



Early Head Start and African American families: Impacts and mechanisms of child outcomes

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ABSTRACT

Persistent disparities exist between African American children and their European American counterparts across developmental domains. Early childhood intervention may serve to promote more positive outcomes among African American children. The current study examined whether and how the Early Head Start (EHS) program benefited African American children at the end of the program, when they were 36 months of age, as well as the parenting these children experienced and how this affected their developmental outcomes. The data show a wide and strong pattern of impacts of EHS for African American children and families. Path analysis yielded findings that suggested a direct effect of EHS on specific child outcomes and parenting processes within this group of African American families. Parental supportiveness and cognitive stimulation emerged as important direct influences on African American children's outcomes and as pathways through which Early Head Start benefits these children. These findings are discussed in the context of early childhood intervention practice.

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Despite considerable gains in the socioeconomic status of the African American population over the past few decades, racial disparities persist for African American children, who are worse off than their European American peers in terms of physical and mental health (Auerbach, Krimgold, & Lefkowitz, 2000; Poissant & Alexander, 2000), academic achievement (Barbarin & Soler, 1993; Neal, 2006), and life-course outcomes (Williams, Hovmand, & Bright, 2007). Scholars have suggested that these disparities in outcomes between African American and European American children may begin in infancy, and are attributable to their higher likelihood of being born into poverty and of early experiences characterized by a variety of biological, psychological, and social risk factors (Duncan, Brooks-Gunn, & Klebanov, 1994; Duncan, Ziol-Guest, & Kalil, 2010).

Early childhood intervention programs have been touted as one strategy to enhance short- and long-term outcomes for a variety of children at-risk, including children experiencing poverty (Garces, Thomas, & Currie, 2002; Reynolds, 2000), premature and low-birth-weight children (Brooks-Gunn, Klebanov, & Liaw, 1995), and children reared in families at risk for poor parenting (Olds, Henderson, & Kitzman, 1994). Many of these studies have had

majority African American samples, and have reported positive outcomes for participant children throughout childhood and even in young adulthood (e.g., Campbell, Ramey, Pungello, Sparling, & Miller-Johnson, 2002; Reynolds, Temple, Robertson, & Mann, 2002; Schweinhart, Barnes, & Weikart, 1993). These findings are primarily the result of longitudinal evaluations of early childhood demonstration programs initiated 3–4 decades ago.

The goal of the current study is to examine how a contemporary early childhood program begun during pregnancy or infancy and implemented nationwide – Early Head Start – is beneficial to African American children during the early childhood years, specifically at age three. A corollary goal is to identify specific parenting mechanisms that influence the effect of Early Head Start on African American children, and that promote higher developmental outcomes in this population of young children.

1. Developmental outcomes of African American children

A preponderance of evidence points to adverse developmental outcomes for African American children. Health disparities are evident in African American children's higher rates of infant mortality and morbidity (Crum, Hogan, Chapple, Browne, & Green, 2005; Weese-Mayer et al., 2003) and increased likelihood of illness and lack of health care (Chen, Martin, & Matthews, 2006). Further, African American children lag behind their European American peers in regard to cognitive, language, and academic

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skills (Barbarin, 2004; Halle et al., 2009; Iruka & Barbarin, 2009; National Center for Education Statistics, 2006). Developmental discrepancies between African American children and their European counterparts exist in the social-emotional domain as well, such as a lower likelihood of secure attachment (Bakermans-Kranenburg, van IJzendoorn, & Kroonenborg, 2004) and a higher likelihood of having specific mental health difficulties, such as Attention Deficit Hyperactivity Disorder (Barbarin, 2004; Miller, Nigg, & Miller, 2009). Though clearly linked to the higher proportion of African American children who live in poverty (Duncan et al., 2010; Gabalda, Thompson, & Kaslow, 2010), health and developmental disparities have been documented even when researchers control for poverty (Barbarin, 2004; Giscombé & Lobel, 2005; Hudley, 2009).

Due to the large corpus of evidence regarding the compromised functioning of African American children, there is a need to identify factors that positively affect their developmental trajectories. Multiple studies have focused on the development-promoting aspects of the parenting African American children experience. Positive parenting, including warmth, supportiveness, sensitivity, and cognitive stimulation, has been documented to lead to better cognitive and behavioral outcomes for all children, including African American children (Burchinal, Campbell, Bryant, Wasik, & Ramey, 1997; Iruka, Burchinal, & Cai, 2010; Ispa et al., 2004; Jackson, 2003; Tamis-LeMonda, Briggs, McClowry, & Snow, 2009; Whiteside-Mansell, Bradley, & McKelvey, 2009). Negative parenting practices, such as harshness, intrusiveness, punitiveness, and detachment, have been found to adversely affect children's outcomes (Ispa et al., 2004).

Further, extant research suggests that the relation between some aspects of parenting and child outcomes may be unique to African American families, such as the evidence of positive child outcomes in African American families in which spanking is used in the context of warmth (Brooks-Gunn & Markman, 2005; Deater-Deckard, Dodge, & Sorbring, 2005; McLoyd & Smith, 2002). Although there is emerging documentation with respect to the parenting factors that promote positive outcomes for African American children, we have limited knowledge about whether and how early childhood interventions can enhance parenting and its effect on African American children's development and adaptation.

