EARLY HEAD START

RESEARCH

Building Their Futures: How Early Head Start Programs Are Enhancing the Lives of Infants and Toddlers in Low-Income Families

Volume II: Technical Report Appendixes

U.S. DEPARTMENT OF HEALTH & HUMAN SERVICES
Administration for Children & Families
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Commissioner's Office of Research and Evaluation
and the Head Start Bureau

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Volume II: Technical Report Appendixes

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The Commissioner's Office of Research and Evaluation
And the Head Start Bureau
Administration on Children, Youth and Families
Department of Health and Human Services

Early Head Start Evaluation Reports

Leading the Way: *Describes the characteristics and implementation levels of 17 Early Head Start programs in fall 1997, soon after they began serving families.*

Executive Summary (December 2000): *Summarizes Volumes I, II, and III.*

Volume I (December 1999): *Cross-Site Perspectives—Describes the characteristics of Early Head Start research programs in fall 1997, across 17 sites.*

Volume II (December 1999): *Program Profiles—Presents the stories of each of the Early Head Start research programs.*

Volume III (December 2000): *Program Implementation—Describes and analyzes the extent to which the programs fully implemented, as specified in the Revised Head Start Program Performance Standards, as of fall 1997.*

Pathways to Quality and Full Implementation (summer 2001): *Describes and analyzes the characteristics, levels of implementation, and levels of quality of the 17 Early Head Start programs in fall 1999, three years into serving families. Presents an analysis of the pathways programs followed to achieve full implementation and high quality.*

Building Their Futures: How Early Head Start Programs Are Enhancing the Lives of Infants and Toddlers in Low-Income Families: *Presents analysis of the impacts that the research programs have had on children's development, parenting, and family development through 2 years of age.*

Summary Report (January 2001): *Synopsis of the major findings.*

Technical Report (June 2001): *Detailed findings and report on methodology and analytic approaches.*

Special Policy Report on Child Care in Early Head Start (fall 2001): *Describes the nature, types, and quality of child care arrangements in which Early Head Start and control group children enrolled, and presents implication for public policy.*

Special Policy Report on Health and Disabilities in Early Head Start (winter 2002): *Describes health services received by Early Head Start and control group families, and analyzes services for infants and toddlers with disabilities.*

Final Report on the Early Head Start Evaluation (June 2002): *Presents analysis of the impacts that the research programs have had on children's development, parenting, and family development through the children's third birthday (including two to three years of program participation).*

Reports Are Available at:

http://www.acf.dhhs.gov/programs/core/ongoing_research/ehs/ehs_intro.html

http://www.mathematica-mpr.com/3rdLevel/ehstoc.htm

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APPENDIX A

CONTRIBUTIONS OF EARLY HEAD START PROGRAMS AND LOCAL RESEARCH TEAMS TO THE INTERIM REPORT FINDINGS

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INTRODUCTION

As described in Chapter I, the Early Head Start Research Consortium comprises the 17 programs participating in the evaluation, ACYF's Head Start Bureau and Commissioner's Office of Research and Evaluation, 15 university research teams funded by ACYF to work with 16 of the research programs, and the national team of Mathematica Policy Research, Inc. and Columbia University's Center for Children and Families, Teachers College. Local researchers also participated in many national evaluation activities (including collecting cross-site data—see Appendix B). The Consortium facilitated collaboration on issues relating to assessment measures and procedures, analysis and reports, the use of research and evaluation data, and publication policies. Local research teams conducted local research on a variety of topics. In general, however, they focused on in-depth research into understanding the local context and the role of mediators and moderators of program effects. Their research often encompassed measures that supplemented those used in the national, cross-site data collection. They worked closely with their program partners (as did the national team).

The Early Head Start programs helped with all phases of the study from random assignment and locating families for data collection to participation in discussions of analysis and reporting. Local research teams and their program partners have been analyzing data and presenting and publishing descriptive findings for some time. With the release of this report, in some instances they now also report local findings of program effects.

This appendix presents brief write-ups of 19 studies from 11 of the local research teams and from staff in 4 of the programs. The Consortium established a careful peer-review process, which resulted in contributions reflecting a variety of perspectives on the experiences of Early Head Start programs, families, and children. Each of these brief papers expands on the synopses included as boxes in the chapters of this report. They appear alphabetically, by first author.

RELATIONSHIPS BETWEEN SERVICES AND CHILD OUTCOMES IN AN URBAN EARLY HEAD START PROGRAM

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A primary mission of the Kansas Early Head Start Partnership has been to identify program features and services that are most effective in promoting the best outcomes for children and families. This mission is fundamental for improving our local program and for contributing to the national knowledge base on effective intervention practice. As a first step in that effort, the present interim analyses seek to determine whether differences in services across individual families are related to child progress within Early Head Start.

Method

The analysis sample included 77 families in an urban community who were randomly assigned to the Early Head Start program group. All families in the program group were offered home-based intervention services. For families with child care needs, the Early Head Start program also provided placement in developmentally appropriate, community-based child care programs. The sample is ethnically diverse: 59 percent African American, 20 percent European American, and 20 percent Hispanic.

Children's Development

To track developmental progress, analyses focused on growth over time in children's cognitive and language development, using hierarchical linear modeling (HLM) (Raudenbush et al. 2000). Child assessments were scheduled every 4 to 6 months from 8 to 24 months of age, with actual age of administration ranging from 7 to 29 months. Developmental measures included (1) cognitive development, assessed with the Bayley Mental Development Scale; and (2) verbal communication during typical activities at home, assessed with the CIRCLE Observation System (Atwater et al. 1993).

Early Head Start Program Services

Program service variables were examined as possible predictors of children's developmental progress. In other words, we asked whether children who experienced different types and levels of service would have different developmental trajectories. Program service measures included (1) child's age at enrollment; (2) program model—home visiting only or home visiting plus child care services; (3) duration of program services—number of months through child's second birthday; (4) intensity of home-based services—number of home visits per month through child's second birthday; and (5) parent engagement in the program—a composite score based on staff ratings of the level and consistency of parent participation over time, active engagement during home visits, and follow-through on individual program goals between visits.

Family Risk Factors

In previous studies, family risk factors have been associated with a higher risk of developmental delay (see, for example, Sameroff and Fiese 1990). Thus, to control for the possible confound of family risk status in the present analyses, a Cumulative Risk Index (CRI) was calculated for each family, made up of factors assessed at enrollment: low parent education, parent not employed or in school, single-parent status, adolescent mother, large family, minority status, and limited English proficiency.

Summary of Key Results

Predictors of Children's Development

First, we used HLM analyses to determine whether family risk status was a significant predictor of the two dependent measures: cognitive development and verbal communication. Given the focus on developmental outcome, the intercept in HLM analyses was centered at 24 months. The CRI was related significantly both to 24-month outcomes and to developmental

progress over time in Bayley scores (df = 71, $p < .005$; df = 71, $p < .05$, respectively), but was not a significant predictor of verbal communication.

Second, the five program service measures were examined individually as possible predictors of Bayley performance and verbal communication. To control for the number of analyses conducted, results were evaluated at a .01 significance level, using Bonferroni's correction for each dependent measure. Higher levels of parent engagement in program services were predictive of higher Bayley scores at 24 months of age (df = 70, $p < .001$). The relationship between engagement and developmental progress was positive but did not meet the corrected significance standard (df = 70, $p < .05$). Notably, when we considered parent engagement, family risk status dropped out as a predictor of development. Thus, children's 24-month outcomes in cognitive development were significantly higher when programs successfully engaged parents as active participants in home-based services. To illustrate, for families in the lowest quartile for engagement, children's Mental Development Index (MDI) scores at 24 months averaged 78.46 (raw score = 121.55), indicating developmental delay. In contrast, for the most highly engaged families, the mean MDI was 92.74 (raw score = 129.53), well within the typical range.

Similarly, in more highly engaged families, children talked more during home observations (df = 67, $p < .01$) and had more rapid increases in verbal communication over time (df = 67, $p < .01$). Duration of services also was positively related to progress in communication (df = 66, $p < .01$). In contrast, service intensity was negatively related to growth (df = 66, $p < .01$) and to 24-month outcomes (df = 66, $p < .01$). The latter finding may reflect the program's efforts to provide more intensive services for children with greater needs.

Factors Related to Parent Engagement

Given the significance of parent engagement as a predictor of children's development, we examined the relationship between parent engagement and risk status and to other program service variables. Compared to less engaged parents, more highly engaged parents had received more months of service before their child's second birthday (r [73] = .341, $p < .005$). Furthermore, active parent engagement during home-based services was significantly higher in families who also received child care services (mean = 11.5), compared to families who had only home visits (mean = 9.3) (t [71] = -2.411, $p < .05$). In particular, the families with child care services received higher ratings in two specific components of engagement: consistency of participation across time (t [71] = -2.802, $p < .01$) and active engagement during home visits (t [71] = -2.679, $p < .01$).

Conclusion

Taken together, the results highlight the critical importance of active parent engagement to the success of Early Head Start services for young children at risk and suggest that a constellation of services, including quality child care, may support parents' efforts to engage actively in services for their young children.

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Atwater, J., D. Montagna, M. Creighton, R. Williams, and S. Hou. *CIRCLE-II: Code for Interactive Recording of Caregiving and Learning Environments - Infancy Through Early Childhood.* Kansas City, Kansas: Early Childhood Research Institute on Substance Abuse, Juniper Gardens Children's Project, 1993.

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ENTRY CHARACTERISTICS OF RURAL FAMILIES WITH YOUNG CHILDREN: ASSESSMENT OF RISK AND RESILIENCE

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Systematic assessment of child, parent, and family at the time of eligibility for services is one way to begin to identify service needs. The Harvard Graduate School of Education research team explored characteristics of the child, parent, and family in the context of parenting stressors, family strengths and problems, child-rearing attitudes and practices, parental emotional health, and family functioning. The research sample consisted of 133 families eligible for Early Head Start services in Windham County, Vermont. All the primary caregivers were mothers.

The rural families in this sample are exposed to many of the risks that urban families experience; those risks are often compounded by the isolation and poverty of rural living. More than half the families, like many of their urban counterparts, consist of single female heads of household. Most mothers were between 20 and 29 years old at entry to the study; the youngest was 17 years old and the oldest 41. The majority of mothers had just given birth to their first child. In contrast to families in urban settings, nearly all families in this sample are white native English speakers. In spite of this fairly uniform demographic picture, however, wide variation in risk and protective factors was observed, illustrating just how much the families differ in their intervention needs. To examine families' risk and resilience at baseline, information about parenting stress, parenting values and beliefs, emotional health, and interpersonal relationships was collected when families entered the study.

Parenting stress was measured by the Parenting Stress Index (PSI), a well-validated instrument used to evaluate stressors in both the parent and child domains (Abidin 1995). Parents were considered to be at high levels of stress based on clinically validated cutoff values (85th percentile and above) established by the author. Mothers in the Vermont sample found

parenting more stressful than the average parent in the general population. More than a fourth (28 percent) experienced high levels of parenting stress. However, mothers' perceptions of parenting stress varied, from no experienced stress in the role (scoring at the 7th percentile) to cases in which stress was experienced in almost every domain of parenting (scores at the 98th percentile). Sources of parenting tension as measured by the PSI included a focus on the child as difficult (28 percent), on the mother's feelings of lack of competence as a parent (22 percent), on mother's poor health status (15 percent), and on lack of social support (21 percent). The most common source of parenting stress for these mothers (43 percent) was their child's inability to adapt to change. Mothers reported difficulties with their child's distractibility and hyperactivity (26 percent), demandingness (26 percent), acceptability (43 percent), and negative mood (11 percent). One-fifth (20 percent) of mothers in the sample felt that their child did not reinforce their competence as a parent.

A further assessment focused on the mother's role in ensuring her child's safety and care. This assessment was based on the Child Abuse Potential Inventory (CAP), a 120-item measure that provides an indication of the potential for abusive or neglectful parenting, as well as more specific indices of distress, rigidity, unhappiness, problems with child and self, problems with family, and problems with others. The clinical cutoff at the 95th percentile was taken as an indicator of high-risk parenting (Milner 1986). The present sample of mothers varied in describing their parenting values and beliefs, emotional health, and relationships with others. Mothers' predicted potential for acting in a physically abusive way toward their children varied from the 1st to the 99th percentile. More than a fourth (26 percent) of the mothers in the sample expressed potentially abusive values and beliefs about their children. Problems most frequently identified as influencing the potential for negative parenting and child abuse included emotional health indicators of unhappiness (26 percent) and emotional distress (22 percent).

At the same time, a sizable group of women in the sample (88 percent) showed remarkable ego strength. Many mothers saw their relationships with their infants and toddlers as positive (95 percent). One-fifth of the mothers felt that their lives were relatively stress-free in terms of their parenting (PSI 19 percent) and emotional health (CAP 21 percent). For strength-based programs, this kind of information can be central to supporting parents' resilience.

Based on the CAP, mothers' perceptions of problems in their interpersonal relationships were varied. One-fifth of the mothers (20 percent) identified the source of problems within their immediate or extended families, while 19 percent felt that their parenting attitudes and beliefs were seen as problematic only by people and institutions in the larger community. With information on relationship perspectives as a base, targeted intervention planning can be positively supported. Information about a parent's perception of the source of her problems can give the interventionist an entry point for action.

In spite of the geographical, socioeconomic, and ethnic similarities in this group of Vermont mothers, their needs and goals for intervention are quite dissimilar, given the tremendous variation observed in psychosocial risk and protective factors. Programs serving families like these need to be able to assess each family's needs in terms of risks and strengths and develop an intervention plan tailored to their individual needs.

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VOICES OF HOME VISITORS IN ONE EARLY HEAD START PROGRAM[1]

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Early Education Services is a mature Early Head Start program that combines home and center-based services and in which home visitors are responsible for direct provision of services to families. In a series of open-ended, one-on-one interviews with Tracy Collins, a member of the Harvard Graduate School of Education research team, home visitors were asked about their work and professional development. They depicted professional development not simply as something that takes place through training and supervision, but as a path traveled in their work with families and children. Analysis of the interview data focused on home visitors' talk about their actual work, including how they plan for and carry out home visits, examples of decisions made while in a family's home, and their reflections on the satisfaction derived from relationships that work well and frustration with those that do not. The qualitative nature of the present study provided the opportunity to hear home visitors' voices as they spoke of their work with Early Head Start families. Throughout the interviews, home visitors' passion for working with families and children was apparent. Following are excerpts from the interviews: Home visitors see their first task as establishing and maintaining relationships with the family:

- [The work of home visiting] is all about the relationship. (Sybil)[2]
- I've seen the power of that healing relationship work wonders. I've never met a family that didn't want things to be better. It's not because I come and say, "Oh, [you] should do this and this." It's because somebody nonjudgmental is coming every week and asking how you're doing and caring about you when you've never had that. I see great potential for things to get better in a family [through home

[1]Based on Collins, T.E. "Home Visitors in Early Intervention Programs: How Parenting Beliefs and Practices Influence Their Work with Families." Harvard Graduate School of Education Qualifying Paper, 2000.

[2]The names of all participants have been changed.

visiting]. It's definitely a process of learning about each other, how strong they are and how much they can take. (Randi)

Home visitors explain how they see their work with families as centering around, but not limited to, child development:

- Our main focus here is child development, [but] there's a lot of different things that go into [that]. (Lynn)
- We do parent education, case management, and early childhood education. We blend those into a home visit, leaning more on early childhood education according to the family's needs. (Tammy)
- Home visiting is a different opportunity—it's one of those things that can't really be explained until you do it. A stereotypical home visit doesn't exist; it's a very interwoven process. (Carla)

Home visitors also must deal with many challenges: finding ways to connect with families with histories of difficult or unsuccessful relationships, reassessing or reestablishing connections with families, and being willing to recognize how their own personal histories may interact with those of the families they serve:

- You've got to pick up on the priorities the family has, then go in through that door. I had one [mom] who used to dismiss me; [she] had a limit on how long she could tolerate me. (Tammy)
- What they'll do is [not] show up. They won't call and cancel—they usually just won't be there. It's easier for them to not be there than to say, "I can't deal." (Sara)
- Sometimes it's really hard, even if you have a good relationship with [a family], you're not sure what's going on for them, what they're really thinking about. You can just kind of miss the mark [sometimes]. (Hayley)
- I've messed up. I know everybody does. [Those are] opportunities to take the time to check in and assess if it's working [for the family] or not. (Carla)
- I have to think it through, [ask myself] what's going on, why am I so upset over this? And then I look back and go, "Aah, she reminds me of me." It really is amazing because you have to be in touch with yourself, too. (Sara)

These examples illustrate some of the many levels at which home visitors approach their work with families. Findings from this study may help inform training and supervision of home

visitors, as well as supplement more quantitative methods used in evaluating Early Head Start services provided through the home-visiting model.

FACTORS AFFECTING LANGUAGE OUTCOMES OF YOUNG CHILDREN IN BILINGUAL ENVIRONMENTS

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A range of factors influence the language outcomes of Latino children growing up in bilingual households in inner-city communities. These factors include environmental risk factors, family cultural expectations about language use, and amount of exposure to language inside and outside the home. This report focuses on these factors in a subsample of 20 children from bilingual English/Spanish environments in an urban community who were involved in the larger Early Head Start national study.

Methods

Participants

Twenty children from the larger Early Head Start study were selected who met the following criteria established during Early Head Start enrollment: (1) they identified their ethnicity as Mexican, and (2) they included Spanish and/or English as their home languages. In a follow-up interview, families meeting these criteria reported that their child was being raised in a bilingual environment and characterized that environment as English- or Spanish-dominant based on the language most commonly used by the child in the home. Using these criteria, 11 families identified themselves as Spanish-dominant and 9 as English-dominant. Ten of the families were participants in the Early Head Start program (six were Spanish-Dominant; four were English-dominant).

Design and Measures

This study followed the same prospective longitudinal design used in the larger Early Head Start evaluation and followed children from approximately 8 to 36 months. Two of the measures used to assess the families and children were from the larger Early Head Start study: (1) the

Head Start Family Information System (HSFIS) to identify demographic risk factors, and (2) the MacArthur Communicative Development Inventories (CDI) and its Spanish adaptation (Inventario del Desarrollo de las Habilidades Comunicativas). Supplementing these measures were the Acculturation Rating Scale for Mexican Americans-II (ARSMA-II); a project-developed Language Background Questionnaire (to provide the extent of the child's exposure in English and Spanish by various caregivers inside and outside of the home); and the CIRCLE Observation System, a momentary time-sampling system that recorded the percentage of time children interacted in English and Spanish with primary caregivers during typical home activities (Atwater et al. 1993).

Results

Characteristics of English- and Spanish-Dominant Families

Spanish-dominant families were more likely to have a greater number of environmental risks (M = 4.9 out of a possible 6 factors) than the English-dominant families (M = 4.0). Specifically, Spanish-dominant families were more likely to be larger (family size is > 5) and have a mother who did not finish high school and who did not speak English. English-dominant families, on the other hand, were more likely to be headed by single parents as opposed to two parents residing in the home.

Spanish-dominant families were less acculturated into the mainstream culture. On the ARSMA-II scale, families in the sample were rated using established cutpoints for determining acculturation levels from Level 1-Very Mexican (scores < -1.55) to Level 3-Slightly Anglo-oriented (scores between -.07 and 1.19). Not surprisingly, the mean acculturation score for Spanish-dominant families (-1.55) indicated an orientation that was significantly more Mexican than that of the English-dominant families (M = .15) (df = 9, $p < .01$).

Degree of Exposure to Spanish and English

While both groups were exposed to both English and Spanish, children in Spanish-dominant families were exposed to much higher proportions of Spanish (85 percent) than were the children in the English-dominant families, whose relative exposure to Spanish was only 32 percent. It is important to realize that characterizing children's language environment as English- or Spanish-dominant greatly oversimplifies the complexity of their linguistic exposure. Children may have been surrounded by a variety of caregivers both in their homes and outside their home (in childcare arrangements) who spoke English, Spanish, or a combination. Therefore, in this study, estimates of percentage of exposure were made by determining the caregivers (both primary and secondary) for a specific child and the amounts of time each caregiver spoke Spanish or English. Times reported for primary caregivers were weighted more heavily than those reported for secondary caregivers.

Language Outcomes in Spanish and English

Language outcomes of a subsample of 16 children were assessed in both Spanish and English on different measures at several age points. At 30 months, children in the Spanish-dominant group were producing fewer vocabulary words in both languages on the CDI (M = 392.43) than were children in the English-dominant group (M = 478.71). As expected, however, the Spanish-dominant children were producing more vocabulary words in Spanish (M = 318.67) than the English-dominant children (M = 210.43). English-dominant children were reported to produce more vocabulary words in English (M = 272.29) than the Spanish-dominant children (M = 103. 51). Spanish-dominant children had higher vocabulary scores in their dominant language than did the English-dominant children, but English-dominant children outperformed the Spanish-dominant children in their nondominant language. Children's CDI vocabulary scores in their dominant language were highly correlated to the relative amount of exposure in that

language (for English-dominant: r = .68, $p < .01$; for Spanish-dominant: r = .67; $p < .01$). Finally, on the direct observation measure, parents in English-dominant group spent more time verbalizing to their children than did the Spanish-dominant group. Families who were more highly acculturated and who had fewer risks also spent more time verbalizing to their children in either language. Similarly, English-dominant children spent more time verbalizing than did the Spanish-dominant children. The English-dominant group spent 9.8 percent of their time talking in English and 4.2 percent of the observation talking in Spanish. Spanish-dominant children were observed spending 4.1 percent of their time in Spanish and 1.2 percent of their time speaking English.

Conclusions

Consistent with other research (Hart and Risley 1995), this study supports the notion that children's language outcomes are highly related to the amount of language exposure. Children with greater levels of exposure in specific languages were likely to have higher vocabulary scores in that language. While children from English-dominant bilingual environments are experiencing better language outcomes in their secondary language, they also appeared to have an edge in the amount of parent interaction in both languages. Their families also appeared to have lower levels of environmental risk.

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Atwater, J., D. Montagna, M. Creighton, R. Williams, and S. Hou. *CIRCLE-II: Code for Interactive Recording of Caregiving and Learning Environments - Infancy Through Early Childhood.* Kansas City, Kansas: Early Childhood Research Institute on Substance Abuse, Juniper Gardens Children's Project, 1993.

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DIET QUALITY BY FOOD INTAKE AND MEALS IN LIMITED INCOME MOTHER-INFANT PAIRS IN JACKSON, MICHIGAN

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Background

Low-income families are at high risk for poor nutritional status and health. Low socioeconomic status (SES) groups show higher incidence than high SES groups of premature and low birth weight babies, growth and developmental retardation in infants/toddlers, and chronic diseases such as heart disease, stroke, and some cancers. Poor diet is a factor in these conditions that is sometimes overlooked by child development specialists. Furthermore, despite the importance of diet to growth, limited research exists on the dietary quality of infants and toddlers.

Objective

To investigate the dietary quality of mothers and infants in low-income families at risk for poor dietary quality.

Methods

Participants for this study were 181 mother-infant pairs eligible for Early Head Start who were participating in the longitudinal evaluation of Early Head Start. Mothers were interviewed in their homes about many aspects of parenting, service use, and family health habits. Interviewers obtained 24-hour dietary recalls of both the mothers (average age 23.3 years, SD = 5.2) and their infants at or near the time of enrollment (average age of infants was 6.4 months, SD = 3.3) and again when the infants were about 14 months old. The interviews lasted about two hours, and mothers were given $20 for each interview. Questions were asked at the first interview about consumption of nutritional supplements and participation in the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), Food Stamp, and

Medicaid programs. Food and meal analysis, not nutrient analysis, was considered appropriate because detailed probing was not done. Food recall data were analyzed by subject-identified eating times such as "breakfast," "morning snack," "lunch," "afternoon snack," "dinner," and "evening snack" using SPSS (Statistical Package for the Social Sciences 1996, version 7.5). Foods were entered by type of food and subdivided by the major food groups. The dietary quality of infants at the first data collection was classified according to the U.S. Department of Agriculture's (USDA's) guideline for WIC (Table 1). Six factors comprised "appropriate infant feeding," including the age-/amount-appropriate intake of formula, juice, milk, grains, vegetables, and fruits (Table 2). The dietary quality of mothers and 14-month-old children was examined by food group and skipping breakfast (Table 2). Consumption of less than at least one serving from each of the five food groups from the USDA Food Guide Pyramid (fruit, vegetable, dairy, meat, and grain) has been shown to be nutritionally inadequate. Many studies have reported poor dietary quality to be associated with skipping breakfast.

Results

At the 14-month interview, data were collected for 158 pairs; however, data from only 123 pairs could be analyzed, because some mothers provided incomplete data on their children's food intake. For the two time points, 119 cases could be matched. The percentage of mothers using WIC and Medicaid was 87.5 and 88.7, respectively. Only 58.3 percent of mothers reported receiving food stamps, although all were eligible (13 mothers did not answer this item). Most (91.5 percent) of the mothers had inappropriate diets. Grain and meat were the most frequently consumed food groups; about two-thirds of mothers consumed a vegetable or dairy food, but fruit consumption was very low at both time points (Table 3). Mothers' diets were also fairly consistent from the first to the second time point, with only about half of mothers consuming foods from four or five of the food groups (Table 4). Most (82.5 percent) infants were not fed

according to the WIC guidelines. Infants consumed formula (only 11 infants were reported to have been breast-fed) in inappropriate amounts and were fed juice, fruit, grains, and vegetables at younger ages than recommended. Fruit juice is recommended after 6 months of age, but 18 infants were fed juice before 6 months of age, including 7 infants who were fed high amounts of juice (>12 oz.). No soda drinks were reported for infants at breakfast at the first time point. Fruit and vegetable consumption were the least frequently consumed food groups for toddlers (Table 3), but by 14 months more than 50 percent of children consumed from the five food groups and another 30 percent from at least four food groups (Table 4).

The percent of skipped meals was higher for mothers than for toddlers. At baseline, 41 percent of mothers skipped breakfast; 23.8 percent, lunch; and 5.5 percent, dinner. Toddlers rarely missed a meal. Few mothers or infants reported taking nutrient or dietary supplements. At the first interview, supplements were reported for 20.4 percent of mothers and 19.3 percent of infants. This changed to 23.6 percent of mothers and 9.8 percent infants at 14 months. To examine the relationship between the diet quality of mothers and that of their infants, we compared the dietary quality of mother and infants (Table 5). At the first interview (6 months), a poor diet for the mother was highly predictive of her infant's having a poor diet. A poor-quality mother's diet had a sensitivity of 93 percent, specificity of 29 percent, and predictive value of 76.8 percent at 6 months of age for her infant's diet quality. At 14 months, a poor-diet quality for mothers remained a good predictor for poor diet quality of her infant but not as good as at the first time point. Sensitivity was 84 percent, specificity was 53 percent, and predictive value was 48 percent. There was no relationship between services received and dietary quality.

Conclusions

Even though these limited-income families received health services and most were in WIC, diet quality of most mothers was poor and remained so from the first to the second time point. Fruits and vegetables were the food groups least likely to be consumed by mothers and toddlers. Infants were often fed inappropriately, although, by the age of 14 months, the quality of the children's diets had improved slightly.

TABLE 1

GUIDELINES FOR FEEDING NORMAL INFANTS FROM BIRTH TO 12 MONTHS OF AGE

(These are general guidelines for the average infant; the number and size of serving may vary with individual infants)

Age (Months)	Breast Milk or Infant Formula	Grain Products	Juices	Vegetables	Fruits	Protein Food
0 to 4	Breast 0 to 4 weeks 8 to 12+ feedings 1 to 4 months 6 to 10+ feedings Formula 14 to 43 oz.	None	None	None	None	None
4 to 6	Breast 6 to 8+ feedings Formula 27 to 49 oz.	Iron-fortified infant cereals (1 to 2 servings/day: 1 to 8 Tb.)	Infant or regular 100% juice (avoid citrus, pineapple, and tomato juices)	None	None	None
6 to 8	Breast 4 to 6+ feedings Formula 27 to 32 oz Can begin to offer formula in a cup	Iron-fortified infant cereals (2 servings/day 4 to 8 Tb.) Can try cracker, small pieces of toast, zwieback at 8 months)	Infant or regular 100% juice or vegetable juice (2 to 4 oz./day) only from a cup	Plain strained or pureed cooked vegetables (1 to 2 servings/day: 4 to 8+ Tb./day)	Plain strained or pureed fresh or cooked fruits (2 servings/ day: 4 to 8+ Tb./day)	Protein foods may be introduced. (Plain strained or pureed meats may be introduced if an additional food source of iron is needed.)
8 to 10	Breast 4 to 6+ feedings Formula 24 to 32 oz. Can continue to offer formula in a cup	Iron-fortified infant cereals (4 to 8+ Tb./day) Other grain products (2 to 3 servings/day)	Infant or regular 100% juice or vegetable juice (4 oz./day) only from a cup	Pureed or mashed fresh or cooked fruits or junior fruits (2 servings/day: 4 to 8+ Tb./day)	Pureed or mashed fresh or cooked fruits or junior fruits (2 servings/day: 4 to 8+ Tb./day)	Pureed, finely chopped, or plain strained lean meat, poultry, or fish, egg, yolk, cheese, yogurt, mashed beans or peas (1 to 6 Tb./day)
10 to 12	Breast 4 to 6+ feedings Formula 23 to 32 oz.	Iron-fortified infant cereals (4 to 8+ Tb./day) Other grain products (2 to 3 servings/day)	Infant or regular 100% juice or vegetable juice (4 oz/day) only from a cup	Mashed or chopped fresh or cooked fruits or junior fruits (2 servings/day: 6 to 8+ Tb./day)	Mashed or chopped fresh or cooked fruits or junior fruits (2servings/day: 6 to 8+ Tb.)	Pureed or chopped lean meat, poultry, or fish, egg yolk, cheese, yogurt, mashed beans or peas (2 to 8 Tb. or 1 to 2 oz./day)

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TABLE 2

DIETARY QUALITY DEFINITIONS FOR LIMITED-INCOME MOTHERS AND THEIR INFANTS

A. Mothers' and 14-Month Toddlers' Dietary Quality Items

1. Five food groups
   Appropriate: Mother had all 5 food groups
   Inappropriate: Mother had less than 5 food groups
2. Breakfast skipped

B. Infants' Dietary Quality Items

1. Formula intake amount (amount according to age group):
   Appropriate 1) Infants (0-12 mo) had normal amount in their age
   2) Infants >12 mo, all of them are considered as good
   Inappropriate 1) Infants (0-12 mo) had less or excess amount for their age group
   2) Infants <12 mo didn't consume formula or breast milk
2. Juice intakes (amount according to age group):
   Appropriate 1) Infants (6-12) had normal amount for their age or up to 6 oz.
   2) Infants <6 mo didn't consume juice
   Inappropriate 1) Infants (6-12) had less or excess amount of juice > 6 oz.
   2) Infants >6 didn't consume
3. Milk intakes:
   Appropriate 1) Infants >12 mo had whole milk
   Inappropriate 1) Infants <12 had milk
   2) Infants >12 had reduced fat milk
4. Grain group intakes:
   Appropriate 1) Infants <4 mo didn't have grain products
   2) Infants >4 mo had grain products
   Inappropriate 1) Infants >4 mo didn't have grain products
   2) Infants < 4 mo had grain products
5. Vegetables intakes:
   Appropriate 1) Infants <6 mo didn't have vegetables
   2) Infants >6 mo had vegetables
   Inappropriate 1) Infants >6 mo didn't have vegetables
   2) Infants <6 mo had vegetables
6. Fruits intakes:
   Appropriate 1) Infants <6 mo didn't have fruits
   2) Infants >6 mo had fruits
   Inappropriate 1) Infants >6 mo didn't have fruits
   2) Infants <6 mo had fruits

TABLE 3

PERCENT OF MOTHERS AND TODDLERS CONSUMING AT LEAST ONE SERVING FROM THE FIVE BASIC FOOD GROUPS

Food Group	**Mothers at Baseline (n=119)**	**Mothers at 14 Months (n=119)**	**Toddlers at 14 Months (n=119)**
Grain	93.3	95.0	100.0
Vegetable	62.2	70.6	72.3
Fruit	25.2	27.7	78.2
Dairy	71.4	73.9	96.6
Meat	92.4	87.4	93.3

TABLE 4

PERCENT OF MOTHERS AND TODDLERS CONSUMING THE FIVE FOOD GROUPS

	0 Food Group	1 Food Group	2 Food Groups	3 Food Groups	4 Food Groups	5 Food Groups
Mothers at Baseline (n=119)	0.0	1.7	13.4	32.8	42.9	9.2
Mothers at 14 Months (n=119)	0.8	2.5	10.9	31.1	36.1	18.5
Toddlers at 14 Months (n=119)	0.0	0.0	0.8	13.4	30.3	55.5

TABLE 5

CROSS-TABULATION OF MOTHERS' AND CHILDREN'S DIET QUALITY

		Mother's Dietary Quality		
Infants' Dietary Quality		Inappropriate	Appropriate	Total
	6 Months (n=119)			
	Inappropriate	96 (80.7%)	5 (4.2%)	101 (84.9%)
	Appropriate	12 (12.6%)	3 (2.5%)	18 (15.1%)
	Total	111 (93.3%)	86 (6.7%)	119 (100%)
	14 Months (n=119)			
	Inappropriate	47 (39.4%)	9 (7.6%)	56 (47.0%)
	Appropriate	54 (45.4%)	9 (7.6%)	63 (53.0%)
	Total	101 (84.8%)	18 (15.2%)	119 (100%)

DIVERSITY OF EARLY HEAD START FAMILIES AND PROGRAM SERVICES

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The United Cerebral Palsy Early Head Start program is located about half an hour from the nation's capital, in a major suburban area of Northern Virginia where rich and poor live in juxtaposition. To understand how Early Head Start promotes child development and self-sufficiency in families struggling with poverty, the Catholic University of America research partners profiled the diverse families served by United Cerebral Palsy Early Head Start and documented the development of individualized program services for targeted family groups.

To meet the unique needs of the 75 families served, United Cerebral Palsy Early Head Start tailored its program services as suggested by their demographic profile (Table 1), birth (immigrant or U.S.-born), and occupational status (military or civilian). Specifically, United Cerebral Palsy Early Head Start served 45 percent immigrant and 55 percent U.S.-born families. The U.S.-born families comprised 35 percent military and 20 percent civilian families. To meet the needs of children in these family groupings, United Cerebral Palsy Early Head Start developed a flexible mixture of child-focused services. These services included center-based child care on a nearby military base, community-based family child care, and home visiting.

The immigrant families tended to be in their late 20s or early 30s and married. Although all United Cerebral Palsy Early Head Start families were poor, immigrant families tended to be more preoccupied than civilian or military families with obtaining resources to meet their basic survival needs. They reported resources as more inadequate (M 45.2, SD 8.0) than either civilian (M 34.0, SD 9.4) or military (M 33.3, SD 5.2) families (F22.4, df 74, *p* .001). To meet the immigrant families' basic survival needs, United Cerebral Palsy Early Head Start sought to mobilize resources in public, faith-based, and voluntary sectors of the community. In addition to

poverty, family descriptors suggested that immigrant families faced three barriers to economic self-sufficiency: (1) less-than-adequate English-speaking skills (88 percent), (2) not completing high school education (65 percent), and (3) living in the United States less than five years (40 percent). To counter these barriers, United Cerebral Palsy Early Head Start referred immigrant families to community-based educational programs. These and other pressing needs of United Cerebral Palsy Early Head Start immigrant families are supported by the national Census 2000 report, which documented that immigrant families and their children are 50 percent more likely to suffer poverty than U.S.-born citizens (Camarota 2001).

Three-quarters of the immigrant families were of Hispanic origin, most from Central America, some from South America and Mexico. The rest were from West Africa, the Caribbean, Pakistan, the Philippines, Vietnam, and Bosnia. To directly serve them, United Cerebral Palsy Early Head Start hired bilingual staff (usually speaking Spanish and English but also some Twi and Urdu) for home-visiting, case management, and family child care services, as well as for the center's policy council meetings and family socialization sessions. To identify and meet the linguistic gaps in community services for immigrant families, the United Cerebral Palsy Early Head Start staff also participated in community forums. As a result of the staff's investment in community collaboration, many immigrant families were able to enroll in English classes by just showing proof of their Early Head Start participation rather than having to follow a complex identification process required of other applicants.

Both U.S.-born military and civilian families tended to be younger than immigrant families. Military families had more mothers who were married and who had some college education. Civilian families were the youngest, least likely to be married, and most likely to have a high school education. U.S.-born military and civilian families had more resources than immigrant families, but they also struggled with the poverty-related issues of lack of economic self-

sufficiency, family problems, and health care. In addition, civilian families had the pressing needs faced by very young families with inadequate health care, while military families faced stresses such as deployment or family separations. To address the needs of young families, United Cerebral Palsy Early Head Start pioneered the integration of Fairfax County's new Nurturing Program for infant health and care into its parent education program. Through ongoing collaboration with other community providers, United Cerebral Palsy Early Head Start staff facilitated a countywide shift in health care for low-income families from a lottery system to universal availability. United Cerebral Palsy Early Head Start also signed a memorandum of understanding with a neighboring army post establishing child care within a child development center on the post's premises. The military provided the classroom space, office space, food services, some furnishings and equipment, and access to a developmentally appropriate playground. In turn, United Cerebral Palsy Early Head Start employed, trained, and supervised all direct child care and case management staff, particularly drawing staff with military experience. To meet the child development needs of children of military personnel, United Cerebral Palsy Early Head Start participated in the Special Needs Review Team at the child development center. To facilitate access to needed mental health and family services, United Cerebral Palsy Early Head Start staff collaborated with the military's Family Advocacy, Exceptional Family Member, and New Parent Support Group programs and also helped families to directly access community services.

As part of their provision of center- and family-based child care and home-visiting services for families in all three subgroups, United Cerebral Palsy Early Head Start staff extensively collaborated with the county's early intervention services, facilitating early identification and family supports to families of infants and toddlers with special needs.

In conclusion, the combination of family birth status and occupational status, along with individual demographic needs, proved useful in designing and implementing Early Head Start individualized, comprehensive, and culturally sensitive services.

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TABLE 1

DEMOGRAPHIC PROFILE OF 75 UNITED CEREBRAL PALSY
EARLY HEAD START FAMILIES

Descriptor	Immigrant Family 34 = N	U.S.-Born Military Family 26 = N	U.S.-Born Civilian Family 15 = N
Mother's Age*	Mean 27.8, SD 6.3	Mean 24.4, SD 3.7	Mean 23.7, SD 5.5
Father's Age*	Mean 32.8, SD 6.9	Mean 24.8, SD 3.6	Mean 27.6, SD 7.6
Child's Age	Mean 9 month, range: Pregnancy—1½ years		
Child s Gender	61% Males, 39% Females		
Number of Children	1 child—32%, 2 children—36%, 3 to 5 children 32%		
Child Lives with	2 parents & relatives—70%, 1 parent—20%, 1 parent & relatives—10%		
Income*	Mean $11,958 SD $ 4,519	Mean $15, 816 SD $ 3,700	Mean $ 10,637 SD $ 5,279
Mother's Heritage*	Hispanic 76% Black 12% Caucasian 6% Asian 6%	Hispanic 19% Black 27% Caucasian 38% Asian 4% N. Am. Indian 12%	Hispanic 0% Black 73% Caucasian 27% Asian 0%
Mother's Education*	< High School 65% High School 21% Some College 6% College + 8%	< High School 12% High School 31% Some College 57% College + 0%	< High School 27% High School 53% Some College 13% College + 7%
Mother's Employment	Unemployed—75% Employed 25%		
Father's Employment	Unemployed—14% Employed 86%		
Formal Support Services Used*	None 9% 1 to 2 services 76% 3 to 4 services 9% 5 to 6 services 6%	None 19% 1 to 2 services 73% 3 to 4 services 8%	None 7% 1 to 2 services 33% 3 to 4 services 47% 5 to 6 services 13%

* $p < .05$

EARLY HEAD START PARTICIPATION AND MOTHERS' PERCEPTIONS OF PARENTING ROLE COMPETENCE

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The United Cerebral Palsy Early Head Start site is located in a suburban Northern Virginia strip mall, about one-half hour south of Washington, DC. To enhance child development in families struggling with poverty, Early Head Start provides individualized child care and parent role and family development services in a comprehensive framework congruent with the resources and values of the local community. In collaboration with this site, researchers at the Catholic University of America investigated mothers' perceptions of their parenting role competence as a way to understand the relationship between families' Early Head Start participation and parent role development when their child is 24 months old.

As a person's view of his or her own competence is tied to the ability to act, so is a mother's perception of parenting role competence conceptualized as underpinning the ability to rear a child. The literature attests that parents' views of parenting role competence impact their childrearing (Walsh 1998) and may have long-term consequences for child development (Kumpfer and Alvarado 1995). Specifically, the project hypothesized (1) that mothers' perceptions of their parenting role competence at 24 months may differ significantly between families enrolled in Early Head Start and the control group; and (2) that this difference may be influenced by mothers' birth status (being U.S.-born or immigrant), age, education, English-speaking adequacy, employment, and resilience as well as by mothers' reporting about family income and adequacy of family resources. Mothers' perception of parenting role competence at 24 months was measured by a single 5-point scaled question about what kind of a parent she thought she was (a very good, better-than-average, average, less-than-average, or poor parent).

Of the 149 families who applied for services, 75 were randomly assigned to the Early Head Start program and 74 to the control group. Of this total, 52 Early Head Start and 52 control group families had children 24 months old and were included in this investigation. The program and comparison families shared similar demographics (Table 1) except for slight variation in birth status. That is, the Early Head Start group contained slightly more immigrant families than the control group (X^2 3.86, df 1, *p* .03, Phi .16).

