (0.90)	<i>t</i> (37)=4.25	<.001
Sleep Problems	Total	1.41 (0.39)	1.37 (0.37)	<i>t</i> (68)=1.09	.282
	Boys	1.50 (0.43)	1.35 (0.32)	<i>t</i> (32)=2.48	.019
	Girls	1.33 (0.33)	1.39 (0.39)	<i>t</i> (35)=1.50	.142

\* Wilcoxon signed rank test was reported because item is ordinal. % boys overall and by high-risk group: 47% of participants; 63% of dysregulated children, 54% of overweight children, and 46% of children of overweight parents.