1.1. The benefits of early childhood programs for African American children

In the last decade, there has been a spate of studies documenting benefits of early intervention programs for children who have experienced an array of risk factors (Karoly, Kilburn, & Cannon, 2005; Nelson, Westhues, & MacLeod, 2003). Multiple longitudinal evaluations of early childhood programs initiated in the sixties and seventies, which served primarily African American children and families, have documented positive outcomes in young adulthood for program participants, specifically the Abecedarian, Perry Preschool, and Chicago Child-Parent Center projects (Campbell et al., 2002; Reynolds et al., 2002; Schweinhart et al., 1993). More recent research has also pointed to the benefits of early care and education for African American children, including reductions in obesity (Lumeng, Kaciroti, & Frisvold, 2010), improved school readiness (Burchinal et al., 1997; Zaslow, Oldham, Moore, & Magenheimer, 1998), higher levels of cognitive skills (Burchinal & Cryer, 2003), and enhanced social-emotional functioning (Administration for Children and Families, 2010a; Burchinal & Cryer, 2003).

Early childhood programs have also yielded benefits to parents. Program participants have been found to have improved maternal physical health (Kitzman et al., 1997), mental health (Ammerman et al., 2009), and self-sufficiency and life course outcomes (Barnet, Liu, DeVoe, Alperovitz-Bichell, & Duggan, 2007; Olds et al., 1997). Additionally, effects of early childhood intervention

have been documented with respect to parenting behaviors, including warmth, responsiveness, supportiveness, and cognitive stimulation (Ammaniti et al., 2006; Black et al., 1994; Caldera et al., 2007; Dishion et al., 2008; DuMont et al., 2008; Heinicke et al., 1999), and the quality of parent-child relationships (Lyons-Ruth & Easterbrooks, 2006; van Doesum, Riksen-Walraven, Hosman, & Hoefnagels, 2008). These effects are typically found in interventions that are home-based or include a home-based component (Sweet & Appelbaum, 2004).

Early childhood intervention research has moved beyond a main effects model and examined the factors that may attenuate or augment the benefits of these programs. Albeit limited, extant data suggest that parent factors such as parental depression (Shaw, Connell, Dishion, Wilson, & Gardner, 2009) and interpersonal violence (Eckenrode et al., 2000) may attenuate the impact of early childhood programs on participants. Additionally, parenting mediators of early childhood programs' benefits include parent involvement in school and avoidance of child maltreatment (Reynolds, Ou, & Topitzes, 2004), parental sensitivity and responsiveness (Administration for Children and Families, 2002), and the quality of the home environment (Bradley, Burchinal, & Casey, 2001). There is limited evidence regarding parenting as a mediator of the effects of early intervention during the infant/toddler period on African American families.

EHS is a prime venue for examining whether the benefits of early childhood programs that were found for African American children in earlier studies hold for a contemporary sample, as well as whether the positive impacts of preschool programs documented in more recent studies extend down to an infant-toddler sample. Moreover, the Early Head Start Research and Evaluation (EHSRE) study assessed multiple child and family factors that allow for a broad and more refined examination of early childhood program impacts on African American children. Research emanating from the EHSRE has typically combined all racial/ethnic groups (e.g., Administration for Children and Families, 2002; Love et al., 2005). Although EHS benefits on African American families have been documented (Chazan-Cohen, Raikes, & Love, 2011), as well as racial/ethnic differences between the parenting practices of Early Head Start families (Iruka, 2009), a within-group examination of impacts, mechanisms of impacts, and parenting influences on the outcomes of African American children in EHS has not been conducted.

Thus, the aim of the current study is to examine the extent to which Early Head Start can improve the developmental outcomes of African American children, as well as the mechanisms through which these benefits are achieved. A particular focus is the parenting African American EHS children experience, and how it affects their outcomes. We hypothesized that: (1) African American children and their parents would show benefits from EHS across developmental and parenting domains; (2) specific parenting processes would be related to particular child outcomes (i.e., cognitive stimulation would be linked to child cognitive-language outcomes, and warmth-supportiveness would be linked to child social-emotional outcomes); and (3) the impact of EHS on African American children would be mediated by parental cognitive stimulation, positive parenting (i.e., warmth, supportiveness), parental distress, and negative parenting (i.e., harshness).

2. Method

2.1. Participants

In the first two years of EHS funding, 17 sites were selected to be a part of the national, cross-site evaluation. A purposive sampling strategy was undertaken to select the sites to be included in the

Table 1
African American participant characteristics at enrollment.

Variable	Percentage
Family characteristics at baseline	
Mother teen at birth	53
Highest grade completed	
Less than 12th grade	50
12th grade or earned a GED	29
More than 12th grade	22
Race and ethnicity	
White non-Hispanic	0
Black non-Hispanic	100
Hispanic	0
Other	0
Live with partner	7
Pregnant at enrollment	28
Family income of 100% + of poverty	8
Receiving food stamps	60
Receiving WIC	88
Inadequate food	4
Inadequate housing	14
Inadequate medical care	7
Mother employed	21
Mother in school	35
Characteristics of focus child	
Male	51
First born	71
Birthweight less than 2500 g	7

EHS national evaluation, in order to have all program approaches, regions of the country, and characteristics of families represented. Primary caregivers eligible for EHS (i.e., from low-income families) were enrolled who were either pregnant or had children less than 12 months of age.

A total of 778 African American families were randomly assigned to either the control or intervention group by the national evaluator, Mathematica Policy Research (MPR). Control group families could not receive EHS services, although they could receive other services in the community. Response rates for the intervention and control group families varied depending on the data point and data source, but were fairly equivalent across program and control groups. However, it should be noted that some response rates were quite low. The various sample sizes for the data sources are delineated in the tables summarizing the results.