In comparing mothers' parenting role competence when their child turned 24 months, chi-squared analysis revealed that Early Head Start mothers modestly but significantly differed from comparison mothers (104; X^2 8.0, df 3, *p* .05, Phi .28). Specifically, 87 percent of Early Head Start mothers perceived their role competence as that of a better-than-average parent, 13 percent as that of an average parent. By contrast, 63 percent of comparison mothers perceived their role competence as that of a better-than-average parent, 37 percent as that of an average to below-average parent.

In preparation for exploring the interactive effects of selected baseline variables (mothers' birth status, age, education, English-speaking adequacy, employment, and resilience; and family income and adequacy of family resources) together with the targeted main effect of Early Head Start participation on mothers' perceived parenting role competence, bivariate correlational analyses were conducted. These analyses yielded two significant, albeit weak, relationships between mothers' parenting role competence and mothers' baseline birth status (r .18, p .07) and employment (r .19, *p* .05). Inclusion of these two correlates with Early Head Start participation in stepwise multiple regression analysis (MRA) revealed that Early Head Start participation is the most important contributor (Beta –.27, t –2.8, *p* .006) to the prediction of mothers' 24-month parenting role competence (N 104, F 7.86, df 103, *p* .006), and accounts for 7 percent of the variance (R^2 .07).

In conclusion, this investigation demonstrated a mild positive relationship between mothers' participation in Early Head Start and their perceptions of parenting role competence. This finding represents one aspect of parent role development in the beginning process of assessing Early Head Start impact on family development at 24 months. The findings did not support the hypothesis that mothers' parenting role competence is influenced by the eight baseline variables under consideration. Future research, however, might expand the study of parenting role competence to include the interactive effect of mothers' resilience, resources, and general competence along with the main effect of Early Head Start participation.

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TABLE 1

DEMOGRAPHIC PROFILE OF 149 FAMILIES APPLYING FOR
EARLY HEAD START SERVICES

Mother's Age	Mean 25 years, SD 5.5
Father's Age	Mean 28 years, SD 6.5
Child's Age	Mean 9 months, SD .18, range: mother's pregnancy, 1 ½ years
Child's Gender	Male 57.7 percent, female 42.3 percent
Number of Children	1 child, 34.2 percent; 2 children, 35 percent, 3 children, 22 percent; 4 to 5 children, 8.8 percent
Child Lives with	Two parents and/or relatives, 65.3 percent; Single parent, 20.4 percent; Single parent and relatives, 4.2 percent
Mother's Heritage	Hispanic, 35.6 percent; African American/Caribbean, 32.9 percent; Caucasian, 22.8 percent; American Indian, 5.4 percent; Asian, 3.4 percent
Mother's Education	Less than High School, 32.2 percent; High School, 36.9 percent; Some College, 26.8 percent; College and beyond, 4.0 percent
Mother's English	Adequate, 65.1 percent; Somewhat adequate, 8.1 percent; Inadequate, 26.8 percent
Immigrant's Mother's Length of Residence in U.S.	< 5 years, 45.7 percent; 6 to 10 years, 32.3 percent; 11 to 30 years, 22.0 percent
Mother's Employment	Unemployed, 71.8 percent; Employed, 28.2 percent
Father's Employment	Unemployed, 11.0 percent; Employed, 89.0 percent
Family Income	Mean $12,952.00, SD $5,438.73
Formal Support Services	No services used, 12.8 percent; 1 to 2 services used, 64.4 percent; 3 or more services used, 22.8 percent
Adequacy of Resources	Adequate, 30.2 percent; somewhat adequate, 61.1 percent; Inadequate, 8.7 percent

PARENTING VALUES AND EMOTIONAL HEALTH, ENGAGEMENT IN RESEARCH AND PROGRAM, AND PARENT-CHILD COMMUNICATION[1]

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Conducting research and providing services to families in poverty is a formidable challenge. Many low-income families frequently relocate and often do not have reliable transportation or consistent phone service. These circumstances present challenges for researchers and service providers alike, especially those working with families in rural or geographically isolated areas. One of the outcomes many Early Head Start programs target is the quality of parent-child interaction and communication, but intervention can be effective only if families are involved and engaged with the program. Research carried out by the Harvard Graduate School of Education research team, with Early Education Services in Vermont, suggests that parenting values and emotional health may influence parents' participation in the research study, their use of Early Head Start services, and their access to intervention around parent-child communication and interaction.

At entry into the study, 133 parents[2] living in Windham County, Vermont, completed the Child Abuse Potential Inventory (CAP, Milner 1986), a 120-item questionnaire about parenting values and beliefs, emotional health, and parents' relationships with others. The CAP provides an indication of the potential for abusive or neglectful parenting, as well as more specific indices of distress, rigidity, unhappiness, problems with child and self, problems with family, and problems with others. Validity scales provide measures of response distortion, such as

[1]Based on Pan, B.A., and L. Bratton. "Parenting Stress and Maternal Communication with Toddlers." Paper presented at Head Start's Fifth National Research Conference, Washington, DC, June 28-July 1, 2000.

[2]Questionnaire not completed by 33 of the 146 mothers in the total sample.

respondents' attempts to provide socially desirable responses. In the present sample, between 20 and 26 percent of mothers scored above clinical thresholds for unhappiness, distress, problems with family or others, and/or child abuse potential, often despite parents' apparent efforts to project socially desirable responses. Some months later, when the target child was 14 months old, each parent was asked for permission to be videotaped at home interacting with her child around a set of toys provided by researchers. Seventy-six percent of parents (n = 101) who completed the CAP questionnaire at baseline were locatable and agreed to participate in this aspect of the study. Of those parents whose earlier responses on the CAP questionnaire indicated potential for child abuse/neglect, only 57 percent participated. Least likely to participate in the videotaped parent-child interaction were those parents whose responses evidenced both potential for child abuse/neglect and efforts to provide socially desirable responses. Thus, only 38 percent of parents (5 out of 13) in this subgroup are reflected in the data based on videotaped parent-child interaction when children were 14 months old.

This variability in participation as a function of parenting values and emotional health was mirrored in program involvement for program families. That is, of the 17 parents in the program group at risk for dysfunctional parenting, 11 dropped out of the program within a few months; a few others continued in the program but engaged only minimally. Only four actually engaged in the program in a meaningful way for an extended period of time. Parents who are experiencing stress around the parent-child relationship may be particularly difficult to engage in a program that focuses on parenting and on child development.

Previous research has shown that quantity and quality of adult communication predict children's rate of vocabulary growth, which in turn predicts children's later academic achievement. While there is some evidence that richness of adult communicative input to children is related to socioeconomic status, there is enormous variation among mothers of similar

socioeconomic status as well (Pan and Rowe 1999). Because mothers differ so widely in their degree of communication, intervention programs such as Early Head Start need better ways of targeting mothers most in need of intensive intervention around communication with their infants and toddlers. Unfortunately, the findings reported here suggest that those mothers may also be among the parents most difficult to engage in the program and, furthermore, that they are often missing from the research picture, because they have reservations about participating fully in the research and because researchers cannot locate them. Use of instruments such as the CAP at entry to the program may help identify those parents who are at risk of dropping out prematurely and whose children may be at risk for abuse or neglect.

Furthermore, the results of this study suggest that program staff may need to give particular attention to developing working relationships with parents experiencing high levels of stress around their role as parent. Often, help in overcoming social and environmental barriers must precede direct work on parenting, parent-child communication, and child development. For those high-risk mothers with whom staff are able to form a working relationship and who do engage in the program in a sustained fashion, intervention can then focus on ways of alleviating parenting distress, developing parents' skills in reading infants' signals, and cultivating parents' enjoyment of interaction and communication with their children.

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AN INSIDE LOOK AT HOME VISITING

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Research findings that the best child development occurs within families where all members have adequate support (Bronfenbrenner 1992) provide a strong rationale for home intervention services. Home visiting also affords a unique opportunity to understand young children and their families in the context of their natural environments and to tailor services to address their individually identified needs efficiently (Bailey and Simeonsson 1988; and Powell 1993). Recent efficacy studies of home-visiting programs have produced mixed and modest results, and home visiting is being questioned as an effective mechanism for service delivery (Gomby et al. 1999).

However, the home is only a location for intervention services (McBride and Peterson 1997). Many recent evaluations of home-visiting programs have employed rigorous experimental designs but have failed to document the actual nature and content of home visits, the diversity of programs and populations being served (Gomby et al. 1999), or a theory of *how* and *why* a program might work (Weiss 1995). Thus, groundwork often has not been thoughtful enough to ensure that processes and outcomes are being measured adequately. Guralnick (1997) has suggested that "second-generation" program efficacy studies must examine what about a program works for whom.

A Look at Child Development Services for Two Families

Iowa State University researchers have collaborated with Mid-Iowa Community Action, Inc. (MICA) to document the process and content of interventions delivered to 77 families through home visits. Two families receiving Early Head Start services illustrate the notion that home

visiting as a service delivery model is complex and not homogenous across families even within a single program.

Observational data describing the process and content of home visits were collected by research staff who accompanied interventionists to families' homes. Observational data were summarized to present the percentages of overall time spent on content areas (for example, child development topics, family topics) and in specific intervention arrangements (for example, facilitating parent-child interaction, providing information). These data were combined with program documentation of hours of home visiting received to calculate total numbers of hours, or dosage, of specific intervention strategies implemented with individual families.

Rita and Kandy[1] are two young mothers who received home-visiting services from MICA's Early Head Start program from late 1996 through 1998; these two women are similar to many other participants in MICA's Early Head Start program. Rita and Kandy were each parenting one child (both of whom were born during summer 1996), as were approximately half of participating families. Rita and Kandy each had a high school diploma, as did the middle one-third of other program participants. Each lived in a small, rural community. Both women were single, as were half of MICA's Early Head Start participants; however, Kandy lived with her son's father during part of this time. Despite many similarities, these two families received very different Early Head Start services.

Both families received home visits from a Child Development Specialist (CDS) and a Family Development Specialist (FDS), and both families received similar numbers of home visits from August 1996 through 1998. However, Rita's family received far more child development services than did Kandy's family. Rita's family received 113 home visits (160

[1]Names have been changed.

hours), but 65 of these visits (99 hours) were made by the CDS. Kandy's 109 visits were split almost evenly between CDS visits (55 visits and 68 hours) and FDS visits (54 visits and 61 hours).

Closer examination of the content and process of intervention services delivered through these home visits reveals even greater differences. Not surprisingly, CDS visits for both families focused primarily on child-related content; however, child-related content was an important element of FDS visits as well. Rita's CDS visits focused on child-related content 51 percent of the time, translating into 51 total intervention hours with this focus. Rita's FDS visits focused on child-related content 23 percent of the time, accounting for an additional 14 hours of child-related intervention. Further examination reveals that the CDS spent 19 hours and the FDS spent 5 hours engaging Rita's son and supporting his interactions directly by teaching the child themselves, modeling interactions for Rita, or coaching Rita's interactions with her son. In contrast, Kandy received 51 hours of child-related intervention—43 hours from the CDS and 9 hours from the FDS. Interventionists working with Kandy's family spent 18 hours during home visits engaging her son directly.

Implications

Seemingly, greater emphasis on a specific content area and/or strategy should translate into more powerful intervention outcomes in the targeted area(s). However, an established theory of change (Weiss 1995) should guide intervention design and implementation for both programs, as well as for individual families. Furthermore, systematic study of the links between intervention activities, outcomes, and contexts is necessary to refine intervention services effectively and to guide policy recommendations adequately (Connell and Kubish 1996).

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THE CHALLENGES OF EARLY HEAD START SERVING RURAL AREAS: CENTRAL IOWA

Kathie Readout
Mid-Iowa Community Action Early Head Start

Mid-Iowa Community Action (MICA) chose a home-based model as the best way to reach the largest number of Early Head Start-eligible families throughout five central Iowa counties. The home-based model was appropriate to the widely dispersed population that MICA serves. MICA's five-county service area stretches 120 miles east to west and north to south. The area averages 60 people per square mile, compared with 2,500 in Des Moines, Iowa's largest city, or with 20,000 per square mile in a metropolitan area such as Chicago. Half the population lives in towns with less than 10,000 people or in unincorporated areas. The largest city in each of the two "urbanized" counties has 27,000 and 50,000 inhabitants, respectively; these cities are 45 miles apart. Only two cities in the three rural counties have more than 3,000 inhabitants. Towns with populations of 2,000 to 5,000 people are found 20 to 30 miles apart.

This geography affects how low-income families live their lives. Families live in small towns because they grew up in them and so they can be near extended family. Some families seek out the lower housing costs in small towns. Unfortunately, growth in the economy over the past decade has concentrated in larger towns and cities. Families living in small towns have been pressed more and more to seek jobs and services outside the communities in which they live. Welfare reform has cut the TANF rolls in half. Yet despite historically low unemployment rates (three to four percent in MICA's service area), low-income adults are not able to obtain jobs that support their families. Low wages have made Iowa the state with the second-highest percentage of families in which both adults work: 82 percent, compared with the national average of 65 percent. A third of MICA's Early Head Start parents work. But the jobs for which the greatest

number of openings exist in central Iowa (retail, services, manufacturing) pay modest wages ($8 to $10 per hour); they are the jobs least likely to be full-time and the least likely to include fringe benefits such as health insurance. Fourteen of 77 (18 percent) Early Head Start children are covered by private, third-party health insurance.

Because of these low wages and the limited job opportunities in small communities, the most common reason for children exiting Early Head Start is a family move out of the service area, moves primarily driven by the parents seeking jobs elsewhere. The 1998 Bureau of Economic Analysis (U.S. Census) placed Iowa second to the bottom in average income per job when compared with the six contiguous states: $25,861 per year, or an hourly wage equivalent of $12.43. In contrast, average wages per job in Missouri, Minnesota, and Illinois were 12, 21, and 42 percent higher, respectively. The second reason parents give for taking their children out of Early Head Start is that they do not have time to meet with staff for home visits. This is because the parents are under pressure to seek employment—or education and training in preparation for employment.

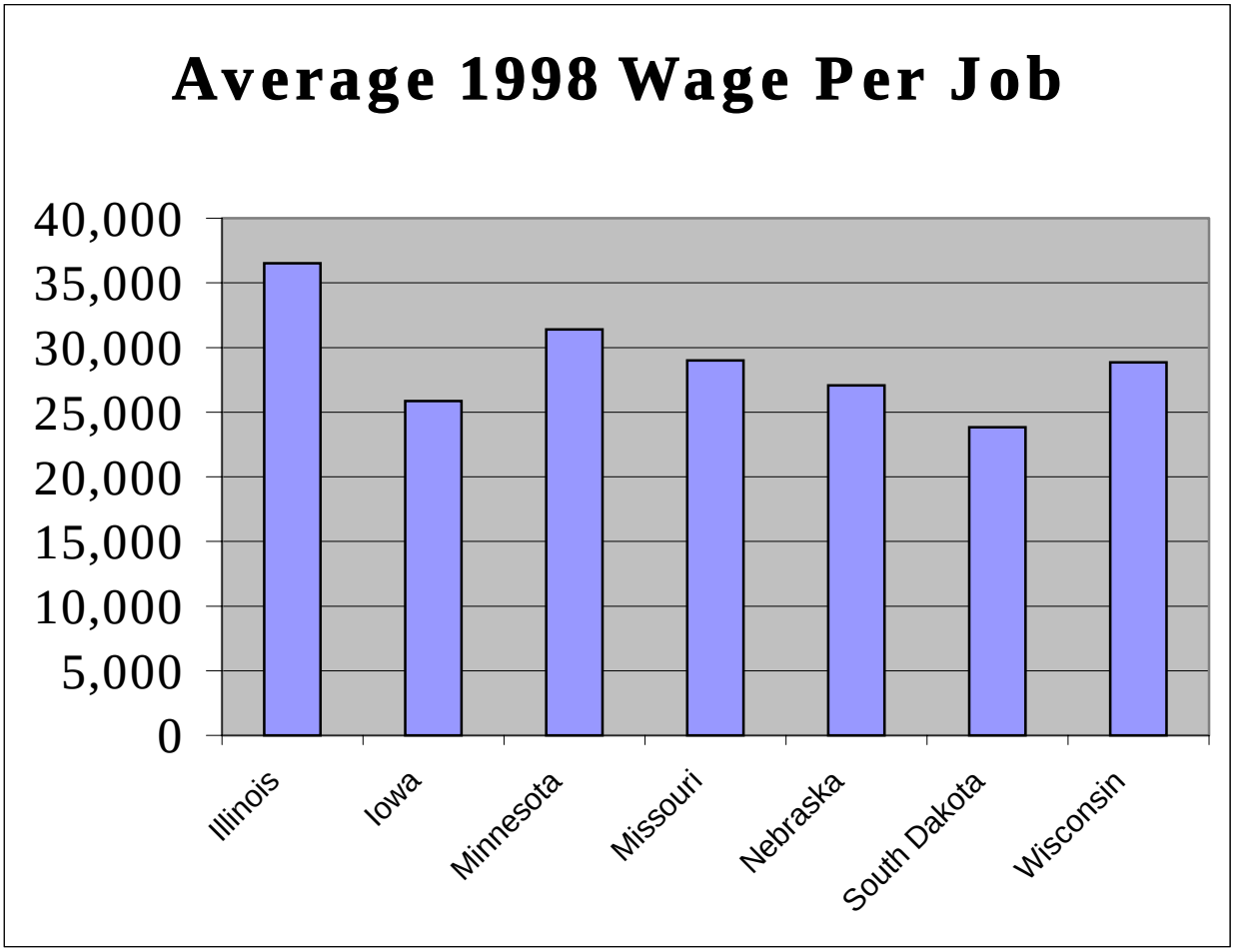
A home-based model is responsive to families with at least one adult at home with the children because staff members visit the family. Such families can be physically isolated because transportation is unreliable or because the working adult must use the only family vehicle to get to work. Consequently, these families cannot take children to centers, doctors, dentists, WIC, or other basic services.

Working adults in rural families nearly always have to commute, because most of the desirable jobs are in larger cities. These adults must have a personal vehicle, as public transportation is too limited and inflexible to be useful for getting to work or for keeping most appointments.

Working low-income adults struggle to locate adequate child care they can afford. One Early Head Start parent recently lobbied for her child to be selected as one of the eight children in MICA's toddler room, because she was going to school and had found no acceptable care alternative. Few small towns can support center-based child care. Family child care is the predominant choice for most low-income families. Iowa family child care providers are not required to be licensed or registered, although they must meet minimal conditions if they do register. MICA has recognized three distinct responses it must offer to meet Early Head Start family needs for quality child care:

1. Center-based services in the largest cities with the population density to support centers
2. Home-based services to a small but important group of families
3. Family care provider support, technical assistance, and professional development to raise the quality of care available where centers are not an option

Geography affects how rural low-income families live their lives; it also shapes program options. A single Early Head Start model cannot meet the work schedules and child development/child care needs of families in towns of dramatically different sizes that are distant from one another.


Average 1998 Wage Per Job
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
Illinois
Iowa
Minnesota
Missouri
Nebraska
South Dakota
Wisconsin

KEEPING KIDS ON TRACK: INTERACTIVE EFFECTS OF AGE AND INTERVENTION

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"Time and experience . . . alter all perspectives." Henry Adams

Early Head Start interventions take place over time during the early years when development is like a fast-moving train that can get off track. Development in the first three years is rapid but vulnerable and demanding—infants and toddlers need a lot of support for their development to stay "on track." The second year of life is particularly critical for this support and thus for intervention, as both social and cognitive development are becoming more stable, and developmental trajectories are becoming increasingly differentiated (the "rich" are getting richer, the "poor" poorer). Early Head Start is trying to help keep children who are at risk because of poverty on track developmentally so they make the same gains as children in better circumstances. The goal of Utah's Bear River Early Head Start program is to improve the developmental outcomes for infants and toddlers by helping parents provide the experiences infants and toddlers need for social and cognitive development. To test whether these Early Head Start children are more on track, it is essential to look at the interactive effects of Early Head Start with regard to developmental change over time, especially in the second year of the child's life. By looking at the combination of developmental change (comparing tests at two ages) and intervention (comparing Early Head Start to a control group), we can see a pattern of effects that takes into account both maturation and environmental support. We included both age and intervention groups in our data analyses to see if the developmental track or trajectory is different for children in Early Head Start compared with those in the control group in two critical outcomes of early development: attachment security and cognitive skills. This approach to analysis is different from that used for the national cross-site study because it considers both age

and intervention together by comparing changes from one age to another in the Early Head Start program group versus the control group.

Our Early Head Start local research project included mothers who were either pregnant at the time of enrollment or had infants less than 10 months old. To meet program requirements, over 90 percent were low-income as defined by federal poverty guidelines, and most families (97 percent) received some sort of public assistance such as Medicaid, food stamps, or WIC. Most children were white (82 percent) compared with 11 percent Latino and 7 percent other. Their mothers were mostly married or living with a partner (73 percent), over age 19 (75 percent; mean age = 22.9), had at least a high school education (65 percent), and were not working (79 percent). Family size at enrollment ranged from zero to seven children. Data for this study were from interviews with mothers before enrollment and again when the infants were 14, 18, and 24 months old. Attachment security was assessed using the Attachment Q-Set (Waters 1987) at 14 and 18 months; cognitive skills were assessed using the Bayley Scales of Infant Development at 14 and 24 months.

One strategy for examining both age and intervention group is to directly test the statistical interaction of age and group to see if change over time is different for children in the Early Head Start program group compared with those in the control group. Results of between-group repeated measures (by age) analyses of variance showed that, for both attachment security scores and cognitive skills scores, there were statistically significant interactions between age and group (for security scores $F\ [1,137] = 8.9$, $p = .003$, for Bayley scores $F\ [1, 115] = 4.2$, $p = .04$). This means that, for both attachment security and cognitive skills, age changes were different for those in Early Head Start compared with those in the control group. Simple effects tests were used to test age changes within each group: the Early Head Start group and the control group. For attachment security, only Early Head Start toddlers showed a statistically significant increase

in their security scores from 14 to 18 months, as is expected developmentally, while control group toddlers did not increase their security scores with age (simple effects test for Early Head Start group, $F\ [1, 137] = 8.2$, $p = .005$). For cognitive skills, Early Head Start toddlers maintained stable standardized test scores that did not change with age, while control group toddlers, similar to others in poverty, began to lose ground, as indicated by a statistically significant decrease in their standardized cognitive skill scores (simple effects test for control group, $F\ [1, 115] = 9.4$, $p = .003$).

In summary, the developmental track is already different for toddlers compared with those in the control group. Utah's Bear River Early Head Start seeks to improve the expected outcomes of infants and toddlers by helping parents support their developmental gains. On average, toddlers in this Early Head Start program are becoming increasingly secure in their attachments to their primary caregivers, and they are maintaining age-appropriate progress in their cognitive skills. In contrast, toddlers in the control group did not show similar progress with age in either of these domains—they did not increase their attachment security or maintain age-appropriate cognitive skills. By examining both time and intervention, our results indicate a different developmental trajectory for Early Head Start toddlers compared with those in the control group. Toddlers in Early Head Start are staying on track because, as the research literature has shown, attachment security predicts later positive social behavior and early cognitive skills predict later academic readiness. In contrast, toddlers in the control group are beginning to get off track. These differences are likely to become greater with time, favoring those on a better developmental trajectory.

GETTING DADS INVOLVED: PREDICTORS OF FATHER INVOLVEMENT IN EARLY HEAD START AND WITH THEIR CHILDREN.

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(Supported by grant 90-YF-0004 from the Head Start Bureau Administration for Children and Families, Department of Health and Human Services and a contract with Bear River Early Head Start, Logan, Utah)

Bear River Early Head Start, serving northern Utah and southern Idaho, emphasizes father involvement with the program and with their infants. Understanding the characteristics of families and fathers that are related to father involvement may help program staff develop more-focused strategies for working with hard-to-involve fathers. Family and father characteristics were examined as predictors of father involvement both in the program and with their infant. Variables examined as potential predictors were selected based on the program's emphasis on building relationships as their primary intervention strategy.

The 72 Early Head Start fathers (or father figures) studied were predominantly white (78 percent) and were married or living with the child's mother (94 percent, 75 percent of mothers were married or living with partner). Of these fathers, all were contacted and interviewed before enrollment in the program, and the Early Head Start staff rated 57 after at least one year of enrollment in the program (no ratings in cases with staff turnover or family dropout). Preenrollment interviews included questions about depression (CES-D; Radloff 1977), attitudes about relationships (Adult Attachment Scale; Simpson et al. 1992), use of social support (F-COPES; McCubbin and Patterson 1982), work hours, religion, and religious activity. Home-visiting staff rated each father's participation in Early Head Start and engagement with his child using a Likert scale, based on direct observation and maternal report. Although home visits were scheduled when fathers were at home and could be observed directly, some ratings of engagement with the child were based on the mother's report to the home visitor.

Fathers who rated high on quality of relationship with home visitor are those who home visitors say interact during visits, answer questions, and show interest; those rated low do not participate in visits or interact with the home visitor. Fathers rated high on program participation are often at the home visits and are involved in other ways, such as in group activities; fathers rated low participate rarely or not at all. Fathers rated high on engagement with child play with their children, talk to them, read to them and tell them stories, take care of them, and seem to enjoy being with them; fathers rated low have few or mostly negative interactions with their children. An overall involvement score combining these ratings had a reliability coefficient (Cronbach alpha) of .93. (See descriptive data in Table 1.)

Statistical analysis showed that fathers' characteristics before enrollment were related to their later involvement in expected ways (see Table 2). (All reported relations were statistically significant at the .05 level.) Fathers with more education were rated as having better relationships with home visitors, participating more in the program, showing more improvement over time in program participation, being more engaged with their infant, and being more involved overall. Fathers were more involved overall when they were less depressed, less anxious about close relationships, more likely to use social support (especially spiritual support), and more active in their religion. Depression was also related specifically to poorer relationships with home visitors, less participation in the program, less engagement with their child, and less improvement over time in engagement with child. Relationship anxiety—in particular, relationship ambivalence—was related to poorer relationships with home visitors. Fathers' use of social support for coping with problems, particularly informal and spiritual support, was related to all the specific rating scales.

One implication of our results is that it appears that "the rich get richer." That is, those fathers who are already good at relationships, trusting, able to turn to others, and living with their

children are the same ones who participate more in Early Head Start programs and are more engaged with their children. In contrast, the fathers who are not functioning well psychologically or socially may be the ones who most strongly resist participating in Early Head Start programs but who perhaps could benefit the most. These results are especially salient in view of this Early Head Start program's theory of change that emphasizes the quality of relationships between staff and families and between parents and children. The relation of father involvement in Early Head Start to fathers' attitudes about close relationships is therefore not surprising.

Local Early Head Start program staff discussed our results and considered how to get depressed or withdrawn fathers more involved. Staff members made several suggestions to respond positively to fathers by showing a genuine interest in them, accepting them as they are, not stereotyping them, being sensitive to their circumstances and limitations, appreciating their interests, praising small accomplishments, and "never, never" giving up on them. Making appropriate referrals for mental health services may also help encourage father involvement. By identifying possible barriers to father involvement when a family first enrolls, Bear River Early Head Start hopes to be better able to promote father involvement to enhance children's early development.

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TABLE 1

MEANS, STANDARD DEVIATIONS, AND RANGES FOR RESEARCH VARIABLES

Father Variable	N	Mean	SD	Min.	Max.
Depression	72	1.5	.35	1.0	2.8
Relationship Anxiety (Total)	71	2.4	.51	1.3	3.6
Relationship Avoidance	71	2.6	.63	1.3	4.3
Relationship Ambivalence	71	2.1	.59	1.0	3.4
Social Support (Total)	72	3.0	.37	2.2	3.9
Informal Support	72	2.7	.57	1.4	4.2
Community Support	72	2.1	.72	1.0	3.8
Spiritual Support	72	3.2	1.1	1.0	5.0
Religious Activity	71	5.1	2.0	1.0	7.0
Overall Staff-Rated Father Involvement (Total)	57	2.7	1.1	1.0	5.0
Relationship with Early Head Start Home Visitor	54	2.9	1.3	1.0	5.0
Participation in Program (Current)	59	2.3	1.2	1.0	5.0
Participation in Program (Improved)	59	2.7	1.3	1.0	5.0
Engagement with Infant (Current)	59	2.6	1.2	1.0	5.0
Engagement with Infant (Improved)	59	3.0	1.2	1.0	5.0

TABLE 2

CORRELATIONS WITH FATHER INVOLVEMENT MEASURES

Father Variable	Relationship with Home Visitor	Program Participation (Current)	Program Participation (Improved)	Engagement with Infant (Current)	Engagement with Infant (Improved)	Overall Father Involvement
Education	.45**	.41**	.40**	.33*	.27+	.43**
Work Hours	-.36*	-.24	-.18	-.16	-.26+	-.27+
Depression	-.35*	-.32*	-.26+	-.37*	-.35*	-.38*
Relationship Anxiety (Total)	-.31*	-.05	-.12	-.11	-.13	-.16
Relationship Avoidance	-.23	.05	-.08	-.02	-.09	-.08
Relationship Ambivalence	-.31*	-.21	-.12	-.20	-.14	-.22
Social Support (Total)	.42**	.29+	.47**	.42**	.49***	.48**
Informal Support	.24	.18	.36*	.25	.40**	.33*
Community Support	.29+	.19	.38*	.42*	.33*	.36*
Spiritual Support	.48**	.34*	.39*	.33*	.37*	.42**
Religious Activity	.44**	.23	.43**	.27+	.37*	.40**

\+ $p < .10$
* $p < .05$
** $p < .01$
*** $p < .001$

INSIDE HOME VISITS: A COLLABORATIVE LOOK AT PROCESS AND QUALITY

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For Bear River Early Head Start, serving northern Utah and southern Idaho, the target and setting of intervention are the mother and child in their home. Like many other home-based Early Head Start programs, Bear River Early Head Start is committed to this strategy for service delivery as a practical way to emphasize parent-child relationships and parent education in a mostly rural area. Some research has questioned the benefits of home visits, so new research is especially needed to examine variations in the quality and process of home visits. Individual home visitors may implement visit strategies in different ways that may or may not match the program's intended model. Therefore, an informative evaluation of home visits includes an examination of what happens during home visits and how families respond.

Bear River Early Head Start is funded to serve 75 families at any given time. Staff provided ratings on 61 families (no ratings in cases of recent staff turnover), and home visits were videotaped and observed for 49 families. The families this program served during the evaluation period were predominantly white (82 percent), married (73 percent), and first-time parents (52 percent).

Home visit quality was assessed at Bear River Early Head Start using measures developed in collaboration with program staff. Like many previous studies of home visits, we used parent satisfaction ratings and home visitors' ratings to get different perspectives. In addition, we added direct observations of home visits to provide a more complete inside view. Parent ratings were obtained during interviews by research staff 6 and 15 months after enrollment. Scales were developed, based on program objectives, to ask parents 14 questions about their home visits and

15 questions about their home visitor (alpha = .99 for both scales). Home visitor ratings of the quality of visits and level of functioning for each family were analogous to assessments by other professionals such as classroom teachers who evaluate outcomes of the services they provide. For each family, home visitors rated the quality of the home visits, the quality of their relationships with the parents, and each family's current level of functioning and extent of improvement (alphas = .95 for both current functioning and improvement ratings). Researchers independently coded 49 videotaped home visits. Parent engagement (McBride and Peterson 1997) and home visitor facilitation (a new coding scheme developed in collaboration with the program) were rated for each home visit. Interrater agreement based on 22 percent of the videotapes was 88 percent, kappa = .75 for both codes.

Parent ratings of their home visits and home visitors were high and consistent, indicating that parents consistently agreed with positive statements about their home visits and home visitors. Home visitors rated their relationships with parents as "better than most" with a "feeling of partnership." Home visits were rated somewhere between "typical" and "better than most." Researchers' independent observations of home visitor facilitation indicated that home visitors were "trying to facilitate" parent-child interaction, although not all their attempts were effective, and that parents were available and appeared interested in activities of the home visit by asking questions and participating, although not initiating activities or focusing on child development topics. (See descriptive data in Table 1.)

Although not directly comparable, these measures of home visit quality were interrelated in interesting ways, as shown in bivariate correlations (see Table 2). Home visitor ratings of relationships with parents were positively correlated with parent ratings of home visit quality. In addition, home visitor ratings of relationships with parents and quality of home visits were higher for parents whom researchers rated as highly engaged during home visits. How staff

perceived family functioning and improvement was related to staff ratings of relationships and home visits, a possible "halo effect," so it was important to examine the relation of staff perceptions with researchers' independently coded observations. Indeed, staff ratings of family improvement were correlated with research observers' ratings of parent engagement and home visitor facilitation of parent-child interaction during home visits.

Multiple viewpoints of home visits are valuable, because each perspective represents a different view of the quality of home visits. These perspectives together indicated that the quality of home visits in this program was high. They also indicated that how well home visitors and parents worked together was related to how much program staff reported that parents benefited from the program. When researchers independently coded home visitors as more facilitative and parents as more engaged, program staff rated families as having better home visits and making more progress. Therefore, development of this Early Head Start program was enhanced by its collaboration with researchers. The results of this evaluation were used to strengthen the quality of home visits. In response to feedback about variations in the quality of home visits, the program reexamined its home visit strategies and provided more extensive training and supervision for home visitors.

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TABLE 1

DESCRIPTIVES OF PARENT RATINGS, STAFF RATINGS,
AND RESEARCHER OBSERVATIONS

Measure	N	M	SD	Range
Parent Ratings				
Home visitor (HV)	92	4.78	.40	1.80 - 5.00
Home visits (V)	91	4.67	.43	2.79 - 5.00
Staff Ratings				
Relationship with parent	61	3.60	1.23	1.00 - 5.00
Home visits with family	61	3.48	1.32	1.00 - 5.00
Researcher Observation Ratings				
Parent engagement	49	3.17	1.06	1.00 - 5.00
Home visitor facilitation	49	2.89	.92	1.00 - 4.50
Researcher Observed Percentages of Interactions				
Parent-child (P-C)	49	4.95%	6.71%	0 - 34%
Parent-home visitor (P-HV)	49	37.20%	17.14%	8 - 83%
Home visitor-child (HV-C)	49	6.51%	6.72%	0 - 28%
HV-C-P (joint)	49	41.14%	18.85%	8 - 79%
Family Functioning Ratings				
Current functioning	61	3.21	.85	1.50 - 4.94
Improvement	61	3.35	.81	1.38 - 5.00

TABLE 2

CORRELATIONS AMONG HOME VISIT QUALITY
AND FAMILY FUNCTIONING MEASURES

	Correlations						
Measure	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Parent Ratings							
1. Home visitor							
2. Home visits	**.70****						
Staff Ratings							
3. Relationship w/parent	.20	**.27***					
4. Home visits w/family	.19	.15	**.80****				
Researcher Observation Ratings							
5. Parent engagement	.16	.04	.31	**.39***			
6. Home visitor facilitation	.07	.01	.20	.27	**.54****		
Family Functioning Ratings							
7. Current functioning	.13	.05	**.72****	**.79****	**.48****	.27	
8. Improvement	.21	.19	**.64****	**.78****	**.49****	**.34***	**.86****

* $p < .05$

** $p < .01$

FAMILY GOALS AND ENGAGEMENT WITH THE PROGRAM: PERSPECTIVES OF TWO TEENAGE MOTHERS

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For three years, researchers from the Harvard Graduate School of Education have been following two teenage mothers, Rachel and Kristen, as part of an ethnographic study of Early Head Start research families in Brattleboro, Vermont. The purpose of the study is to examine how factors such as parent-child dynamics, family relationships, day care, work, and welfare and other assistance interact over time in families' lives and how they influence participation in the program. It is particularly important to better understand the lives of young women like Rachel and Kristen, because teenage mothers are a population much debated in policy and press. By interviewing Rachel and Kristin in depth about their lives and choices, the hope is that they can tell a story policymakers and politicians often tell for them, one about the risks and struggles that young, poor mothers face and how best to handle this problem.

Understanding what young parents want for themselves and their children and why is crucial for understanding program efficacy, because participants' goals and beliefs determine what services they find useful. Rachel and Kristen differ strikingly both in their present lives and in their plans for the future. These differences explain, in part, how these mothers value Early Head Start services differently and how they engage in the home-visiting, day care, and adult services the program provides.

Two months after her 16th birthday, Rachel gave birth to her daughter Daisy. She and Daisy currently live in an apartment in downtown Brattleboro paid for in part by the local Land Trust. Since her daughter's birth, public assistance has been Rachel's main source of income. She works 20 hours a week in the warehouse of a jewelry company as part of Vermont's welfare-to-work program. She also takes a full courseload at a local community college. While

Rachel is at school and work, her daughter Daisy attends full-time day care. Her care is fully subsidized through Rachel's participation in Early Head Start.

Over the next few years, Rachel hopes to earn a college degree and secure a good job. She believes a college degree is necessary because "in today's society you can't do anything without an education." Rachel sees attending school full-time, working part-time, placing Daisy in full-time day care, and temporarily remaining on welfare as necessary steps toward self-sufficiency. When asked what she values most about her involvement in Early Head Start, Rachel explains how crucial good-quality, subsidized day care is to her plan. Of the Early Head Start center, she says, "It's the best day care in town, and if I didn't have it I wouldn't put her in day care. I wouldn't be able to go to school. I wouldn't be able to work. I wouldn't be able to go anywhere in life." To Rachel, day care is the key because it will enable her to get a good job and pull herself out of poverty, something she thinks her own mother could not have done when Rachel was growing up. Of her mother's situation, not having a program like Early Head Start available to her, she says:

> I mean I never went to day care as a child, but we were also very poor…. My mom didn't get to go to school until I was in seventh grade. She was on assistance when we were little…. She thought staying home with her kids was more important than having a job… especially without the skills to get a good job—what's the point of going out and working at McDonald's when you could be at home with your kids?… She had four kids. She's gonna put us all in day care? Okay, that's gonna be like more than what she's making. It just wasn't realistic for her to work.

Thus, Rachel uses the Early Head Start services primarily for child care while she invests in her skills and training in order to achieve professional and financial goals. She describes the program as helping her pave a realistic path toward those goals, offering her guidance on how to chart that path, and supporting her emotionally as she moves, and often struggles, along it.

Kristin had her baby, Emily, at age 17, shortly after she married her boyfriend. Kristin, her husband Jack, and Emily now live in a trailer home in Brattleboro. Jack works full-time as a mechanic, and Kristin stays home part-time to care for Emily. Emily is in Early Head Start-provided day care two days a week. Kristin is interested primarily in having time to care for her daughter, both now and in the future. She makes decisions about work and day care on the basis of how best to maximize her time with Emily. Unlike Rachel, Kristin is not investing time and resources in her own skills now to work toward a future goal; rather, her priority is how best to meet Emily's immediate needs. When asked what she gains from participating in Early Head Start, Kristin mentions information about child development and healthy ways to care for children. Kristin appreciates the Early Head Start day care center because it provides good-quality, affordable care for Emily. However, she values the day care not because it makes her own education or future professional development possible, but rather because she believes it benefits Emily's development immediately and directly. For Kristin, Early Head Start is valuable because it helps her care for Emily and supports her daughter's development during these first three years.

Low-income parents choose both whether to apply for Early Head Start and when and how to use Early Head Start services. These choices are rooted in how they understand their present and future lives and in turn influence the impact the program can have. Mothers like Kristen and Rachel can help researchers and policymakers understand the perspectives of young mothers in similar situations. Developing a deeper awareness of the values parents hold is crucial to understanding the efficacy of Early Head Start.

BEYOND ROUGH AND TUMBLE: FATHERING AND COGNITIVE DEVELOPMENT IN 24-MONTH-OLDS

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The Early Head Start Fathers' group emerged out of a need to understand the nature and meaning of father involvement in low-income families. Studies that have examined fathering in low-income families often emphasize their deficits (Furstenberg and Harris 1993). In addition, much research on fathers' interactions has emphasized paternal "rough-and-tumble" play styles (Parke 1996). Few studies, however, have examined how fathers' interaction styles relate to toddlers' interactions and development. In response to these limitations, we focus on positive aspects of low-income fathers' interactions with their toddlers, and examine whether fathers' interactions with their toddlers predict the cognitive development of their toddlers.

Participants were 45 father-child dyads (23 boys) taken from the first wave of participants in the 24-month cohort in New York City. Fathers' average age was 26 years (SD = 7.23). Children were between 23 and 30 months of age. Approximately 42 percent of the fathers were living with their children.

During home visits, father-child interactions were videotaped during semistructured free play for 10 minutes in the three-bag task (described as the parent-child structured play task in this report). Bayley Mental Development Index scores were obtained on the children. Father-child interactions were assessed using the Caregiver-Child Affect, Responsive and Engagement Scale (C-CARES; Tamis-LeMonda and Spellmann 2000). The C-CARES measures parent-child interactions on 23 parent behaviors and 16 child behaviors. Each item was rated on a 5-point Likert scale ranging from 1, "not observed," to 5, "constantly observed."

Factor analyses on father items indicated a three-factor solution (explaining 66 percent of the variance). The first factor, Responsive-Didactic (eight items loaded, which ranged from .57 to .82), reflects paternal behaviors that are positive, responsive, emotionally attuned, and didactic. The second factor, Negative-Unresponsive-Intrusive (seven items loaded, which ranged from –.4 to –.71 and from .6 to .79), reflects paternal behaviors that are parent-driven and achievement-oriented, through use of highly structured, negative verbal reinforcement and unresponsive, intrusive, and inflexible behaviors. The third factor, Inflexible-Teasing (two items loaded, which were -.43 and .92), reflects paternal behaviors that are inflexible with high levels of teasing. Due to poor reliability, we deleted this factor from further analyses.

The factor analysis on child items revealed a three-factor solution (explaining 72 percent of the variance). The first factor, Cognitive-Playful (five items loaded, which ranged from .63 to .86), reflects child behaviors that were positive in affect, sophisticated in language and play skills, and highly involved with the toys. The second factor, Social (four items loaded, which ranged from .36 to .92), reflects child behaviors that are positive, participatory, responsive, and emotionally attuned toward their father. The third factor, Regulated-Persistent (four items loaded, which were –.82, and ranged from .37 to .87), reflects child behaviors that are highly regulated and persistent.

Responsive-Didactic father behaviors related to all three child behaviors (ts range = .33 to .73, *p*'s < .05 to .001). Negative-Unresponsive-Intrusive father behaviors were negatively associated with child Cognitive-Playful behaviors (t = –.31, $p < .05$). Responsive-Didactic father behaviors and child Cognitive-Playful and Social behaviors positively related with child scores on the MDI (ts range = .34 to .44, *p*'s < .05 to .01).

Children's mean score on the Bayley MDI was 86.13 (SD = 11.87). Twenty-five of the children were not developmentally delayed (MDI > 85), and 20 were developmentally delayed

(MDI < 85). A binary logistic regression analysis was performed with children's MDI scores [not delayed/delayed] as the outcome variable, and three predictor variables: Cognitive-Playful and Social child behaviors and Responsive-Didactic father behaviors.

In the logistic regression model, child Cognitive-Playful and Social behaviors were not significant predictors of delay status (social: $p = .18$, play-language: $p = .82$). Only father Responsive-Didactic behaviors retained their unique significance as predictors of delayed status ($p = .01$). Based on the nonsignificance of child behaviors, a second model was then run, including only father Responsive-Didactic behaviors as a predictor, to eliminate spurious expansion effects. This model yielded an odds ratio of 10:1, $p = .001$. The Nagelkerke R^2 indicated that this model explained 33 percent of the variance of children's delayed status. The model correctly classified 80 percent of the children who were delayed and 72 percent of children who were not delayed (overall total: 76 percent).

To summarize, this investigation of fathers playing with their 24-month-olds indicated two distinct parental styles of engagement: Responsive-Didactic and Negative-Unresponsive-Intrusive. Fathers scoring higher on Responsive-Didactic behaviors were *10 times* less likely to have children who scored in the delayed range of the Bayley MDI than fathers scoring lower on Responsive-Didactic behaviors. Responsive-Didactic behaviors in fathers contributed unique variance to Bayley scores, over and above child behaviors during the interaction. Although this suggests the relevance of fathers to the cognitive status of their toddlers, the concurrent nature of the study still leaves the question of causal relationship open. This finding is particularly relevant to understanding the plight of many minority children who begin dropoff in IQ scores when they are 2 years old.

These findings are important because they suggest that (1) low-income men interact with their children in a variety of ways, some very positive; (2) there are powerful predictors of

fathers' interaction styles that carefully crafted program interventions can address; and (3) fathers and children develop complex and nurturant relationships that can have potent effects on children's mental development.

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ETHNOGRAPHY AND THE EARLY HEAD START EVALUATION: CONTRIBUTIONS FROM LOCAL RESEARCH TO UNDERSTANDING PROGRAM PROCESSES

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The national Early Head Start evaluation follows a traditional random-assignment research design, with quantitative measures of process and outcome. Several sites, however, included anthropological work as part of their local research to tell the story of program implementation more fully and to document the sociocultural contexts in which programs operated. Here, we describe the ethnographic research at two sites, Denver-Family Star (FS) and Pittsburgh.

Ethnographic research at Denver-FS was designed to illuminate the ways in which the families served by the Early Head Start program accepted or rejected the program's Montessori intervention. In the United States, Montessori interventions tend to be associated with middle- and upper-class families and communities, so the Denver-FS research team was especially interested in how families living in poverty would receive the curriculum. Moreover, since the program's theory of change was based on the idea that children would bring Montessori principles into their families' homes, it was crucial to understand the extent to which this was happening. The ethnographic study was designed to address both these issues by focusing on (1) the child's experience in the Montessori classrooms, and (2) how a subset of families understood the intervention and reacted to it.

The first year of this research was devoted to understanding the program intervention through twice-a-week, half-day sessions of participant observation in the classrooms. This work was a prerequisite to the home-visiting phase of the study, in that we first had to understand what the program was attempting to do with children before examining how children and families received it. This participant observation documented staff attention to encouraging the

autonomy and individuality of children in their exploratory activities. Researchers also documented the emotional sensitivity of children to transitions, such as changes in caregivers and classrooms. After the program had been open for one year, 12 families were recruited into the home visit phase of the study. In this component, the ethnographer visited families at six-month intervals after their children had been in the program one year in order to understand how parents understood the intervention and how it had affected them and their children.

Perhaps the most striking finding in this research was the extent to which parents became vocal advocates for Montessori during their involvement with the program. While most parents began by knowing very little about Montessori, they were almost immediately impressed by their children's developmental progress, especially in their growing independence and facility in daily routines (for example, cleaning up after a meal or after play), which were major emphases in the program's classrooms. With program staff, parents believed that the progress their children were showing in these areas at 2 and 3 years of age would translate directly into their success in school. They eagerly capitalized on an opportunity to continue Montessori education for their children at a local public school preschool program after they left the Early Head Start program. The preliminary results from this ethnographic research have emphasized that, contrary to what may have been believed about Montessori prior to the program's experience, low-income parents appreciated and, indeed, valued the changes that they saw it produce in their children, confirming the program's hypothesis that they would succeed in changing families by first changing their children.

The ethnographic study in Pittsburgh was designed as a series of nested investigations that included (1) exploration of community and policy developments that influence operation of the Early Head Start program, (2) participant observation of Early Head Start program activities and focus groups with program staff to trace the evolution of the program and shifts in its theory of

change, and (3) home visits and ethnographic interviews with program families about their experience in the program and their own understandings of key program components. An integration of these three strands of research helped elucidate the relationships among community context, program implementation, and family perspectives and cultures.

The issue of child care illustrates the value of this approach. Researchers noted early that changes in welfare policy were leading to an increased need for out-of-home child care, which created new challenges for the Pittsburgh home-visiting program, whose theory of change focused on the parent-child relationship as the primary vehicle for positive child development. At the same time, ethnographic interviews with Early Head Start families made clear that relationships remained crucial in their cultural understanding of parenting, articulated as "being there." Indeed, the importance of "being there" contrasted sharply with the public discourse of policymakers, who emphasized an equation between good parenting and employment. We related families' expressed interests in being there for their children to another insight provided by the ethnographic case studies concerning the importance of trusting personal relationships more generally. By doing so, we came to better understand one of the reasons why Early Head Start families chose informal neighbor/relative care for their children when they were at work.

This set of factors, and the insights provided by ethnographic research, led the Early Head Start program to expand home-visiting services to informal child care providers, offering them child development information and strengthening the mutual relationships among child, parent, and provider. In this way, the program's theory of change was elaborated to respond to both changing community contexts and increased understanding of family cultures, which were revealed, at least in part, by the ongoing ethnographic work.

These brief representations of ethnographic work in two sites provide insight into the meaning of interventions for families and program staff. This information is likely to prove

valuable not only in documenting the stories of these programs and the families they serve, but also in providing insight into aspects of program process not anticipated in the design of the randomized trial.

ADULT ATTACHMENT STATUS OF EARLY HEAD START PARTICIPANTS

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Two of the Early Head Start research sites conducted the Adult Attachment Interview (AAI) (George et al. 1985 and 1996) with all parents at the beginning of the project. The AAI is a structured, hour-long, semiclinical interview during which the subject is queried about early experiences with caregivers. The audiotaped interviews are transcribed verbatim, and individuals who have received extensive training in the analysis of discourse code the transcripts. The rating system is complex. The major focus for this report is the four-category classification system (F, D, E, U) of an adult's current "state of mind with respect to attachment."

Transcripts are classified as secure-freely autonomous (F) when they are internally consistent and reasonably clear, relevant, and succinct. Individuals with troubled childhoods, as well as those from loving families, may all be classified as secure, because it is the coherence of the discourse, and not the content of the early experience reported, that determines classification.

Interviews that are low in coherence receive an insecure classification. Interviews are classified as insecure-dismissing (D) when the discourse appears to minimize the importance of attachment-related experiences. Interviews are classified as insecure-preoccupied (E) when the discourse reveals a preoccupation with attachment figures and attachment experiences. The unresolved (U) classification reflects a breakdown in organization associated with particular traumatic events in what may otherwise be an organized F, D, or E transcript.

AAI classifications have been shown to be valid in numerous studies conducted over the past decade (van IJzendoorn 1995). AAI classifications are unrelated to social desirability, intelligence, and memory ability. Parents whose AAI transcripts are classified as secure-autonomous are more sensitive caregivers of their children.

Van IJzendoorn and Bakermans-Kranenburg (1996) conducted a meta-analysis of studies using the AAI on clinical and nonclinical samples from several countries. This meta-analysis involved nine nonclinical samples and nearly 500 mothers. The distribution of AAI classifications, using the insecure-dismissing (D), secure-autonomous (F), insecure-preoccupied (E), and unresolved (U) categories, was 16, 55, 9, and 19 percent, respectively. The distribution of AAI classifications across five low-income samples involving 350 mothers revealed significantly fewer secure mothers, and significantly more classified insecure-dismissing and unresolved (25, 39, 8, and 28 percent). Finally, across six clinical samples involving 165 mothers, there were fewer secure and more insecure-preoccupied and unresolved classifications (26, 8, 25, and 40 percent).

Among parents eligible for Early Head Start at the first Early Head Start research site, which involved predominantly white, non-Hispanic mothers, only 27 percent were classified as secure-autonomous, 32 percent were classified as insecure-dismissing, 7 percent as insecure-preoccupied, and 33 percent as unresolved. Thus, this sample had a distribution of AAI classifications typical of other low-income samples. At the second site, consisting primarily of Latino immigrant families, the distribution was somewhat different: 38 percent of the mothers were classified as secure-autonomous, 25 percent were classified as insecure-dismissing, 31 percent as insecure-preoccupied, and 6 percent as unresolved. The security rate was typical of other low-income samples, but this site had more preoccupied parents and fewer who were unresolved with respect to trauma or loss. The data from both sites suggest that Early Head Start parents are at risk for insensitive and unresponsive caregiving. Cultural differences may be involved in the different distributions of preoccupied and unresolved classifications at the two sites.

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LOW-INCOME ADOLESCENT MOTHERS' KNOWLEDGE ABOUT DOMAINS OF CHILD DEVELOPMENT

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Over the past two decades, there has been a growing interest in understanding and describing the nature of parents' knowledge about child development. One reason for this growing interest is the notion that parents' knowledge about child development guides their interactions with children, thereby indirectly influencing children's development. Consequently, researchers engaged in preventive interventions have become increasingly interested in what parents do and do not know about child development, in an effort to educate less knowledgeable parents and to support sensitive parent-child interactions.

Adolescent mothers in particular have been shown to know less about children's development than older mothers, even when controlling for differences in socioeconomic factors.

Although studies indicate that adolescent mothers may lack knowledge about development, specific details about the nature and magnitude of their errors remain unclear. We sought to characterize the nature of adolescent mothers' knowledge about child development. We examined two aspects of mothers' knowledge: (1) the relative ordering of developmental milestones; and (2) the developmental timing of milestones across five domains of child development: cognition, language, motor, play, and social development. Findings contribute to theoretical models about the precise nature of parenting views and to interventions that aim to prepare parents for "what is to come."

Fifty-nine first-time adolescent mothers of 32 boys and 17 girls, who represented a first wave of participants in our Early Head Start research evaluation study, participated in this study (M age = 16.62, SD = 1.15). Ten mothers were pregnant, 33 had children between 1 and 12 months of age, and 16 mothers had children between 13 and 28 months of age. Participants were

from diverse ethnic backgrounds. Child's gender, maternal ethnicity, and maternal age did not relate to maternal knowledge. In this group, child's age showed patterns inconsistent to mothers' knowledge. Mothers with older children were more accurate at estimating language milestones ($r = .27$, $p < .05$). Maternal knowledge in the other domains was unrelated to child age (rs range .12 to .22, $p > .05$). Given our limited sample size, it was not feasible to explore further how parenting experiences with children of different ages interact with knowledge of development.

Mothers were asked to complete an age checklist of children's abilities for five developmental domains: cognition (11 items), language (11 items), motor skill (11 items), social development (8 items), and play (11 items) (see Table 1). They were asked to estimate the ages (in months) at which the average child is first capable of performing each action within each of the five domains. Items on each of the five lists were obtained primarily from the Hawaii Early Learning Profile Checklist (Furno 1987) and the Bayley Scales of Infant Development, 2nd edition (Bayley 1993). To measure the accuracy of mothers' age estimates, we created a "developmental window" around each of the items from the five developmental scales and estimated whether mothers' responses fell within or outside the window.

Findings indicated that as a group, mothers were highly accurate in their ordering of developmental abilities (r's range .66 to .98, $p <. 05$). Mothers' knowledge about the ordering of play and social abilities was significantly weaker (range of Cohen's $q = .699$ to 1.505, p's $< .01$, two-tailed) than their knowledge of cognitive, language, and motor milestones.

To assess mothers' knowledge about the timing of abilities—that is, the ages at which children first exhibit each behavior—we calculated the percentages of mothers' estimates that were (1) within the age window, (2) underestimates (mothers predicted children achieve the ability at ages younger than norms), and (3) overestimates (mothers predicted children achieve the ability at ages older than norms). Mothers' age estimates fell within the developmental

window between 24 and 35 percent of the time. Thus, mothers were less knowledgeable about precisely when developmental abilities emerge.

Across all domains, mothers were more likely to under- than to overestimate onsets of abilities (*t*'s range = 4.19 to 8.15, *p*'s < .001; see Table 2) and were more accurate at estimating age onsets for earlier milestones than for those occurring after 12 months of age (*t*'s range 3.51 to 12.75, *p*'s < .001). Figures 1a through 1e plot mothers' age estimates against the actual age onsets of the target milestones. Mothers' age estimates overlapped with empirical ages for early abilities, but the two lines increasingly diverged for later abilities.

In summary, the adolescent mothers at our Early Head Start site were generally knowledgeable about the ordering of developmental abilities but less aware of the timing of children's abilities. Mothers were better at estimating first-year abilities around cognitive, language, and motor development than play and social development. Mothers systematically underestimated the timing of later emerging abilities across all domains, expecting children to achieve most abilities within a short span of a few months, rather than appreciating the protracted course of children's developmental achievements. For example, in the language domain, mothers expected children to combine words into simple sentences and to include words of emotion in those sentences (for example, "boy sad") by about 17 months; in reality, such linguistic abilities do not emerge until after 30 months. The most compressed view of development occurred for social abilities; mothers expected many of these to occur within a two-week window.

These findings have implications for Early Head Start interventions with mothers. Lack of knowledge about development can lead to mothers' unrealistic expectations of children. In turn, this may lead to diminished efficacy in mothers, disappointment in children's abilities, or

inappropriate parenting. Teaching adolescent parents about normative achievements across domains of development is important preparation for the task of parenting.

TABLE 1
ITEMS IN THE FIVE DEVELOPMENTAL DOMAINS:
MOTHERS' ESTIMATED AGES OF EMERGENCE

	Empirical Age of Milestone Onsets (in Months)	Mothers' Age Estimates (in Months)	
Cognitive Milestone Items		***M***	***SD***
Turns head when he or she hears a sound.	2 – 4	4.9	3.7
Reaches for objects held in front of him or her.	3 – 5	6.3	2.7
Imitates simple actions like clapping and waving.	7 – 11	7.7	3.1
Looks at pictures in books or magazines.	6 – 14	9.3	4.7
Takes off a lid from a box and looks inside.	8 – 13	8.8	3.2
Puts small objects or toys in a container.	11 – 16	10.1	3.8
Finds objects in a "3 card monte game"—or any game where objects are hidden under cups or bowls that are then mixed up.	12 – 16	16.4	8.6
Builds a tower of 8 or more blocks.	20 – 31	12.5	5.2
Can pick out specific people and objects in photographs.	24 – 28	11.4	5.6
Copies a line with a crayon on paper.	23 – 34	14.8	7.4
Groups objects by color (red, blue, yellow).	32 – 42	16.4	8.2
Language Milestone Items			
Looks around the room and then looks into the air and make "aaah, oooh" noises over and over.	1 – 4	8.4	5.2
Looks over to caretaker and responds to that person talking to them with sounds such as "gagaga, bababa."	4 – 10	9.0	4.4
Whines "mamama mama" when upset to ask to be picked up by mother or father.	7 – 12	9.9	3.7
Looks at a person, reaches for cup, and grunts "uhh uhh" to ask for a cup.	8 – 12	10.8	5.2
Looks at person leaving a room and says "bye-bye," imitating that person saying "bye-bye."	9 – 13	10.6	3.2
Looks at mother getting a bottle and says "ba ba," naming the bottle without mother saying anything about the bottle.	11 – 16	10.8	3.6
Sees a dog's ball and says "dog dog," meaning that the ball belongs to the dog.	16 – 20	15.9	6.7
Looks over to juice, reaches for juice, and says "more ju" to request juice.	18 – 24	13.3	5.6
Says "hat head" or something like that as mother leaves the shower with a towel on her head.	20 – 28	16.7	8.0
Says "baby down" or "baby fall down" to a picture of a baby down on the ground or floor, meaning that he/she really did see a baby fall down last week.	24 – 34	17.0	7.8
Looks at a picture of a boy crying, points to the picture, and says "boy sad" or "boy cry."	30 – 36	17.8	7.7

	Empirical Age of Milestone Onsets (in Months)	Mothers' Age Estimates (in Months)	
Motor Milestone Items			
Supports own head upright with good control.	1 – 3	5.7	2.9
Uses arms to lift head and chest off crib.	2 – 4	6.3	3.3
Rolls over from back to stomach.	5 – 7	5.1	2.3
Sits without support with good balance.	5 – 9	6.7	2.3
Pulls himself or herself to stand up using furniture.	6 – 10	8.2	2.0
Crawls across the floor on hands and knees.	7 – 10	6.7	1.7
Walks alone while holding the wall or furniture.	8 – 13	9.3	2.2
Walks up stairs with help from an adult.	14 – 19	12.4	5.2
Climbs on and off furniture like a chair or couch.	18 – 21	11.0	5.9
Can run easily and with good coordination.	18 – 25	16.0	8.2
Gets both feet off the ground when jumping.	22 – 30	14.2	7.4
Social Milestone Items			
Makes sounds in response to another person's voice.	3 – 5	7.5	3.2
Smiles at himself or herself in the mirror.	5.5 - 8.5	8.9	4.3
Becomes upset when caregiver leaves the room or home.	6 – 9	8.5	3.9
Plays simple social games like peek-a-boo.	6 – 10	8.5	3.1
Imitates or copies movements such as clapping or waving.	9 – 12	8.2	2.6
Looks at an object or person when an adult points	9 – 14	8.5	3.8
Shows interest in other children besides brothers or sisters.	18 – 24	9.3	3.7
Shows a desire to please mother or caregiver.	24 – 36	9.9	5.1
Play Milestone Items			
Reaches for a small nesting cup, holds on to it, and looks at it.	3 – 6	10.1	3.9
Grasps a toy telephone, touches the buttons on it, and pushes one of the buttons.	7 – 12	10.0	3.2
Gets a toy teapot, look for its lid, and fits the lid on top.	9 – 14	14.7	6.1
Picks up a toy spoon, holds it in hand, and eats from spoon.	11 – 15	10.7	4.6
Finds a baby doll, holds it in arms, and kisses its face.	12 – 16	11.6	4.7
Puts a toy bowl on the floor, stirs in it, and scoops "pretend food" onto a toy plate.	13 – 18	12.7	5.4
Reaches for a baby doll, holds on to its hand, and makes it wave "bye-bye."	15 – 24	13.3	6.1
Uses a toy to stand for another toy—for example, picks up a small ball, puts it against the floor, and scrubs the floor.	16 – 25	11.6	4.6
Finds a stuffed bunny, places bunny in a toy car, and makes bunny drive away.	17 – 26	13.9	6.7
Holds out finger, stirs in a toy frying pan, and eats from finger.	18 – 27	13.7	6.0
Takes a skinny bottle, puts the bottle in the baby doll's hands, and makes the doll color. The child is pretending that the bottle is a crayon.	20 – 30	15.8	6.9

TABLE 2

MOTHERS' UNDERESTIMATES AND OVERESTIMATES OF DEVELOPMENTAL MILESTONES: PAIRED T-TEST COMPARISONS WITHIN DOMAINS

Developmental Domain	Underestimates		Overestimates		Paired t-test
	Mean %	**SD**	**Mean %**	**SD**	
Cognitive	40%	.21	13%	.12	8.15***
Language	37%	.23	16%	.12	5.55***
Motor	34%	.17	16%	.12	6.72***
Social	39%	.22	21%	.19	4.19***
Play	43%	.27	15%	.16	5.99***

*** $p < .001$

Figure 1a. Mothers' age estimates of cognitive milestones against the empirical estimates

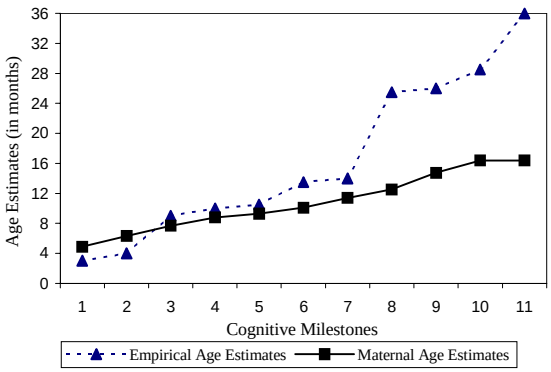


Figure 1b. Mothers' age estimates of language milestones against the empirical estimates

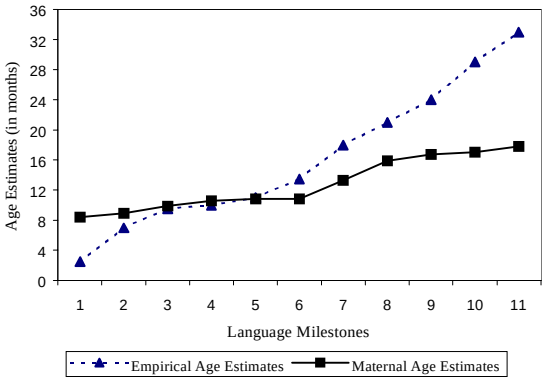


Figure 1c. Mothers' age estimates of motor milestones against the empirical estimates

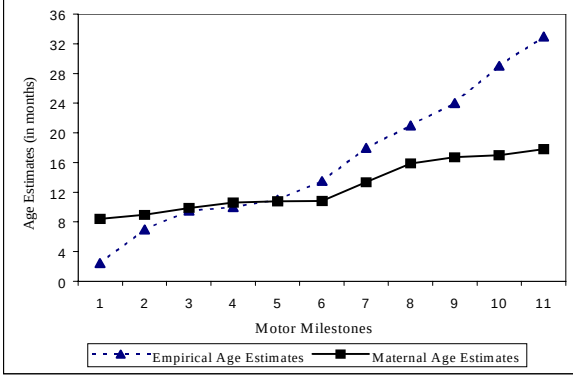


Figure 1d. Mothers' age estimates of social milestones against the empirical estimates

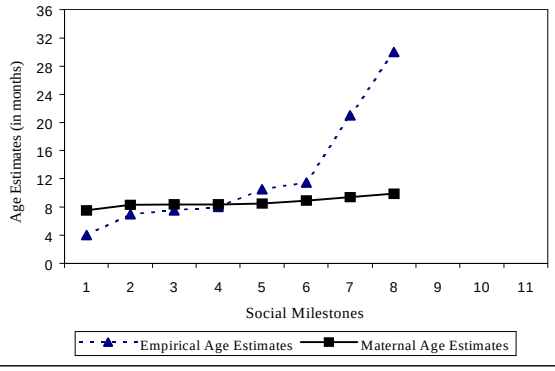
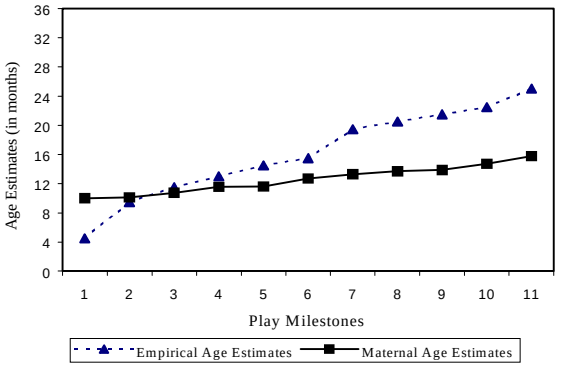


Figure 1e. Mothers' age estimates of play milestones against the empirical estimates



VENICE FAMILY CLINIC CHILDREN FIRST PROGRAM HEALTH SERVICES PROVE SUCCESSFUL

JoEllen Tullis and Karen Lamp
Venice, California, Early Head Start

The Venice Family Clinic (VFC) provides affordable, accessible, and compassionate comprehensive primary health care for people with no other access to such care. One of the clinic's guiding principles is that clients are partners in their health care, with a focus on the whole person or whole family system and the understanding that health care happens within the context of the cultural, social, physical, emotional, and economic needs of the client. As a result of this commitment, VFC sought and received funds to operate the Children First Early Head Start program. The program's mission is to optimize the quality of life for children prenatal to age 3 by strengthening families and communities. To achieve this, children and families must be healthy. The first steps toward reaching the desired outcome of healthy children and families are to help families access insurance and to connect them to a medical home. The consequences of being uninsured include limited and delayed access to needed services, poorer physical and mental health, premature death, and a diminished capacity to contribute to one's family and community. The Children First Early Head Start program helps all its families determine whether any family members are eligible for any insurance programs. Enrollment is handled on-site at the clinic or, when needed, in the family home. VFC becomes the medical home for families that are not insurable. At VFC, families receive free quality primary health care and can access a variety of services. These services include health education, developmental screening, diagnostic tests, chronic care treatment, medication, nutrition counseling, ophthalmology/optometry (including free glasses), case management, and social work. They also include mental health services, which provide crisis, individual and family counseling, and group support and education programs (for example, parenting, prenatal, battered women). The clinic also has a

"warm line" to answer basic child development concerns and provide information on parent/child classes. Because Children First Early Head Start home visitors understand the scope of services at the clinic and (with family permission) have access to their physician and multidisciplinary case conferences, Early Head Start families are more likely to take advantage of these services, seek care in a timely manner, and adhere to treatment plans.

Having Early Head Start as part of the clinic has led to some operational changes at the clinic that provide advantages to all patients. Children First Early Head Start has enhanced the ability of VFC staff to (1) understand the importance of the early years and how those years affect an individual in the future, (2) see patients in the context of their families rather than individuals in a state of disease, and (3) look beyond the medical model and embrace social work services. The relationship has also led VFC to create a literacy program for pediatric patients, to strengthen the Health Education Department with its focus on primary prevention and community outreach, and to infuse resources into behavioral modification/risk reduction and identification of victims of domestic violence. All doctors screen for domestic violence, and the clinic now has a domestic violence specialist—an advocate to help victims through the court system—and an ongoing support group. Substantial quantitative and qualitative data show that this comprehensive approach to health care makes a difference. Compared to county averages, Children First Early Head Start families fare much better.

Medical Home:

Countywide: 31 percent of children have no insurance; seen primarily in emergency rooms for illness.

Children First Early Head Start children: All children receive regular well-child visits. All family members are enrolled in insurance as eligible, and when not eligible, receive free medical care at the clinic.

Immunization Rates:

Countywide: 73 percent of children are fully immunized by age 3.

Children First Early Head Start children: 85 percent of enrolled children are current on immunizations at any given time, and 95 percent of children graduating from the program at age 3 are fully immunized.

Rates for both number of uninsured and incomplete immunizations are even higher among Hispanics and children from immigrant families. Therefore, these improved outcomes for children are impressive, since 85 percent of Children First Early Head Start families are Hispanic and one or both of the parents in 70 percent of Children First Early Head Start families are immigrants.

One family's experience shows how this program has made a difference. When the home visitor noticed the family was not keeping its appointments for well-child and immunization visits, she talked with the mother and learned that the barriers included fear of doctors and fear of using public transportation. She gradually helped the parent assume greater responsibility both in keeping appointments and in figuring out transportation. The home visitor provided photos of the clinic, arranged a phone call with the doctor to help the parent feel more comfortable, and transported the family and remained with them on their first visit. She helped the parent learn about public transportation and accompanied them on their first bus ride. Over time, the parent was able to make and keep appointments and use the bus on her own. The child now receives regular checkups and keeps up-to-date on immunizations. An interesting benefit to the community is that a non-Early Head Start-eligible family with three children that shared living space with the Children First Early Head Start family and previously only received medical care through emergency room visits has, with the help of the Children First Early Head Start mother, obtained insurance for its children, who now receive regular preventive care.

"He who has health, has hope; and he who has hope, has everything." —Arabian proverb

APPENDIX B

DATA COLLECTION, SOURCES OF NONRESPONSE, AND FATHER STUDY RESPONSE RATES

B.1 DATA COLLECTION

a. National and Local Research Roles

The national contractor team (MPR and Columbia) was responsible for all aspects of preparation for data collection, tracking of interview status, data entry, quality control, coding of interview responses, coding of parent-child interaction videotapes, and data analysis. Preparation for data collection included nominating evaluation measures, creating and distributing interviews, writing operations and training manuals, conducting centralized training sessions for staff from all 16 sites (2 programs were located in one city, so one research team conducted the data collection for both), certifying that data collectors met the quality and reliability standards set for each measure, providing assessment materials, and notifying local data collection teams when families were to be interviewed. MPR's tracking of interview status included requiring the local teams to send biweekly updates on the data collection status of families with open interview "windows," working with the sites to assist in locating hard-to-reach families, and conducting regular telephone meetings with the sites to review the biweekly reports.

In addition to conducting their own research, the local research teams were responsible for hiring a site coordinator as the key person to work with MPR on the cross-site data collection, hiring data collectors, locally supervising the data collection team, conducting all interviews and assessments, tracking interview status, and sending the data to MPR for processing. Sites decided how they staffed the data collection, and data collection team personnel varied, with some staff members working full-time and some part-time. We began with two data collection roles at each site: (1) interviewer/assessors (IAs) were hired with the primary responsibility of conducting the birthday-related parent interviews, child assessments, and parent-child interaction videotaping; (2) community/family coordinators (CFCs) were designated to conduct the follow-

up parent services interviews using the Computer-Assisted Personal Interviewing (CAPI) technique. Individuals with a variety of experiences assumed data collector roles, including graduate students, professional interviewing staff, and members of the local community. In some sites the site coordinators collected data themselves, and in other sites they did not.

b. Interviewer Training, Certification, and Reliability

Interviewer Training. The national team conducted group training for local research staff members (site coordinators, CFCs, and IAs) who conducted the Parent Services Interviews (PSI), Parent Interviews (PI), and Child and Family Assessments. Training sessions for the 6-month PSI, the 14-month PI, and the 14-month Child and Family Assessments were conducted in August 1996 and during several smaller sessions throughout the first year of data collection to accommodate different data collection schedules at the sites, as well as to respond to staff turnover. Training sessions were approximately 3 days long for CFCs conducting the 6-month PSI, and 5 days long for IAs conducting the 14-month PI and the Child and Family Assessments. Site coordinators conducted all the 15-month PSI training locally. In July 1997, we conducted a four-day training session for the 24-month PI and Child and Family Assessments. Representatives from each site were required to attend. The site coordinators conducted all subsequent 24-month training locally. For all training sessions, we asked CFCs and IAs to review the training manual prior to training and prepare to participate in group lectures and discussions, hands-on practice, and taping of practice administrations.

Interviewer Certification and Reliability. After training, we required CFCs and IAs to conduct practice interviews and assessments and submit audiotapes or videotapes to the national team for certification. The mode of administration, initial certification requirements, and ongoing reliability procedures for each type of interview are described in this section.

- **Parent Services Interview.** CFCs conducted the PSIs by CAPI. Most of the interviews were conducted by telephone, but CFCs visited families in their homes if a telephone interview was not possible. CFCs were required to practice using CAPI with nonrespondents and conduct a mock interview with their site coordinator. The site coordinator reviewed the completed interview on the computer and sent an audiotape of the practice interview and the diskette containing the interview data to MPR for review. CFCs were certified to collect data from respondent families if the mock interview was administered correctly. If a CFC was not certified on their first attempt, we asked them to practice and conduct another mock interview until they met the certification requirements. After a CFC was certified, site coordinators monitored every fifth interview until the CFC reached her/his 25th. Beyond the 25th interview, site coordinators monitored one audiotaped interview every month and one live interview every 6 months.

- **Birthday-Related Measures.** IAs conducted the 14- and 24-month PI and the family and child assessments (including the Bayley II, the parent-child videotaped structured play assessment, the MacArthur CDI, and a modified version of the HOME) in the families' homes. Most of the birthday-related interviews and assessments were conducted in the homes, but if the parent was unable to conduct the interview and assessments in her/his home, the IA conducted the PI by telephone and tried to complete the assessments at a different time. The interviews and assessments were conducted using paper-and-pencil questionnaires.

  Bayley Scales. After the 14- and 24-month training sessions, IAs were required to critique and score a videotaped Bayley administration and score a second administration to practice what they learned during training. A team of Bayley trainers and reviewers (expert consultants from New York University) provided feedback on the practice exercises. IAs were asked to practice the Bayley and the videotaped parent-child protocol with families who were not part of the evaluation.

  After a minimum of two practice administrations, IAs submitted a videotaped Bayley administration, a self-critique, the score sheet, and the completed behavior rating scale for review. The Bayley trainers and reviewers provided written feedback for two administrations per IA and determined whether the IA met our certification criteria of 85 percent reliability on administration and scoring. If an IA did not meet the certification criteria, he/she was asked to practice and resubmit. All IAs were required to meet the certification requirements before they collected data with study children. To ensure reliability of administration, IAs were required to videotape every 15th Bayley and submit it and a self-critique to MPR for review. Our Bayley trainers and reviewers found that most IAs met the certification criteria throughout data collection. If an IA did not, he/she was asked to review the feedback from the reviewer and conduct another Bayley with a child who was not part of the study. Usually the IA did not require more than one practice administration to reestablish reliability for the Bayley administration and scoring.

  Parent-Child Structured Play Assessment. After training and practice with at least two families who were not part of the evaluation, IAs were required to submit one videotape to MPR for review. A team of experts from MPR and Columbia reviewed the tapes and scored the interviewer on the administration of the protocol instructions,

timing of the activities, and videography. IAs were certified to collect data with study families if they met the certification criteria established by the review team. If an IA did not meet the criteria, he/she was asked to submit another practice tape and self-critique for review. The review team provided feedback to IAs about the video protocol for approximately every 15th administration.

As part of the field monitoring of the practice administrations of the PI, Bayley, and structured play assessment, the site coordinators determined whether the IAs were certified on the PI, which included the MacArthur CDI (completed by the parent as a self-administered questionnaire or administered by the interviewer according to the parent's preference) and the modified version of the HOME. To determine whether IAs were ready to conduct the interviews and assessments with study families, site coordinators were asked to assess the flow of the interview, transitions between components of the PI and the assessments, rapport with family and child, and completeness and accuracy of the interview and assessment documents.

- **Father Study Interview.** Twelve of the 17 research sites participated in the father study. Eleven of the sites conducted the 24-month father interview and one site conducted an abbreviated interview. The father interview was administered after the 24-month PI was completed with the child's primary caregiver. The primary caregiver (the mother in over 96 percent of the families) identified whether the biological father lived with the child or saw the child regularly. If the biological father did not live with the child, the IA determined whether there was a father figure. If the mother identified both an involved nonresident biological father and a father figure, the IA asked the mother which man was more involved with the child. If the mother did not object to having the father contacted, the IA reported to the site coordinator that there was an identified father and MPR began tracking the father as a respondent for the father study. In some sites, the same team of IAs conducted the father interviews and other sites hired new IAs. The site coordinator and certified IAs in each site conducted father interview training. Father study IAs were required to submit audiotapes of the father interview for review by the national team. Father study IAs had to meet the same certification and reliability standards as the IAs in the main study.

c. Data Collection Windows, Tracking, and Receipt Control

Data Collection Windows. Site coordinators were required to monitor the data collection window for each family for all the interviews and assessments. MPR generated contact sheets and advance letters for every family and sent them to the sites. The contact sheet included contact information for the family, the dates between which the interview was to be completed (the "window"), space to code the status of the interview, and space to record attempts to reach the family. All windows opened 4 weeks before the target date of the interview (targeted for 6

months after random assignment and 15 months after random assignment for the PSIs, and the date of the child's 14- and 24-month "birthday" for the birthday-related interviews and assessments). See Table B.1 for the target length of the windows by type of interview.

Timing of Interviews/Assessments by Child's Age and Months Since Random Assignment. Table B.2 gives a summary of the distribution of months between the target date and the completion of the 15-month PSI and the 24-month PI by research status. On average, the 15-month PSI was conducted about 16.5 months after random assignment, and the 24-month PI was conducted when the children were 25 months old (overall there were no differences by research status).

Tracking of Interview Cooperation Rates. When the interview window was open, MPR and the site coordinators worked together to develop strategies to increase interview completion rates. At the start of the study, site coordinators reported interview status to MPR every two weeks and participated in phone meetings with MPR staff members to review data collection issues and update tracking information. For interviews that were difficult to complete or families that were hard to locate, the site coordinator requested assistance from MPR that included search data bases and in some sites telephone or field support from a trained MPR specialist in locating families.

Receipt Control. Completed birthday-related interviews and assessments were reviewed by site coordinators and any data edits were conducted at the site as necessary before the materials were sent to MPR. Site coordinators sent regular shipments to MPR of CAPI diskettes containing the PSIs, originals of the PI, and videotapes. MPR staff logged the materials into the tracking database and prepared the interview and assessment materials for data entry.

d. Data Processing, Data Entry, and Quality Control

Data Processing. All interview materials were logged into a data tracking system upon their arrival at MPR from the sites. MPR staff copied the parent-child videotapes and sent them to the Columbia University team for coding. As the data collection effort ended at each site, MPR and the site coordinator compared logs of materials sent by the sites and received by MPR to ensure that all the data had been received. CAPI diskettes were downloaded and included in a database organized by a unique family identification number. To protect families, all data items were organized using the identification number, and any documents that included both the family identification number and the family contact information were kept in locked files.

Data Entry and Quality Control. Prior to data entry, all paper-and-pencil instruments were reviewed by quality control staff for any problems with the skip logic and other interview administration errors. All paper-and-pencil instruments were data entered with 100 percent verification into data entry programs with prescribed ranges for each item. For the PSIs, automatic range checks and skip patterns were part of the CAPI programming to reduce data collection and data entry errors. For questions that required the parent to specify her/his response, we developed codes to classify responses and included them as additional values if 10 or more respondents gave the same answer.

TABLE B.1

EHS DATA COLLECTION WINDOW BY TYPE OF INTERVIEW/ASSESSMENT

Data Collection Instrument	Window
6-Month PSI (Parent Services Interview)	5 months - 11 months and 30 days
14-Month PI (Birthday Related Parent Interview)	13 months - 19 months and 30 days
14-Month Parent-Child Structured Play Assessment and Bayley	13 months - 16 months and 30 days
15-Month PSI	14 months - 22 months and 30 days
24-Month PI/Parent-Child Structured Play Assessment and Bayley	23 months - 28 months and 15 days
24-Month Father Interview	23 months - 31 months and 30 days

TABLE B.2

DISTRIBUTION OF THE NUMBER OF MONTHS BETWEEN INTERVIEW TARGET DATES AND COMPLETION OF KEY INTERVIEWS, BY RESEARCH STATUS
(Percentage)

Number of Months	15-Month Parent Service Interviews			24-Month Parent Interviews		
	Program Group	Control Group	Combined Sample	Program Group	Control Group	Combined Sample
–3 to –1	3.8	3.8	3.8	1.6	1.8	1.7
–1 to –.5	9.1	8.3	8.7	9.9	10.5	10.2
–.5 to 0	11.3	13.3	12.3	14.4	12.6	13.5
0 to .5	12.8	10.9	11.9	14.2	15.5	14.8
.5 to 1	13.8	14.0	13.9	14.7	16.5	15.6
1 to 2	18.7	19.4	19.1	21.3	21.0	21.2
2 to 3	11.0	10.5	10.7	11.9	10.0	11.0
3 to 4	7.5	5.7	6.6	5.9	6.4	6.1
4 or Greater	12.0	14.0	13.0	6.2	5.8	6.0
Average Number of Months	1.6	1.6	1.6	1.1	1.1	1.1

B.2 SOURCES OF NONRESPONSE

All multisite evaluations of the size and complexity of Early Head Start face a variety of data collection and analytic challenges that affect the overall and site-level response rates. This study is no different. Overall response rates, response rates by site and by data source, and response rates by evaluation subgroups are presented and discussed in Chapter II. Here we describe the nature of the nonresponse.

The primary sources of nonresponse were refusals to participate and inability to locate the families. Overall for the 15-month PSI, 36 percent of the families who did not respond refused to participate, and 40 percent moved or could not be located (the remaining 24 percent included families for whom the interview window closed before the interview was completed or the interview was conducted after our cutoff for inclusion in this report).[1] For the 24-month PI, 43 percent of the families who did not respond refused to participate, and 36 percent moved or could not be located (the remaining 21 percent included families for whom the interview window closed before the interview was completed or the interview was conducted after our cutoff for inclusion in this report).