Baseline demographic characteristics of African American families in the program and control groups are provided in Table 1. Mothers were typically living without a partner (93%) and had a high school diploma or less (79%); the majority (53%) had their infants as adolescents. At baseline, 75% of families had children, whose ages ranged from newborn to 12 months. Approximately 36% of the families had children who were less than 5 months of age, and another 40% had children between 5 and 12 months.

2.2. Procedures

The EHS study was conducted using multiple methods and included both implementation and impact designs. Baseline information was taken from the *Head Start Family Information System*, which was derived from parent responses on application and enrollment forms. Information on family service receipt was garnered through the *Parent Services Interview*, which was targeted to be administered approximately 6, 15, and 26 months after random assignment. Some of these interviews were conducted via telephone and some were done in person.

Child and family outcome assessments were tied to the children's ages (i.e., 14, 24, and 36 months). In this paper, we focus on assessments conducted at the end of the program when children were 36 months of age. For the most part, these assessments were conducted in the families' homes by trained researchers who were

part of local research teams or staff from the office of the national contractor (MPR) who were blind to family intervention status. Small financial incentives were offered to families for participation in the research.

2.3. Measures

Child functioning was measured through direct assessment, observation, and parent interviews. Cognitive development was directly assessed using the *Bayley Scales of Infant Development – Second Edition (BSID-II)*, a well-known measure of development with good reliability and validity (Bayley, 1993). Trained assessors administered the Mental Scale at the 36 month assessment point. Language development (i.e., receptive vocabulary) was assessed with the *Peabody Picture Vocabulary Test – Third Edition (PPVT-III)* (Dunn & Dunn, 1997). This is a standardized measure that is used with persons from 2.5 years through adulthood. Trained researchers administered this test to children at 36 months.

Social-emotional development of the children was assessed via parent report, live observation, and videotaped observation. Parents completed a shortened 2–3 year version of the *Child Behavior Checklist (Achenbach, 1993)*. Parents rated their children's behavior using a 39-item scale that asked about 31 items from the aggression subscales plus 8 additional items selected by MPR for their ability to discriminate children who were receiving clinical mental health services. The Chronbach's alpha reliability coefficient in the present sample for this shortened version was .98.

Children were observed both during the administration of the Bayley Scales of Infant Development, when testers filled out the infant behavior record, and in videotaped interaction with their parents in semi-structured play. Coding of the videotapes provided data regarding the children's engagement with parent, sustained attention with objects, and negativity toward parents. The free-play task and coding scheme used were adapted from the NICHD Study of Early Child Care (NICHD Early Child Care Research Network, 1992). Inter-rater agreement averaged 94%. These scales were also used to code a videotaped puzzle challenge task.

Parent and family functioning was assessed in several areas: stimulation of learning; emotional support; knowledge of child development; parenting behaviors (including negative parenting and discipline strategies); parental health and mental health; family relationships; and self-sufficiency. Stimulation of learning was assessed through a live observation of the quality of the home environment, using the *Home Observation for the Measurement of the Environment (HOME) Scale (Caldwell & Bradley, 1984)*. An independent observer rated each home environment for the existence of parental warmth, harshness, stimulation of learning and language, and emotional responsiveness.

Parenting behavior was assessed through live and videotaped observation. The semi-structured free play session (see description in child measures section) was used to examine parenting behavior. The constructs measured during the free play were parent supportiveness, detachment, intrusiveness, and negative regard. Correlations among the three parenting scales were moderate to high. On the puzzle challenge task, four parenting scales were rated: supportive presence, quality of assistance, intrusiveness, and detachment. Correlations among these four parenting scales were also moderate to high.

Information on parental health was obtained via the *Parent Services Interview*. Parental mental health was assessed through an examination of parental stress and depression. Parental stress and parent-child dysfunctional interaction were measured using the *Parenting Stress Inventory – Short Form (PSI/SF)* (Abidin, 1990), derived from the full-length parent-report PSI (Abidin, 1986). Internal reliability coefficients in this sample were: .91 for parental distress; and .84 for parent-child dysfunctional

interaction. Parental depression was assessed via parental response to 12 items from the *Center for Epidemiologic Studies Depression (CESD)* scale (Radloff, 1997). The internal reliability coefficient for this sample was .88.

To garner data on family characteristics and demographics, MPR staff reviewed the *Head Start Family Information System (HSFIS)* program application and enrollment forms for each of the families. The *Parent Services Interview*, a questionnaire created for this project, was used to gain information on families' progress toward self-sufficiency, the status of parent and child health, and other family characteristics. In the current study, we used information on their level of education and employment status.

3. Results

3.1. Program benefits for African American EHS participants

We used regression procedures to estimate program impacts, controlling for baseline demographic factors as well as site, using an intent-to-treat approach. We present impacts for the African-American sample compared to its respective control group. Table 2 includes the mean outcome for the program group, the mean outcome for the control group, the N and standard deviations, the estimated impact with significance level, and the size of the impact in effect size units for each variable. Effect size was calculated by dividing the impact by the standard deviation of the outcome variable for the control group (McCartney & Rosenthal, 2000).