Site coordinators reported that the data collection was very challenging. From the beginning of the project, some site coordinators reported that some families had not understood what they were signing up for (related to the program, the research activities, or both), and some site coordinators reported that control group families refused participation in the study after they learned that they were not going to receive Early Head Start services.

[1]A small number of 24-month birthday-related interviews and assessments, as well as 15-month PSIs, were received by MPR after the cutoff date for inclusion in the analysis files. These data will be added to the data files and included in the longitudinal analyses to be reported in the final report, June 2002.

Analysis of the categories of nonresponse by site showed that the center-based sites were more successful in completing interviews and assessments with Early Head Start families than they were with the control group families. One explanation for this is that the Early Head Start families were using center-based services and may have been easier for research and program staff members to contact. To some degree, the same pattern might have been expected across all the programs—if the local research team used all available leads, they may have been able to contact and successfully complete interviews with a larger proportion of the Early Head Start group than the control group. This was not true across all sites, and in a number of sites research teams completed a larger proportion of the interviews with control group families. The national team is continuing to work with the local research teams and the program directors to better understand this variation across sites and to provide a description of the challenges the local research teams faced in completing the interviews and assessments.

In general, the PI response rate establishes the maximum for the Bayley and parent-child structured play assessment response rates. This is because if an interview was not done, it was generally the case that the other assessments also were not done. In some sites, IAs completed the PI by telephone if the interview window was about to close or if the family moved away, rather than lose the entire data collection wave for the family. In those cases it was impossible to conduct the Bayley and the parent-child structured play assessment. Sites reported other data collection-related reasons for nonresponse on the Bayley and the parent-child structured play assessment, including child illness on the interview date, child refusal to participate in the Bayley assessment or the play assessment, parental refusal to participate in the play assessment, and insufficient time during the visit to complete the assessments.

Some of the data that were collected could not be used because of technical problems or errors in administration of the assessment. Between three and seven percent of the 1,807 24-

month videotapes sent to Columbia for coding could not be coded because of incorrect administration of the parent-child structured play assessment, lack of video or sound, or other technical problems. Nine percent of the 1,903 24-month Bayley assessments conducted could not be scored because of errors in administration of the test or the lack of a basal. Appendix D includes information about how we adjusted for nonresponse in our analyses.

B.3 FATHER STUDY RESPONSE RATES

The father study data in this report are from interviews conducted with fathers or father figures of children in the program group. As described above, the 12 father study sites recruited the men after the mothers identified them either as a resident biological father, an involved nonresident biological father, or a father figure. Across the 12 sites, approximately 65 percent of the mothers identified a father or father figure. Following identification of the father, some of the mothers refused to share information about how to reach the identified father or requested that we did not contact him. Site coordinators reported that some mothers did not want us to contact the father because he was too busy, and other mothers reported that although the identified father had been active in the child's life, he no longer was. Overall, we completed interviews with 67 percent of the identified fathers (after excluding mothers who requested that we did not contact the father). Father study sample sizes and response rates by site for the program group are included in Table B.3.

TABLE B.3

PROGRAM GROUP FATHER INTERVIEW SAMPLE SIZES AND RESPONSE RATES, BY SITE

Site	24-Month Father Interview	
	Program Group Sample Size	Response Rate (Percentage)[a]
1	19	60
3	26	89
4	34	88
6	14	55
8	44	69
10	19	83
11	19	52
13	57	55
14	20	68
15	27	59
16	40	78
17	28	64
Total	**347**	**67**

[a]The response rate was calculated by using the number of fathers identified by mothers during the 24-month parent interview as the denominator.

APPENDIX C

OUTCOME MEASURES, PSYCHOMETRICS, AND IMPLEMENTATION MEASURES

This appendix provides supplementary information on measures used in the national evaluation for the impact and implementation analyses. We include:

C.1 SELECTION OF CHILD AND FAMILY MEASURES

Our approach to selecting child and family measures was based on several guiding principles:

- **Relevance to Intervention Goals and Key Hypotheses.** The measures we chose were concentrated in areas that are important for children and families, that the Early Head Start program seeks to influence, and for which we had strong hypotheses about the short-term effects of the program.

- **Appropriateness to Children's Age and Developmental Level.** Because developmental change is rapid during the early years that are the focus of the evaluation, the measures of child outcomes appropriate at this age tend to focus on relatively narrow age ranges. Thus, to measure a particular outcome at different ages, we often had to select different outcome measures. In addition, a relatively large proportion of children from economically disadvantaged families exhibit developmental lags. Therefore, we considered the developmental level, as well as the chronological age of the children when choosing measures.

- **Appropriateness for the Early Head Start Population.** Many of the families in the sample have low income and represent racial, ethnic, and linguistic minority groups. Therefore, our goal was to choose measures available in languages other than English and normed or used with samples that include a variety of ethnic groups and children from economically disadvantaged families. In addition, we chose measures used with parents to be appropriate to their expected reading and comprehension levels as well as their cultural backgrounds.

- **Adequate Psychometric Properties.** We chose measures with adequate reliability and validity for children from low-income families and for a number of racial and ethnic groups. In general we chose measures with a demonstrated internal consistency reliability (coefficient alpha) of .70 or higher (this level is generally accepted as an adequate demonstration of reliability).

- **Prior Use in Large-Scale Surveys and Intervention Evaluations.** To reduce measurement development efforts and increase comparability with other national studies and intervention evaluations, many of the measures we chose were used in other studies and had demonstrated ease of administration and adequate psychometric properties. When we decided to use a measure that had not been used before, we worked with the author of the measure to determine whether we would expect it to work well in a national study with the characteristics of our study population.

- **Low Cost and Burden.** The measures we chose had to be administered reliably by trained interviewers rather than require administration by an experienced clinician. We also chose measures that posed minimal burden on the parents and children.

The national team (MPR and Columbia) worked with the Early Head Start Research Consortium to nominate measures, modify existing measures as needed, create new measures as needed, and pretest the interviews and assessments with families and children similar to the Early Head Start study families. The measures and the variables constructed from them are briefly described in each chapter of this report. Psychometric properties of the measures are described in Appendix C.2.

C.2 CONSTRUCTS USED IN THE ANALYSIS: PSYCHOMETRIC PROPERTIES

To be included in the impact analyses, constructed variables had to meet the following criteria:

- **Sufficient Data at the Item Level.** If an individual was missing 25 percent or more of the items that went into a constructed variable, we did not construct the variable for that individual and that individual was not included in the impact analysis of that variable. If the individual was missing fewer than 25 percent of the items needed for a constructed variable, we imputed values based on the mean of the nonmissing items. The proportion of scores that required imputation was fairly low—if a parent began a measure, they generally completed all of the items. We never imputed values for our direct child assessments (the Bayley and the MacArthur) or our parent-child structured play assessments.
- **Adequate Distribution of Scores.** For our constructed variables, we checked the mean, standard deviation, skewness, and kurtosis to determine whether the variables had a normal distribution and seemed to have a similar distribution to those found in other studies using the same measure. In general, we found that our distributions met the criteria for normality, with skewness and kurtosis levels within appropriate ranges. The distributions were similar to those found in other studies of low-income families. Our sample means and standard deviations were generally lower than the means found in child assessment norming samples and in studies using similar measures with a more nationally representative sample of children and families.
- **Adequate Internal Consistency Reliability.** After discussion within the consortium and consultation with outside experts, we decided to include measures with internal consistency reliability of .65 and above in our impact analyses.
- **Consistent Reliability across Major Race/Ethnicity Subgroups.** We examined internal consistency reliability across our three major race/ethnicity groups, white non-Hispanics, black non-Hispanics, and Hispanics, to determine whether our measures had similar levels of reliability across these groups.

To prepare our data for analysis, we first consulted the literature and either scored questionnaires and child assessments as they had been scored by the author of the measure or we used a scoring approach consistent with the current literature. For new measures or for measures which required additional data reduction, we conducted factor analyses as needed. We also coded the parent-child structured play assessments and analyzed the ratings. The factor analysis and coding procedures are described below.

a. Factor Analysis Approach

We used exploratory factor analysis techniques with Varimax rotation to create variables from multi-item questionnaire and observational measures. All factor analyses were conducted using only nonmissing child- and parent-level data. We used the following criteria to judge the adequacy of our factor analysis results:

- Items within factors made sense conceptually
- The solution yielded internal consistency reliability (coefficient alpha) of .65 or greater within each factor
- The solution minimized the number of items with appreciable loadings (.35 and greater) on multiple factors
- The solution minimized the number of items that did not load appreciably on any factor

b. The Bayley Language Score

As described in Chapter IV, we found that impacts on the cognitive and language measures at 24 months varied by program approach. To investigate whether the results were biased by the fact that parents reported about their children's language skills, we conducted a factor analysis of the Bayley MDI items to identify a set of items that might serve as a validation test of the language findings from the parent-report measure. We created a Bayley data set based on each child's individual-item Bayley scores on items 113 through 154 (the 23- to 25-month through 26- to 28-month item sets). If a child did not have an item score for a particular item because it came before their basal or after their ceiling, the appropriate score was assigned (1 if below the basal, 0 if above the ceiling). Using this data set, we conducted exploratory factor analyses to determine the underlying factor structure. We used Varimax rotations and considered factor loadings greater than .35 to be appreciable.

The 24-month two-factor solution included a first factor made up of 12 language items and a second factor made up of 15 visual-spatial items. When an item loaded appreciably on both factors, we included the item in the factor on which it had the highest loading. We created factor scores by summing the items with loadings greater than .35. The two factors account for about 22 percent of the total variance in the Bayley items, with each factor accounting for about 11 percent of the variance. The alphas are acceptable for both factors: .86 and .80 for language and visual-spatial, respectively.

Before conducting impact analyses of the factor scores, we hypothesized that if the Bayley Language score and the MacArthur scores measured the same underlying language construct, they would show a similar pattern of impacts and thereby "validate" the MacArthur data. We had no specific hypotheses about the Visual-Spatial score and did not use it in this report. As described in Chapter IV, we found that there is consistency across the three program approaches between parent reports of language and children's language ability as measured by the Bayley Language score.

c. Coding of the Parent-Child Structured Play Assessment and Variable Creation

All videotapes of the 24-month parent-child structured play assessments were coded by staff at the Center for Children and Families, Columbia University, Teachers College, according to scales adapted from the NICHD Study of Early Child Care's Three Box coding scales (NICHD Early Child Care Research Network 1997, 1999; Owen 1992; Owen et al. 1993). There are nine seven-point coding scales that address child and parent behaviors. The three child scales address *engagement of parent* (extent to which child initiates and/or maintains interaction with parent); *sustained attention with objects* (degree of child's involvement with toys in the three bags); and *negativity toward parent* (degree to which child shows anger or hostility toward parent).

The six parenting scales address *sensitivity* (the extent to which the parent takes the child's perspective, accurately perceives the child's signals, and promptly and appropriately responds to these signals); *positive regard* (demonstration of love, respect, admiration); *stimulation of cognitive development* (teaching, actively trying to expand the child's abilities); *detachment* (under-involvement and lack of awareness, attention, engagement); *intrusiveness* (over-involvement, over-control); and *negative regard* (discontent, anger, rejection). Box C.2A includes more information about the individual coding scales.

We conducted preliminary analyses examining correlations among these scales, possible underlying factors, and internal consistency. Based on our analyses, we created a composite parenting score, "supportiveness" (coefficient alpha = .83), by computing the mean scores for parental sensitivity, cognitive stimulation, and positive regard, which were highly and significantly correlated (correlations ranged from .52 to .67). The scales assessing parental insensitivity (detachment, intrusiveness, and negative regard) and the child scales (engagement of parent, sustained attention with objects, and negativity toward parent) were retained as individual scales. The correlations among the three child scales were moderate to high (statistically significant correlations of -.34 to .55). The correlations among the four parenting scales were small to moderate and statistically significant (correlations of .11 to .40), with the exception of supportiveness and detachment (correlation of -.56, significant) and intrusiveness and negative regard (correlation of .52, significant).

A trained coding team leader worked with a six-member coding team to establish and maintain inter-rater reliability throughout the coding period. For the coding of the 24-month parent-child structured play assessment, inter-rater reliabilities on the 9 seven-point scales between the team leader and six coders were established to a criterion of 85 percent (exact or

BOX C.2A

24-MONTH CODING SCALES FOR THE PARENT-CHILD STRUCTURED PLAY ASSESSMENT

Child Scales

Engagement of Parent Reflects the extent to which the child shows, initiates, and/or maintains interaction with the parent. This may be expressed by approaching or orienting toward parent, establishing eye contact with parent, positively responding to parent's initiations, positive affect directed to parent, and/or engaging parent in play.

Sustained Attention Measures the degree to which the child is involved with the toys presented in the three bags. Indicators include the degree to which child "focuses in" when playing with an object and the extent to which child coordinates activities with several objects and/or explores different aspects of a toy.

Negativity toward Parent Reflects the degree to which child shows anger, hostility, or dislike toward parent. Expressions may be overt (for example, forcefully rejecting a toy offered by parent or pushing parent away) or covert (for example, hitting or throwing an object in response to parent's behavior).

Parent Scales

Sensitivity Measures the degree to which the parent observes and responds to the child's cues (gestures, expressions, and signals) during times of distress as well as non-distress. Key features include being child-centered, "tuning in" to the child, manifesting an awareness of child's needs, moods, interests, and capabilities, being flexible in supporting and responding to child's emerging need for autonomy, control, independence, and mastery even while enforcing necessary rules, regulations, and constraints.

Positive Regard Assesses the parent's expression of love, respect and/or admiration for the child. Key features include verbal praising of child's efforts and successes, words of encouragement or support, and nonverbal affect, the way in which parent watches child attentively and looks into the child's face.

Stimulation of Cognitive Development Measures the quality and quantity of the parent's effortful teaching to enhance child's perceptual, cognitive, and linguistic development. Key features include being aware of the child's developmental level, efforts to bring the child above that level, flexibility and timing of instructions or explanations, and use of complex and varied language.

Detachment Measures the parent's lack of awareness, attention, and engagement with the child. Key features include being inattentive, perfunctory, or cold when interacting with child or, at the higher levels, complete lack of attention to or interaction with child.

Intrusiveness Assesses the degree to which the parent exerts control over the child rather than acting in a way that recognizes and respects the validity of the child's perspective. Intrusive interactions are clearly adult-centered rather than the child-centered and involve imposing the parent's agenda on the child despite signals that a different activity, level or pace of interaction is needed.

Negative Regard Reflects the parent's expression of discontent with, anger toward, disapproval of, and/or rejection of the child. This may be expressed verbally (words of derogation or disregard toward child) or physically (parental roughness, grabbing, or hitting child).

NOTE: Scales are assessed on a seven-point scale, "1" indicating a very low incidence of the behavior and "7" indicating a very high incidence of the behavior. Scales were adapted by Christy L. Brady, Claudia O'Brien, Lisa Berlin, and Anne M. Ware and are based on the "Early Head Start 14-month Child-Parent Interaction Rating Scales for the Three Bag Assessment" (Ware, Brady, O'Brien, and Berlin 1998), the NICHD Study of Early Child Care 15-, 24-, and 36-month ratings of Parent-Child Interaction, and the "Manual for Coding Freeplay - Parenting Styles from the Newark Observational Study of the Teenage Parent Demonstration" (Brooks-Gunn et al. 1992).

within one point agreement). Thereafter, the team conducted intermittent inter-rater reliability checks on a randomly selected 15 percent of each coder's weekly videotape assignment. A total of 151 tapes (8.5 percent of the 1,782 codable tapes) served as reliability tapes. Percent agreement (exact or within one point) averaged 93 percent across all reliability checks for all coders, with a range of 84 to 100 percent.

d. Psychometric Information for Key Constructed Variables

Table C.2A presents key psychometric data for the main constructed variables included in this report. Table C.2B presents psychometric data for the father study constructed variables. The tables are organized by measurement domain. We include the sample size, the possible range of values for each variable, the actual range found in the Early Head Start sample, the sample mean, standard deviation, and the internal consistency reliability (coefficient alpha). In Table C.2A, these psychometric data are presented for the full sample, that is, with the program and control groups combined. In Table C.2B, these psychometric data are presented for the program group.

TABLE C.2A

DESCRIPTIVE INFORMATION FOR COMPOSITE VARIABLES CONSTRUCTED FROM 24-MONTH PARENT INTERVIEWS AND CHILD ASSESSMENTS, FOR THE FULL SAMPLE

Measure	Sample Size	Possible Range		Range		Mean	Standard Deviation	Internal Consistency Reliability[a]
		Minimum	Maximum	Minimum	Maximum			
CHILD COGNITIVE DEVELOPMENT								
Bayley Scales of Infant Development – Second Edition: Mental Development Index (MDI)	1,739	49	150	49	134	89.2	13.7	NA
CHILD LANGUAGE DEVELOPMENT								
MacArthur Communicative Development Inventories (CDI)—Vocabulary Production	2,026	0	100	0	100	54.7	22.9	.98
MacArthur CDI—Sentence Complexity	1,943	0	37	0	37	8.2	8.4	.95
CHILD SOCIAL EMOTIONAL WELL-BEING								
Parent-Child Structured Play: Engagement	1,732	1	7	1	7	4.3	1.1	NA
Parent-Child Structured Play: Negativity Toward Parent	1,732	1	7	1	7	1.7	1.0	NA
Parent-Child Structured Play: Sustained Attention with Objects	1,732	1	7	1	7	5.0	1.0	NA
Bayley Behavioral Rating Scale (BRS) – Emotional Regulation	1,868	7	35	7	35	25.3	5.5	.92
Bayley BRS– Orientation/Engagement	1,870	6	30	6	30	22.4	4.3	.83
Child Behavior Checklist– Aggressive Subscale	2,052	0	60	0	60	21.6	10.6	.91
EMOTIONAL SUPPORT FOR THE CHILD								
HOME: Emotional Responsivity	1,902	0	7	0	7	6.1	1.4	.74
Parent-Child Structured Play: Supportiveness	1,732	1	7	1	7	4.0	1.0	.83
PARENT'S STIMULATION OF LANGUAGE AND LEARNING								
Home Observation for Measurement of the Environment (HOME): Total Score	1,904	0	31	8.3	31	26.4	3.5	.76

TABLE C.2A *(continued)*

Measure	Sample Size	Possible Range		Range		Mean	Standard Deviation	Internal Consistency Reliability[a]
		Minimum	Maximum	Minimum	Maximum			
HOME: Support of Cognitive, Language, and Literacy Environment	2,096	0	12	0	12	10.2	1.7	.68
Parent-Child Activities	2,072	1	6	1	6	4.5	0.8	.78
HOME: Maternal Verbal-Social Skills	1,949	0	3	0	3	2.8	0.6	.71
NEGATIVE PARENTING BEHAVIOR								
Parent-Child Structured Play: Detachment	1,730	1	7	1	7	1.4	0.9	NA
Parent-Child Structured Play: Intrusiveness	1,732	1	7	1	7	1.9	1.0	NA
Parent-Child Structured Play: Negative Regard	1,732	1	7	1	7	1.4	0.8	NA
HOME: Absence of Punitive Interactions	1,900	0	5	0	5	4.4	1.2	.78
KNOWLEDGE OF CHILD DEVELOPMENT								
Knowledge of Infant Development Inventory (KIDI)	2,088	1	4	1.8	4.0	3.4	0.4	.56[b]
DISCIPLINE STRATEGIES								
Mild Discipline Only	2,104	0	1	0	1	0.4	0.5	NA
Discipline Severity Index	2,104	1	5	1	5	2.7	1.7	NA
SELF-SUFFICIENCY								
Family Resource Scale	2,223	39	195	68.3	195	152.9	19.4	.91
PARENT MENTAL HEALTH AND FAMILY FUNCTIONING								
Parenting Stress Index (PSI)—Parent-Child Dysfunctional Interaction	2,077	12	60	12	56.7	17.2	5.8	.78
PSI—Parental Distress	2,078	12	60	12	60	25.4	9.3	.82
Family Environment Scale (FES)—Conflict	1804	1	4	1	4	1.71	0.54	.67
Composite International Diagnostic Interview (CIDI) – Short Form: Major Depression (probability)[c]	2,104	0	90.8	0	90.8	12.6	30.0	NA

Source: Parent interviews, child assessments, interviewer observations, and assessments of parent-child structured play assessments conducted when children were approximately 24 months old, and Parent Services Interviews conducted approximately 15 months after enrollment.

[a]Reliability was estimated using Cronbach's coefficient alpha formula.

TABLE C.2A *(continued)*

[b]The KIDI items we used were a subset of the 20 used by the IHDP study. Although the resulting summary score did not meet our .65 internal consistency reliability criterion, we included the score in the impact analysis because parent knowledge was a key outcome for many of the programs and these items have been used successfully in other studies with other samples. It is likely that our reduction of the number of items resulted in the reduced reliability.

[c]A skip logic error in the version of the CIDI that we used prevented us from scoring the CIDI in the usual way. Based on the advice of the CIDI developer, we created 2 versions of the CIDI scores-a lower and upper bound (the true CIDI score is between these two scores). The lower and upper bound scores tend to be 1 to 4 percentage points apart for the full sample and most subgroups. The impact estimates and their significance using both versions are very similar. In the report, we use the lower bound version of the measure (the most conservative estimate of the probability of depression).

TABLE C.2B

DESCRIPTIVE INFORMATION FOR COMPOSITE FATHER STUDY VARIABLES, FOR THE PROGRAM GROUP

Measure	Sample Size	Possible Range		Range		Mean	Standard Deviation	Internal Consistency Reliability[a]
		Minimum	Maximum	Minimum	Maximum			
MOTHER REPORT OF FATHER-CHILD ACTIVITIES								
14-Month Father-Child Activities	1,045	0	20	0	20	13.8	1.2	.77
24-Month Father-Child Activities	1,045	0	20	0	20	14.8	1.3	.81
FATHER REPORT OF FATHER-CHILD ACTIVITIES								
24-Month Caregiving Score[b]	347	1	73	1	73	49.4	11.1	.84
24-Month Social Activities Score[b]	347	1	73	1	73	48.4	11.6	.71
24-Month Cognitive Play Score[b]	347	1	73	1	73	49.4	10.6	.76
24-Month Physical Play Score[b]	347	1	73	1	73	49.4	11.1	.72

Source: Parent interviews conducted when children were approximately 14 months and 24 months old, and father interviews conducted when children were approximately 24 months old.

[a]Reliability was estimated using Cronbach's coefficient alpha formula.
[b]Standard (*T*) scores based on factor analysis of frequency of father-child activities.

C.3 CONSTRUCTION OF TIMELINES

The employment- and education-related outcome variables were constructed from weekly timelines signifying whether the primary caregiver was employed or in a school or training program in each *week* during the 15 months after random assignment. Similarly, the welfare-related outcome variables were constructed using *monthly* timelines signifying whether the family was receiving various forms of public assistance benefits in each month. These timelines were constructed using data from the 6- and 15-month Parent Service Interviews.

Timelines were constructed using start and end dates of spells. Positive integers were used to signify that the caregiver was in a spell in a week (month) after random assignment. If the reported *day* that a spell started or ended was missing, we set the day to "15." However, if the month or year was missing, the relevant timeline entries were set to "missing" using alphabetic codes. A timeline entry could have multiple codes pertaining to overlapping spells. For example, a code of '1B' signified that the caregiver was working on the first job reported in the survey, but also that we were unsure whether she was working on job 2.

The variables pertaining to weeks spent employed, in school or training, or on welfare during the 15 months after random assignment were constructed by summing the number of weeks (months) that the relevant timelines had positive codes. The variables were set to zero if the family had no spells, and they were set to "missing" if any timeline entry had a missing code but no positive code. Similarly, variables pertaining to hours spent in employment and education activities were constructed using the timelines and survey information on the number of hours per week the caregiver usually spent in each activity. Finally, we constructed variables pertaining to the amount of public assistance benefits that were received using the welfare timelines and information on the monthly amount of benefits received for each spell of receipt.

C.4 TABLES OF NONMISSING VALUES FOR CONSTRUCTS

In the body of this report, all sample sizes given in tables of findings are for the full sample of respondents to the relevant data source (such as the 6-month parent services interview or the 24-month Bayley). One important characteristic of the Early Head Start data is that most parents and children who responded at all completed most of the questions, items, and constructs derived from the items. Table C.4A gives the percentage responding to each variable or construct used in the impact analyses described in the body of this report.

The variables are organized by type, with the service-use variables listed first, followed by the child, parenting, and family outcomes. Although in a few cases response rates are below 90 percent, as the table shows, 99 percent or more of the respondents completed the vast majority of items.

TABLE C.4A

DATA ITEM RESPONSE FOR KEY OUTCOME MEASURES USED IN THE EARLY HEAD START INTERIM IMPACT ANALYSIS FOR INTERVIEW RESPONDENTS, BY RESEARCH STATUS (PERCENTAGE)

Outcome Measure	Program Group	Control Group
Service Receipt		
Received Any Key Services	99.7	98.1
Received Any Core Services	99.8	98.1
Received at Least 1 Home Visit	99.8	99.2
Received Home Visits at Least Monthly		
1st Followup	98.8	98.1
2nd Followup	98.5	98.3
Received Home Visits at Least Weekly		
1st Followup	98.8	98.1
2nd Followup	98.5	98.3
Met with a Case Manager at Least Once	99.7	99.5
Met with a Case Manager at Least Monthly		
1st Followup	93.2	92.4
2nd Followup	97.5	98.3
Met with a Case Manager at Least Weekly		
1st Followup	93.2	92.4
2nd Followup	97.5	98.3
Received Any Parenting Information	99.9	99.5
Participated in Any Group Parenting Activity	99.2	98.9
Participated in Parenting Classes	99.8	99.7
Participated in Any Group Parent-Child Activities	98.2	98.5
Participated in Any Parent Support Group Meetings	99.3	99.5
Received Any Child Care	98.7	99.0
Received Any Center-Based Child Care	97.4	96.7
Received Child Care in Concurrent Arrangements	98.7	99.0
Average Hours/Week of Any Child Care	100.0	100.0
Average Hours/Week of Center-Based Child Care	100.0	100.0
Child Was Identified with a Disability	98.4	98.0
Received Early Intervention Services for Child with a Disability	99.7	99.9
Percentage of Focus Children who Visited a Doctor		
For any reason	100.0	99.9
For a check-up	99.9	99.8
For treatment of an acute or chronic illness	99.7	99.7
Average Number of Doctor Visits		
For checkups	85.9	82.6
For treatment of an acute or chronic illness	85.8	83.3
Percentage Who Had Sufficient Well-Child Doctor Visits During Their:		
First year	99.6	99.6
Second year	99.7	99.1
Percentage of Focus Children Who Visited an Emergency Room	99.8	99.9
Average Number of Emergency Room Visits:		
For any reason	88.2	85.7
For treatment of accident/injury	99.6	99.1

TABLE C.4A *(continued)*

Outcome Measure	Program Group	Control Group
Average Number of Hospitalizations During Child's:		
First year	99.7	99.7
Second year	100.0	99.7
Average Number of Nights Hospitalized During Child's:		
First year	99.7	99.5
Second year	99.9	99.5
Average Percentage of Focus Children Who Visited a Dentist	99.1	99.5
Average Percentage of Focus Children Who Received Any Immunizations	99.9	99.7
Average Percentage Who Received:		
Any screening test	98.8	98.7
A hearing test	91.7	90.2
A lead test	91.3	89.3
Average Percentage of Children Who Received Any Health Services	99.0	98.7
Average Parent-Reported Health Status of Child		
When child was 14 months old	100.0	99.7
When child was 24 months old	99.8	99.8
Percentage Who Were Reported by Parents to be in Fair or Poor Health		
When child was 14 months old	100.0	99.7
When child was 24 months old	99.8	99.8
Percentage of Families Who Received Any Health Services	99.2	99.5
Percentage of Families Who Received Any Mental Health Services	99.9	99.8
Average Self-Reported Health Status of Parent or Guardian		
When child was 14 months old	99.1	99.0
When child was 24 months old	99.8	99.4
Received Any Education-Related Services	100.0	100.0
Received Any Employment-Related Services	99.5	98.9
Received Any Housing Assistance	97.6	98.2
Received Any Transportation Assistance	99.7	99.8
Structuring The Environment		
Percentage of Parents Who Set a Regular Bedtime for Child	100.0	100.0
Percentage of Parents and Children Who Have Regular Bedtime Routines	100.0	100.0
Parent's Stimulation of Language and Learning		
Percentage of Parents Who Read to Child Every Day	98.4	97.4
Percentage of Parents Who Read to Child at Bedtime	100.0	100.0
Hostility and Punishment		
Negative Regard (Structured Play)	100.0	100.0
Absence of Punitive Interactions (HOME)	100.0	100.0
Whether the Parent Spanked the Child in the Previous Week	100.0	100.0
Knowledge of Child Development		
Knowledge of Infant Development Inventory	100.0	100.0
Cognitive Development		
Bayley Mental Development Index	83.2	81.2
Percent with Bayley MDI Below 100	83.2	81.2
Percent with Bayley MDI Below 85	83.2	81.2

TABLE C.4A *(continued)*

Outcome Measure	Program Group	Control Group
Language Development		
CDI Vocabulary Production Score	96.8	94.7
CDI Percent Combining Words	98.2	97.2
CDI Sentence Complexity Score	92.9	90.7
Social-Emotional Development		
Engagement of Parent	83.5	80.2
Negativity Toward Parent	83.5	80.2
Sustained Attention with Objects	83.5	80.2
Emotional Regulation in a Cognitive Task (Average Score)	89.2	87.3
Orientation/Engagement in a Cognitive Task (Average Score)	89.5	87.5
Aggressive Behavior Problems (Average Score)	97.7	96.6
Emotional Support		
Emotional Responsivity	90.6	89.2
Supportiveness	83.5	80.2
Structuring the Environment		
Percentage of Parents Who Set a Regular Bedtime for Child	99.8	99.8
Percentage of Parents and Children Who Have Regular Bedtime Routines	98.9	98.8
Parent's Stimulation of Language and Learning		
Home Observation for Measurement of the Environment (HOME) Total Score	90.9	89.0
Support of Cognitive, Language, and Literacy Environment	99.1	99.1
Parent-Child Activities	98.4	97.6
Parent's Verbal-Social Skills		
Maternal Verbal-Social Skills	92.7	91.6
Insensitivity		
Detachment (Structured Play)	83.4	80.2
Intrusiveness (Structured Play)	83.5	80.2
Hostility and Punishment		
Negative Regard (Structured Play)	83.5	80.2
Absence of Punitive Interactions (HOME)	90.8	88.7
Whether the Parent Spanked the Child in the Previous Week	98.2	97.8
Knowledge of Child Development		
Knowledge of Infant Development Inventory	98.7	98.7

TABLE C.4A *(continued)*

Outcome Measure	Program Group	Control Group
Percentage of Parents Who Suggested Responses to Hypothetical Situations with Child:		
Prevent or Distract	99.5	99.5
Remove Child or Object	99.5	99.5
Talk and Explain	99.5	99.5
Threaten or Command	99.5	99.5
Shout	99.5	99.5
Physical Punishment	99.5	99.5
Percentage of Parents Suggesting Only Mild Responses to the Hypothetical Situations	99.5	99.5
Index of Severity of Discipline Strategies Suggested	99.5	99.5
Safety Practices		
Family has Syrup of Ipecac in the House in Case of a Poison Emergency	99.5	99.7
Parent/Guardian has or Knows how to Find the Telephone Number for the Poison Control Center	99.7	99.6
Family Uses a Gate or Door at the Top of Stairs	94.3	93.3
Family Uses Guards or Gates for Windows	87.7	86.8
Family has Covers on Electrical Outlets that Child can Reach	97.8	97.6
Family's Homes has Working Smoke Alarms	98.5	98.7
Interviewer Observed that Child's Play Area is Safe	89.3	87.6
Family Uses Car Seat for Child and Child Rides in Back Seat	99.3	99.2
Any Self-Sufficiency Activities		
Percentage of Parents Ever Employed or in an Education or Job Training in First 15 Months	99.7	99.5
1st Quarter	99.4	99.2
2nd Quarter	99.5	99.1
3rd Quarter	98.6	98.5
4th Quarter	98.2	97.6
5th Quarter	99.2	97.6
Average Hours per Week Employed at All Jobs and in Any Education or Training in First 15 Months	93.6	92.6
Employment Activities		
Percentage of Parents Ever Employed in First 15 Months	99.6	99.5
1st Quarter	99.5	99.5
2nd Quarter	99.6	99.4
3rd Quarter	99.1	99.1
4th Quarter	98.7	98.1
5th Quarter	99.1	98.5
Average Hours per Week Employed at All Jobs in First 15 Months	96.1	95.9

TABLE C.4A *(continued)*

Outcome Measure	Program Group	Control Group
Education Activities		
Percentage of Parents Who Ever Participated in an Education or Training Program in First 15 Months	99.2	99.3
1st Quarter	99.5	99.4
2nd Quarter	99.1	99.0
3rd Quarter	98.5	98.5
4th Quarter	98.3	98.5
5th Quarter	98.8	98.1
Average Hours per Week in an Education Program During First 15 Months	96.9	96.4
Types of Education Activities		
High School	99.6	99.9
High School or Alternative	99.6	99.9
Adult Basic Education	99.8	99.9
English as a Second Language	99.8	99.8
GED Preparation	99.6	99.7
Any Vocational Education	99.3	99.8
2-year College	99.8	99.8
4-year College	99.8	99.9
Degrees and Credentials Received		
Highest Grade Completed at Second Followup	100.0	100.0
GED Certificate	99.9	99.5
High School Diploma	99.9	99.6
Received a High School Degree or GED Between Enrollment and Second Followup	99.8	99.4
Vocational, Business, or Secretarial Diploma	99.8	99.4
Associate's Degree	99.9	99.5
Bachelor's Degree	99.8	99.5
Welfare Program Participation		
Percentage of Parents Who Received Any Welfare Benefits During First 15 Months	98.4	98.0
Total Welfare Benefits Received During First 15 Months	84.1	81.6
Percentage of Parents Who Received AFDC or TANF Benefits During First 15 Months	97.7	97.6
1st Quarter	96.8	96.2
2nd Quarter	97.2	97.3
3rd Quarter	96.2	95.5
4th Quarter	96.0	95.5
5th Quarter	94.3	93.3
Total AFDC or TANF Benefits Received During First 15 Months	91.3	90.2
Average Total Food Stamp Benefit Received During First 15 Months	91.7	90.7

TABLE C.4A *(continued)*

Outcome Measure	Program Group	Control Group
Family Income and Resources		
Percentage of Families with Income Above the Poverty Line at Second Followup		
Dunst Family Resource Scale	91.1	92.4
First Followup	99.1	99.3
Second Followup	99.5	99.4
Parent's Physical Health		
Parent's Health Status	99.6	99.4
Parent's Mental Health		
Parental Distress	98.4	98.1
Parent-Child Dysfunctional Interaction	98.4	97.9
CIDI-Depression – Average Probability	99.7	99.4
Family Functioning		
Family Environment Scale – Family Conflict Average Score	84.1	86.7

NOTE: Item-level response rates were computed by dividing the number of respondents who completed a particular item by the number of respondents who completed the interview of interest. For the Bayley and the parent-child structured play assessment, response rates were computed using the number of respondents to the 24-month PI as the denominator.

C.5 IMPLEMENTATION MEASURES

The first step to measuring the extent of program implementation is establishing a clear definition of a fully implemented program. For purposes of this research, we defined the degree of implementation as the extent to which a program offers services meeting the requirements of selected key elements of the revised Head Start Program Performance Standards and the Early Head Start grant announcement. The degree of implementation across Early Head Start program components could vary within programs at any given point in time and especially during early stages of program development, reflecting variation in program emphases and levels of difficulty with implementing particular services in particular communities. Likewise, the degree of implementation of each program component could vary across programs, reflecting differences in program emphases and circumstances. The degree of implementation could also vary across programs in the early stages due to differences in programs' understanding of the revised Head Start Program Performance Standards. In fall 1997, the performance standards were not yet official, and the Head Start Bureau had not yet used the standards to monitor programs.

The degree to which programs implement Early Head Start and the quality of the services they provide are intertwined. The Early Head Start grant announcement not only specified the types of services that programs must provide, but explicitly required programs to provide high-quality services. Thus, in order to determine the extent to which programs have met the federal government's vision for Early Head Start and have become fully implemented, we must assess both the degree to which Early Head Start research programs have implemented the required services and, to the extent we are able, the quality of the services provided. Because established measurement tools do not exist for assessing the quality of many Early Head Start services, and because of the importance of child care, we have focused our first assessment of service quality on center-based child care, drawing on the child care research literature for measuring quality.

To help us assess the extent of program implementation, we developed rating scales, checklists for organizing the information needed to assign ratings, and a process for assigning ratings to each research program. The rating scales are designed to help us reduce the large amount of implementation information into summary variables for testing hypotheses about how implementation relates to outcomes and to help us summarize the research programs' progress toward full implementation over time.

To assess the quality of center-based child care, we used an established quality measure--the Infant/Toddler Environment Rating Scale (ITERS) (Harms, Cryer, and Clifford 1990)--and examined structural quality indicators, including group sizes and child-staff ratios. The ITERS measures were collected in observations of center-based child care provided directly by Early Head Start research programs and observations of Early Head Start children's classrooms in community child care centers. These observations were made in connection with developmental assessments of children in the research sample at 14 and 24 months of age.

The following sections describe the process we followed for assessing the extent of program implementation in the Early Head Start research programs in fall 1997. We begin by describing the data sources we used in developing implementation ratings and then describe our methodology for developing the implementation rating scales and for assigning ratings to individual programs.

a. Date Sources for Implementation Ratings

To assess the extent of program implementation, we relied primarily on information collected during site visits conducted in fall 1997. With one member of the site visit team visiting each program, site visitors conducted individual and group interviews with program staff, parents, community members, and local researchers; reviewed case files to learn about patterns of services provided to individual families; reviewed other program records; and

observed service delivery during a home visit or in a program-operated child care center. In addition, all Early Head Start staff at the research programs completed a self-administered survey about their background, qualifications, education and training, and satisfaction with the work environment. To ensure consistency of data collection across individual programs while allowing site visitors to tailor discussion guides to the circumstances of individual programs, all six site visitors participated in a training session prior to the visits and followed discussion guides for conducting individual and group interviews while on-site.

To facilitate the assignment of implementation ratings for each program, site visitors assembled the site visit and staff survey information in checklists organized according to program components. In addition, site visitors wrote detailed program profiles based on information obtained during the visits. Program directors and their local research partners reviewed the profiles and checklists for their programs, provided corrections of erroneous information, and in some cases provided additional clarifying information.

b. Implementation Rating Scales

To develop implementation rating scales, we identified specific criteria for determining the degree to which programs implemented Early Head Start's three major program areas: (1) early childhood development and health services, (2) family and community partnerships, and (3) program design and management. To refine our assessment, we created distinct criteria for both family and community partnerships. Likewise, within program design and management we created separate criteria for staff development and program management systems.

The criteria encompass key program requirements in the Early Head Start grant announcement issued on March 17, 1995, and the revised Head Start Program Performance Standards first issued on November 5, 1996. Because the purpose of the ratings was to identify and track over time the key elements of program implementation and not to monitor compliance,

we focused on the key requirements needed to help us identify pathways to full implementation and high-quality services and to summarize and quantify a large amount of qualitative information on program implementation. We reviewed our initial criteria with representatives of the Head Start Bureau and the Early Head Start technical assistance network to ensure that our criteria focused on an appropriate subset of program requirements. We also solicited comments from members of the Early Head Start Research Consortium. After incorporating the comments and suggestions we received, we finalized the criteria and converted them into rating scales for each of the five program components we examined. Table C.5.A summarizes the program elements we assessed under each of the five program components.

For each program element, we created a rating scale containing up to five levels of implementation, ranging from minimal implementation (level 1) to enhanced implementation (level 5). We created fewer than five implementation levels in our rating scales for a few of the program elements we examined, because our criteria were not complex enough to identify five distinct levels of implementation. For our analysis of program implementation, we considered programs rated at levels 1 through 3 to have reached partial implementation and programs rated at levels 4 and 5 to have reached full implementation of the particular program element rated. Table C.5.B provides our definition for each rating level. We use the term "full implementation" as a research term to indicate that the program has substantially implemented most of the program elements.

TABLE C.5.A

PROGRAM ELEMENTS INCLUDED IN THE EARLY HEAD START IMPLEMENTATION RATING SCALES

Scale	Program Element
Early Childhood Development and Health Services	Frequency of services Developmental assessments Health services Child care Parent involvement in child development services Individualization of services Group socialization activities (for home-based and mixed-approach programs)
Family Partnerships	Individualized family partnership agreements Availability of services Frequency of services Parent involvement Father initiatives
Community Partnerships	Collaborative relationships with other service providers Advisory committees Transition plans
Staff Development	Supervision Training Staff turnover Compensation Staff morale
Management Systems and Procedures	Policy council Goals, objectives, and plans Program self-assessment Community needs assessment

TABLE C.5.B

EARLY HEAD START IMPLEMENTATION RATING SCALE LEVELS

Level		Definition
Partial Implementation		
1	Minimal implementation	Program shows little or no evidence of effort to implement the relevant program element.
2	Low-level implementation	Program has made some effort to implement the relevant program element.
3	Moderate implementation	Program has implemented some aspects of the relevant program element.
Full Implementation		
4	Full implementation[a]	Program has substantially implemented the relevant program element.
5	Enhanced implementation	Program has exceeded expectations for implementing the relevant program element.

[a]We use the term "full implementation" throughout this report as a research term.

c. Implementation Rating Process

We designed a consensus-based approach to assigning implementation ratings to each Early Head Start research program. Following our 1997 site visits, we assembled a rating panel of four national evaluation team members and two outside experts. Each rating panel member was given responsibility for rating a subset of the research programs. For each program, the site visitor and two panel members reviewed the extensive documentation in more than 50 pages of checklists and written materials, and assigned ratings independently based on the program profile and the checklist. Once these independent ratings were completed for all programs, the rating panel met in May 1998 to review the three sets of ratings produced for each program, discuss differences in ratings across panel members, and assign consensus ratings for each program. During the course of this process, the rating panel made minor modifications to the rating scales to clarify ambiguities and create clearer distinctions between scores in some areas. The analyses of the ratings we present in this report are based on the consensus ratings assigned in May 1998 by the rating team.

After we completed the rating process, we checked the validity of the consensus-based implementation ratings by comparing them to independent ratings. After the Head Start Bureau completed monitoring visits to all 17 research programs in spring 1998, we asked a member of the monitoring team to use information collected during the monitoring visits to rate the programs' implementation using the rating scales we developed. We did not share our rating results or information collected during our site visits with the monitoring team. The ratings assigned by the monitoring team member were very similar to those assigned by our rating panel and confirmed that our ratings provide a good assessment of program implementation.

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APPENDIX D

ANALYTIC ISSUES AND DETAILS

This appendix describes details of analyses conducted to test a number of assumptions underlying the analytic approach taken in our assessment of Early Head Start's impacts on children and families. The specific issues that we investigated and report here are:

D.1 COMPARING THE BASELINE CHARACTERISTICS OF PROGRAM AND CONTROL GROUP MEMBERS

In theory, randomized experimental designs ensure that differences in the average outcomes between program and control groups can be attributed to the intervention under investigation. This rigor is possible, however, only if the random assignment process generates program and control groups with similar characteristics, on average, at the time of random assignment. Thus, the benefits of the random assignment design can be realized only if random assignment is implemented correctly and produces equivalent research groups.

We believe that the process used in the Early Head Start study to randomly assign families to the program or control groups was implemented correctly. MPR staff controlled the process, random numbers generated from a computer were used to assign the families to a research status, and, to the best of our knowledge, local programs and research staff followed the specified procedures for obtaining applicants and notifying families of their group assignment.

In this appendix, we compare the characteristics of program and control group families to check that the random assignment process was implemented correctly. First, we discuss data sources and methods and then discuss analysis results.

1. Data Sources and Methods

We used data from the Head Start Family Information System (HSFIS) application and enrollment forms for the analysis. This information was collected *prior* to random assignment, so neither the quality of the data nor item response should differ by research status if random assignment was conducted properly. As discussed in Appendix C, the HSFIS data contain demographic information on families, primary caregivers, and focus children.

We used standard statistical tests to assess the similarity of the two research groups, including univariate t-tests to compare variable means for binary and continuous variables and

chi-squared tests to compare distributions of categorical variables. In addition, we conducted a more formal multivariate analysis to test the hypothesis that variable means and distributions are *jointly* similar. For this analysis, we estimated logit regression models where the probability a family is in the program group was regressed on the HSFIS variables, and used chi-squared tests to assess whether the coefficients on these explanatory variables were jointly significant. This multivariate procedure adjusts for the fact that univariate tests are expected to produce some significant test statistics by chance, even when the program and control groups are identical. For example, if the hypothesis tests are conducted at the 10 percent level of significance, then we would expect that 10 percent of independent tests would be falsely rejected. The multivariate procedure also accounts for correlations across measures, whereas the univariate procedure assumes that the measures are independent.

For several reasons, our main approach was to conduct the analysis using the sample pooled across all 17 research sites rather than conduct separate analyses by site. First, pooling increases the power of the statistical tests. Second, it allows us to examine more HSFIS variables, because we cannot accurately examine program and control group differences by site for characteristics that are relatively uncommon. Finally, and most important, we used the *same* random assignment procedures for each site, so that we had no reason to believe that there would be differences in results across sites. However, we also conducted the analysis separately by site for selected HSFIS variables and display *p*-values for these tests.

2. Analysis Results

Table D.1A displays analysis results for the sample pooled across the 17 research sites. The table displays variable distributions for the program and control groups, as well as *p*-values for testing differences across the two groups. Table D.1B displays *p*-values by site for 12 selected variables.

The results indicate that random assignment produced program and control groups with equivalent characteristics. For the full sample, the program and control group differences are statistically significant at the 10 percent level for only 3 of the 47 univariate tests (which is less than the approximately 5 tests that would be expected by chance), and only 4 of the tests are statistically significant at the 15 percent level. Furthermore, the joint test from the multivariate regression model yields a *p*-value of .630. Finally, very few (15 of 207) univariate tests for 12 key variables are rejected at the 10 percent level across the sites, and the significant test statistics are scattered across sites and variables. We conclude that random assignment produced equivalent research groups.

TABLE D.1A

COMPARISON OF THE BASELINE CHARACTERISTICS OF ALL PROGRAM AND CONTROL GROUP MEMBERS

Variable	Program Group	Control Group	P-Value for Testing Differences
Site Characteristics			
Program Approach			.813
Center-based	20.2	20.6	
Home-based	46.7	45.6	
Mixed	33.0	33.9	
Overall Implementation Level			.957
Full and early	34.5	34.8	
Full but late	35.0	35.1	
Never	30.5	30.0	
Family and Parent Characteristics			
Age of Mother at Birth of Focus Child			.803
Younger than 20	39.0	39.5	
20 to 25	33.2	32.0	
25 or older	27.9	28.5	
Mother Was Younger than 19 at First Birth	42.9	41.2	.336
Highest Grade Completed			.175
Less than 12	47.7	47.8	
12 or earned a GED	27.3	29.8	
More than 12	24.9	22.4	
Race and Ethnicity			.968
White non-Hispanic	37.3	37.1	
Black non-Hispanic	34.2	35.0	
Hispanic	23.8	23.4	
Other (Asian or Pacific Islander, American Indian, Eskimo, Aleut)	4.7	4.5	
Primary Occupation			.826
Employed	22.9	23.8	
In school or a training program	22.0	21.4	

TABLE D.1.A *(continued)*

Variable	Program Group	Control Group	P-Value for Testing Differences
Other	55.0	54.7	
English Language Ability			.485
Primary language is English	79.9	78.1	
Primary language is not English but the applicant speaks English well	9.6	10.3	
Primary language is not English and the applicant does not speak English well	10.5	11.6	
Living Arrangements			.762
Living with a spouse	24.9	25.4	
Living with other adults	38.3	39.1	
Living with no other adults	36.8	35.5	
Adult Male Present in the Household	38.1	39.1	.586
Number of Adults in the Household[a]			.804
1	37.8	36.6	
2	49.8	50.8	
3 or more	12.4	12.6	
Number of Children Less than 5 Years Old in the Household Other than the Focus Child			.781
0	64.3	65.1	
1	27.0	26.8	
2 or more	8.7	8.1	
Number of Children Between 6 and 17 in the Household			.454
0	64.3	66.4	
1	23.1	21.3	
2 or more	12.6	12.3	
Number of Moves in the Past Year			.884
0	49.5	49.8	
1	28.9	28.1	
2 or more	21.6	22.1	
Owns Home	11.0	11.1	.907

TABLE D.1.A *(continued)*

Variable	Program Group	Control Group	P-Value for Testing Differences
Household Income as a Percent of the Poverty Level (Percent)			.257
Less than 33	30.2	30.0	
33 to 67	32.5	29.2	
67 to 99	24.0	26.5	
100 or more	13.3	14.3	
Welfare Receipt			
AFDC/TANF[a]	35.6	34.7	.627
Food Stamps	48.0	47.8	.889
Medicaid	76.6	74.7	.217
SSI	7.0	7.0	.978
WIC	87.5	85.9	.235
Public housing	9.5	8.9	.565
Has Inadequate Resources			
Food	4.9	6.3	.111
Housing	12.3	13.3	.432
Money to buy necessities	20.8	21.7	.588
Medical care	14.0	14.7	.577
Transportation	20.9	22.4	.334
Child care	34.4	34.6	.913
Money for supplies	27.1	29.4	.280
Support from friends	12.9	14.0	.414
Parent information	12.5	16.3	.005*
Maternal Risk Index[c]			.469
0 or 1 (low risk)	18.8	17.3	
2 or 3 (moderate risk)	54.2	56.4	
4 or 5 (high risk)	27.1	26.3	
Random Assignment Date			.808
Before 10/96	36.0	36.5	
10/96 to 6/97	30.2	30.8	
After 6/97	33.8	32.7	
Previously Enrolled in Head Start or Another Childhood Development Program[b]	12.8	13.4	.628
Characteristics of Focus Child			
Age (Months)			.330
Unborn	24.2	26.5	

TABLE D.1.A *(continued)*

Variable	Program Group	Control Group	P-Value for Testing Differences
Less than 5	36.1	34.7	
5 or more	39.7	38.7	
Male	51.7	50.4	.493
First Born	62.3	62.8	.783
Birthweight Less than 2,500 Grams[b]	9.9	8.4	.237
Born more than 3 Weeks Early[b]	15.8	12.0	.014*
Stayed in Hospital After Birth[b]	18.3	16.0	.178
People Concerned About the Child's Overall Health and Development[b]	13.0	13.3	.870
Received an Evaluation Because of Concerns About the Child's Overall Health and Development or Because of Suspected Developmental Delay[b]	6.0	6.9	
Risk Categories			
Has established risks[b]	11.6	10.6	.444
Has biological or medical risks[b]	18.3	16.8	.396
Has environmental risks[b]	32.5	36.4	.062*
Covered by Health Insurance[b]	90.1	89.6	.723
Sample Size	**1,513**	**1,488**	

SOURCE: HSFIS application and enrollment forms.

[a]The primary caregiver is considered to be an adult regardless of her age.

[b]These variables pertain to families with focus children who were born at baseline.

[c]This index was constructed by summing the number of the following risk factors that the mother faced: (1) being a teenage mother; (2) having no high school credential; (3) receiving public assistance; (4) not being employed or in school or training, and (5) being a single mother.

*Significantly different from zero at the .10 level, two-tailed test.

TABLE D.1B

P-VALUES FROM TESTS COMPARING THE BASELINE CHARACTERISTICS OF PROGRAM AND CONTROL GROUP MEMBERS, BY SITE

Site	Mother's Age	Mother's Education	Race and Ethnicity	Mother's Primary Occupation	Living Arrangements	Received AFDC or TANF	Received Food Stamps	Maternal Risk Index	Random Assignment Date	Child's Age	Child's Gender
1	.446	.903	.211	.976	.459	.820	.707	.809	.970	.576	.027*
2	.165	.482	.252	.948	.472	.700	.734	.820	.615	.400	.227
3	.927	.782	.795	.219	.073*	.107	.041*	.138	.981	.626	.896
4	.748	.496	.434	.722	.662	.682	.401	.131	1.00	.939	.951
5	.550	.158	.190	.559	.694	.361	.808	.840	.845	.464	.308
6	.863	.943	.505	.393	.598	.611	.757	.715	.666	.344	.952
7	.978	.084*	.840	.071*	.052*	.147	.726	.893	.924	.541	.677
8	.824	.355	.683	.499	.773	.115	.858	.879	1.00	.749	.778
9	.970	.217	.579	.533	.401	.326	.791	.286	.985	.306	.362
10	.594	.786	.507	.619	.680	.225	.331	.185	.707	.592	.951
11	.749	.534	.405	.326	.755	.402	.075*	.156	.454	.040*	.215
12	.549	.716	.739	.411	.681	.200	.095*	.083*	.990	.967	.698
13	.003*	.996	.824	.735	.367	.051*	.920	.406	.670	.751	.347
14	.381	.540	.387	.884	.993	.984	.403	.417	.948	.417	.402
15	.744	.880	.395	.343	.766	.776	.934	.469	.924	.911	.453
16	.075*	.622	.622	.464	.492	.142	.887	.244	.791	.242	.867
17	.733	.804	.367	.188	.358	.122	.895	.714	1.00	.457	.496

SOURCE: HSFIS application and enrollment forms.

*Statistically different from zero at the .10 level, two-tailed test.

D.2 ASSESSING AND CORRECTING FOR THE EFFECTS OF NONRESPONSE TO THE EARLY HEAD START INTERVIEWS AND ASSESSMENTS

In the previous section, we examined the baseline characteristics of program and control group members in the full analysis sample and concluded that they were similar. However, as discussed in Chapter II, not all sample members completed the follow-up interviews and assessments. The response rate was about 75 percent to the 15-month parent services interview (PSI), 70 percent to the 24-month birthday-related parent interview (PI), and 58 percent to the Bayley and video assessments. Furthermore, response rates differed somewhat across sites and subgroups defined by site and family characteristics at baseline. Thus, it was important to test whether program group members who responded to the interviews are fully representative of all program group members, and whether control group members who responded to the interviews are fully representative of all control group members. Furthermore, it was important to test whether the baseline characteristics of *respondents* in the two research groups differ from each other.

If not corrected, the effects of interview nonresponse could lead to two problems:

1. ***The impact estimates could be biased.*** This would occur if the differences in the average baseline characteristics of respondents in the program and control groups were correlated with the outcome variables, and hence, the impact estimates.
2. ***The impact estimates might not be generalizable to the study population of eligible families.*** This would occur if the differences between interview respondents and nonrespondents were correlated with the outcome variables (regardless of whether or not the average characteristics of program group and control group respondents were similar).

In this appendix, we assess the effects of nonresponse and discuss procedures that we used to adjust for potential nonresponse effects.

1. Assessing the Effects of Nonresponse

Our basic approach for assessing the effects of nonresponse to key data sources was to compare the baseline characteristics of (1) respondents in the program and control groups, and (2) respondents to the full sample of respondents and nonrespondents in each research group. We conducted this analysis using data from the HSFIS application and enrollment forms, and with the same methods that we used to compare the baseline characteristics of the full program and control groups (see Appendix D.1). To keep the presentation manageable, we focus our analysis on the 15-month PSIs and the 24-month birthday-related interviews and assessments.

Tables D.2A to D.2D display the following results from the nonresponse analysis, with separate tables displayed for each data source:

1. Variable distributions for interview respondents, by research status
2. Significance levels for testing differences between the characteristics of respondents in the program and control groups.
3. Variable distributions for the full sample of respondents and nonrespondents, by research status
4. Significance levels for testing differences between respondents and the full sample of respondents and nonrespondents, by research status

We find some differences in the characteristics of respondents and the full sample of respondents and nonrespondents for each research group and data source. Response rates for the program group were higher in center-based programs than in home-based or mixed-approach programs, and response rates for both research groups were higher in "fully implemented" programs than in programs that were not fully implemented. Response rates increased with the education level of the primary caregiver. In addition, they were higher if the primary caregiver (1) was employed at the time of random assignment, (2) was married or living with other adults, and (3) spoke English as the primary language at home. Response rates were also slightly larger

for whites than for African Americans and Hispanics, for older mothers than younger ones, and for families not receiving welfare than for those receiving it. The *p*-values to test the hypotheses that variable means and distributions are *jointly* similar are less than .01 for all data sources and for both research groups. These results suggest that program group respondents are not fully representative of the full program group, and control group respondents not fully representative of the full control group.

However, we find fewer differences between the baseline characteristics of program and control group *respondents*. Very few of the differences in the distributions of the baseline variables for respondents in the two research groups are statistically significant. For example, the program and control group differences are statistically significant at the 10 percent level for only 6 of the 48 univariate tests for the 24-month Bayley assessment (which is close to the approximately 5 tests that would be expected by chance). Similarly, only 6 of the tests for the 24-month video assessment, 9 for the 24-month PI, and 3 for the 15-month PSI are statistically significant at the 10 percent level. Furthermore, *none* of the joint tests from the multivariate regression models is statistically significant at the 10 percent level. Finally, very few univariate tests for key variables are rejected at the 10 percent level across the sites, and the significant test statistics are scattered across sites and variables (not shown).

In sum, we find some differences in the characteristics of respondents and nonrespondents, but these differences are not large and in many instances are present for both the program and the control groups. Consequently, the characteristics of respondents in the two research groups are similar, which suggests that our impact estimates are likely to be unbiased.

2. Adjusting for the Effects of Nonresponse

As discussed in Chapter II of this report, the main approach we used to adjust for observed differences between program and control group respondents was to estimate program impacts using regression models. In these models, we regressed outcome variables on a program status indicator variable and a large number of explanatory variables. The explanatory variables were constructed using HSFIS data and pertain to the characteristics of families and children at baseline. An important criterion that we used to select the explanatory variables was that they should capture differences between the characteristics of respondents in the two research groups. Furthermore, to adjust for differences in response rates across sites, we assigned equal weight to each site in the analysis.

We believe that our regression approach produced unbiased estimated impacts because there were not large differences between respondents in the two research groups, and because the regression models controlled for some of these differences. However, the regression procedure does not correct for differences between respondents and nonrespondents in each research group, so the estimated impacts may not be generalizable to the full study population.

To address this problem, we constructed sample weights so that the weighted observable baseline characteristics of respondents were similar to the baseline characteristics of the full sample of respondents and nonrespondents. For each survey instrument, we constructed separate weights for program and control group members using the following three steps:

1. ***We estimated a logit model predicting interview response.*** The binary variable indicating whether or not a family was a respondent to the instrument was regressed on the full set of HSFIS variables used in the nonresponse analysis discussed above, as well as site indicator variables. Only HSFIS variables that were statistically

significant predictors of response status were retained as explanatory variables in the models.[1]

2. ***We calculated a propensity score for each family in the full sample.*** We constructed this score, the predicted probability that a family was a respondent, using the parameter estimates from the logit regression model and the family's HSFIS characteristics. Families with large propensity scores were likely to be respondents, whereas families with small propensity scores were likely to be nonrespondents.

3. ***We constructed nonresponse weights using the propensity scores.*** Families were ranked by the size of their propensity scores and were divided into six groups of equal size. The weight for a family was inversely proportional to the mean propensity score of the group the family was assigned to.[2]

This propensity score procedure yielded large weights for families with characteristics that were associated with low response rates (that is, for those with small propensity scores). Similarly, the procedure yielded small weights for families with characteristics that were associated with high response rates. Thus, the weighted characteristics of respondents were similar, on average, to the characteristics of the entire research sample.

As discussed in Chapter II, our main procedure was *not* to include these weights in the regression models when estimating impacts per eligible applicant and per participant. The use of these weights correctly adjusts for nonresponse bias when impacts are estimated with a simple differences-in-means estimation approach. However, using weights does not correctly adjust for nonresponse bias in a regression context, because the regression-adjusted impact estimates are not weighted correctly (DuMouchel and Duncan 1983).

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[1]We estimated the logit models using the full sample rather than by site, so that we could include many more HSFIS variables and obtain more precise parameter estimates.

[2]The nonresponse weight for a family could be defined to be inversely proportional to that family's actual propensity score. However, families were divided into six groups to "smooth" the weights. The theoretical properties of the smoothed weights can be shown to be superior to those of the unsmoothed weights.

To check the robustness of study findings, however, we did estimate the regression models using the sample weights (see Appendix D.5). In addition, we used weights when estimating impacts using a simple differences-in-means approach (see Appendix D.5). These differences-in-means impact estimates should be unbiased and generalizable to the study population (although they are less precise than the regression-adjusted impact estimates). We inflated the standard errors of the weighted impact estimates to account for design effects due to weighting.

It is important to note that the use of weights and regression models adjusts only for *observable* differences between survey respondents and nonrespondents in the two research groups. The procedure does not adjust for potential unobservable differences between the groups. Thus, our procedures only partially adjust for potential nonresponse bias.

TABLE D.2A

COMPARISON OF THE BASELINE CHARACTERISTICS OF RESPONDENTS AND THE FULL SAMPLE OF RESPONDENTS AND NONRESPONDENTS TO THE 15-MONTH PSI, BY RESEARCH STATUS

Variable	Respondents		Respondents and Nonrespondents	
	Program Group	Control Group[a]	Program Group[b]	Control Group[c]
Site Characteristics				
Program Approach				
Center-based	20.5	18.6	20.2	20.6*
Home-based	47.1	47.6	46.7	45.6
Mixed	32.3	33.8	33.0	33.9
Overall Implementation Level				
Full and early	34.2	34.1	34.5*	34.8*
Full but late	37.7	36.9	35.0	35.1
Never	28.1	29.0	30.5	30.0
Family and Parent Characteristics				
Age of Mother at Birth of Focus Child				
Younger than 20	38.4	40.1	39.0	39.5
20 to 25	33.0	32.3	33.2	32.0
25 or older	28.6	27.6	27.9	28.5
Mother Was Younger than 19 at First Birth	41.8	41.0	42.9	41.2
Highest Grade Completed				
Less than 12	44.8	47.3	47.7*	47.8*
12 or earned a GED	28.8	28.7	27.3	29.8
More than 12	26.4	24.0	24.9	22.4
Race and Ethnicity				
White non-Hispanic	38.2	37.8	37.3	37.1
Black non-Hispanic	34.3	35.1	34.2	35.0
Hispanic	23.3	22.2	23.8	23.4
Other (Asian or Pacific Islander, American Indian, Eskimo, Aleut)	4.2	5.0	4.7	4.5
Primary Occupation				
Employed	22.8	24.5	22.9	23.8
In school or a training program	22.2	21.8	22.0	21.4
Other	55.0	53.7	55.0	54.7

TABLE D.2.A *(continued)*

Variable	Respondents		Respondents and Nonrespondents	
	Program Group	Control Group[a]	Program Group[b]	Control Group[c]
English Language Ability				
Primary language is English	81.1	79.1	79.9*	78.1
Primary language is not English but the applicant speaks English well	8.7	9.9	9.6	10.3
Primary language is not English and the applicant does not speak English well	10.2	11.0	10.5	11.6
Living Arrangements				
Living with a spouse	25.1	26.2	24.9	25.4*
Living with other adults	38.5	40.3	38.3	39.1
Living with no other adults	36.4	33.6	36.8	5.5
Adult Male Present in the Household	38.5	40.3	38.1	39.1
Number of Adults in the Household[d]				
1	37.6	34.4	37.8	36.6*
2	50.0	51.9	49.8	50.8
3 or more	12.4	13.7	12.4	12.6
Number of Children Less than 5 Years Old in the Household Other than the Focus Child				
0	64.9	64.8	64.3	65.1
1	26.3	27.0	27.0	26.8
2 or more	8.9	8.2	8.7	8.1
Number of Children Between 6 and 17 in the Household				
0	64.0	65.4	64.3	66.4
1	22.9	21.9	23.1	21.3
2 or more	13.1	12.7	12.6	12.3
Number of Moves in the Past Year				
0	52.1	51.3	49.5*	49.8*
1	27.8	28.5	28.9	28.1
2 or more	20.1	20.2	21.6	22.1
Owns Home	12.8	11.8	11.0*	11.1
Household Income as a Percent of the Poverty Level (Percent)				
Less than 33	29.2	29.7	30.2	30.0
33 to 67	32.3	29.1	32.5	29.2
67 to 99	24.9	26.7	24.0	26.5
100 or more	13.6	14.6	13.3	14.3

TABLE D.2.A *(continued)*

Variable	Respondents		Respondents and Nonrespondents	
	Program Group	Control Group[a]	Program Group[b]	Control Group[c]
Welfare Receipt				
AFDC/TANF[e]	35.8	34.0	35.6	34.7
Food Stamps	47.7	48.1	48.0	47.8
Medicaid	76.5	76.0	76.6	74.7*
SSI	6.8	7.7	7.0	7.0
WIC	87.7	86.0	87.5	85.9
Public housing	10.0	9.0	9.5	8.9
Has Inadequate Resources				
Food	4.2	6.6*	4.9*	6.3
Housing	11.5	11.7	12.3	13.3*
Money to buy necessities	19.4	20.4	20.8*	21.7*
Medical care	13.6	13.2	14.0	14.7*
Transportation	20.5	22.0	20.9	22.4
Child care	33.1	32.6	34.4*	34.6*
Money for supplies	26.6	29.2	27.1	29.4
Support from friends	12.1	11.8	12.9	14.0*
Parent information	12.4	16.0*	12.5	16.3
Maternal Risk Index[f]				
0 or 1 (low risk)	19.7	18.0	18.8	17.3
2 or 3 (moderate risk)	54.5	55.4	54.2	56.4
4 or 5 (high risk)	25.9	26.6	27.1	26.3
Random Assignment Date				
Before 10/96	36.8	37.5	36.0	36.5*
10/96 to 6/97	30.3	32.7	30.2	30.8
After 6/97	32.9	29.8	33.8	32.7
Previously Enrolled in Head Start or Another Childhood Development Program[e]	12.8	13.5	12.8	13.4
Characteristics of Focus Child				
Age (Months)				
Unborn	25.6	27.5	24.2*	26.5
Less than 5	35.5	33.7	36.1	34.7
5 or more	38.9	38.7	39.7	38.7
Male	50.6	49.3	51.7	50.4
First Born	62.4	62.7	62.3	62.8
Birthweight Less than 2,500 Grams[e]	9.3	7.9	9.9	8.4
Born more than 3 Weeks Early[e]	15.1	12.4	15.8	12.0

TABLE D.2.A *(continued)*

Variable	Respondents		Respondents and Nonrespondents	
	Program Group	Control Group[a]	Program Group[b]	Control Group[c]
Stayed in Hospital After Birth[e]	17.6	16.4	18.3	16.0
People Concerned About the Child's Overall Health and Development[e]	12.3	13.7	13.0	13.3
Received an Evaluation Because of Concerns About the Child's Overall Health and Development or Because of Suspected Developmental Delay[e]	5.6	7.6	6.0	6.9
Risk Categories				
Has established risks[e]	11.2	10.4	11.6	10.6
Has biological or medical risks[e]	17.2	17.4	18.3	16.8
Has environmental risks[e]	29.6	36.4*	32.5*	36.4
Covered by Health Insurance[e]	90.6	91.6	90.1	89.6*
Sample Size	**1,139**	**1,097**	**1,513**	**1,488**

SOURCE: HSFIS application and enrollment forms and 15-month PSI data.

[a]Significance levels are from tests comparing program and control group respondents.

[b]Significance levels are from tests comparing respondents and the full sample of respondents and nonrespondents in the program group.

[c]Significance levels are from tests comparing respondents and the full sample of respondents and nonrespondents in the control group.

[d]The primary caregiver is considered to be an adult regardless of her age.

[e]These variables pertain to families with focus children who were born at baseline.

[f]This index was constructed by summing the number of the following risk factors that the mother faced: (1) being a teenage mother; (2) having no high school credential; (3) receiving public assistance; (4) not being employed or in school or training, and (5) being a single mother.

*Significantly different from zero at the .10 level, two-tailed test.

TABLE D.2B

COMPARISON OF THE BASELINE CHARACTERISTICS OF RESPONDENTS AND THE FULL SAMPLE OF RESPONDENTS AND NONRESPONDENTS TO THE 24-MONTH PI, BY RESEARCH STATUS

Variable	Respondents		Respondents and Nonrespondents	
	Program Group	Control Group[a]	Program Group[b]	Control Group[c]
Site Characteristics				
Program Approach				
Center-based	22.0	19.9	20.2*	20.6
Home-based	45.8	45.6	46.7	45.6
Mixed	32.2	34.5	33.0	33.9
Overall Implementation Level				
Full and early	34.9	34.5	34.5*	34.8*
Full but late	38.2	38.3	35.0	35.1
Never	26.9	27.2	30.5	30.0
Family and Parent Characteristics				
Age of Mother at Birth of Focus Child				
Younger than 20	37.1	39.0	39.0*	39.5
20 to 25	33.8	32.2	33.2	32.0
25 or older	29.0	28.8	27.9	28.5
Mother Was Younger than 19 at First Birth	41.6	40.0	42.9*	41.2
Highest Grade Completed				
Less than 12	44.9	46.1	47.7*	47.8*
12 or earned a GED	28.5	28.6	27.3	29.8
More than 12	26.6	25.3	24.9	22.4
Race and Ethnicity				
White non-Hispanic	38.8	40.3	37.3	37.1*
Black non-Hispanic	33.6	32.4	34.2	35.0
Hispanic	23.5	22.6	23.8	23.4
Other (Asian or Pacific Islander, American Indian, Eskimo, Aleut)	4.1	4.7	4.7	4.5
Primary Occupation				
Employed	25.4	24.9	22.9*	23.8
In school or a training program	22.1	20.7	22.0	21.4
Other	52.5	54.4	55.0	54.7

TABLE D.2.B *(continued)*

Variable	Respondents		Respondents and Nonrespondents	
	Program Group	Control Group[a]	Program Group[b]	Control Group[c]
English Language Ability				
Primary language is English	81.3	78.6	79.9*	78.1
Primary language is not English but the applicant speaks English well	8.2	10.2	9.6	10.3
Primary language is not English and the applicant does not speak English well	10.6	11.2	10.5	11.6
Living Arrangements				
Living with a spouse	25.2	28.4*	24.9	25.4*
Living with other adults	38.0	40.1	38.3	39.1
Living with no other adults	36.8	31.5	36.8	35.5
Adult Male Present in the Household	38.4	42.1*	38.1	39.1*
Number of Adults in the Household[d]				
1	37.9	32.2*	37.8	36.6*
2	49.7	53.9	49.8	50.8
3 or more	12.4	13.9	12.4	12.6
Number of Children Less than 5 Years Old in the Household Other than the Focus Child				
0	64.9	63.7	64.3	65.1
1	26.6	27.5	27.0	26.8
2 or more	8.4	8.8	8.7	8.1
Number of Children Between 6 and 17 in the Household				
0	64.7	66.4	64.3	66.4
1	22.5	20.4	23.1	21.3
2 or more	12.8	13.2	12.6	12.3
Number of Moves in the Past Year				
0	51.5	50.1	49.5*	49.8
1	28.2	28.7	28.9	28.1
2 or more	20.3	21.2	21.6	22.1
Owns Home	12.6	11.7	11.0*	11.1
Household Income as a Percent of the Poverty Level (Percent)				
Less than 33	28.0	28.5	30.2*	30.0
33 to 67	33.0	29.8	32.5	29.2
67 to 99	24.7	27.7	24.0	26.5
100 or more	14.3	13.9	13.3	14.3

TABLE D.2.B *(continued)*

Variable	Respondents		Respondents and Nonrespondents	
	Program Group	Control Group[a]	Program Group[b]	Control Group[c]
Welfare Receipt				
AFDC/TANF[e]	33.5	32.4	35.6*	34.7*
Food Stamps	46.6	46.2	48.0*	47.8*
Medicaid	76.0	73.6	76.6	74.7
SSI	6.8	7.0	7.0	7.0
WIC	88.0	86.1	87.5	85.9
Public housing	10.2	8.7	9.5	8.9
Has Inadequate Resources				
Food	4.9	6.6*	4.9	6.3
Housing	12.4	11.4	12.3	13.3*
Money to buy necessities	19.6	20.9	20.8*	21.7
Medical care	12.8	14.1	14.0*	14.7
Transportation	20.1	22.1	20.9	22.4
Child care	32.9	33.6	34.4*	34.6
Money for supplies	25.0	29.8*	27.1*	29.4
Support from friends	12.7	11.5	12.9	14.0*
Parent information	12.5	15.4*	12.5	16.3
Maternal Risk Index[f]				
0 or 1 (low risk)	20.9	19.0	18.8*	17.3*
2 or 3 (moderate risk)	54.5	56.2	54.2	56.4
4 or 5 (high risk)	24.6	24.8	27.1	26.3
Random Assignment Date				
Before 10/96	35.8	35.3	36.0*	36.5
10/96 to 6/97	28.5	31.4	30.2	30.8
After 6/97	35.7	33.3	33.8	32.7
Previously Enrolled in Head Start or Another Childhood Development Program[e]	12.6	13.7	12.8	13.4
Characteristics of Focus Child				
Age (Months)				
Unborn	24.2	25.9	24.2*	26.5
Less than 5	34.0	33.9	36.1	34.7
5 or more	41.8	40.3	39.7	38.7
Male	51.5	50.2	51.7	50.4
First Born	62.0	61.3	62.3	62.8*
Birthweight Less than 2,500 Grams[e]	9.2	7.8	9.9	8.4
Born more than 3 Weeks Early[e]	14.9	12.6	15.8	12.0

TABLE D.2.B *(continued)*

Variable	Respondents		Respondents and Nonrespondents	
	Program Group	Control Group[a]	Program Group[b]	Control Group[c]
Stayed in Hospital After Birth[e]	17.4	17.2	18.3	16.0
People Concerned About the Child's Overall Health and Development[e]	12.5	15.5*	13.0	13.3*
Received an Evaluation Because of Concerns About the Child's Overall Health and Development or Because of Suspected Developmental Delay[e]	6.0	8.1	6.0	6.9*
Risk Categories				
Has established risks[e]	11.8	10.7	11.6	10.6
Has biological or medical risks[e]	18.5	18.3	18.3	16.8*
Has environmental risks[e]	32.1	36.5*	32.5	36.4
Covered by Health Insurance[e]	91.3	91.1	90.1*	89.6*
Sample Size	**1,092**	**1,021**	**1,513**	**1,488**

SOURCE: HSFIS application and enrollment forms and 24-month PI data.

[a]Significance levels are from tests comparing program and control group respondents.

[b]Significance levels are from tests comparing respondents and the full sample of respondents and nonrespondents in the program group.

[c]Significance levels are from tests comparing respondents and the full sample of respondents and nonrespondents in the control group.

[d]The primary caregiver is considered to be an adult regardless of her age.

[e]These variables pertain to families with focus children who were born at baseline.

[f]This index was constructed by summing the number of the following risk factors that the mother faced: (1) being a teenage mother; (2) having no high school credential; (3) receiving public assistance; (4) not being employed or in school or training, and (5) being a single mother.

*Significantly different from zero at the .10 level, two-tailed test.

TABLE D.2C

COMPARISON OF THE BASELINE CHARACTERISTICS OF RESPONDENTS AND THE FULL SAMPLE OF RESPONDENTS AND NONRESPONDENTS TO THE 24-MONTH BAYLEY ASSESSMENT, BY RESEARCH STATUS

Variable	Respondents		Respondents and Nonrespondents	
	Program Group	Control Group[a]	Program Group[b]	Control Group[c]
Site Characteristics				
Program Approach				
Center-based	22.3	19.9	20.2*	20.6
Home-based	47.0	46.6	46.7	45.6
Mixed	30.7	33.5	33.0	33.9
Overall Implementation Level				
Full and early	36.0	36.3	34.5*	34.8
Full but late	36.4	34.9	35.0	35.1
Never	27.6	28.8	30.5	30.0
Family and Parent Characteristics				
Age of Mother at Birth of Focus Child				
Younger than 20	36.7	40.0	39.0	39.5
20 to 25	34.6	31.7	33.2	32.0
25 or older	28.7	28.3	27.9	28.5
Mother Was Younger than 19 at First Birth	41.0	41.5	42.9*	41.2
Highest Grade Completed				
Less than 12	45.5	46.0	47.7	47.8*
12 or earned a GED	28.9	27.9	27.3	29.8
More than 12	25.6	26.1	24.9	22.4
Race and Ethnicity				
White non-Hispanic	38.9	42.0	37.3	37.1*
Black non-Hispanic	33.2	31.2	34.2	35.0
Hispanic	23.9	21.5	23.8	23.4
Other (Asian or Pacific Islander, American Indian, Eskimo, Aleut)	4.0	5.3	4.7	4.5
Primary Occupation				
Employed	25.1	24.7	22.9*	23.8
In school or a training program	22.5	21.2	22.0	21.4
Other	52.5	54.1	55.0	54.7

TABLE D.2C *(continued)*

Variable	Respondents		Respondents and Nonrespondents	
	Program Group	Control Group[a]	Program Group[b]	Control Group[c]
English Language Ability				
Primary language is English	80.0	80.0	79.9	78.1*
Primary language is not English but the applicant speaks English well	8.8	9.9	9.6	10.3
Primary language is not English and the applicant does not speak English well	11.2	10.1	10.5	11.6
Living Arrangements				
Living with a spouse	25.8	28.1	24.9	25.4*
Living with other adults	37.1	39.3	38.3	39.1
Living with no other adults	37.0	32.6	36.8	35.5
Adult Male Present in the Household	39.5	40.7	38.1	39.1
Number of Adults in the Household[d]				
1	38.4	33.4*	37.8	36.6*
2	48.8	53.4	49.8	50.8
3 or more	12.9	13.2	12.4	12.6
Number of Children Less than 5 Years Old in the Household Other than the Focus Child				
0	65.1	63.6	64.3	65.1
1	26.4	27.3	27.0	26.8
2 or more	8.6	9.1	8.7	8.1
Number of Children Between 6 and 17 in the Household				
0	63.8	65.2	64.3	66.4
1	22.4	20.9	23.1	21.3
2 or more	13.7	13.9	12.6	12.3
Number of Moves in the Past Year				
0	52.1	50.1	49.5*	49.8
1	28.4	28.9	28.9	28.1
2 or more	19.6	21.0	21.6	22.1
Owns Home	13.1	12.1	11.0*	11.1
Household Income as a Percent of the Poverty Level (Percent)				
Less than 33	29.6	29.3	30.2	30.0
33 to 67	32.6	29.1	32.5	29.2
67 to 99	24.4	28.8	24.0	26.5
100 or more	13.5	12.8	13.3	14.3

TABLE D.2C *(continued)*

Variable	Respondents		Respondents and Nonrespondents	
	Program Group	Control Group[a]	Program Group[b]	Control Group[c]
Welfare Receipt				
AFDC/TANF[e]	33.0	33.1	35.6*	34.7
Food Stamps	46.8	47.0	48.0	47.8
Medicaid	76.4	73.9	76.6	74.7
SSI	7.1	6.3	7.0	7.0
WIC	89.6	86.0*	87.5*	85.9
Public housing	9.9	8.6	9.5	8.9
Has Inadequate Resources				
Food	4.7	6.8*	4.9	6.3
Housing	12.2	10.9	12.3	13.3*
Money to buy necessities	19.4	20.9	20.8	21.7
Medical care	12.5	14.0	14.0*	14.7
Transportation	18.4	21.5	20.9*	22.4
Child care	31.4	31.1	34.4*	34.6*
Money for supplies	23.3	28.5*	27.1*	29.4
Support from friends	11.6	10.4	12.9*	14.0*
Parent information	12.5	14.5	12.5	16.3*
Maternal Risk Index[f]				
0 or 1 (low risk)	20.4	19.0	18.8*	17.3
2 or 3 (moderate risk)	55.3	55.9	54.2	56.4
4 or 5 (high risk)	24.3	25.1	27.1	26.3
Random Assignment Date				
Before 10/96	36.9	37.2	36.0	36.5
10/96 to 6/97	28.9	32.0	30.2	30.8
After 6/97	34.2	30.9	33.8	32.7
Previously Enrolled in Head Start or Another Childhood Development Program[e]	12.5	13.0	12.8	13.4
Characteristics of Focus Child				
Age (Months)				
Unborn	24.3	26.9	24.2*	26.5
Less than 5	33.4	32.7	36.1	34.7
5 or more	42.3	40.4	39.7	38.7
Male	50.2	49.9	51.7	50.4
First Born	61.4	61.0	62.3	62.8
Birthweight Less than 2,500 Grams[e]	8.7	7.1	9.9*	8.4
Born more than 3 Weeks Early[e]	14.9	12.0	15.8	12.0

TABLE D.2C *(continued)*

Variable	Respondents		Respondents and Nonrespondents	
	Program Group	Control Group[a]	Program Group[b]	Control Group[c]
Stayed in Hospital After Birth[e]	16.3	16.1	18.3*	16.0
People Concerned About the Child's Overall Health and Development[e]	12.1	16.2*	13.0	13.3*
Received an Evaluation Because of Concerns About the Child's Overall Health and Development or Because of Suspected Developmental Delay[e]	5.0	6.9	6.0*	6.9
Risk Categories				
Has established risks[e]	10.4	9.2	11.6	10.6
Has biological or medical risks[e]	16.6	17.3	18.3*	16.8
Has environmental risks[e]	30.7	36.5*	32.5	36.4
Covered by Health Insurance[e]	92.2	91.6	90.1*	89.6*
Sample Size	**910**	**829**	**1,513**	**1,488**

SOURCE: HSFIS application and enrollment forms and 24-month Bayley assessment data.

[a]Significance levels are from tests comparing program and control group respondents.

[b]Significance levels are from tests comparing respondents and the full sample of respondents and nonrespondents in the program group.

[c]Significance levels are from tests comparing respondents and the full sample of respondents and nonrespondents in the control group.

[d]The primary caregiver is considered to be an adult regardless of her age.

[e]These variables pertain to families with focus children who were born at baseline.

[f]This index was constructed by summing the number of the following risk factors that the mother faced: (1) being a teenage mother; (2) having no high school credential; (3) receiving public assistance; (4) not being employed or in school or training, and (5) being a single mother.

*Significantly different from zero at the .10 level, two-tailed test.