The data presented herein highlight that EHS yielded many benefits to African American children and families at 36 months, with effect sizes ranging from .16 to .40. Although there was no impact of EHS on African American children's cognitive development, African American children who received EHS had higher receptive vocabularies than their African American counterparts in the control group ($ES = .21, p < .01$). EHS had an impact on a broad array of outcomes in the social-emotional domain for African American children. Relative to controls, African American children who were recipients of the EHS intervention displayed less aggressive behavior ($ES = -.24, p < .01$) and more sustained attention ($ES = .38, p < .001$). They were also less negative toward ($ES = -.28, p < .01$) and more engaged with ($ES = .42, p < .001$) their parents during play. There was also a trend suggesting that they were less likely to have experienced an injury or hospitalization ($ES = -.15, p < .1$).

Similarly, EHS produced a wide array of impacts on African American parents (i.e., mothers) at the 36-month data point, which may explain the pattern of outcomes of EHS on African American children. African American parents who had participated in EHS provided better language and literacy environments ($ES = .16, p < .05$), were more supportive of their children during play ($ES = .40, p < .001$), and were more likely to report a regular bedtime for their children ($ES = .20, p < .05$), when compared to controls. They also were more likely to be employed or in school ($ES = .22, p < .001$) than their counterparts in the control group. Finally, there were trends suggesting that African American parents were more likely to provide warm home environments ($ES = .15, p < .10$) and to engage in teaching activities with their children ($ES = .15, p < .10$). Further, the favorable impacts for African American families persisted after several potentially confounding family and site variables were controlled for in the models.

3.2. Mechanisms of EHS program impacts

Our preliminary examination of the impacts of EHS revealed significant findings, which were the basis of our examination of potential mechanisms through which EHS led to positive child development outcomes for African American children. The

confirmatory program evaluation (CPE) approach (Reynolds, 1998) heavily informed our data analytic strategy. CPE allows for the examination of the mechanisms by which an intervention affects child and family outcomes. Structural equation modeling (SEM) (using Mplus 5.0; Muthén & Muthén, 1998–2007) was used to test our hypothesized model as it allowed us to examine the complex relationships among measured variables including direct and indirect effects of Early Head Start participation on child outcomes while controlling for the clustering of participants by program site that occurred as a result of the sampling design.

In determining the mechanisms to be included in our model, we elected to include a subset of the variables that were examined in the impact analysis and that emerged as key in other EHS research (Love et al., 2005). We were most interested in examining the program effects on various aspects of parenting. We selected five variables for which there was strong empirical support that captured different parenting qualities or processes: parental warmth, harshness, supportiveness, cognitive stimulation, and parental distress. For our child outcomes, we examined cognitive skills (i.e., Bayley MDI score), receptive language skills (i.e., PPVT), problem behaviors (i.e., CBCL), emotion regulation (i.e., BBRs), sustained attention, engagement with parent, and negativity toward parent (the latter three measured by the Three Bag Task). We also controlled for child gender and maternal education, the two covariates found to be most significantly related to the selected model variables, to account for any variance in the model that could be contributed to those variables.

The proposed structural model (see Fig. 1) represents the following parameters: (1) the influence of EHS participation on specific aspects of parenting; (2) the direct effects of EHS participation on a range of child outcomes; and (3) the indirect effects of EHS on child outcomes by way of the mediating variables. We conducted a path analysis using the sample of African American children in the study ($n = 778$) to estimate the strength of these predicted relationships.

Three model fit indices were used to evaluate the fit of the models: the Bentler Comparative Fit Index (CFI), the Root Mean Square Error of Approximation (RMSEA), and the Standardized Root Mean Square Residual (SRMR). We used Hu and Bentler's (1999) joint criteria to determine data-model fit, which include .93 and above for the CFI, .09 and below for the SRMR, and .06 and below on the RMSEA. We utilized maximum likelihood (ML) procedures for missing data. Since only a small number of participants were missing data on the endogenous model variables, additional methods of handling missing data, such as mean imputation, were deemed unnecessary.

Intercorrelations between model variables were estimated in order to determine the strength of the relationships prior to testing our hypothesized model (see Table 3). Then, we ran a measurement model with the selected model variables to test the covariance among model variables, which resulted in good model fit according to recommended criteria (CFI = 1.00, RMSEA = .000, SRMR = .001). The final path analysis also produced good model fit (CFI = .996, RMSEA = .024, SRMR = .015), which indicated that the hypothesized relationships were supported by the data. The model R^2 s were .19 ($p < .001$) for cognitive skills, .17 ($p < .001$) for receptive language skills, .18 ($p < .001$) for problem behaviors, .08 ($p < .05$) for emotional regulation, .31 ($p < .001$) for sustained attention, .47 ($p < .001$) for engagement with parent, and .14 ($p < .001$) for negativity toward parent.

The standardized model coefficients for both direct and indirect effects are presented in Table 4. According to the model results, EHS participation was related to greater parental supportiveness ($\beta = .11, p < .01$) and cognitive stimulation ($\beta = .07, p < .05$) among African American mothers. There was also a direct effect of EHS on three child outcomes. African American EHS participants demonstrated fewer problem behaviors ($\beta = -.10, p < .05$), greater

Table 2
Impacts on child and family outcomes at age 3 for African Americans.