TABLE D.2D

COMPARISON OF THE BASELINE CHARACTERISTICS OF RESPONDENTS AND THE FULL SAMPLE OF RESPONDENTS AND NONRESPONDENTS TO THE 24-MONTH VIDEO ASSESSMENT, BY RESEARCH STATUS

Variable	Respondents		Respondents and Nonrespondents	
	Program Group	Control Group[a]	Program Group[b]	Control Group[c]
Site Characteristics				
Program Approach				
Center-based	24.4	21.0	20.2*	20.6
Home-based	46.1	45.5	46.7	45.6
Mixed	29.5	33.5	33.0	33.9
Overall Implementation Level				
Full and early	34.8	35.9	34.5*	34.8*
Full but late	39.3	38.5	35.0	35.1
Never	25.8	25.6	30.5	30.0
Family and Parent Characteristics				
Age of Mother at Birth of Focus Child				
Younger than 20	36.9	40.6	39.0	39.5
20 to 25	34.4	31.3	33.2	32.0
25 or older	28.7	28.1	27.9	28.5
Mother Was Younger than 19 at First Birth	41.4	42.4	42.9	41.2
Highest Grade Completed				
Less than 12	46.0	46.3	47.7	47.8
12 or earned a GED	28.0	29.5	27.3	29.8
More than 12	26.0	24.2	24.9	22.4
Race and Ethnicity				
White non-Hispanic	38.8	40.9	37.3*	37.1*
Black non-Hispanic	32.7	32.4	34.2	35.0
Hispanic	25.2	22.8	23.8	23.4
Other (Asian or Pacific Islander, American Indian, Eskimo, Aleut)	3.3	4.0	4.7	4.5
Primary Occupation				
Employed	26.8	24.5	22.9*	23.8
In school or a training program	22.4	21.3	22.0	21.4
Other	50.8	54.2	55.0	54.7

TABLE D.2D *(continued)*

Variable	Respondents		Respondents and Nonrespondents	
	Program Group	Control Group[a]	Program Group[b]	Control Group[c]
English Language Ability				
Primary language is English	80.0	80.0	79.9*	78.1
Primary language is not English but the applicant speaks English well	8.3	9.9	9.6	10.3
Primary language is not English and the applicant does not speak English well	11.7	10.1	10.5	11.6
Living Arrangements				
Living with a spouse	25.5	27.5	24.9	25.4*
Living with other adults	38.4	40.6	38.3	39.1
Living with no other adults	36.0	31.8	36.8	35.5
Adult Male Present in the Household	39.3	41.1	38.1	39.1*
Number of Adults in the Household[d]				
1	37.5	32.6	37.8	36.6*
2	49.6	53.7	49.8	50.8
3 or more	12.9	13.7	12.4	12.6
Number of Children Less than 5 Years Old in the Household Other than the Focus Child				
0	65.1	63.4	64.3	65.1*
1	26.6	27.1	27.0	26.8
2 or more	8.3	9.5	8.7	8.1
Number of Children Between 6 and 17 in the Household				
0	63.9	65.4	64.3	66.4
1	23.3	21.1	23.1	21.3
2 or more	12.8	13.6	12.6	12.3
Number of Moves in the Past Year				
0	52.0	50.2	49.5*	49.8
1	28.7	27.8	28.9	28.1
2 or more	19.3	22.0	21.6	22.1
Owns Home	13.5	12.2	11.0*	11.1
Household Income as a Percent of the Poverty Level (Percent)				
Less than 33	29.2	29.3	30.2	30.0
33 to 67	31.8	28.4	32.5	29.2
67 to 99	24.7	28.7	24.0	26.5
100 or more	14.3	13.6	13.3	14.3

TABLE D.2D *(continued)*

Variable	Respondents		Respondents and Nonrespondents	
	Program Group	Control Group[a]	Program Group[b]	Control Group[c]
Welfare Receipt				
AFDC/TANF[e]	32.0	32.2	35.6*	34.7*
Food Stamps	46.3	45.2	48.0	47.8*
Medicaid	76.8	73.9	76.6	74.7
SSI	7.7	6.8	7.0	7.0
WIC	88.9	86.2*	87.5*	85.9
Public housing	9.8	8.9	9.5	8.9
Has Inadequate Resources				
Food	4.9	6.9*	4.9	6.3
Housing	11.9	11.8	12.3	13.3*
Money to buy necessities	19.5	20.5	20.8	21.7
Medical care	12.4	13.7	14.0*	14.7
Transportation	18.8	21.9	20.9*	22.4
Child care	32.2	32.1	34.4*	34.6*
Money for supplies	24.4	28.7	27.1*	29.4
Support from friends	12.1	10.4	12.9	14.0*
Parent information	13.0	14.5	12.5	16.3*
Maternal Risk Index[f]				
0 or 1 (low risk)	21.1	18.8	18.8*	17.3*
2 or 3 (moderate risk)	54.5	55.6	54.2	56.4
4 or 5 (high risk)	24.3	25.7	27.1	26.3
Random Assignment Date				
Before 10/96	36.0	36.4	36.0*	36.5
10/96 to 6/97	26.6	29.9	30.2	30.8
After 6/97	37.3	33.7	33.8	32.7
Previously Enrolled in Head Start or Another Childhood Development Program[e]	12.3	14.6	12.8	13.4
Characteristics of Focus Child				
Age (Months)				
Unborn	22.8	26.1	24.2*	26.5
Less than 5	34.1	34.4	36.1	34.7
5 or more	43.2	39.4	39.7	38.7
Male	51.6	50.9	51.7	50.4
First Born	61.2	61.9	62.3	62.8
Birthweight Less than 2,500 Grams[e]	9.1	7.1	9.9	8.4
Born more than 3 Weeks Early[e]	14.7	13.0	15.8	12.0

TABLE D.2D *(continued)*

Variable	Respondents		Respondents and Nonrespondents	
	Program Group	Control Group[a]	Program Group[b]	Control Group[c]
Stayed in Hospital After Birth[e]	17.6	17.6	18.3	16.0
People Concerned About the Child's Overall Health and Development[e]	12.7	16.5*	13.0	13.3*
Received an Evaluation Because of Concerns About the Child's Overall Health and Development or Because of Suspected Developmental Delay[e]	6.2	7.9	6.0	6.9
Risk Categories				
Has established risks[e]	12.4	10.2	11.6	10.6
Has biological or medical risks[e]	17.7	18.3	18.3	16.8
Has environmental risks[e]	32.6	37.7*	32.5	36.4
Covered by Health Insurance[e]	92.3	92.3	90.1*	89.6*
Sample Size	**913**	**819**	**1,513**	**1,488**

SOURCE: HSFIS application and enrollment forms and 24-month video assessment data.

[a]Significance levels are from tests comparing program and control group respondents.

[b]Significance levels are from tests comparing respondents and the full sample of respondents and nonrespondents in the program group.

[c]Significance levels are from tests comparing respondents and the full sample of respondents and nonrespondents in the control group.

[d]The primary caregiver is considered to be an adult regardless of her age.

[e]These variables pertain to families with focus children who were born at baseline.

[f]This index was constructed by summing the number of the following risk factors that the mother faced: (1) being a teenage mother; (2) having no high school credential; (3) receiving public assistance; (4) not being employed or in school or training, and (5) being a single mother.

*Significantly different from zero at the .10 level, two-tailed test.

D.3 ESTIMATING IMPACTS PER PARTICIPANT

The comparison of the average outcomes of all program and all control group members yields unbiased estimates of program impacts for eligible applicants, because random assignment was performed at the point that applicant families were determined to be eligible for Early Head Start services. In Chapter II, we described our methods for obtaining regression-adjusted impacts per eligible applicant. However, some eligible families in the program group decided not to participate in the program after random assignment. This appendix describes the procedures that we used to obtain unbiased impact estimates for those who actually received some services (that is, for program *participants*).[3]

We used a two-step procedure to estimate impacts per participant for both the global and the targeted analyses. First, for each site, we divided the regression-adjusted impacts per eligible applicant by the site's program group participation rate (Bloom 1984). Second, we averaged these site-specific impact estimates giving equal weight to each site.

To illustrate how this procedure generates unbiased impact estimates for participants, we express the impact per eligible applicant on a given outcome in a site as a weighted average of the program impact for those eligible applicants who would participate in Early Head Start, given the chance, and the program impact for those who would not participate, with weights p_s and $(1-p_s)$, respectively. In mathematical terms:

$$(1)\ I_{Es} = p_s * I_{Ps} + (1 - p_s) * I_{Ns},$$

[3]Our definition of a program participant was discussed in Chapters II and III.

where I_{Es} is the impact per eligible applicant in site *s*, I_{Ps} is the impact per participant (that is, the difference between the average outcome of program and control group members who would participate in Early Head Start if given the chance), and I_{Ns} is the impact per nonparticipant (that is, the difference between the average outcome of program and control group members who would not participate if given the chance).

We do not know which control group families would have participated if they had instead been assigned to the program group, or which control group members would not have participated. However, this information is not necessary if we assume that all impacts were due to those who participated in Early Head Start, and that the *impacts on nonparticipants were zero* (that is, $I_{Ns} = 0$). Under this assumption (or "exclusion restriction"), the impact per participant in a site can be calculated by dividing the impact estimate per eligible applicant (that is, those based on *all* program and control group members) by the proportion of program group members who participated in Early Head Start. In mathematical terms:

$$(2)\ I_{Ps} = \frac{I_{Es}}{p_s}.$$

Our estimate of the impact per participant across all sites is the simple average of the site-specific impacts per participant (that is, the average of I_{Ps} over all sites). The standard errors of these impacts are larger than those for the impacts per eligible applicant, because the standard errors for the impacts per participant need to account for the estimation error in the site participation rates.

To make this procedure operational, we used PROC SYSLIN in the SAS statistical software package to estimate the following system of equations, using two-stage least-squares (instrumental variable) estimation techniques:

(3) $S_j * P = \delta_j S_j * T + u_j$

(4) $y = \sum_j \alpha_j (S_j * P) + X\beta + \varepsilon,$

where S_j is an indicator variable equal to 1 if the family is in site j, P is an indicator variable equal to 1 if the program group family participated in Early Head Start (and is 0 for control group families and program group nonparticipants), T is an indicator variable equal to 1 if the family is in the program group, y is an outcome variable, X are explanatory variables (that include site indicator variables), ε and the u_js are mean zero disturbance terms, and δ_j, α_j, and β are parameters to be estimated.

In the first-stage regressions, we obtained estimates of δ_j in equation (3) for each site j. These estimates were the program group participation rates in each site.[4] In the second-stage regression, we estimated equation (4) where the predicted values from the first-stage regressions were used in place of the S_j*P interaction terms. In this formulation, the estimate of α_j from the second-stage regression represents the impact estimate per participant in site j. The standard errors of these estimates were corrected for the estimation error from the first-stage regressions.[5]

[4]We also estimated models that included other explanatory variables (that is, that included the X variables in equation [4]). These models did not change the results and so, for simplicity, were not adopted.

[5]This procedure uses the treatment status indicator variable (T) as an "instrument" for the program participation indicator variable (P) in each site. This is a valid instrument, because T is correlated with P but is uncorrelated with the disturbance term ε due to random assignment. The instrumental variable estimates of the impacts per participant are identical to the estimates using the Bloom procedure described above (Angrist et al. 1996).

D.4 VERIFYING FINDINGS BY PROGRAM APPROACH AND IMPLEMENTATION LEVEL

This appendix provides details beyond those discussed in the body of this report on the impact findings by program approach and implementation level. Our main conclusions about the extent to which impacts differed by program approach and by implementation level are supported by the impact findings presented here.

For our primary analysis of Early Head Start impacts by program approach, we analyzed three subgroups in which the program approach (center-based, home-based, and mixed approach) was defined according to how programs were delivering services at the time of the fall 1997 site visits (see Chapter I). To confirm these findings, we also created three subgroups defined on the basis of the configuration of services that programs provided to families between 1997 and 1999. Under this second definition, we combined the mixed-approach programs that offered a relatively small number of child care slots (fewer than 25) with the home-based programs to form a group of "mostly home-based" programs. The 15-month parent services follow-up interview data confirm that only a small percentage of families in these mixed-approach programs reported receiving Early Head Start center-based services.

To examine results by level of implementation, it was important to hold program approach constant. We did this by comparing impacts for (1) the 3 early-implemented and 3 not-early-implemented *mixed-approach* programs using the 1997 definition, and (2) the 3 early-, 4 late-, and 3 incompletely implemented programs that were mostly home-based.[6] This approach is preferable to comparing estimated impacts for all implementers to those of all nonimplementers

[6]There is some overlap in these two analyses, because 3 of the 1997 mixed programs (2 of which were early implementers) were recategorized as mostly home-based programs based on the later definition.

because it holds program approach constant. This is important, because the proportion of implemented programs differed substantially by program approach. For example, using the 1997 definition, only 1 of the 7 home-based programs was an early implementer, as compared to 2 of the 4 center-based programs and 3 of the 6 mixed-approach programs. Thus, comparing all implementers to all nonimplementers confounds impact differences by implementation level with differences by program approach. Because of sample size constraints, we limited our analysis to the mixed-approach programs using the 1997 definition and the mostly home-based programs using the later definition.

For all analyses, we also examined the proportion of sites within a subgroup that had beneficial impacts, to assess whether the impact results were due to a small number of sites with large impacts, or to most sites within the subgroup. We believe that subgroup results are more credible if impacts are spread uniformly across programs within the subgroup.[7]

To keep the presentation manageable, we focused on selected key child, parenting, and family outcomes spanning a range of types of outcomes: (1) Bayley MDI and the percentage with scores below 85 at 24 months of age; (3) MacArthur vocabulary production and sentence complexity at 24 months; (4) CBCL aggressiveness scale at 24 months; (5) engagement, negativity, attention span, parental supportiveness, and parental detachment measures from the parent-child structured play assessments at 24 months; (6) KIDI at 24 months; (7) FES family conflict scale at 24 months; (8) the HOME language/literacy support scale at 24 months; (9)

[7]Impacts with a *positive* sign are beneficial impacts for outcomes for which larger values are preferable to smaller values (for example, Bayley or MacArthur scores). However, impacts with a *negative* sign are beneficial impacts for outcomes for which smaller values are preferable to larger values (for example, the CBCL aggressiveness scale or the percentage with Bayley scores less than 85).

parenting stress index at 24 months; and (10) the percentage and hours per week the caregiver spent in education or training during the 15 months after random assignment. The analysis results are presented in Tables D.4A to D.4H.

Our conclusions are as follows:

1. **Center-based programs had beneficial effects on cognitive development outcomes, but had no effects on language development or parenting outcomes (Tables D.4A to D.4D).** The estimated impacts on the Bayley measures are statistically significant at the 10 percent level and translate into effect sizes of about 20 percent. Estimated impacts on Bayley MDI scores are positive in all 4 center-based sites. However, none of the estimated impacts on the language and parenting measures is statistically significant, and many have the "wrong" sign. Furthermore, the MacArthur language and the parenting impacts are similar in the 2 center-based programs with a large percentage of Hispanic families and the 2 non-Hispanic center-based programs. Thus, these results (and the language ones in particular) are not due to the inclusion of programs that largely serve Hispanic families.[1]

2. ***Home-based programs had beneficial effects on language development and*** parenting ***outcomes, but had no effects on cognitive development (Tables D.4A to D.4D).*** Impacts on the MacArthur vocabulary production measure are statistically significant for the 7 home-based programs using the 1997 definition and for the 10 home-based programs using the service configuration definition. In both cases, the impact in effect size units is about 15 percent, and about 60 percent of the sites within each group had positive impacts. The impact on the MacArthur sentence complexity measure is statistically significant at the 5 percent level for the 10 programs (7 of which had positive impacts) and is positive, although not statistically significant for the 7 programs using the 1997 definition. The impacts on Bayley scores are small using both definitions, which suggests that home-based programs had at most a small effect on cognitive development in the short term.

   Home-based programs improved parenting outcomes using either definition of home-based programs. Six of the 11 parenting outcomes were statistically significant using the 1997 definition, and 9 of the 11 were statistically significant using the service configuration definition. (The difference in these findings is due to the fact that the 3 mixed-approach programs that were defined as home-based under the configuration-of-services definition had large beneficial impacts.) Beneficial impacts were typically found in 70 to 80 percent of the programs.

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[1]This conclusion does not consider possible measurement bias that might result if parents in center-based programs are less able than those in home-based programs to accurately report their children's language abilities.

It is very important to note that beneficial program impacts were found in the home-based programs even though many of these programs were not fully implemented. Of the 7 programs using the 1997 definition, only 1 was fully implemented early, 3 were implemented later, and 3 were incompletely implemented. The early/late/incomplete split for the 10 programs using the configuration-of-services definition was 3/4/3.

3. ***Mixed-approach programs had beneficial effects on language and parenting outcomes and small effects on cognitive development (Tables D.4A to D.4D).*** Nearly all the estimated impacts on language and parenting outcomes (12 of 14) were statistically significant at the 10 percent level for the 6 mixed-approach programs using the 1997 definition. Importantly, the magnitude of the impacts using the 3 mixed-approach programs defined using the configuration-of-services definition were very similar to those for the 6 mixed-approach programs using the initial 1997 definition. Because of smaller sample sizes, fewer of the impacts for the 3 mixed-approach programs were statistically significant. Thus, the relabeling of the three 1997 mixed-approach programs to largely home-based service configurations did not change the results materially for the mixed-approach programs.

   The Bayley impacts were positive overall, but only about one-half of the 6 original 1997 mixed-approach programs had positive values, so there is no clear evidence that mixed-approach programs improved child cognitive development at 24 months.

4. ***There is evidence that implementation matters (Tables D.4E to D.4H).*** The comparison of impacts of the 3 early-implemented 1997 mixed-approach programs and the other 3 mixed-approach programs strongly suggests that early implementation matters. Except for the self-sufficiency measures, the child and parent outcomes are typically larger for the early implementers, more are statistically significant, and a larger percentage of early-implemented programs had beneficial impacts. Furthermore, there is some evidence that the early-implemented mixed-approach programs improved Bayley scores.

   The evidence is more mixed when comparing impact findings for the 3 early-, 4 later- and 3 incompletely implemented home-based programs using the service configuration definition. In general, the impacts for the early (in particular) and the late implementers are larger than for the incomplete-implementers. However, this pattern does not hold for impacts on the MacArthur vocabulary production, the Family Conflict (FES) measure, the HOME measure, and the self-sufficiency measures. Furthermore, the proportions of early-implemented programs with beneficial impacts across the outcome measures are not systematically greater than those of later-implemented programs. This suggests that the beneficial results for the early-implemented programs were driven by a small number of sites.

TABLE D.4A

IMPACT ESTIMATES PER PARTICIPANT FOR KEY OUTCOMES,
BY PROGRAM APPROACH USING THE 1997 DEFINITION

Variable	Center-Based (4 Sites)	Home-Based (7 Sites)	Mixed (6 Sites)
Bayley Mental Development Index (MDI) at 24 Months of Age	2.94*	1.09	1.51
Percent with Bayley MDI Below 85 at 24 Months	–11.81*	–0.99	–7.01
Vocabulary Production at 24 Months	–1.38	2.98*	4.36**
Sentence Complexity Score at 24 Months	–0.45	0.67	2.31***
Aggressive Behavior Problems At 24 Months (CBCL)	–1.84	–0.30	–1.97**
Engagement of Parent at 24 Months (Three Bag)	–0.09	0.02	0.27**
Negativity Towards Parent at 24 Months (Three Bag)	–0.01	–0.02	–0.17
Sustained Attention with Objects at 24 Months (Three Bag)	–0.13	0.04	0.17*
Parental Supportiveness at 24 Months (Three Bag)	–0.05	0.14*	0.23**
Parental Detachment at 24 Months (Three Bag)	0.08	–0.14*	–0.16**
Knowledge of Infant Development Inventory (KIDI) at 24 Months	–0.02	0.07**	0.07**
Family Environment Scale: Family Conflict at 24 Months	–0.06	–0.07	–0.04
Support of Cognitive, Language, and Literary Environment (HOME) at 24 Months	–0.15	0.19*	0.40***
Parenting Stress Index at 24 Months	0.51	–1.07	–2.12***
Percentage of Children with Poor or Fair Health at 24 Months	–0.24*	0.02	0.01

TABLE D.4A *(continued)*

Variable	Center-Based (4 Sites)	Home-Based (7 Sites)	Mixed (6 Sites)
Percentage of Caregivers Ever in an Education or Training Program During the 15 Months After Random Assignment	0.92	5.90**	5.43
Average Hours Per Week Caregivers Were in Education or Training During the 15 Months After Random Assignment	1.16	1.27***	1.08*
Sample Size	**612**	**1,385**	**1,004**

SOURCE: PSI and PI data and Bayley and video assessments.

NOTE: A negative sign for impacts for the CBCL, video negativity, parental detachment, family conflict, and the parenting stress index should be interpreted as positive (beneficial) program effects. A positive sign for the impact for other outcomes should be interpreted as positive (beneficial) effects.

*Significantly different than zero at the .10 level, two-tailed test.
**Significantly different than zero at the .05 level, two-tailed test.
***Significantly different than zero at the .01 level, two-tailed test.

TABLE D.4B

PERCENTAGE OF PROGRAMS WITH ESTIMATED IMPACTS WITH A POSITIVE SIGN, BY PROGRAM APPROACH USING THE 1997 DEFINITION

Variable	Center-Based (4 Sites)	Home-Based (7 Sites)	Mixed (6 Sites)
Bayley Mental Development Index (MDI) at 24 Months of Age	100.00	85.71	50.00
Percent with Bayley MDI Below 85 at 24 Months	0.00	71.43	33.33
Vocabulary Production at 24 Months	50.00	57.14	50.00
Sentence Complexity Score at 24 Months	50.00	57.14	100.00
Aggressive Behavior Problems At 24 Months (CBCL)	0.00	57.14	16.67
Engagement of Parent at 24 Months (Three Bag)	75.00	42.86	83.33
Negativity Towards Parent at 24 Months (Three Bag)	50.00	42.86	16.67
Sustained Attention with Objects at 24 Months (Three Bag)	50.00	71.43	83.33
Parental Supportiveness at 24 Months (Three Bag)	50.00	100.00	83.33
Parental Detachment at 24 Months (Three Bag)	75.00	0.00	16.67
Knowledge of Infant Development Inventory (KIDI) at 24 Months	75.00	85.71	66.67
Family Environment Scale: Family Conflict at 24 Months	50.00	28.57	33.33
Support of Cognitive, Language, and Literary Environment (HOME) at 24 Months	50.00	85.71	83.33
Parenting Stress Index at 24 Months	50.00	28.57	50.00
Percentage of Children with Poor or Fair Health at 24 Months	25.00	42.86	33.33

TABLE D.4B *(continued)*

Variable	Center-Based (4 Sites)	Home-Based (7 Sites)	Mixed (6 Sites)
Percentage of Caregivers Ever in an Education or Training Program During the 15 Months After Random Assignment	25.00	85.71	83.33
Average Hours Per Week Caregivers Were in Education or Training During the 15 Months After Random Assignment	50.00	85.71	100.00
Sample Size	**612**	**1,385**	**1,004**

SOURCE: PSI and PI data and Bayley and video assessments.

NOTE: Small proportions represent beneficial findings for the CBCL, video negativity, parental detachment, family conflict, and the parenting stress index. Large proportions represent beneficial findings for the other outcomes.

*Significantly different than zero at the .10 level, two-tailed test
**Significantly different than zero at the .05 level, two-tailed test
***Significantly different than zero at the .01 level, two-tailed test

TABLE D.4C

IMPACT ESTIMATES PER PARTICIPANT FOR KEY OUTCOMES, BY PROGRAM APPROACH USING THE SERVICE CONFIGURATION DEFINITION

Variable	Center-Based (4 Sites)	Home-Based (10 Sites)	Mixed (3 Sites)
Bayley Mental Development Index (MDI) at 24 Months of Age	2.94*	1.33	2.22
Percent with Bayley MDI Below 85 at 24 Months	–11.81*	–3.59	–6.79
Vocabulary Production at 24 Months	–1.38	3.36**	4.32
Sentence Complexity Score at 24 Months	–0.45	1.22**	2.22**
Aggressive Behavior Problems At 24 Months (CBCL)	–1.84	–1.24*	–1.50
Engagement of Parent at 24 Months (Three Bag)	–0.09	0.10	0.21
Negativity Towards Parent at 24 Months (Three Bag)	–0.01	–0.06	–0.15
Sustained Attention with Objects at 24 Months (Three Bag)	–0.13	0.11*	0.10
Parental Supportiveness at 24 Months (Three Bag)	–0.05	0.21***	0.16
Parental Detachment at 24 Months (Three Bag)	0.08	–0.16***	–0.16
Knowledge of Infant Development Inventory (KIDI) at 24 Months	–0.02	0.07***	0.08
Family Environment Scale: Family Conflict at 24 Months	–0.06	–0.10***	0.08
Support of Cognitive, Language, and Literary Environment (HOME) at 24 Months	–0.15	0.18**	0.78***
Parenting Stress Index at 24 Months	0.51	–2.12***	0.55
Percentage of Children with Poor or Fair Health at 24 Months	–0.24*	0.06	–0.07

TABLE D.4C (*continued)*

Variable	Center-Based (4 Sites)	Home-Based (10 Sites)	Mixed (3 Sites)
Percentage of Caregivers Ever in an Education or Training Program During the 15 Months After Random Assignment	0.92	5.46 **	6.79
Average Hours Per Week Caregivers Were in Education or Training During the 15 Months After Random Assignment	1.16	1.23 ***	0.90
Sample Size	**612**	**1,875**	**514**

SOURCE: PSI and PI data and Bayley and video assessments.

NOTE: A negative sign for impacts for the CBCL, video negativity, parental detachment, family conflict, and the parenting stress index should be interpreted as positive (beneficial) program effects. A positive sign for the impact for other outcomes should be interpreted as positive (beneficial) effects.

*Significantly different than zero at the .10 level, two-tailed test
**Significantly different than zero at the .05 level, two-tailed test
***Significantly different than zero at the .01 level, two-tailed test

TABLE D.4D

PERCENTAGE OF PROGRAMS WITH ESTIMATED IMPACTS WITH A POSITIVE SIGN, BY PROGRAM APPROACH USING THE SERVICE CONFIGURATION DEFINITION

Variable	Center-Based (4 Sites)	Home-Based (10 Sites)	Mixed (3 Sites)
Bayley Mental Development Index (MDI) at 24 Months of Age	100.00	80.00	33.33
Percent with Bayley MDI Below 85 at 24 Months	0.00	50.00	66.67
Vocabulary Production at 24 Months	50.00	60.00	33.33
Sentence Complexity Score at 24 Months	50.00	70.00	100.00
Aggressive Behavior Problems At 24 Months (CBCL)	0.00	40.00	33.33
Engagement of Parent at 24 Months (Three Bag)	75.00	60.00	66.67
Negativity Towards Parent at 24 Months (Three Bag)	50.00	30.00	33.33
Sustained Attention with Objects at 24 Months (Three Bag)	50.00	80.00	66.67
Parental Supportiveness at 24 Months (Three Bag)	50.00	100.00	66.67
Parental Detachment at 24 Months (Three Bag)	75.00	0.00	33.33
Knowledge of Infant Development Inventory (KIDI) at 24 Months	75.00	80.00	66.67
Family Environment Scale: Family Conflict at 24 Months	50.00	20.00	66.67
Support of Cognitive, Language, and Literary Environment (HOME) at 24 Months	50.00	90.00	66.67
Parenting Stress Index at 24 Months	50.00	20.00	100.00
Percentage of Children with Poor or Fair Health at 24 Months	25.00	50.00	0.00

TABLE D.4D *(continued)*

Variable	Center-Based (4 Sites)	Home-Based (10 Sites)	Mixed (3 Sites)
Percentage of Caregivers Ever in an Education or Training Program During the 15 Months After Random Assignment	25.00	80.00	100.00
Average Hours Per Week Caregivers Were in Education or Training During the 15 Months After Random Assignment	50.00	90.00	100.00
Sample Size	**612**	**1,875**	**514**

SOURCE: PSI and PI data and Bayley and video assessments.

NOTE: Small proportions represent beneficial findings for the CBCL, video negativity, parental detachment, family conflict, and the parenting stress index. Large proportions represent beneficial findings for the other outcomes.

*Significantly different than zero at the .10 level, two-tailed test
**Significantly different than zero at the .05 level, two-tailed test
***Significantly different than zero at the .01 level, two-tailed test

TABLE D.4E

IMPACT ESTIMATES PER PARTICIPANT FOR KEY OUTCOMES FOR EARLY-IMPLEMENTED AND NOT EARLY-IMPLEMENTED MIXED PROGRAMS USING THE 1997 DEFINITION

Variable	Early-Implemented Mixed Programs (3 Sites)	Not Early-Implemented Mixed Programs (3 Sites)
Bayley Mental Development Index (MDI) at 24 Months of Age	2.35	0.27
Percent with Bayley MDI Below 85 at 24 Months	–8.73	–5.57
Vocabulary Production at 24 Months	6.30**	–1.07
Sentence Complexity Score at 24 Months	2.24*	1.45
Aggressive Behavior Problems At 24 Months (CBCL)	–2.59	–1.21
Engagement of Parent at 24 Months (Three Bag)	0.20	0.15
Negativity Towards Parent at 24 Months (Three Bag)	–0.16	–0.09
Sustained Attention with Objects at 24 Months (Three Bag)	0.26	–0.06
Parental Supportiveness at 24 Months (Three Bag)	0.30*	0.11
Parental Detachment at 24 Months (Three Bag)	–0.21	–0.21
Knowledge of Infant Development Inventory (KIDI) at 24 Months	0.05	0.07
Family Environment Scale: Family Conflict at 24 Months	0.01	–0.01
Support of Cognitive, Language, and Literary Environment (HOME) at 24 Months	0.63***	0.26
Parenting Stress Index at 24 Months	–1.64	–0.79
Percentage of Children with Poor or Fair Health at 24 Months	–0.27*	0.09

TABLE D.4E *(continued)*

Variable	Early-Implemented Mixed Programs (3 Sites)	Not Early-Implemented Mixed Programs (3 Sites)
Percentage of Caregivers Ever in an Education or Training Program During the 15 Months After Random Assignment	4.54	5.55
Average Hours Per Week Caregivers Were in Education or Training During the 15 Months After Random Assignment	0.53	1.88*
Sample Size	**540**	**464**

SOURCE: PSI and PI data and Bayley and video assessments.

NOTE: A negative sign for impacts for the CBCL, video negativity, parental detachment, family conflict, and the parenting stress index should be interpreted as positive (beneficial) program effects. A positive sign for the impact for other outcomes should be interpreted as positive (beneficial) effects.

*Significantly different than zero at the .10 level, two-tailed test
**Significantly different than zero at the .05 level, two-tailed test
***Significantly different than zero at the .01 level, two-tailed test

TABLE D.4F

PERCENTAGE OF PROGRAMS WITH ESTIMATED IMPACTS WITH A POSITIVE SIGN FOR EARLY-IMPLEMENTED AND NOT EARLY-IMPLEMENTED MIXED PROGRAMS USING THE 1997 DEFINITION

Variable	Early-Implemented Mixed Programs (3 Sites)	Not Early-Implemented Programs (3 Sites)
Bayley Mental Development Index (MDI) at 24 Months of Age	66.67	33.33
Percent with Bayley MDI Below 85 at 24 Months	0.00	66.67
Vocabulary Production at 24 Months	100.00	0.00
Sentence Complexity Score at 24 Months	100.00	100.00
Aggressive Behavior Problems At 24 Months (CBCL)	0.00	33.33
Engagement of Parent at 24 Months (Three Bag)	100.00	66.67
Negativity Towards Parent at 24 Months (Three Bag)	33.33	0.00
Sustained Attention with Objects at 24 Months (Three Bag)	100.00	66.67
Parental Supportiveness at 24 Months (Three Bag)	100.00	66.67
Parental Detachment at 24 Months (Three Bag)	0.00	33.33
Knowledge of Infant Development Inventory (KIDI) at 24 Months	66.67	66.67
Family Environment Scale: Family Conflict at 24 Months	0.00	66.67
Support of Cognitive, Language, and Literary Environment (HOME) at 24 Months	100.00	66.67
Parenting Stress Index at 24 Months	33.33	66.67
Percentage of Children with Poor or Fair Health at 24 Months	33.33	33.33

TABLE D.4F *(continued)*

Variable	Early-Implemented Mixed Programs (3 Sites)	Not Early-Implemented Programs (3 Sites)
Percentage of Caregivers Ever in an Education or Training Program During the 15 Months After Random Assignment	66.67	100.00
Average Hours Per Week Caregivers Were in Education or Training During the 15 Months After Random Assignment	100.00	100.00
Sample Size	**540**	**464**

SOURCE: PSI and PI data and Bayley and video assessments.

NOTE: Small proportions represent beneficial findings for the CBCL, video negativity, parental detachment, family conflict, and the parenting stress index. Large proportions represent beneficial findings for the other outcomes.

*Significantly different than zero at the .10 level, two-tailed test
**Significantly different than zero at the .05 level, two-tailed test
***Significantly different than zero at the .01 level, two-tailed test

TABLE D.4G

IMPACT ESTIMATES PER PARTICIPANT FOR KEY OUTCOMES FOR EARLY-, LATE-, AND NEVER-IMPLEMENTED HOME-BASED PROGRAMS USING THE SERVICE CONFIGURATION DEFINITION

Variable	Early-Implemented Home-Based Programs (3 Sites)	Late-Implemented Home-Based Programs (4 Sites)	Never-Implemented Home-Based Programs (3 Sites)
Bayley Mental Development Index (MDI) at 24 Months of Age	1.26	1.52	0.62
Percent with Bayley MDI Below 85 at 24 Months	–4.86	–1.71	0.06
Vocabulary Production at 24 Months	4.68**	2.12	4.23*
Sentence Complexity Score at 24 Months	2.27**	0.80	0.80
Aggressive Behavior Problems At 24 Months (CBCL)	–2.91***	0.08	–1.07
Engagement of Parent at 24 Months (Three Bag)	0.24*	0.17	–0.10
Negativity Towards Parent at 24 Months (Three Bag)	–0.21**	–0.04	0.11
Sustained Attention with Objects at 24 Months (Three Bag)	0.30***	0.05	0.01
Parental Supportiveness at 24 Months (Three Bag)	0.33***	0.18*	0.12
Parental Detachment at 24 Months (Three Bag)	–0.12*	–0.21**	–0.11
Knowledge of Infant Development Inventory (KIDI) at 24 Months	0.01	0.15***	0.03
Family Environment Scale: Family Conflict at 24 Months	–0.11*	–0.05	–0.15**
Support of Cognitive, Language, and Literary Environment (HOME) at 24 Months	0.07	0.27*	0.32**
Parenting Stress Index at 24 Months	–2.75***	–2.49***	–0.67
Percentage of Children with Poor or Fair Health at 24 Months	0.05	0.07	0.04

TABLE D.4G (*continued)*

Variable	Early-Implemented Home-Based Programs (3 Sites)	Late-Implemented Home-Based Programs (4 Sites)	Never-Implemented Home-Based Programs (3 Sites)
Percentage of Caregivers Ever in an Education or Training Program During the 15 Months After Random Assignment	7.12	3.86	9.84 **
Average Hours Per Week Caregivers Were in Education or Training During the 15 Months After Random Assignment	–0.02	1.79 ***	2.33 **
Sample Size	**530**	**727**	**18**

SOURCE: PSI and PI data and Bayley and video assessments.

NOTE: A negative sign for impacts for the CBCL, video negativity, parental detachment, family conflict, and the parenting stress index should be interpreted as positive (beneficial) program effects. A positive sign for the impact for other outcomes should be interpreted as positive (beneficial) effects.

*Significantly different than zero at the .10 level, two-tailed test
**Significantly different than zero at the .05 level, two-tailed test
***Significantly different than zero at the .01 level, two-tailed test

TABLE D.4H

PERCENTAGE OF PROGRAMS WITH ESTIMATED IMPACTS WITH A POSITIVE SIGN FOR EARLY-, LATE-, AND NEVER-IMPLEMENTED HOME-BASED PROGRAMS USING THE SERVICE CONFIGURATION DEFINITION

Variable	Early-Implemented Home-Based Programs (3 Sites)	Late-Implemented Home-Based Programs (4 Sites)	Never-Implemented Home-Based Programs (3 Sites)
Bayley Mental Development Index (MDI) at 24 Months of Age	66.67	75.00	100.00
Percent with Bayley MDI Below 85 at 24 Months	33.33	50.00	66.67
Vocabulary Production at 24 Months	66.67	50.00	66.67
Sentence Complexity Score at 24 Months	66.67	75.00	66.67
Aggressive Behavior Problems At 24 Months (CBCL)	33.33	50.00	33.33
Engagement of Parent at 24 Months (Three Bag)	66.67	75.00	33.33
Negativity Towards Parent at 24 Months (Three Bag)	0.00	25.00	66.67
Sustained Attention with Objects at 24 Months (Three Bag)	100.00	75.00	66.67
Parental Supportiveness at 24 Months (Three Bag)	100.00	100.00	100.00
Parental Detachment at 24 Months (Three Bag)	0.00	0.00	0.00
Knowledge of Infant Development Inventory (KIDI) at 24 Months	66.67	100.00	66.67
Family Environment Scale: Family Conflict at 24 Months	0.00	50.00	0.00
Support of Cognitive, Language, and Literary Environment (HOME) at 24 Months	66.67	100.00	100.00
Parenting Stress Index at 24 Months	33.33	25.00	0.00
Percentage of Children with Poor or Fair Health at 24 Months	33.33	75.00	33.33

TABLE D.4H *(continued)*

Variable	Early-Implemented Home-Based Programs (3 Sites)	Late-Implemented Home-Based Programs (4 Sites)	Never-Implemented Home-Based Programs (3 Sites)
Percentage of Caregivers Ever in an Education or Training Program During the 15 Months After Random Assignment	66.67	75.00	100.00
Average Hours Per Week Caregivers Were in Education or Training During the 15 Months After Random Assignment	66.67	100.00	100.00
Sample Size	**530**	**727**	**618**

SOURCE: PSI and PI data and Bayley and video assessments.

NOTE: Small proportions represent beneficial findings for the CBCL, video negativity, parental detachment, family conflict, and the parenting stress index. Large proportions represent beneficial findings for the other outcomes.

*Significantly different than zero at the .10 level, two-tailed test
**Significantly different than zero at the .05 level, two-tailed test
***Significantly different than zero at the .01 level, two-tailed test

D.5 ASSESSING THE ROBUSTNESS OF STUDY FINDINGS

As discussed in Chapter II, short-term Early Head Start impacts on child, parent, and family outcomes were estimated (1) using regression models to control for baseline differences between the program and control groups; (2) giving equal weight to each site; (3) not using weights to adjust for nonresponse; and (4) using the maximum sample for each outcome variable (that is, using the full sample for whom the outcome variable could be constructed). This appendix addresses the following important question: Are the impact estimates sensitive to alternative estimation strategies, weighting schemes, or sample definitions?

To test the robustness of study findings, we also estimated global impacts under the following scenarios:

1. ***Using Simple Differences-in-Means Estimation Techniques.*** Our main estimation approach was to use regression models to estimate program impacts. However, we also estimated impacts by simply comparing the mean outcomes of the program and control groups, and used t-tests to gauge the statistical significance of the estimated impacts.

2. ***Using Weights to Adjust for Nonresponse.*** As discussed in Appendix D.2, we constructed weights to adjust for potential bias in the impact estimates due to interview nonresponse. The use of these weights correctly adjusts for nonresponse using the simple differences-in-means estimation methods. Although there is no theoretical reason to use these weights in a regression context, we did include them in some models to examine how the results would change.

3. ***Weighting Each Site by Its Sample Size.*** Our main approach was to weight each site equally in the analysis regardless of sample size, because the intervention varied substantially across programs and was administered at the site level. However, we also estimated models where sites with larger sample sizes (response rates) were given larger weights than sites with smaller sample sizes (response rates). For these models, we simply pooled all observations across all sites.

4. ***Using Alternative Sample Definitions.*** Our main approach was to estimate impacts using all sample members for whom outcome measures were available. However, we also estimated impacts using alternative sample definitions: those who (1) completed a particular instrument at both data collection points (which is the sample that would be used in a growth curve analysis); (2) completed the 15-month PSI *and* the particular birthday-related instrument (so that the impacts on service use and receipt could be directly linked to the impacts on the child, parent, and family outcomes); and (3) completed *all* interviews and assessments at both data collection points.

5. ***Dropping Sites with Low Response Rates.*** We estimated impacts after dropping sample members from 4 sites with the lowest response rates, because interview respondents in these sites may not be representative of the full samples or respondents and nonrespondents in these sites.

We estimated impacts on 17 key child, parenting, and family outcomes constructed using the 24-month birthday-related instruments and the 15-month PSIs.

Our results indicate that our main global impact findings are very robust to alternative estimation strategies, weighting schemes, and sample definitions (Tables D.5A and D.5B). The regression results are very similar whether or not we use nonresponse weights and whether we weight sites equally or by their sample sizes. Interestingly, the differences-in-means estimates are very similar to the regression ones, because as discussed, the baseline characteristics of interview respondents in the two research groups are similar. The same set of policy conclusions can be drawn using impact results from the alternative sample definitions. Finally, the results do not change substantially when we drop the four sites with the lowest response rates.

In sum, we believe that our interim impact findings represent real effects and are not due to our methodological assumptions.

TABLE D.5A

IMPACT ESTIMATES PER PARTICIPANT FOR THE FULL SAMPLE ON KEY OUTCOME VARIABLES USING ALTERNATIVE ESTIMATION AND WEIGHTING STRATEGIES

Variable	Regression-Adjusted Estimates			Differences-in-Means Estimates		
	Sites Weighted Equally, No Weights for Nonresponse (Benchmark)	Sites Weighted Equally, Weights for Nonresponse	Sites Weighted by Sample Size, Weights for Nonresponse	Sites Weighted Equally, No Weights for Nonresponse	Sites Weighted Equally, Weights for Nonresponse	Sites Weighted by Sample Size, Weights for Nonresponse
Bayley Mental Development Index (MDI) at 24 Months of Age	2.01***	2.14***	1.95***	2.04***	2.33***	2.05***
Percent with Bayley MDI Below 85 at 24 Months	-6.58**	-7.24***	-5.07**	-6.39**	-7.45***	-5.62**
Vocabulary Production at 24 Months	2.42**	2.77**	3.08***	2.44*	2.70**	2.95***
Sentence Complexity Score at 24 Months	0.93**	0.91**	0.97**	0.95**	0.93**	0.95**
Aggressive Behavior Problems at 24 Months (CBCL)	-1.26**	-1.24**	-1.06**	-1.21**	-1.22**	-1.11**
Engagement of Parent at 24 Months (Three Bag)	0.09	0.11	0.12**	0.09	0.09	0.12**
Negativity Towards Parent at 24 Months (Three Bag)	-0.08	-0.06	-0.05	-0.05	-0.03	-0.04
Sustained Attention with Objects at 24 Months (Three Bag)	0.06	0.08	0.09*	0.05	0.07	0.08
Parental Supportiveness at 24 Months (Three Bag)	0.14**	0.13**	0.14***	0.15***	0.14**	0.15***

TABLE D.5A *(continued)*

Variable	Regression-Adjusted Estimates			Differences-in-Means Estimates		
	Sites Weighted Equally, No Weights for Nonresponse (Benchmark)	Sites Weighted Equally, Weights for Nonresponse	Sites Weighted by Sample Size, Weights for Nonresponse	Sites Weighted Equally, No Weights for Nonresponse	Sites Weighted Equally, Weights for Nonresponse	Sites Weighted by Sample Size, Weights for Nonresponse
Parental Detachment at 24 Months (Three Bag)	-0.10*	-0.10*	-0.11**	-0.09*	-0.09*	-0.11**
Knowledge of Infant Development Inventory (KIDI) at 24 Months	0.05***	-0.06***	-0.05***	-0.06***	0.06***	0.06***
Family Environment Scale: Family Conflict at 24 Months	-0.06**	-0.06*	0.04	0.07**	-0.06**	-0.05
Support of Cognitive, Language, and Literary Environment (HOME) at 24 Months	0.20***	0.21***	0.21***	0.23***	0.24***	0.24***
Parenting Stress Index at 24 Months	-0.96**	-1.05**	-1.02**	-1.00**	-1.04**	-1.08**
Percentage of Children with Poor or Fair Health at 24 Months	-0.62	-0.25	-1.22	-0.26	-0.15	-1.09
Percentage of Caregivers Ever in an Education or Training Program During the 15 Months After Random Assignment	4.68**	4.89**	5.21**	5.29**	-5.84**	6.03**
Average Hours Per Week Caregivers Were in Education or Training During the 15 Months After Random Assignment	1.13***	1.12***	1.16***	1.26***	1.28***	1.32***

SOURCE: PSI and PI data and Bayley and video assessments.

*Significantly different than zero at the .10 level, two-tailed test
**Significantly different than zero at the .05 level, two-tailed test
***Significantly different than zero at the .01 level, two-tailed test

TABLE D.5B

IMPACT ESTIMATES PER PARTICIPANT FOR THE FULL SAMPLE ON KEY OUTCOME VARIABLES USING ALTERNATIVE SAMPLE DEFINITIONS

Variable	Completed the Relevant 24-Month or 15-Month Instrument (Benchmark)	Completed the Relevant Instrument at Both Data Collection Points	Completed the 15-Month PSI as well as the Relevant Instrument	Completed All Instruments	Completed the Relevant Interview and Dropped 4 Sites with the Lowest Response Rates
Bayley Mental Development Index (MDI) at 24 Months of Age	2.01***	1.85**	1.76**	1.83*	1.64**
Percent with Bayley MDI Below 85 at 24 Months	-6.58**	-6.33**	-7.07***	-7.50**	-3.94
Vocabulary Production at 24 Months	2.42**	2.48**	1.97	1.33	2.23*
Sentence Complexity Score at 24 Months	0.93**	1.01**	0.92*	1.48**	0.97**
Aggressive Behavior Problems At 24 Months (CBCL)	-1.26**	-1.31**	1.49**	-2.06***	-1.21**
Engagement of Parent at 24 Months (Three Bag)	0.09	0.13*	0.11*	0.12	0.18***
Negativity Towards Parent at 24 Months (Three Bag)	-0.08	-0.09	-0.05	-0.05	-0.11**
Sustained Attention with Objects at 24 Months (Three Bag)	0.06	0.07	0.07	0.01	0.08
Parental Supportiveness at 24 Months (Three Bag)	0.14**	0.19***	0.15***	0.17**	0.15***

TABLE D.2 *(continued)*

Variable	Completed the Relevant 24-Month or 15-Month Instrument (Benchmark)	Completed the Relevant Instrument at Both Data Collection Points	Completed the 15-Month PSI as well as the Relevant Instrument	Completed All Instruments	Completed the Relevant Interview and Dropped 4 Sites with the Lowest Response Rates
Parental Detachment at 24 Months (Three Bag)	-0.10 *	-0.11 *	-0.12 **	-0.11 *	-0.12 **
Knowledge of Infant Development Inventory (KIDI) at 24 Months	0.05 ***	0.04 **	0.05 **	0.05	0.05 ***
Family Environment Scale: Family Conflict at 24 Months	-0.06 **	-0.06 *	-0.06 *	-0.06	-0.02
Support of Cognitive, Language, and Literary Environment (HOME) at 24 Months	0.20 ***	0.18 **	0.17 **	0.14	0.18 **
Parenting Stress Index at 24 Months	-0.96 **	-1.22 **	-0.81	-1.33 *	-0.95 *
Percentage of Children with Poor or Fair Health at 24 Months	-0.62	-0.55	0.10	-0.22	-2.52
Percentage of Caregivers Ever in an Education or Training Program During the 15 Months After Random Assignment	4.68 **	5.88 ***	4.68 **	7.85 **	4.76 *
Average Hours Per Week Caregivers Were in Education or Training During the 15 Months After Random Assignment	1.13 ***	1.19 ***	1.13 ***	1.96 ***	1.43 ***

SOURCE: PSI and PI data and Bayley and video assessments.

NOTE: All estimates were calculated using regression models where each site was weighted equally and where weights for nonresponse were not used.

*Significantly different than zero at the .10 level, two-tailed test
**Significantly different than zero at the .05 level, two-tailed test
***Significantly different than zero at the .01 level, two-tailed test

D.6 ESTIMATING IMPACTS PER ELIGIBLE APPLICANT

In the body of the report, we focus on impacts per applicant for the child and family outcomes, because these impact estimates are more policy relevant and differ very little from the impacts per eligible applicant. Tables D.6A through D.6N show the impacts per eligible applicant for key outcome variables in order to illustrate how similar the impact findings are to those based on applicants.

TABLE D.6A

IMPACTS ON COGNITIVE AND LANGUAGE DEVELOPMENT

Outcome	Program Group	Control Group	Estimated Impact Per Eligible Applicant[a]	Effect Size[b]
COGNITIVE DEVELOPMENT				
Bayley Mental Development Index (MDI)	89.9	88.1	1.8***	13.3
Percent with Bayley MDI Below 100	75.4	79.8	-4.4**	10.7
Percent with Bayley MDI Below 85	34.6	40.2	-5.6**	11.5
LANGUAGE DEVELOPMENT				
MacArthur Communicative Development Inventories (CDI): Vocabulary Production Score	56.2	53.9	2.4**	10.5
MacArthur CDI: Percent Combining Words	80.5	77.5	2.9*	7.0
MacArthur CDI: Sentence Complexity Score	8.6	7.7	0.9**	11.3
Sample Size	**1,021**	**1,092**	**2,113**	

SOURCE: Parent interviews, child assessments, interviewer observations, and assessments of semi-structured parent-child interactions conducted when children were approximately 24 months old.

NOTE: All impact estimates were calculated using regression models, where each site was weighted equally.

[a]The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for all program and control group members.

[b]The effect size was calculated by dividing the estimated impact per eligible applicant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact expressed as a percentage of the standard deviation).

*Significantly different from zero at the .10 level, two-tailed test
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

TABLE D.6.B

IMPACTS ON SOCIAL AND EMOTIONAL DEVELOPMENT

Outcome	Program Group	Control Group	Estimated Impact Per Eligible Applicant[a]	Effect Size[b]
Parent-Child Structured Play: Engagement of Parent[c]	4.3	4.2	0.1	7.8
Parent-Child Structured Play: Negativity toward Parent[c]	1.7	1.8	–0.1	–7.3
Parent-Child Structured Play: Sustained Attention with Objects[c]	5.0	5.0	0.1	6.9
Bayley Behavioral Rating Scale (BRS): Emotional Regulation in a Cognitive Task[d]	3.6	3.6	0	–1.5
Bayley BRS: Orientation / Engagement in a Cognitive Task[d]	3.6	3.6	0	0.1
Child Behavior Checklist: Aggressive	9.9	10.5	–0.5**	–9.5
Sample Size	**1,092**	**1,021**	**2,113**	

SOURCE: Parent interviews, child assessments, and interviewer observations, and assessments of semi-structured parent-child interactions conducted when children were approximately 24 months old.

NOTE: All impact estimates were calculated using regression models, where each site was weighted equally.

[a]The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for all program and control group members.

[b]The effect size was calculated by dividing the estimated impact per eligible applicant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact expressed as a percentage of the standard deviation).

[c]Behaviors are observed during the videotaped Parent-Child Structured Play task and coded on a seven-point scale.

[d]Behaviors are observed during the Bayley assessment and rated on a five-point scale by the Interviewer/Assessor.

*Significantly different from zero at the .10 level, two-tailed test
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

TABLE D.6C

IMPACTS ON EMOTIONAL SUPPORT FOR CHILDREN

Outcome	Program Group	Control Group	Estimated Impact Per Eligible Applicant[a]	Effect Size[b]
Home Observation for Measurement of the Environment (HOME): Emotional Responsivity[c]	6.2	6.1	0.1*	7.4
Parent-Child Structured Play: Supportiveness[d]	4.0	3.9	0.1***	13.3
Sample Size	**1,092**	**1,021**	**2,113**	

SOURCE: Parent interviews, child assessments, interviewer observations, and assessments of semi-structured parent-child interactions conducted when children were approximately 24 months old.

NOTE: All impact estimates were calculated using regression models, where each site was weighted equally.

[a]The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for all program and control group members.

[b]The effect size was calculated by dividing the estimated impact per eligible applicant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact expressed as a percentage of the standard deviation).

[c]Behaviors are observed during the HOME assessment and rated on a yes/no scale by the Interviewer/Assessor.

[d]Behaviors are observed during the videotaped Parent-Child Structured Play task and coded on a seven-point scale.

*Significantly different from zero at the .10 level, two-tailed test
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

TABLE D.6D

IMPACTS ON THE HOME ENVIRONMENT AND STIMULATION OF LANGUAGE AND LEARNING

Outcome	Program Group	Control Group	Estimated Impact Per Eligible Applicant[a]	Effect Size[b]
Home Observation for Measurement of the Environment (HOME): Total Score	26.5	26.1	0.4**	9.8
STRUCTURING THE ENVIRONMENT				
HOME: Support of Cognitive, Language, and Literacy Environment	10.3	10.1	0.2***	11.2
Percentage of Parents Who Set a Regular Bedtime for Child	61.0	56.2	4.8**	9.7
Percentage of Parents and Children Who Have Regular Bedtime Routines	69.1	67.0	2.0	4.4
PARENT-CHILD ACTIVITIES				
Parent-Child Activities	4.6	4.5	0.1**	10.4
Percentage of Parents Who Read to Child Every Day	57.4	52.3	5.1**	10.2
Percentage of Parents Who Read to Child at Bedtime	28.4	22.6	5.8***	13.7
PARENT'S VERBAL-SOCIAL SKILLS				
HOME: Maternal Verbal-Social Skills[c]	2.8	2.7	0.0	6.4
Sample Size	**1,092**	**1,021**	**2,113**	

SOURCE: Parent interviews, child assessments, interviewer observations, and assessments of semi-structured parent-child interactions conducted when children were approximately 24 months old.

NOTE: All impact estimates were calculated using regression models, where each site was weighted equally.

[a]The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for all program and control group members.

[b]The effect size was calculated by dividing the estimated impact per eligible applicant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact expressed as a percentage of the standard deviation).

[c]Behaviors are observed during the HOME assessment and rated on a yes/no scale by the Interviewer/Assessor.

*Significantly different from zero at the .10 level, two-tailed test
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

TABLE D.6E

IMPACTS ON NEGATIVE PARENTING BEHAVIOR
IN STRUCTURED PLAY AND INTERACTION

Outcome	Program Group	Control Group	Estimated Impact Per Eligible Applicant[a]	Effect Size[b]
INSENSITIVITY				
Parent-Child Structured Play: Detachment[c]	1.4	1.5	–0.1**	–10.2
Parent-Child Structured Play: Intrusiveness[c]	1.9	1.9	0	–3.3
HOSTILITY AND PUNISHMENT				
Parent-Child Structured Play: Negative Regard[c]	1.5	1.4	0	2.1
Home Observation of Measurement of the Environment (HOME): Absence of Punitive Interactions[d]	4.4	4.4	0	–3.7
Percentage of Parents who Spanked the Child in the Previous Week	48.1	52.5	–4.4**	–8.9
Sample Size	**1,092**	**1,021**	**2,113**	

SOURCE: Parent interviews, child assessments, interviewer observations, and assessments of parent-child interactions during videotaped, semi-structured tasks conducted when children were approximately 24 months old.

NOTE: All impact estimates were calculated using regression models, where each site was weighted equally.

[a]The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for all program and control group members.

[b]The effect size was calculated by dividing the estimated impact per eligible applicant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact expressed as a percentage of the standard deviation).

[c]Behaviors are observed during the videotaped Parent-Child Structured Play task and coded on a seven-point scale.

[d]Behaviors are observed during the HOME assessment and rated on a yes/no scale by the Interviewer/Assessor

*Significantly different from zero at the .10 level, two-tailed test
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

TABLE D.6F

IMPACTS ON PARENTING KNOWLEDGE:
CHILD DEVELOPMENT AND DISCIPLINE STRATEGIES

Outcome	Program Group	Control Group	Estimated Impact Per Eligible Applicant[a]	Effect Size[b]
KNOWLEDGE OF CHILD DEVELOPMENT				
Knowledge of Infant Development Inventory	3.4	3.3	0.1***	11.1
DISCIPLINE STRATEGIES				
Percentage of Parents Who Suggested Responses to Hypothetical Situations with Child:				
Prevent or Distract	72.1	66.7	5.3***	11.3
Remove Child or Object	80.5	81.3	–0.8	–2.0
Talk and Explain	37.4	31.5	5.9***	12.6
Threaten or Command	31.8	34.1	–2.3	–4.8
Shout	5.5	4.7	0.8	4.0
Physical Punishment	27.4	29.9	–2.5	–5.5
Percentage of Parents Suggesting Only Mild Responses to the Hypothetical Situations[a]	43.0	39.0	4.0*	8.1
Index of Severity of Discipline Strategies Suggested[b]	2.7	2.8	–0.1*	–6.8
Sample Size	**1,092**	**1,021**	**2,113**	

SOURCE: Parent interviews, child assessments, interviewer observations, and assessments of semi-structured parent-child interactions conducted when children were approximately 24 months old.

NOTE: All impact estimates were calculated using regression models, where each site was weighted equally.

[a]The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for all program and control group members.

[b]The effect size was calculated by dividing the estimated impact per eligible applicant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact expressed as a percentage of the standard deviation).

*Significantly different from zero at the .10 level, two-tailed test
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

TABLE D.6G

IMPACTS ON SAFETY PRACTICES

Outcome	Program Group	Control Group	Estimated Impact Per Eligible Applicant[a]	Effect Size[b]
Family Has Syrup of Ipecac in the House in Case of a Poison Emergency	29.6	29.5	0.1	0.3
Parent/Guardian Has or Knows How to Find the Telephone Number For the Poison Control Center	37.3	35.7	1.6	3.2
Family Uses a Gate or Door at the Top Of Stairs	79.7	81.2	–1.5	–3.8
Family Uses Guards or Gates For Windows	62.7	64.7	–1.9	–4.0
Family Has Covers on Electrical Outlets That Child Can Reach	60.4	60.8	–0.3	–0.7
Family's Home Has Working Smoke Alarms	86.6	84.8	1.8	5.1
Family Uses a Car Seat For Child and it is in the Back Seat of the Car	81.0	82.0	–1.0	–2.7
Interviewer Observed That Child's Play Area is Safe	68.5	68.5	0.0	0.0
Sample Size	**1,092**	**1,021**	**2,113**	

SOURCE: Parent interviews, child assessments, interviewer observations, and assessments of semi-structured parent-child interactions conducted when children were approximately 24 months old.

NOTE: All impact estimates were calculated using regression models, where each site was weighted equally.

[a]The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for all program and control group members.

[b]The effect size was calculated by dividing the estimated impact per eligible applicant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact expressed as a percentage of the standard deviation).

*Significantly different from zero at the .10 level, two-tailed test
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

TABLE D.6H

IMPACTS ON SELF-SUFFICIENCY ACTIVITIES DURING FIRST 15 MONTHS

Outcome	Program Group	Control Group	Estimated Impact Per Eligible Applicant[a]	Effect Size[b]
ANY SELF-SUFFICIENCY ACTIVITIES				
Percentage of Parents Ever Employed or in an Education or Job Training Program	85.0	82.5	2.5*	6.5
Average Hours Per Week Employed at All Jobs and in Any Education or Training	20.1	19.7	0.4	2.6
EMPLOYMENT ACTIVITIES				
Percentage of Parents Ever Employed	72.5	71.9	0.6	1.3
Average Hours Per Week Employed at All Jobs	14.7	15.4	-0.7	-4.2
EDUCATION ACTIVITIES				
Percentage of Parents Who Ever Participated in an Education or Training Program	48.1	43.7	4.4**	8.9
Average Hours Per Week in an Education Program	5.2	4.1	1.0***	13.4
Sample Size	**1,139**	**1,097**	**2,236**	

SOURCE: Parent Services Follow-Up Interviews completed an average of 7 and 16 months after random assignment.

NOTE: All impact estimates were calculated using regression models, where each site was weighted equally.

[a]The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for all program and control group members.

[b]The effect size was calculated by dividing the estimated impact per eligible impact by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact expressed as a percentage of the standard deviation).

*Significantly different from zero at the .10 level, two-tailed test
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

TABLE D.6I

IMPACTS ON EDUCATION ACTIVITIES AND CREDENTIALS BY THE SECOND FOLLOWUP

Outcome	Program Group	Control Group	Estimated Impact Per Eligible Applicant[a]	Effect Size[b]
TYPES OF EDUCATION ACTIVITIES				
High School	12.7	9.6	3.0***	10.4
High School or Alternative	13.2	11.2	2.0*	6.4
Adult Basic Education	3.0	2.9	0.2	0.9
English as a Second Language	2.6	1.3	1.3**	11.1
GED Preparation	7.2	6.8	0.3	1.3
Any Vocational Education	14.9	12.9	2.0	6.0
2-Year College	7.4	6.8	0.6	2.4
4-Year College	4.3	4.8	–0.5	–2.4
DEGREES AND CREDENTIALS RECEIVED				
Highest Grade Completed	11.4	11.5	–0.1	–2.4
GED Certificate	9.8	9.7	0.1	0.3
High School Diploma	46.1	45.3	0.8	1.6
Received a High School Degree or GED Between Enrollment and Second Follow-Up	24.7	24.4	0.3	0.7
Vocational, Business, or Secretarial Diploma	15.4	14.8	0.5	1.5
Associate's Degree	3.1	3.6	–0.6	–3.0
Bachelor's Degree	3.1	4.0	–0.9	–4.5
Sample Size	**1,139**	**1,097**	**2,236**	

SOURCE: Parent Services Follow-Up Interviews completed an average of 7 and 16 months after random assignment.

NOTE: All impact estimates were calculated using regression models, where each site was weighted equally.

[a]The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for all program and control group members.

[b]The effect size was calculated by dividing the estimated impact per eligible applicant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact expressed as a percentage of the standard deviation).

*Significantly different from zero at the .10 level, two-tailed test
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

TABLE D.6J

IMPACTS ON WELFARE PROGRAM PARTICIPATION
DURING THE FIRST 15 MONTHS

Outcome	Program Group	Control Group	Estimated Impact Per Eligible Applicant[a]	Effect Size[b]
Percentage of Parents Who Received Any Welfare Benefits	65.7	64.8	0.9	1.8
Total Welfare Benefits Received ($)	3,652.1	3,431.9	220.2	5.1
Percentage of Parents Who Received AFDC or TANF Benefits	45.0	43.0	2.0	4.0
Total AFDC Or TANF Benefits Received ($)	1,524.3	1,465.3	59.0	2.5
Average Total Food Stamp Benefits Received ($)	1,308.5	1,288.5	20.0	1.3
Sample Size	**1,139**	**1,097**	**2,236**	

SOURCE: Parent Services Follow-Up Interviews completed an average of 7 and 16 months after random assignment.

NOTE: All impact estimates were calculated using regression models, where each site was weighted equally.

[a]The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for all program and control group members.

[b]The effect size was calculated by dividing the estimated impact per eligible applicant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact expressed as a percentage of the standard deviation).

*Significantly different from zero at the .10 level, two-tailed test
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

TABLE D.6K

IMPACTS ON FAMILY INCOME AND RESOURCES

Outcome	Program Group	Control Group	Estimated Impact Per Eligible Applicant[a]	Effect Size[b]
Percentage of Families With Income Above the Poverty Line at Second Follow-Up	33.9	36.1	–2.3	–4.7
Total Family Resources Scale				
First follow-up	150.2	149.1	1.2	5.4
Second follow-up	153.1	152.3	0.9	4.4
Sample Size	**1,139**	**1,097**	**2,236**	

SOURCE: Parent Services Follow-Up Interviews completed an average of 7 and 16 months after random assignment.

NOTE: All impact estimates were calculated using regression models, where each site was weighted equally.

[a]The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for all program and control group members.

[b]The effect size was calculated by dividing the estimated impact per eligible applicant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact expressed as a percentage of the standard deviation).

*Significantly different from zero at the .10 level, two-tailed test
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

TABLE D.6L

IMPACTS ON PARENT HEALTH AND FAMILY FUNCTIONING

Outcome	Program Group	Control Group	Estimated Impact Per Eligible Applicant[a]	Effect Size[b]
PARENT'S PHYSICAL HEALTH				
Parent's Health Status	3.5	3.5	0	2.4
PARENT'S MENTAL HEALTH				
Parenting Stress Index (PSI): Parental Distress	25.0	25.9	–0.9**	–9.6
PSI: Parent-Child Dysfunctional Interaction	17.0	17.4	–0.5*	–7.5
Composite International Diagnostic Interview Short Form (CIDI): Major Depression (average probability)	15.6	15.7	–0.1	–0.2
FAMILY FUNCTIONING				
Family Environment Scale: Conflict	1.7	1.7	–0.1*	–9.2
Sample Size	**1,092**	**1,021**	**2,113**	

SOURCE: Parent interviews, child assessments, interviewer observations, and assessments of semi-structured parent-child interactions conducted when children were approximately 24 months old.

NOTE: All impact estimates were calculated using regression models, where each site was weighted equally.

[a]The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for all program and control group members.

[b]The effect size was calculated by dividing the estimated impact per eligible applicant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact expressed as a percentage of the standard deviation).

*Significantly different from zero at the .10 level, two-tailed test
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

APPENDIX TABLE D.6M

IMPACTS ON PARENTING BEHAVIOR AT AGE 2, BY PROGRAM APPROACH IN 1997 (Eligible Applicants)

	Center-Based Programs				Home-Based Programs				Mixed-Approach Programs			
Outcome	Program Group	Control Group	Impact Estimate Per Eligible Applicant[a]	Effect Size[b]	Program Group	Control Group	Impact Estimate Per Eligible Applicant[a]	Effect Size[b]	Program Group	Control Group	Impact Estimate Per Eligible Appklicant[a]	Effect Size[b]
CHILDREN'S COGNITIVE AND LANGUAGE DEVELOPMENT												
Bayley Mental Development Index (MDI)	89.0	86.6	2.5*	18.3	91.4	90.4	1.0	7.3	88.2	86.8	1.4	10.5
Percentage with Bayley MDI below 85***[c]	36.3	45.5	–9.2*	–18.9	31.6	32.4	–0.9	–1.8	38.2	44.8	–6.6	–13.6
MacArthur Communicative Development Inventories (CDI): Vocabulary Production	54.2	55.2	–1.0	–4.4	56.1	53.3	2.8*	12.6	57.8	53.6	4.2**	18.7
MacArthur CDI: Sentence Complexity*	8.4	8.7	–0.3	–3.2	8.3	7.7	0.6	7.9	9.2	7.0	2.2***	26.8
CHILDREN'S SOCIAL-EMOTIONAL DEVELOPMENT												
Child Behavior Checklist: Aggressive Behavior Problems	9.4	10.3	–0.9	–16.9	10.4	10.4	–0.1	–1.3	9.8	10.7	–0.8*	–15.1
Parent-Child Structured Play: Engagement of Parent	4.4	4.4	0.0	–3.7	4.3	4.3	0.0	1.8	4.3	4.1	0.3**	22.2
Parent-Child Structured Play: Negativity Toward Parent	1.8	1.8	0.0	–1.5	1.7	1.7	0.0	–2.2	1.8	2.0	–0.2*	–17.0
Parent-Child Structured Play: Child Sustained Attention with Objects	5.0	5.1	–0.1	–10.7	5.1	5.0	0.0	4.4	5.1	4.9	0.2*	17.5
CHILDREN'S HEALTH												
Percentage of Children with Poor or Fair Health***	12.2	10.1	2.1	6.2	11.8	14.6	–2.8	–8.2	11.8	13.8	–2.0	–5.9
QUALITY OF THE HOME ENVIRONMENT AND PARENTING												
Parent-Child Structured Play: Parent Supportiveness	4.0	4.0	0.0	–1.6	4.0	3.9	0.1*	12.4	4.1	3.9	0.2**	21.8
Home Observation for Measurement of the Environment (HOME): Support of Cognitive, Language, and Literacy Environment*	10.2	10.3	–0.1	–5.0	10.2	10.0	0.2*	9.8	10.4	10.1	0.4***	20.6
Parent-Child Structured Play: Parent Detachment	1.4	1.4	0.1	5.7	1.4	1.5	–0.1*	–13.8	1.4	1.5	–0.2**	–16.6
Knowledge of Infant Development Inventory (KIDI)	3.3	3.4	0.0	–3.7	3.4	3.3	0.1**	15.1	3.4	3.4	0.1**	14.8
PARENT'S MENTAL HEALTH AND FAMILY FUNCTIONING												
Parenting Stress Index: Parental Distress	25.3	24.9	0.4	4.3	25.2	26.2	–1.0	–10.1	24.4	26.4	–2.0***	–21.5
Family Environment Scale: Conflict	1.7	1.8	0.0	–4.9	1.7	1.7	–0.1	–11.0	1.7	1.7	0.0	–6.7

TABLE D.6M *(continued)*

Outcome	Center-Based Programs				Home-Based Programs				Mixed-Approach Programs			
	Program Group	Control Group	Impact Estimate Per Eligible Applicant[a]	Effect Size[b]	Program Group	Control Group	Impact Estimate Per Eligible Applicant[a]	Effect Size[b]	Program Group	Control Group	Impact Estimate Per Eligible Appklicant[a]	Effect Size[b]
PARENT'S PROGRESS TOWARD SELF-SUFFICIENCY												
Percentage of Parents Ever in and Education or Training Program During the 15 Months after Random Assignment***	53.0	52.3	0.8	1.5	44.9	39.4	5.6**	11.2	48.4	43.4	5.0	10.2
Average Hours per Week Parents Participated in Education or Training During the 15 Months after Random Assignment	6.6	5.5	1.1	14.6	4.8	3.7	1.1**	14.7	4.7	3.7	1.0*	12.6
Sample Size												
Parent Interview	**240**	**203**	**443**		**500**	**466**	**966**		**352**	**352**	**704**	
Bayley	**203**	**165**	**368**		**428**	**386**	**814**		**279**	**278**	**557**	
Parent-Child Interactions	**223**	**172**	**395**		**421**	**373**	**794**		**269**	**274**	**543**	
Parent Services Interview	**234**	**204**	**438**		**537**	**522**	**1,059**		**368**	**371**	**739**	

SOURCE: Parent interviews, child assessments, interviewer observations, and assessments of parent-child interactions during semi-structured tasks conducted when children were approximately 24 months old.

NOTE: All estimates were calculated using regression models, where each site was weighted equally. Only sites with at least 10 program group members and 10 control group members in the subgroup are included in the estimates for each subgroup.

[a]The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for program and control group members.

[b]The effect size is calculated by dividing the estimated impact per eligible applicant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact per participant expressed as a percentage of a standard deviation).

[c]Asterisks next to variable names indicate significance levels for statistical tests of differences in impacts across the subgroups.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

APPENDIX TABLE D.6N

IMPACTS ON PARENTING BEHAVIOR AT AGE 2, BY PATTERN OF IMPLEMENTATION (Eligible Applicants)

	Early Implementers				Later Implementers				Incomplete Implementers			
Outcome	Program Group	Control Group	Impact Estimate Per Eligible Applicant[a]	Effect Size[b]	Program Group	Control Group	Impact Estimate Per Eligible Applicant[a]	Effect Size[b]	Program Group	Control Group	Impact Estimate Per Eligible Appklicant[a]	Effect Size[b]
CHILDREN'S COGNITIVE AND LANGUAGE DEVELOPMENT												
Bayley Mental Development Index (MDI)	91.5	89.4	2.1*	15.5	86.0	84.1	1.8*	13.6	92.2	91.5	0.7	4.8
Percentage with Bayley MDI below 85***[c]	30.9	37.0	–6.1	–12.5	45.6	51.3	–5.7	–11.6	26.4	30.1	–3.7	–7.6
MacArthur Communicative Development Inventories (CDI): Vocabulary Production	60.2	56.2	4.0**	17.7	52.4	51.3	1.2	5.2	56.0	54.1	1.9	8.4
MacArthur CDI: Sentence Complexity	10.0	8.6	1.5**	18.1	7.1	6.2	0.9	11.2	8.7	8.5	0.2	2.0
CHILDREN'S SOCIAL-EMOTIONAL DEVELOPMENT												
Child Behavior Checklist: Aggressive Behavior Problems	9.2	10.5	–1.3***	–22.6	10.5	10.6	0.0	–0.3	9.9	10.5	–0.5	–9.6
Parent-Child Structured Play: Engagement of Parent**	4.6	4.4	0.2**	18.0	4.2	4.1	0.2*	13.4	4.1	4.2	–0.2	–13.6
Parent-Child Structured Play: Negativity Toward Parent	1.6	1.7	–0.1	–13.0	1.7	1.8	–0.1	–5.2	1.9	1.9	0.0	2.5
Parent-Child Structured Play: Child Sustained Attention with Objects*	5.2	5.0	0.2**	22.0	5.0	4.9	0.1	10.8	4.9	5.0	–0.1	–7.6
CHILDREN'S HEALTH												
Percentage of Children with Poor or Fair Health***	12.2	12.5	–0.3	–0.9	14.5	15.7	–1.2	–3.5	9.2	10.2	–1.0	–2.8
QUALITY OF THE HOME ENVIRONMENT AND PARENTING												
Parent-Child Structured Play: Parent Supportiveness	4.4	4.2	0.2**	20.2	3.9	3.7	0.1*	13.8	3.9	3.9	0.0	–1.9
Home Observation for Measurement of the Environment (HOME): Support of Cognitive, Language, and Literacy Environment	10.7	10.4	0.3***	19.0	9.7	9.7	0.0	1.9	10.5	10.3	0.2	10.9
Parent-Child Structured Play: Parent Detachment	1.3	1.4	–0.1*	–13.2	1.4	1.6	–0.2**	–19.0	1.5	1.5	–0.1	–4.9
Knowledge of Infant Development Inventory (KIDI)	3.5	3.4	0.0	7.1	3.3	3.2	0.1**	16.4	3.4	3.3	0.0	9.3
PARENT'S MENTAL HEALTH AND FAMILY FUNCTIONING												
Parenting Stress Index: Parental Distress	24.0	25.5	–1.4**	–15.1	25.9	27.3	–1.5**	–15.6	25.0	24.9	0.1	1.4
Family Environment Scale: Conflict	1.7	1.7	–0.1	–11.7	1.7	1.7	0.0	–3.6	1.7	1.8	–0.1	–15.0

TABLE D.6N *(continued)*

Outcome	Early Implementers: Program Group	Early Implementers: Control Group	Early Implementers: Impact Estimate Per Eligible Applicant[a]	Early Implementers: Effect Size[b]	Later Implementers: Program Group	Later Implementers: Control Group	Later Implementers: Impact Estimate Per Eligible Applicant[a]	Later Implementers: Effect Size[b]	Incomplete Implementers: Program Group	Incomplete Implementers: Control Group	Incomplete Implementers: Impact Estimate Per Eligible Appklicant[a]	Incomplete Implementers: Effect Size[b]
PARENT'S PROGRESS TOWARD SELF-SUFFICIENCY												
Percentage of Parents Ever in and Education or Training Program During the 15 Months after Random Assignment***	45.9	42.3	3.5	7.2	43.2	41.4	1.8	3.7	56.0	49.2	6.8*	13.7
Average Hours per Week Parents Participated in Education or Training During the 15 Months after Random Assignment	3.8	3.2	0.6	8.1	4.8	3.8	1.0**	12.8	7.3	5.6	1.7**	22.3
Sample Size												
Parent Interview	**381**	**352**	**733**		**417**	**391**	**808**		**294**	**278**	**572**	
Bayley	**328**	**301**	**629**		**331**	**289**	**620**		**251**	**239**	**490**	
Parent-Child Interactions	**318**	**294**	**612**		**359**	**315**	**674**		**236**	**210**	**446**	
Parent Services Interview	**390**	**374**	**764**		**429**	**405**	**834**		**320**	**318**	**638**	

SOURCE: Parent interviews, child assessments, interviewer observations, and assessments of parent-child interactions during semi-structured tasks conducted when children were approximately 24 months old.

NOTE: All estimates were calculated using regression models, where each site was weighted equally. Only sites with at least 10 program group members and 10 control group members in the subgroup are included in the estimates for each subgroup.

[a]The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for program and control group members.

[b]The effect size is calculated by dividing the estimated impact per eligible applicant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact per participant expressed as a percentage of a standard deviation).

[c]Asterisks next to variable names indicate significance levels for statistical tests of differences in impacts across the subgroups.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

APPENDIX E

SUPPLEMENTAL TABLES BY CHAPTER

CONTENTS

This Appendix presents tables that contain additional data cited in Chapters II through VII. The table numbers indicate which chapter they relate to, for example, tables for chapter III are numbered E.III.1, E.III.2, and so forth. They are presented in the order in which they are referred to in the text of the main report.

Section **Page**

APPENDIX E.II.A

RANDOM ASSIGNMENT AND RELATED ISSUES IN THE EARLY HEAD START EVALUATION: COMMONLY ASKED QUESTIONS AND ANSWERS

Mathematica Policy Research, Inc.

February 21, 1997

Since the beginning of random assignment and program enrollment in June 1996, Mathematica has responded to numerous questions. fu some instances, we and ACYF have clarified procedures, modified approaches, and developed new policies. This document brings together the most important questions that EHS programs and local research teams have been asking. This document includes some questions from a previous Q&A document about random assignment and several new questions that have come up in the past several months. We begin with a review of the key steps in random assignment. The Q&As are grouped under random assignment, maintaining the research sample, and completing the HSFIS application and enrollment forms. If you have any questions about these procedures or how to handle specific situations, contact Diane Paulsell at MPR at (609) 275-2297 (e-mail: dpaulsell@mathematica-mpr.com).

A. OVERVIEW OF RANDOM ASSIGNMENT PROCEDURES

All programs should be submitting families for random assignment according to the following procedures:

1. Determine each family's eligibility for Early Head Start (EHS), and for those who are eligible, complete the full HSFIS application and enrollment forms.

2. Within one month of application, transmit the following information to Mathematica Policy Research, Inc. (MPR) *and* to the local research partner:

   - A fax cover sheet listing the names of applicants, verification of three aspects of their eligibility for the research sample, and the subgroup to which they belong (if random assignment subgroups have been identified for the program)
   - Pages 1-4 of the HSFIS form for each applicant listed on the fax cover sheet
   - A copy of the signature page of the consent form for each applicant listed on the fax cover sheet; this information should be sent to Rosiland Page (phone: 609-897-7413; fax: 609-936-1462; e-mail: rpage@mathematica-mpr.com).

3. Receive lists of families selected for the program and for the comparison group from MPR (usually within 48 hours). (At the request of the Denver program, we send that site only the list of program families.)

4. Notify families selected for *the* program group, enroll them in the program, and begin providing services as soon as possible. (The local research partner will notify families assigned to the comparison group.)

5. Send full copies of the HSFIS application and enrollment forms for each applicant submitted for random assignment to MPR within two weeks. MPR will do the data entry until the automated HSFIS is ready for use.

6. Local research staff should periodically fax a listing to MPR that documents when each comparison group family was notified of its status.

B. RANDOM ASSIGNMENT

1. Which families are eligible to participate in the research?

To participate in the research, all families must meet the general EHS eligibility criteria established by ACYF and the more specific criteria established by individual EHS programs. In addition, all families who meet these criteria must also meet the following conditions:

- The family must include a child who is 12 months old or younger on the date of application or a pregnant woman. In addition, this child must have been born or have an expected due date that falls between September 1, 1995 and June 30, 1997.

- The family must not have participated in the Comprehensive Child Development Program (CCDP) for 3 months or more during the previous 5 years.

- The family must not have participated in Head Start, Early Head Start, a Parent Child Center (PCC), or another similar program for 3 months or more during the previous 12 months.

- The family must be enrolled (submitted for random assignment) no later than June 30, 1998.

2. Must programs submit all eligible families for random assignment?

Yes. Programs should not enroll any families who meet the eligibility criteria outlined above outside of the random assignment process unless an exemption has been granted by ACYF. Non-research program slots should only be used for the following types of families:

- Families who are eligible for EHS but do not meet the research eligibility requirements because their child is more than 12 months old; their child's birthdate falls outside of the eligibility window; or they previously participated in CCDP, Head Start, Early Head Start, PCC, or another similar program

- Families assigned to the program group who will not participate in the research because they are part of a multiple family household as described in question 7 below

- Families who are granted an exemption from random assignment by ACYF

3. On what grounds will ACYF grant an exemption from random assignment?

ACYF will grant an exemption from random assignment only in cases of extreme need. For example, ACYF may grant an exemption if program enrollment is necessary to protect a child from physical harm.

4. What steps should a program follow to request an exemption?

The program director must request an exemption *before* submitting the family for random assignment. An exemption cannot be requested after random assignment because a family was assigned to the comparison group. To request an exemption, the program director must first make a request to her or his local research team. The local research team will review the request, discuss it with the program, and, if appropriate, forward it to ACYF. The final decision about whether to grant an exemption from random assignment will be made by ACYF. Contact Helen Raikes (202-205-2247) to request an exemption.

5. What should a program do if it cannot obtain informed parental consent for minors to participate in the EHS Evaluation?

For minors to participate in the evaluation, it is very important to obtain informed parental consent. However, we understand that in certain cases it may be nearly impossible for a program to obtain such consent for a minor (for example, if the minor is living in a separate household, is estranged from parents, or is emancipated). Regardless, we request that programs make every effort to obtain the parent's or a guardian's consent in all cases, even if such consent is not required for the minor to receive services. But, if it is impossible or prohibitively expensive for a program to obtain such consent, we will randomize the minor without consent if the program takes the following steps:

- Write a memo to MPR that clearly and succinctly explains (1) the local program requirements for serving a minor without parental consent, and (2) the state guidelines for providing other types of public services to minors without consent (for example, the general guidelines that AFDC or WIC use to provide assistance to minors.) An *example* of such an explanation is as follows:

  In this state, minors can receive public services as independent cases and without parent or guardian consent if they are living apart from their parent or guardian; consequently, the local EHS program can also provide services to the individual without parent or guardian consent. In addition, circumstances are such that we cannot reasonably be expected to obtain parent or guardian consent in this and other such cases. Therefore, we ask that Mathematica randomize this minor for the EHS Evaluation without such consent.

- Reference this memo on the consent form for all such cases where parent or guardian consent cannot be obtained.

- In the case of legally emancipated minors, provide documentation of emancipation if at all possible. Documentation, if it exists, will likely vary by state. If it is not possible to obtain such documentation, the above memo should be referenced.

- In the case of a minor who is married, the husband should not sign the consent form and is not considered a legal guardian. A minor who is legally married is recognized as having achieved the age of majority for any legal purpose and is responsible for her own acts. Therefore, a mother who is younger than 18 and married should sign the consent form herself.

6. How will MPR randomly assign families in multiple family households?

We want to avoid situations in which a program family and a comparison group family live together because it may be difficult to prevent the comparison group family from receiving services (comparison family members may be present during home visits, for example). Therefore, when two or more families—related or not—are living together in the same home, they will be considered a multiple family household and if they both (all) apply to the EHS program, they will be treated as *one family* for purposes of random assignment. In other words, they will be assigned to the same group, and both will be considered program group families, or both will be considered comparison group families. If both families are selected for the program group, the EHS program may decide whether to serve both families or not. However, only one family will participate in the national evaluation assessment activities, and only that family will count toward the 75 program families required for the research sample. Similarly, if the two (or more) families are assigned to the comparison group, MPR will select just one of them to participate in the evaluation assessments.