Outcome	Program group			Control group			Impact estimate	Effect size
	M	SD	N	M	SD	N		
Child outcomes								
English receptive voc. (PPVT)	81.13	12.70	249	78.40	14.65	225	3.02*	.21
Bayley MDI	87.55	11.98	262	86.54	12.19	220	1.57	.13
ER visits accident/injury	.00	.05	320	.02	.12	303	-.02*	-.15
Sustained attention w/objects	5.0	.79	246	4.62	1.02	219	.39*	.38
Observed Bayley emotion reg.	3.99	.73	272	3.88	.77	238	.06	.08
CBCL aggressive behavior	9.67	6.13	315	11.43	6.41	292	-1.55*	-.24
Negativity toward parent	1.24	.48	246	1.39	.71	220	-.2*	-.28
Engagement during play	4.73	.94	246	4.36	1.02	220	.43*	.42
Parent outcomes								
HOME language and literacy	10.33	2.05	287	9.93	2.20	264	.35*	.16
HOME harshness	.32	.65	275	.34	.64	256	-.02	-.03
HOME warmth	2.46	.87	272	2.35	.96	254	.14+	.15
Percent reading daily	51.1	.50	315	47.6	.50	296	5.0	.10
Parent support during play	3.88	.95	245	3.58	.89	220	.36*	.40
Parent detachment during play	1.28	.70	246	1.37	.76	220	-.09	-.12
Percent regular bedtime	57.9	.49	323	50.2	.50	303	10.0*	.20
Teaching activities	4.43	.87	315	4.3	.84	295	.13+	.15
Parenting distress	24.9	9.82	308	25.37	9.80	293	.88	-.09
Family conflict	1.61	.55	256	1.65	.47	245	-.04	-.08
Ever employed or in school (26 months post enrollment)	95.33	.21	343	88.8	.31	305	6.92*	.22

The bold values are significant with respect to the statistical test used.

* $p < .10$.

+ $p < .05$.

sustained attention ($\beta = .11, p < .01$), and stronger engagement in play with their mothers ($\beta = .07, p < .05$) than did their control group counterparts.

Additionally, cognitive stimulation and parental supportiveness mediated the effect of EHS participation on several child outcomes. The sum of indirect effects on cognitive skills was significant ($\beta = .04, p < .05$), with the path through cognitive stimulation (as measured by the HOME) approaching significance ($\beta = .03, p < .10$). EHS was indirectly related to sustained attention ($\beta = .06, p < .01$), engagement with parent ($\beta = .07, p < .01$), and negativity toward parent ($\beta = -.03, p < .05$) through parental supportiveness.

We note that these three outcomes and parental supportiveness were observed and scored from the same parent-child videotaped interaction which was designed to be a measure of parenting.

Many of the parenting variables had strong direct associations with child outcomes. Supportiveness was positively related to sustained attention ($\beta = .53, p < .001$) and engagement ($\beta = .65, p < .001$), and negatively related to negativity toward parent ($\beta = -.29, p < .001$). Cognitive stimulation was positively related to cognitive skills ($\beta = .36, p < .001$) and language skills ($\beta = .28, p < .01$), and negatively related to problem behaviors ($\beta = -.13, p < .01$). Greater harshness was related to more problem behaviors ($\beta = .15,$

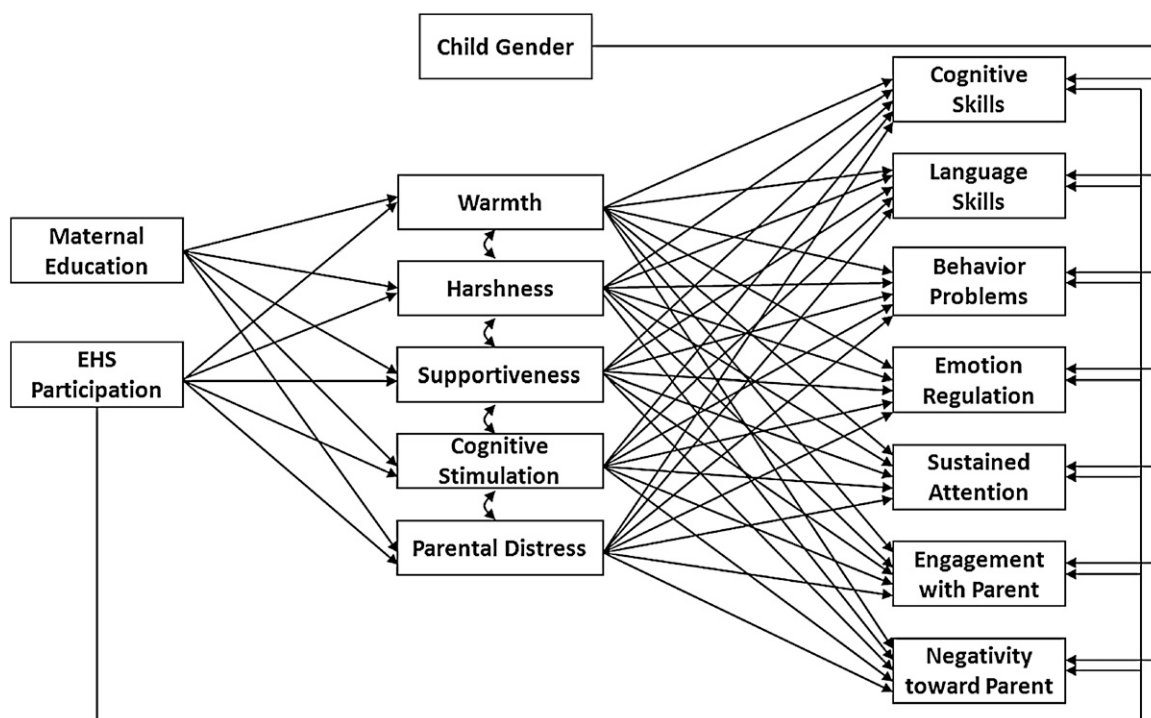


Fig. 1. Hypothesized model for direct and indirect effects of EHS participation on African American child outcomes at age 3.

Table 3
Bivariate correlations between model variables.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1 EHS participation														
2 Male child	-.01													
3 Maternal education	.03	-.01												
4 Warmth	.02	-.00	.23*											
5 Harsh	-.03	-.02	-.08	-.28*										
6 Supportiveness	.13*	.00	.22*	.32*	-.23*									
7 Cognitive stimulation	.09*	.08	.35*	.46*	-.06	.31*								
8 Parental distress	-.00	.05	-.26*	-.18*	.10*	-.02	-.23*							
9 Cognitive skills	.04	-.11*	.24*	.20*	-.10	.17*	.38*	-.09						
10 Language skills	.09	-.10*	.17*	.27*	-.15*	.17*	.35*	-.16*	.57*					
11 Problem behaviors	-.12*	.07	-.17*	-.16*	.19*	-.10*	-.21*	.36*	-.12*	-.17*				
12 Emotion regulation	.10*	-.08	.00	.12*	-.23*	.10*	.06	-.06	.22*	.26*	-.18*			
13 Sustained attention	.18*	-.05	.08	.13*	-.13*	.54*	.18*	-.02	.15*	.19*	-.15*	.17*		
14 Engagement	.15*	-.05	.17*	.27*	-.20*	.68*	.22*	-.04	.20*	.23*	-.14*	.15*	.62*	
15 Negativity	-.09	.04	.01	-.15*	.25*	-.32*	-.06	.02	-.11*	-.08	.19*	-.25*	-.33*	-.42*

* $p < .05$.

$p < .001$), less emotion regulation ($\beta = -.21, p < .001$), and lower cognitive skills ($\beta = -.10, p < .05$). A higher level of parental distress was associated with more problem behaviors ($\beta = .31, p < .001$). Parental warmth was not significantly related to any child outcome.

4. Discussion

The goal of the current study was to examine the unique benefits of EHS for African American children and their families, and the potential mechanisms through which these were achieved. We were particularly interested in documenting any parenting processes that affected child outcomes directly, and that mediated the effect of EHS on African American children.

4.1. EHS impacts on African American families

The current study documented that Early Head Start participation resulted in an array of positive impacts for African American children and families, at the end of the program when children were 3 years old. Specifically, African American Early Head Start children were less likely to experience injuries or hospitalizations, although the effect size was small. This effect has been found in a few evaluations of early childhood programs that did not specifically focus on African American children (e.g., Brooks-Gunn et al., 1994; Olds

et al., 1994). The analyses also revealed that EHS had a small, positive impact on African American children’s receptive vocabulary and a moderate impact on their capacity to sustain attention. The vocabulary finding corroborates evidence from earlier studies on the benefits of early childhood programs for children’s language skills (Anderson, Moffatt, & Shapiro, 2006; NICHD Early Child Care Research Network, 2005). The newer finding that EHS may facilitate sustained attention in children suggests that this early childhood program has the potential to promote a key process relevant to executive functioning and self-regulation, skills that are often compromised in children from low-income backgrounds (Blair, 2002; Eisenberg et al., 2000; Raver, 2004).

EHS seemed to have a moderate effect on African American’s children’s engagement with their parents during play, which has implications for long-term development given the evidence that children’s engagement in positive play is linked to better academic and social outcomes (Mathieson & Banerjee, 2010; Singer & Lythcott, 2004). Additionally, we found that EHS had a small effect on African American children’s aggressive behaviors, as rated by their parents, and their negative behaviors, as observed during play with their parents. These findings merit particular attention, in light of the documented linkage between early child care and behavior problems for young children (McCartney et al., 2010) and the high rates of behavior problems found among African American children (Lamb, Land, Meadows, & Traylor, 2005).

Table 4
Direct and indirect effects of Early Head Start participation on African American children’s outcomes at age 3.

	Parenting variables					36-Month child outcomes						
	W	H	S	C	P	CS	LS	PB	ER	SA	EN	NP
Direct effects												
Program →	.01	-.03	.11*	.07*	-.00	.01	.05	-.10*	.09	.11*	.07*	-.05
Warmth →						.03	.11	-.01	.04	-.07	.05	-.01
Harshness →						-.10*	-.09	.15*	-.21*	-.03	-.03	-.19*
Supportiveness →						.07	.02	-.00	.04	.53*	.65*	-.29*
Cognitive stimulation →						.36*	.28*	-.13*	-.01	.04	-.02	.06
Parental distress →						.02	-.07	.31*	-.04	.01	-.02	.02
Indirect effects												
Program (total)						.04*	.03	-.01	.01	.06*	.07*	-.03*
Program → Warmth →						.00	.00	.00	.00	-.00	.00	.00
Program → Harshness →						.00	.00	-.00	.01	.00	.00	-.00
Program → Supportiveness →						.01	.00	.00	.01	.06*	.07*	-.03*
Program → Cognitive stimulation →						.03	.02	-.01	.00	.00	-.00	.00
Program → Parental distress →						.00	.00	-.00	.00	.00	-.00	.00

Notes: W, warmth; H, harshness; S, supportiveness; C, cognitive stimulation; P, parental distress; CS, cognitive skills; LS, language skills; PB, problem behaviors; ER, emotion regulation; SA, sustained attention; EN, engagement; NP, negativity toward parent. Control variables included maternal education and child gender. Correlations among parenting variables ranged from .04 (support and parental distress) to .42 (warmth with cognitive stimulation).

* $p < .05$.

Our analyses demonstrated impacts on EHS African American parents in the areas of support for children's language and learning when compared to their peers who did not receive the program. There was a moderate effect of EHS on African American parents' observed supportiveness during play. They also reported more regular bedtimes for their children than their non-EHS peers. Additionally, they were marginally more likely to provide warm home environments and engage in teaching activities with their children. Similarly, the path analysis data show that EHS had small but positive direct effects on parental supportiveness and cognitive stimulation for African American parents.

To a limited extent, studies have documented program benefits on parental cognitive and language stimulation (Black et al., 1994; Heinicke et al., 1999). The improvements in parent supportiveness that were found as a result of EHS are more typically documented in evaluations of programs that have a more explicit parent-centered or therapeutic approach than does EHS (e.g. Ammaniti et al., 2006; Dishion et al., 2008). A critical finding was that Early Head Start African American parents were more likely to be employed or participating in education programs than African American parents who did not receive EHS. Benefits of early childhood programs regarding parent self-sufficiency have not typically been found, with the notable exception of the Nurse Family Partnership program (e.g., Kitzman et al., 2000; Olds et al., 2004).

In sum, consistent with earlier studies of early childhood demonstration programs (Campbell et al., 2002; Reynolds, 2000; Schweinhart et al., 1993), African American children and parents seem to derive particular benefits from EHS. The findings presented herein suggest that EHS may have more of an influence on children's outcomes than what has been documented in previous studies, specifically regarding sustained attention and interpersonal engagement, developmental processes that are critical for children's competence in the academic and social arenas (Blair, 2002).

4.2. Pathways of Early Head Start impacts on African American children

A major goal of the current study was to address *how* Early Head Start produced these positive impacts for African American families. Specifically, we examined the pathways through which EHS might affect child outcomes for African American children, particularly the parenting processes that may mediate EHS intervention effects. Although the effects are small, EHS promotes African American children's cognitive skills through parental cognitive stimulation. EHS effects on children's sustained attention, engagement with parents, and negativity toward parents were achieved through the program's facilitation of parental supportiveness.

These findings are consistent with the "theory of change" of many Early Head Start and other early childhood intervention programs – that improved child outcomes are achieved through intervention with parents that focuses on fostering children's skills (Roggman, Boyce, & Cook, 2009; Shaw, Dishion, Supplee, Gardner, & Arnds, 2006). Some studies do suggest that parenting is a particularly potent protective mechanism for African American children across developmental domains (Brody, Dorsey, Forehand, & Armistead, 2002). For example, specific to the early childhood period, Burchinal, Roberts, Zeisel, Hennon, and Hooper (2006) document that both parental responsiveness and stimulation mediate the relation between social risk and lower levels of child behavior problems in African American families.

Beyond intervention effects, parenting processes directly impacted many child outcomes in this group of African American children. Parental supportiveness, as observed during the free play interaction, promoted sustained attention and engagement with

parents, and was associated with reduced problem behavior. However, when controlling for other parenting behaviors, there was no direct effect of parental warmth on any of the child outcomes, a finding that is inconsistent with a wealth of research in the child development field (Tamis-LeMonda et al., 2009). Although there is some overlap in the constructs of warmth and supportiveness, the current findings suggest the relevance of disentangling specific parenting processes, and examining their differential influence on child outcomes among African American families (Ispa et al., 2004; Whiteside-Mansell et al., 2009).

Cognitive stimulation was related to greater cognitive and language skills, which is consistent with the research that documents the importance of specific parenting practices in improving the cognitive and academic outcomes of children who are from impoverished and minority backgrounds (Brooks-Gunn & Markman, 2005; Burchinal et al., 2006; Ferguson, 2007). Additionally, cognitive stimulation tended to be associated with reduced behavior problems, which highlights a finding in the literature that the provision of developmentally stimulating objects and activities to children can foster positive social-emotional development (Bradley, Corwyn, Burchinal, McAdoo, & García Coll, 2001). It may be that parents' investment of time and energy into offering developmentally stimulating experiences may provide their children with the relationships, structure, and interaction with their parents that promote social-emotional competence and reduce behavior problems.

Parental harshness has been linked with a variety of negative child outcomes across samples (McKee et al., 2007; Rhoades et al., 2011). For these African American Early Head Start participants, harshness had a negative effect on children's cognitive skills and emotional regulation, and was related to increased problem behavior. Also related to children's problem behavior was parental distress. These findings underscore previous research on the import of parental influences on emotion regulation and problem behaviors for African American children (e.g., Garner, 2006; Whittaker, Jones Harden, See, Meisch, & Westbrook, 2011). They also contribute to the evidence regarding the effects of specific negative parenting behaviors on African American children's outcomes (Ispa et al., 2004; Whiteside-Mansell et al., 2009).

In sum, the evidence presented herein corroborates early research that underscores the benefit of early childhood interventions for African American children. It extends previous research by documenting the benefits of a contemporary, large-scale, publicly administered primary prevention program for African American families from low-income communities. Additionally, it highlights the importance of beginning preventive intervention during infancy, given that much of the prior research focused on preschool children. Further, this study reveals the potential impact of community-based, preventive early childhood intervention on distinct developmental processes, such as vocabulary, sustained attention, and problem behavior.

Further, the findings presented herein underscore the salience of the parenting context for promoting optimal child outcomes for all children, but especially those at socioeconomic risk such as African American children (Brooks-Gunn, Klebanov, Smith, Duncan, & Lee, 2003; Ferguson, 2007). Parenting processes, such as parental supportiveness and cognitive stimulation, are important mechanisms for achieving child outcomes. How this evidence informs the implementation of early childhood programs is a subject to which we now turn.

4.3. Practice implications

The results of the current analyses provide support for the increased availability of early childhood programs for all children, particularly those who are African American. The majority of early

childhood programs available to children from low socioeconomic backgrounds begin during the preschool years. In fact, despite the recent exponential growth of the Early Head Start program, it serves a small fraction of eligible children (Administration for Children and Families, 2010b). Given such evidence, implementing early childhood programs prior to the preschool period is imperative to address the cognitive and language gaps that emerge during infancy (Halle et al., 2009).

It is also important to address how these programs are implemented (Odom, 2009). African American and other children seem to benefit from interventions that facilitate their parents' provision of cognitively stimulating activities and emotionally supportive environments. This is particularly germane to intervention policy and practice, given the evidence that suggests that many developmental disparities between African American children and their European American peers are attributable to parenting practices (Brooks-Gunn et al., 2003; Burchinal et al., 2006; Ferguson, 2007). Specifically, Brooks-Gunn and Markman (2005) suggest that early childhood interventions with a parenting component can potentially reduce racial/ethnic gaps in school readiness. The strategy of promoting child outcomes through enhancement of the parenting context is also consistent with the two-generation approach taken by EHS programs.

With respect to the findings on child outcomes, the improvements in sustained attention are in line with current approaches to early childhood intervention that emphasize cognitive self-regulation (Raver et al., 2011). The social-emotional benefits of EHS merit particular mention. Evidence regarding the early onset of conduct disorder (Shaw et al., 2006) and the large number of preschool expulsions (Gilliam & Shahar, 2006) highlights the need for social-emotional interventions in programs serving young children. Although EHS is effective in this domain, further emphasis on infant mental health in Early Head Start and other early childhood programs (Beeber et al., 2007; Chazan-Cohen, Stark, Mann, & Fitzgerald, 2007) could potentially lead to greater impacts. Another avenue to achieve even greater effectiveness in the social-emotional domain would be to implement evidence-based interventions that have been found to promote positive social-emotional functioning and reduce behavior problems in young children (e.g., Shaw et al., 2006; Webster-Stratton & Reid, 2003) within EHS programs. These targeted efforts seem to be particularly beneficial for African American children, particularly with respect to addressing problem behavior (Shaw et al., 2006).

4.4. Research limitations and directions

The current study provided a preliminary look at the benefits, for African American children, of a recently and nationally implemented early childhood program begun in infancy – Early Head Start. Although research of this type is limited in the infant/toddler intervention literature, there are some limitations of the study that bear on future research. First, given that these data were collected during the formative years of Early Head Start, future studies should include a sample that is representative of the current array of programs and families nationwide and that is more carefully retained over time. Additionally, it would be important to know how characteristics of staff (e.g., match with race/ethnicity) and families (e.g., risk level, immigration status) affect quality of services and outcomes for African American children and parents. Qualitative research that provides a more in-depth examination of the perceptions of parents and the experiences of particular groups of African Americans would be helpful in this regard.

Future work should incorporate refined examination of the relation between receipt of services and outcomes using experimental and non-experimental analysis. For example, documenting the dosage and content of services through systematic recording

and tracking of program data could add much to our understanding of the benefits of such programs to African American families. Similarly, data on program quality could explain the existence or the magnitude of positive outcomes. Further, a more extensive examination of the program sites that produce greater outcomes for African Americans would be helpful for program implementation.

Some limitations to the methodology of the current study merit mention. This was not a nationally representative study, so it may not include African American families from all geographic regions of the United States. Families were also not randomly assigned to a particular EHS program type; some sites had only center-based or only home-based services. Also, for some study variables, there were elevated non-response rates. Future studies should attempt to rectify these methodological challenges, by including nationally representative samples that are randomly assigned to program types and incorporating multiple strategies to avert program cross-over and sample attrition.

Finally, the design and methodology for the current study were not specific to African American families. Murry, Bynum, Brody, Willert, and Stephens (2001) argue for a more sophisticated conceptual and assessment approach that considers the unique parenting processes of African American families. Such an approach would enhance our understanding of what promotes positive parenting and child outcomes in this population. Specific to the questions that guided this study, a more culturally relevant methodology would allow us to better examine the mechanisms by which early childhood programs affect African American children. Such an approach could ultimately enhance the effectiveness of such programs for this population and improve their outcomes overall (Thomas & McKie, 2006).

5. Conclusions

The goal of this study was to explore the benefits of an early childhood program begun during infancy on African American families. Given the many disparities between the developmental outcomes of African American children and their European American counterparts, it is important to build an evidence base relative to interventions that could potentially enhance the developmental trajectories of African American children. The current study documented that Early Head Start seems to be particularly beneficial in enhancing language, promoting sustained attention and interpersonal engagement, and preventing the development of behavior problems in African American children. It also appears that parenting processes, particularly supportiveness, have a major influence on African American children's outcomes and are important mechanisms through which Early Head Start benefits African American children.

A principal aim of early childhood policy-makers and practitioners is to provide interventions for young children that enhance their development across domains and promote their school readiness. Evidence that developmental disparities between at-risk children and their low-risk counterparts emerge early in life argues for the widespread implementation of programs that serve infants and toddlers from impoverished and minority backgrounds. Such programs may be particularly effective for African American children, who are susceptible to disparities in multiple developmental, socioeconomic, and service sector areas.

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