7. What is the program's role in handling multiple family households (MFHs)?

Whenever possible, programs should notify MPR about a family's status as an MFH *prior* to random assignment. We will not re-assign families after random assignment, as this will diminish the validity of random assignment and will negatively affect the evaluation. Program staff should take the steps listed below when submitting families from MFHs for random assignment:

- *If MFH families apply to EHS at the same time:* The program should verify that the families are part of an MFH and indicate this on each family's HSFIS application. Program staff should clearly indicate on the top of the HSFIS form and on the cover page of their submission to Mathematica that the families are part of an MFH. This can be done by writing "MFH" in the upper right hand comer of the first page of the HSFIS application form and by writing "MFH" next to each family's information on the submission cover page. If the families are assigned to the program group, MPR will randomly select one family to participate in the research assessments. The program should then serve this family; it has the option to decide whether and to what extent it will serve the other family(ies).

- *If an EHS applicant is living in the same household with a family already enrolled in the program group and the program wants to serve this family:* The program should

verify that the applicant family lives with the program group family and clearly indicate both on top of the HSFIS form and on the cover page of their submission that the family lives with a program group family. This can be done by writing MFH-P in the upper right hand comer of the first page of the HSFIS application form and by writing MFH-P next to the applicant's information on the submission cover page. The program should also attach a copy of the first page of the program family's HSFIS application so that MPR can match the new applicant to the program family. The program may decide whether or not to serve this new family.

However, the family will not become part of the research sample, will not count toward the 75 program families required for the research sample, and will not participate in the research assessments.

- *If an EHS applicant is living in the same household with a comparison group family:* Because programs are not providing services to comparison group families, we recognize that these cases may be more difficult for programs to identify. However, when programs are able to identify such cases, the applicants Will not be eligible to receive program services and will not become part of the research sample. Therefore, programs should not recruit families who are living in the same households with a comparison-group family.

8. How does MPR handle the random assignment of twin children?

The family unit, not the child, is randomly assigned to either the program group or the comparison group. If the family is assigned to the program group, both twins may be served by the EHS program, but only one twin will be assessed for research purposes. MPR will select the evaluation focus child at random. If one twin has a disability, that will have no bearing on the selection of the focus child—it will still be random.

9. How can programs ensure that they meet the 10 percent guideline for enrolling children with disabilities?

At least 10 percent of the children enrolled in Head Start must be children with disabilities. Early Head Start programs who are beginning enrollment and who are enrolling pregnant women should work with project officers to ensure that they follow a recruitment strategy likely to result in an enrollment in which at least 10 per cent of the children have disabilities, or in which risk factors for disabilities are present, as relevant within seven states for which specified categories of risk constitute eligibility. All programs will need to demonstrate that they have an intensive recruitment effort for children with identified disabilities and that they are working with appropriate agencies (such as United Cerebral Palsy, Association for Retarded Persons, and neonatal intensive care units) to recruit children with disabilities.

10. Should families whose incomes exceed the Head Start income eligibility requirement be submitted as a subgroup?

We will not form subgroups for families who are over income. Since no more than 10 percent of the EHS program enrollment can be families who are over the income eligibility requirement, we recommend recruiting less than 10 percent to prevent having more of these families selected into the program group than the comparison group.

C. MAINTAINING THE RESEARCH SAMPLE

1. After programs have filled all of their slots, it is likely that a few families will leave the program. If a family leaves the program, what procedures should be followed to fill the vacancy?

Programs should submit applicants for random assignment whenever a vacancy occurs, until the maximum research sample size has been reached. Applicants (whether newly recruited or from a waiting list) should be sent to MPR only when the program has an opening. For every one opening, the program can send from one to 'a few' applicants for random assignment (except for the Utah program, which must send an even number of applicants). Since we conduct random assignment one case at a time (except in Utah, where we use a batch process), if the first family is assigned to the program group, then this family can be enrolled in the program and the rest can be returned to the waiting list. If, however, the first family is assigned to the comparison group, then we will randomly assign the remaining families, one by one, until a family is assigned to the program group and the vacancy if filled.

2. What happens if a family drops out of the program or moves out of the service area after being randomly assigned to the program but before the program begins delivering services?

These families will be treated the same as families who drop out of the program at any other time. They will still be included in the program group of the research sample. The data collectors will make every reasonable effort to follow families who drop out at any time in the process and, whenever possible, conduct assessments on the same schedule as planned for other families in the research sample. In its analyses, MPR will adjust for the extent to which the families receive services, but it is very important that programs make every effort to retain, to the extent possible, all families who are selected for the EHS program group. ***It is very important to be sure that the family being recruited understands and is truly interested in receiving program services and participating in the research before completing the application/enrollment forms that are submitted to MPR.***

3. What happens if a comparison group family moves out of the service area?

If a comparison family moves away from the EHS service area, we do not consider it to have dropped out of the research sample. Wherever comparison group families live, they will receive whatever services are normally available in the community without EHS, and therefore constitute a legitimate comparison. The national evaluation will make reasonable attempts to

follow such families and to conduct the interviews and assessments. MPR will work with the local researchers to determine whether it is feasible to continue following such families and what costs are reasonable to incur for this purpose.

4. What happens if a family says it no longer wishes to participate in the research?

All families participating in the EHS national evaluation may refuse to participate in the research at any time. However, once a family goes through random assignment, it will not be dropped from the research sample, and MPR, through the local researchers, will continue to invite these families to participate in future rounds of interviews and assessments. As with all contacts with families, MPR's approach to communicating with families who have refused to participate will ensure that they are contacted in a respectful and sensitive manner.

When a program family refuses to participate in data collection activities, the local researcher will contact program personnel. Working together, the research and program staff will decide on the appropriate approach to take with the family, taking into account the family's current circumstances and needs. They should remind the family of its commitment to participate in both the program and the research. They should also be aware that the family's circumstances may change, and the family may decide to participate in the program and research at a future date. If the researcher finds that the family still refuses at the time of the next round of data collection, the researcher should again notify the program so that the program can counsel the family about its options. If, after considering various alternatives the family still refuses to participate in the research, the program should disenroll the family. The research team will continue to attempt to contact the family at the time of future data collections to obtain minimal data for the purpose of understanding why refusals occur.

5. What should a program do if it discovers that a family is ineligible for EHS after that family has been randomly assigned?

The program should write a memo to MPR documenting the specifics of the case and requesting directions for how to proceed. If the family was assigned to the program group, the program should explain the error to the family and explain that it cannot continue to receive services. If the family was assigned to the comparison group, the local researcher should inform the family that it will no longer be part of the research. It is very important that programs check eligibility carefully before submitting families for random assignment so that the number of such cases is kept to a minimum.

6. Will families in which the focus child dies or is miscarried continue participating in the research?

No. MPR will not continue collecting data from families after the focus child has died or is miscarried. While we feel that some valuable information about service use could be collected from these families, we have decided that problems with continuing data collection outweigh the advantages. It is up to the program to decide whether it will continue providing services to these

families. In addition, MPR will not change the focus child after he or she has been selected, even if the focus child dies and another sibling is eligible to participate in the research.

7. What happens if the focus child's primary caregiver changes?

Because the focus of our research is the child, when the focus child becomes the responsibility of a new primary caregiver, MPR will follow the child. For example, a child may begin living with a different parent or a grandmother midway through the evaluation. It is up to the program to decide how it wishes to handle service delivery to the child's new primary caregiver.

Cases of adoption constitute an exception to this rule. If the focus child is adopted by another family, we may not be able to follow the child, because the birth mother may not know the identity of the adoptive parents and adoption agencies may not provide this information. Therefore, MPR will stop collecting data from families in which the focus child is adopted by another family.

8. Can program group families who move to the service area of another EHS research site enroll in EHS in their new location?

Yes. If a program group family moves to the service area of another research site, the family can enroll in the new program without going through random assignment a second time. However. it is up to the new program to determine whether it will enroll the family. Because each local program has tailored its eligibility criteria to its local area and program design. the family may not be eligible for the new program. Also. the new program may already have a waiting list for families who want to enroll in EHS.

9. Can comparison group families receive services that are similar to EHS services?

Comparison group families are permitted to apply for any services available in their communities, except those services restricted to EHS program participants. At one site, several comparison group families have enrolled in a local CCDP program. At another site, a comparison group family enrolled in Child Development Associate (CDA) training provided by the EHS program to community members who are interested in becoming child care providers. MPR believes these situations provide a valid counterfactual, because they represent the types of services available to non-EHS families in local communities.

10. What happens if comparison group families receive program services?

Programs should make every effort to avoid providing services to comparison group families. If you discover that services have mistakenly been provided to a comparison group family, please document the type and extent of services received and notify MPR as soon as possible. For national evaluation purposes, comparison group families who receive program services will still be counted as comparison group members when the data are analyzed. We

need the documentation so we can understand how these families differ from comparison members who are not receiving services.

D. THE HEAD START FAMILY INFORMATION SYSTEM (HSFIS)

1. Who can programs call about questions relating to the HSFIS?

Questions about the HSFIS should be directed to Lihong Ma at NIE (301-738-1122). A back-up is Bill Wilson (202-205-8913). Ellen Kisker at MPR (609-275-2379) can also field questions, particularly pertaining to the application and enrollment forms.

2. Do the complete HSFIS application and enrollment forms have to be completed before random assignment?

Yes. However, only the first 4 pages need to be sent to MPR at that time. The rest of the HSFIS pages can be sent later.

3. Which version of the HSFIS forms should programs use?

Program should use the new version of the HSFIS application and enrollment forms that were provided to programs at the December 1996 Infant/Toddler Institute. However, programs should continue using the first 4 pages of the July version (the Preface), even though these pages were not included with the most resent version. These are the four pages that programs fax to MPR when submitting names for random assignment.

4. If the applicant is a pregnant woman, do programs have to fill out the HSFIS information on the program child after the child is born and then send that to MPR?

Yes. ACYF has specified the need for this information. Programs must send HSFIS application and enrollment information on program children to MPR after the child is born. At some point in the future it may be possible for MPR to obtain this information in an automated fashion from the HSFIS contractor. However, until we notify programs otherwise, programs should provide us with the hard copy HSFIS forms. Programs are not required to collect this information for babies born to comparison group families. This information will be collected by local research teams as described under question 5.

5. What is the program's role in collecting HSFIS data on the child of a comparison group family?

The program is responsible for completing the HSFIS application and enrollment forms for all applicants at intake, including those who get assigned to the comparison group. However. some women enroll in EHS during pregnancy, before the birth of the focus child. The program is *not* responsible for collecting HSFIS application and enrollment data for children born after

enrollment who are assigned to the comparison group. In addition. the program is *not* responsible for collecting HSFIS service module data for comparison group families.

6. What is the local research team's role in collecting HSFIS data on babies born to comparison group families after enrollment?

Local research teams will be responsible for collecting HSFIS application and enrollment data on babies born to comparison group mothers enrolled during pregnancy. MPR is developing a form for data collectors to use at the time of the 12-month Parent Services Follow Up Interview (PSI). Some questions from the HSFIS will be omitted because the information will be obtained during other interviews with the parent. Although we do not think that the subcontract budget implications of adding this form will be significant, we will monitor the actual costs for completing the PSI and make adjustments as necessary.

7. Does the "Project Head Start Consents, Authorizations, and Releases Form" need to be completed and medical records information obtained (to complete the HSFIS forms) and sent to MPR before random assignment?

It would be ideal to have the forms and information at the point of random assignment, but it is not imperative. We understand that obtaining medical releases and records information takes time and we do not wish to hold up the random assignment process because of it. Programs should send the Head Start release forms and completed HSFIS question based on the medical records to MPR a soon as possible after they are completed.

TABLE E.IIB

EXPLANATORY VARIABLES FOR REGRESSIONS

Variable	Percent of Families	Number of Sites in Which the Variable Varies
Family and Parent Characteristics		
Age of Mother		
Younger than 20[a]	39	17
20 to 25	33	17
25 or older	28	16
Race and Ethnicity		
White non-Hispanic[a]	37	17
Black non-Hispanic	35	16
Hispanic	24	17
Other (Asian or Pacific Islander, American Indian, Eskimo, Aleut)	5	16
English Language Ability		
Primary language is English[a]	79	16
Primary language is not English but the applicant speaks English well	10	16
Primary language is not English and the applicant does not speak English well	11	12
Highest Grade Completed		
Less than 9[a]	11	17
9 to 11	37	17
12 or earned a GED certificate	28	17
More than 12	24	17
Primary Occupation		
Employed[a]	23	17
In school or a training program	22	17
Unemployed	28	17
Out of the Labor Force	27	17
Living Arrangements		
Living with a partner[a]	25	17
Living with other adults	39	17

TABLE E.IIB *(continued)*

Variable	Percent of Families	Number of Sites in Which the Variable Varies
Living with no other adults	36	17
Number of Children in the Household		
Ages 0 to 5	0.5[c]	17
Ages 6 to 17	0.5[c]	17
Household Income as a Percent of the Poverty Level (Percent)		
Less than 33[a]	25	17
33 to 67	25	17
67 to 99	21	17
100 or more	11	17
Missing	18	17
Welfare Receipt		
AFDC/TANF	34	17
Food Stamps	48	17
WIC	87	17
SSI	7	17
Inadequate Resources		
Food	5	17
Housing	12	17
Money	20	17
Medical care	14	17
Transportation	21	17
Number of Moves in the Past Year	0.9[c]	17
Random Assignment Date		
Before 10/96[a]	36	15
10/96 to 6/97	31	16
After 6/97	33	16
Child Characteristics		
Age of Focus Child (Months)		
Unborn	25	17
Less than 3[a]	21	17
3 to 6	22	17
6 or more	32	17
Birthweight Less than 2,500 Grams[b]	7	17

TABLE E.IIB *(continued)*

Variable	Percent of Families	Number of Sites in Which the Variable Varies
Born More Than 3 Weeks Early[b]	10	17
Male	51	17
Received an Evaluation Because of Concerns About the Child's Overall Health and Development or Because of Suspected Developmental Delay[b]	5	17
Risk Categories		
Has established risks[b]	8	17
Has biological or medical risks[b]	12	17
Has environmental risks[b]	24	17
Previously Enrolled in Head Start or Another Childhood Development Program[b]	13	17
Missing Section on Child Characteristics[b]	8	17

SOURCE: HSFIS application and enrollment forms.

[a]This indicator variable was omitted from the explanatory variables in the regression models.

[b]These variables pertain to families with focus children who were born at the time of program application. The variables were set to zero for families with unborn focus children (because an indicator variable for these families was included in the regression models), but the figures in the second and third columns of this table pertain only to those with born children.

[c]Figures for these continuous variables are variable means.

APPENDIX E.III

TABLE E.III.1

IMPACTS ON SERVICE RECEIPT DURING THE FIRST 16 MONTHS, BY PROGRAM APPROACH IN 1997

Service (Percentage)	Center-Based Programs			Home-Based Programs			Mixed-Approach Programs		
	Program Group	Control Group	Impact Estimate Per Eligible Applicant	Program Group	Control Group	Impact Estimate Per Eligible Applicant	Program Group	Control Group	Impact Estimate Per Eligible Applicant
ANY SERVICES									
Any Key Services***[a,b]	91.7	79.7	12.0***	96.6	73.8	22.8***	96.2	72.9	23.3***
Any Home Visits Or Center-Based Child Care***	84.8	54.9	30.0***	95.1	47.0	48.1***	94.4	52.7	41.7***
HOME VISITS									
Any Home Visits***	67.8	22.3	45.4***	94.2	34.2	59.9***	90.2	38.5	51.7***
Any Child Development Services During Home Visits***	66.3	18.3	48.0***	93.5	31.8	61.7***	89.7	37.0	52.7***
Weekly Home Visits (1st Followup)***	5.0	2.1	2.9	59.7	3.2	56.5***	54.2	3.5	50.7***
CHILD CARE									
Any Child Care***	91.0	84.4	6.6**	72.3	71.5	0.8	80.1	70.2	10.0***
Any Center-Based Child Care***	75.1	42.1	32.9***	24.7	19.9	4.8*	41.9	25.4	16.5***
Average Hours/Week of Center Care***	16.0	8.5	7.5***	2.8	1.9	0.9**	5.7	2.8	2.9***
Concurrent Child Care Arrangements***	48.8	35.0	13.8***	28.4	30.1	-1.7	32.3	28.5	3.8
Average Weekly Out-of-Pocket Cost of Care***	$4.25	14.71	-10.46***	$5.46	$5.66	-$0.20	$5.68	$8.43	-$2.75*
CASE MANAGEMENT									
Any Case Management Meetings***	73.7	54.2	19.5***	88.5	48.4	40.2***	89.5	48.4	41.0***
Weekly Case Management—1st Followup***	19.8	7.7	12.1***	61.0	11.0	50.0***	49.2	6.0	43.1***
GROUP ACTIVITIES									
Any Group Parenting Activities***	67.9	29.0	38.9***	69.0	31.2	37.8***	64.9	31.8	33.1***
Any Parent-Child Group Activities***	23.4	9.7	13.6***	37.8	7.7	30.1***	34.8	11.8	23.1***
EARLY INTERVENTION SERVICES									
Identification of Child's Disability***	5.8	2.2	3.6**	5.1	2.5	2.6**	2.6	4.2	-1.5
Services for Child With Disability***	3.9	0.4	3.5**	3.8	1.7	2.1**	1.7	2.3	-0.5
CHILD HEALTH SERVICES									
Any Child Health Services***	100.1	99.4	0.7	99.1	99.6	-0.5	99.5	99.3	0.3
Any Doctor Visits***	95.6	94.3	1.3	93.6	93.4	0.2	88.8	91.4	-2.6
Any Emergency Room Visits***	49.2	44.4	4.9	41.3	43.2	-1.9	38.2	32.9	5.3
Any Dentist Visits***	16.2	10.3	5.9	10.7	10.8	-0.1	7.1	7.9	-0.8

TABLE III.1 (*Continued*)

Service (Percentage)	Center-Based Programs			Home-Based Programs			Mixed-Approach Programs		
	Program Group	Control Group	Impact Estimate Per Eligible Applicant	Program Group	Control Group	Impact Estimate Per Eligible Applicant	Program Group	Control Group	Impact Estimate Per Eligible Applicant
Any Screening Tests***	59.9	55.2	4.7	52.4	49.4	3.0	55.8	54.2	1.7
Any Immunizations***	97.7	96.4	1.3	96.3	97.9	-1.6	98.4	95.5	2.9**
FAMILY DEVELOPMENT SERVICES									
Any Education-Related Services***	78.3	57.0	21.2***	83.4	45.2	38.2***	85.8	52.4	33.4***
Any Employment-Related Services***	54.7	23.4	31.3***	71.6	32.6	39.0***	70.1	29.7	40.4***
Any Family Health Services***	98.9	98.2	0.7	97.6	98.2	-0.6	97.5	97.6	0.1
Any Family Mental Health Services***	14.7	10.7	4.0	19.7	18.4	1.3	15.6	17.8	-2.2
Transportation Assistance***	22.7	15.1	7.6*	29.8	20.7	9.1***	31.3	18.5	12.8***
Housing Assistance***	49.8	38.3	11.5**	55.6	54.2	1.4	46.5	46.1	0.4
Sample Size	**234**	**204**	**438**	**537**	**522**	**1,059**	**368**	**371**	**739**

SOURCE: Parent Services Follow-Up Interviews completed an average of 7 and 16 months after random assignment.

NOTE: All estimates were calculated using regression models, where each site was weighted equally.

[a]Home visits, case management, center-based child care, and/or group parenting activities.

[b]Asterisks next to variable names indicate significance levels for statistical tests of differences in impacts across the subgroups.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

TABLE E.III.2

IMPACTS ON SERVICE RECEIPT DURING THE FIRST 16 MONTHS, BY PATTERN OF IMPLEMENTATION

Service (Percentage)	Early Implementers			Later Implementers			Incomplete Implementers		
	Program Group	Control Group	Impact Estimate Per Eligible Applicant	Program Group	Control Group	Impact Estimate Per Eligible Applicant	Program Group	Control Group	Impact Estimate Per Eligible Applicant
ANY SERVICES									
Any Key Services***[a,b]	98.0	79.8	18.2***	95.5	71.4	24.1***	91.7	73.3	18.4***
Any Home Visits Or Center-Based Child Care***	96.2	52.2	44.0***	92.0	51.4	40.6***	88.4	48.9	39.5***
HOME VISITS									
Any Home Visits***	90.0	31.2	58.8***	88.7	33.5	55.1***	80.1	34.2	45.9***
Any Child Development Services During Home Visits***	90.3	29.7	60.6***	87.0	32.1	54.9***	79.3	29.2	50.1***
Weekly Home Visits (1st Followup)***	53.2	2.1	51.1***	38.1	4.2	33.9***	42.2	3.5	38.7***
CHILD CARE									
Any Child Care***	81.9	75.2	6.8**	74.4	70.9	3.6	82.8	76.4	6.4**
Any Center-Based Child Care***	49.0	28.8	20.2***	39.1	26.1	13.0***	40.3	25.3	15.0***
Average Hours/Week of Center Care***	9.5	4.2	5.3***	5.5	3.4	2.1***	6.1	3.1	3.1***
Concurrent Child Care Arrangements***	38.9	33.0	5.9*	33.5	26.1	7.4**	30.7	33.7	-3.1
Average Weekly Out-of-Pocket Cost of Care***	$5.25	$8.71	-$3.46**	$5.03	$8.24	-$3.21***	$6.06	$8.89	-$2.83*
CASE MANAGEMENT									
Any Case Management Meetings***	90.1	60.0	30.2***	81.0	44.2	36.8***	85.3	43.7	41.6***
Weekly Case Management—1st Followup***	55.7	7.6	48.1***	37.3	8.6	28.6***	50.0	8.0	42.0***
GROUP ACTIVITIES									
Any Group Parenting Activities***	73.6	35.6	38.0***	63.1	24.4	38.7***	64.3	33.5	30.8***
Any Parent-Child Group Activities***	34.1	13.8	20.3***	36.8	5.8	31.0***	27.7	9.8	17.9***
EARLY INTERVENTION SERVICES									
Identification of Child's Disability***	4.1	3.8	0.3	4.7	2.3	2.4*	3.7	3.6	0.1
Services for Child With Disability***	3.5	1.2	2.2*	3.0	1.4	1.6	2.1	3.0	-0.9
CHILD HEALTH SERVICES									
Any Child Health Services***	99.9	99.2	0.8	98.8	99.5	-0.7	99.8	99.7	0.1
Any Doctor Visits***	96.6	95.6	1.0	86.3	88.6	-2.4	94.5	94.9	-0.4
Any Emergency Room Visits***	47.6	40.1	7.5*	34.5	34.5	0.0	45.7	44.8	0.9

TABLE E.III.2 (*Continued*)

Service (Percentage)	Early Implementers			Later Implementers			Incomplete Implementers		
	Program Group	Control Group	Impact Estimate Per Eligible Applicant	Program Group	Control Group	Impact Estimate Per Eligible Applicant	Program Group	Control Group	Impact Estimate Per Eligible Applicant
Any Dentist Visits***	12.1	8.8	3.4	10.1	8.9	1.2	10.4	11.0	-0.6
Any Screening Tests***	52.7	49.6	3.2	51.7	52.5	-0.8	63.0	56.0	7.1*
Any Immunizations***	98.3	96.5	1.8	96.6	96.2	0.3	97.1	97.5	-0.4
FAMILY DEVELOPMENT SERVICES									
Any Education-Related Services***	83.5	51.0	32.5***	76.3	48.3	28.0***	88.3	55.0	33.3***
Any Employment-Related Services***	68.2	28.8	39.4***	62.2	25.7	36.5***	72.6	33.6	39.0***
Any Family Health Services***	99.4	97.9	1.6*	95.9	97.0	-1.2	98.9	98.8	0.1
Any Family Mental Health Services***	22.0	21.4	0.6	12.9	11.9	1.1	15.6	16.3	-0.7
Transportation Assistance***	28.8	17.4	11.4***	30.4	15.7	14.8***	26.9	23.0	3.9
Housing Assistance***	52.3	46.1	6.2*	39.2	40.4	-1.2	62.7	59.1	3.7
Sample Size	**390**	**374**	**764**	**429**	**405**	**834**	**320**	**318**	**638**

SOURCE: Parent Services Follow-Up Interviews completed an average of 7 and 16 months after random assignment.

NOTE: All estimates were calculated using regression models, where each site was weighted equally.

[a]Home visits, case management, center-based child care, and/or group parenting activities.

[b]Asterisks next to variable names indicate significance levels for statistical tests of differences in impacts across the subgroups.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

TABLE E.III.3

IMPACTS ON SERVICE RECEIPT DURING THE FIRST 16 MONTHS, BY PATTERN OF IMPLEMENTATION OF CHILD DEVELOPMENT SERVICES

Service (Percentage)	Early Implementers			Single Period Implementers			Incomplete Implementers		
	Program Group	Control Group	Impact Estimate Per Eligible Applicant	Program Group	Control Group	Impact Estimate Per Eligible Applicant	Program Group	Control Group	Impact Estimate Per Eligible Applicant
ANY SERVICES									
Any Key Services***[a,b]	97.4	80.0	17.3***	90.0	70.9	19.1***	96.6	74.2	22.4***
Any Home Visits Or Center-Based Child Care***	93.6	53.3	40.3***	86.1	53.0	33.0***	95.0	48.5	46.5***
HOME VISITS									
Any Home Visits***	86.3	30.4	55.9***	77.6	33.6	44.0***	93.6	35.7	57.9***
Any Child Development Services During Home Visits***	85.6	28.2	57.4***	76.5	30.6	45.9***	93.2	33.4	59.9***
Weekly Home Visits (1st Followup)***	42.3	2.5	39.9***	28.5	4.8	23.7***	59.5	3.8	55.7***
CHILD CARE									
Any Child Care***	84.1	76.2	7.8***	78.8	76.2	2.6	75.8	69.7	6.0**
Any Center-Based Child Care***	54.1	30.7	23.4***	46.0	30.5	15.6***	28.3	20.7	7.5***
Average Hours/Week of Center Care***	10.9	5.2	5.6***	7.2	3.7	3.5***	3.3	2.0	1.3**
Concurrent Child Care Arrangements***	43.1	32.5	10.6***	29.9	30.4	-0.5	30.0	29.3	0.6
Average Weekly Out-of-Pocket Cost of Care**	$4.94	$11.11	-$6.17***	$4.03	$7.07	-$3.04**	$6.55	$7.82	-$1.27
CASE MANAGEMENT									
Any Case Management Meetings***	89.5	60.8	28.7***	71.3	41.2	30.1***	92.8	46.1	46.8***
Weekly Case Management—1st Followup***	50.8	9.1	41.7***	24.9	4.5	20.4***	62.5	10.7	52.8***
GROUP ACTIVITIES									
Any Group Parenting Activities***	68.2	31.6	36.6***	69.9	32.3	37.6***	64.1	29.0	35.1***
Any Parent-Child Group Activities***	32.9	13.0	19.9***	36.8	7.7	29.1***	31.2	7.6	23.6***
EARLY INTERVENTION SERVICES									
Identification of Child's Disability***	4.5	4.4	0.2	3.2	2.9	0.3	4.8	2.3	2.5**
Services for Child With Disability***	3.6	1.5	2.1*	2.3	2.5	-0.2	2.7	1.5	1.2
CHILD HEALTH SERVICES									
Any Child Health Services***	99.9	99.2	0.7	99.6	99.4	0.1	99.2	99.5	-0.3
Any Doctor Visits***	97.3	95.2	2.1	85.9	89.7	-3.8	93.3	92.9	0.3
Any Emergency Room Visits***	46.7	40.5	6.2	34.2	33.1	1.1	44.9	43.8	1.1

TABLE E.III.3 (*Continued*)

Service (Percentage)	Early Implementers			Single Period Implementers			Incomplete Implementers		
	Program Group	Control Group	Impact Estimate Per Eligible Applicant	Program Group	Control Group	Impact Estimate Per Eligible Applicant	Program Group	Control Group	Impact Estimate Per Eligible Applicant
Any Dentist Visits***	13.4	9.4	4.0	9.7	10.5	-0.8	9.1	9.0	0.1
Any Screening Tests***	59.1	52.7	6.4*	48.1	52.0	-4.0	57.1	53.3	3.8
Any Immunizations***	97.9	95.6	2.2	97.7	96.8	1.0	96.6	97.6	-1.1
FAMILY DEVELOPMENT SERVICES									
Any Education-Related Services***	79.9	48.2	31.8***	79.6	56.3	23.3***	88.2	49.0	39.2***
Any Employment-Related Services***	64.1	26.1	38.0***	60.2	25.9	34.3***	76.7	34.7	42.0***
Any Family Health Services***	99.4	97.9	1.5*	97.0	97.3	-0.3	97.7	98.0	-0.3
Any Family Mental Health Services***	20.3	16.3	4.0	12.8	14.0	-1.2	18.6	17.1	1.5
Transportation Assistance***	21.2	13.5	7.7***	31.0	18.4	12.6***	33.3	24.8	8.5***
Housing Assistance***	47.6	44.5	3.2	45.7	43.8	2.0	58.0	54.9	3.1
Sample Size	**395**	**362**	**757**	**296**	**293**	**589**	**448**	**442**	**890**

SOURCE: Parent Services Follow-Up Interviews completed an average of 7 and 16 months after random assignment.

NOTE: All estimates were calculated using regression models, where each site was weighted equally.

[a]Home visits, case management, center-based child care, and/or group parenting activities.

[b]Asterisks next to variable names indicate significance levels for statistical tests of differences in impacts across the subgroups.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

TABLE E.III.4

IMPACTS ON SERVICE RECEIPT DURING THE FIRST 16 MONTHS, BY PATTERN OF IMPLEMENTATION OF FAMILY DEVELOPMENT SERVICES

Service (Percentage)	Early Implementers			Single Period Implementers			Incomplete Implementers		
	Program Group	Control Group	Impact Estimate Per Eligible Applicant	Program Group	Control Group	Impact Estimate Per Eligible Applicant	Program Group	Control Group	Impact Estimate Per Eligible Applicant
ANY SERVICES									
Any Key Services***[a,b]	97.3	79.3	18.0***	92.8	69.8	23.0***	95.8	77.3	18.6***
Any Home Visits Or Center-Based Child Care***	96.3	54.3	41.9***	87.5	46.8	40.7***	94.3	53.2	41.1***
HOME VISITS									
Any Home Visits***	94.4	39.3	55.1***	81.7	27.8	53.9***	80.9	28.9	52.0***
Any Child Development Services During Home Visits***	94.1	37.1	56.9***	79.8	25.3	54.6***	81.3	26.4	54.8***
Weekly Home Visits (1st Followup)***	64.5	4.3	60.2***	33.3	2.0	31.3***	25.4	3.1	22.3***
CHILD CARE									
Any Child Care***	77.8	72.5	5.3**	76.0	71.5	4.4	92.3	83.2	9.0**
Any Center-Based Child Care***	35.6	23.9	11.8***	40.0	26.1	13.9***	64.7	37.8	26.8***
Average Hours/Week of Center Care***	5.0	3.0	2.0***	5.7	3.5	2.2***	14.4	6.1	8.3***
Concurrent Child Care Arrangements***	34.6	28.3	6.3**	35.4	26.5	8.9***	33.8	45.3	-11.5**
Average Weekly Out-of-Pocket Cost of Care***	$5.64	$6.61	-$1.00	$5.57	$9.11	-$3.54***	$4.33	$12.18	-$7.85***
CASE MANAGEMENT									
Any Case Management Meetings***	93.4	59.4	34.0***	76.9	40.1	36.8***	84.1	52.0	32.1***
Weekly Case Management—1st Followup***	63.9	9.8	54.1***	34.3	5.4	28.9***	40.4	9.7	30.6***
GROUP ACTIVITIES									
Any Group Parenting Activities***	68.4	31.0	37.5***	63.6	27.6	36.1***	73.2	38.2	35.1***
Any Parent-Child Group Activities***	35.3	11.7	23.6***	34.5	5.9	28.6***	26.6	13.0	13.6***
EARLY INTERVENTION SERVICES									
Identification of Child's Disability***	4.6	2.9	1.7	3.7	2.4	1.3	4.7	5.4	-0.7
Services for Child With Disability***	3.7	1.6	2.1**	2.4	1.4	1.0	2.6	2.8	-0.2
CHILD HEALTH SERVICES									
Any Child Health Services***	99.6	99.3	0.3	99.2	99.7	-0.8	100.0	99.3	0.8
Any Doctor Visits***	96.7	95.3	1.4	86.3	88.5	-2.2	96.5	97.6	-1.1

TABLE E.III.4 (*Continued*)

Service (Percentage)	Early Implementers			Single Period Implementers			Incomplete Implementers		
	Program Group	Control Group	Impact Estimate Per Eligible Applicant	Program Group	Control Group	Impact Estimate Per Eligible Applicant	Program Group	Control Group	Impact Estimate Per Eligible Applicant
Any Emergency Room Visits***	46.7	40.2	6.5**	35.2	33.8	1.4	49.9	49.9	0.0
Any Dentist Visits***	9.8	8.1	1.7	10.8	10.8	0.1	12.9	10.6	2.4
Any Screening Tests***	55.4	52.0	3.4	53.9	55.0	-1.1	57.8	49.0	8.8
Any Immunizations***	97.5	96.7	0.9	96.9	96.7	0.2	97.7	96.9	0.8
FAMILY DEVELOPMENT SERVICES									
Any Education-Related Services***	85.5	49.0	36.5***	77.4	51.9	25.5***	86.6	55.1	31.5***
Any Employment-Related Services***	73.5	35.0	38.6***	59.8	23.9	35.9***	70.2	28.3	41.9***
Any Family Health Services***	99.5	98.0	1.5**	96.0	96.8	-0.8	99.3	100.0	-0.7
Any Family Mental Health Services***	22.1	22.1	-0.0	14.3	12.3	2.0	11.9	12.2	-0.2
Transportation Assistance***	33.7	22.3	11.4***	26.1	16.4	9.7***	23.1	14.7	8.5*
Housing Assistance***	56.8	55.9	0.8	44.3	41.1	3.2	53.0	43.7	9.3
Sample Size	**500**	**484**	**984**	**466**	**450**	**916**	**173**	**163**	**336**

SOURCE: Parent Services Follow-Up Interviews completed an average of 7 and 16 months after random assignment.

NOTE: All estimates were calculated using regression models, where each site was weighted equally.

[a]Home visits, case management, center-based child care, and/or group parenting activities.

[b]Asterisks next to variable names indicate significance levels for statistical tests of differences in impacts across the subgroups.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

TABLE E.III.5

IMPACTS ON SERVICE RECEIPT DURING THE FIRST 16 MONTHS, BY WORK REQUIREMENTS FOR MOTHERS RECEIVING CASH ASSISTANCE

Service (Percentage)	Welfare Mothers of Children Under 1 Required to Work			Welfare Mothers of Children Under 1 Not Required to Work		
	Program Group	Control Group	Impact Estimate Per Eligible Applicant	Program Group	Control Group	Impact Estimate Per Eligible Applicant
ANY SERVICES						
Any Key Services***[a,b]	96.8	82.4	14.5***	93.5	70.4	23.0***
Any Home Visits Or Center-Based Child Care***	93.4	52.8	40.6***	90.8	50.6	40.2***
HOME VISITS						
Any Home Visits***	86.8	29.3	57.4***	86.2	35.7	50.6***
Any Child Development Services During Home Visits***	86.2	27.4	58.8***	85.4	32.8	52.6***
Weekly Home Visits (1st Followup)***	44.6	4.2	40.4***	43.9	3.5	40.5***
CHILD CARE						
Any Child Care***	83.4	80.8	2.7	76.5	69.7	6.8***
Any Center-Based Child Care***	45.9	31.2	14.7***	40.1	24.5	15.6***
Average Hours/Week of Center Care**	9.4	4.8	4.6***	5.4	2.9	2.5***
Concurrent Child Care Arrangements***	42.8	37.6	5.3*	28.4	26.4	2.0
Average Weekly Out-of-Pocket Cost of Care**	$5.47	$10.94	-$5.47***	$5.23	$7.11	-$1.87*
CASE MANAGEMENT						
Any Case Management Meetings***	89.8	62.3	27.5***	81.9	41.4	40.6***
Weekly Case Management—1st Followup***	52.2	11.7	40.5***	43.7	6.2	37.4***
GROUP ACTIVITIES						
Any Group Parenting Activities***	70.0	30.7	39.3***	65.1	31.3	33.8***
Any Parent-Child Group Activities***	32.6	9.9	22.7***	33.8	9.4	24.4***
EARLY INTERVENTION SERVICES						
Identification of Child's Disability***	7.0	3.9	3.1**	2.3	2.6	-0.3
Services for Child With Disability***	5.1	2.0	3.1***	1.5	1.5	-0.1
CHILD HEALTH SERVICES						
Any Child Health Services***	99.8	99.5	0.3	99.3	99.4	-0.1
Any Doctor Visits***	99.1	97.9	1.2	88.0	89.1	-1.1
Any Emergency Room Visits***	49.8	45.7	4.1	37.0	35.4	1.6

TABLE E.III.5 (*Continued*)

Service (Percentage)	Welfare Mothers of Children Under 1 Required to Work			Welfare Mothers of Children Under 1 Not Required to Work		
	Program Group	Control Group	Impact Estimate Per Eligible Applicant	Program Group	Control Group	Impact Estimate Per Eligible Applicant
Any Dentist Visits***	13.3	8.3	5.0**	8.7	10.8	-2.1
Any Screening Tests***	51.1	48.1	3.0	58.0	55.9	2.1
Any Immunizations***	97.4	96.3	1.1	97.3	96.9	0.4
FAMILY DEVELOPMENT SERVICES						
Any Education-Related Services***	83.8	53.0	30.8***	81.7	49.6	32.1***
Any Employment-Related Services***	67.1	29.4	37.7***	67.2	29.3	37.9***
Any Family Health Services***	100.0	99.6	0.5	96.6	96.6	-0.0
Any Family Mental Health Services***	22.8	17.1	5.8**	13.4	15.4	-1.9
Transportation Assistance***	26.1	19.9	6.3**	30.1	18.0	12.1***
Housing Assistance***	50.8	44.7	6.1**	50.9	49.9	1.1
Sample Size	**642**	**622**	**1,264**	**497**	**475**	**972**

SOURCE: Parent Services Follow-Up Interviews completed an average of 7 and 16 months after random assignment.

NOTE: All estimates were calculated using regression models, where each site was weighted equally.

[a]Home visits, case management, center-based child care, and/or group parenting activities.

[b]Asterisks next to variable names indicate significance levels for statistical tests of differences in impacts across the subgroups.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

APPENDIX E.IV

TABLE E.IV.1
IMPACTS ON CHILD OUTCOMES AT AGE 2, BY PROGRAM APPROACH IN 1997

Outcome	Center-Based					Home-Based Programs					Mixed-Approach Programs			
	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]		Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]		Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]
CHILD COGNITIVE DEVELOPMENT														
Average Bayley Mental Development Index (MDI)	90.4	87.5	2.9*	21.7		91.6	90.5	1.1	8.0		88.3	86.8	1.5	11.1
Percentage with MDI < 85***[d]	30.2	42.0	-11.8*	-24.2		31.5	32.5	-1.0	-2.0		37.9	44.9	-7.0	-14.4
Percentage with MDI < 100	74.3	82.7	-8.4	-20.4		73.0	71.9	1.2	2.8		77.0	80.0	-3.0	-7.4
CHILD LANGUAGE DEVELOPMENT														
Average MacArthur CDI—Vocabulary Production	53.8	55.2	-1.4	-6.1		56.4	53.5	3.0*	13.3		57.5	53.1	4.4**	19.4
Percentage with Vocabulary Production < 25***	12.4	10.5	2.0	6.1		11.3	11.2	0.2	0.5		5.4	8.5	-3.1	-9.8
Percent MacArthur CDI—Combining Words***	82.9	84.6	-1.7	-4.0		77.3	75.6	1.7	4.1		83.6	75.2	8.5**	20.2
Average MacArthur CDI—Sentence Complexity*	8.2	8.7	-0.5	-5.6		8.5	7.8	0.7	8.3		9.1	6.8	2.3***	28.4
Percentage with Sentence Complexity < 2***	31.1	24.1	7.1	15.5		28.3	30.2	-1.9	-4.2		22.9	31.5	-8.6**	-18.9
CHILD SOCIAL-EMOTIONAL DEVELOPMENT														
Bayley BRS—Emotional Regulation	3.7	3.6	0.1	9.9		3.6	3.6	0.1	7.0		3.6	3.7	0.0	-4.5
Bayley BRS—Orientation/Engagement	3.7	3.7	0.0	-3.1		3.6	3.6	0.0	0.5		3.7	3.7	0.0	-2.5
Child Behavior Checklist—Aggression	9.3	10.4	-1.0	-18.6		10.4	10.5	-0.1	-1.2		9.8	10.6	-0.9*	-15.9
Parent-Child Structured Play: Child Sustained Attention with Objects	5.0	5.1	-0.1	-13.4		5.1	5.0	0.0	4.6		5.1	4.9	0.2*	18.0
Parent-Child Structured Play: Child Negativity Toward Parent	1.8	1.8	0.0	-1.5		1.7	1.7	0.0	-2.3		1.8	2.0	-0.2	-17.5
Parent-Child Structured Play: Child Engagement	4.3	4.4	-0.1	-7.8		4.3	4.3	0.0	2.1		4.3	4.0	0.3**	23.1
Sample Size														
Parent Interview	**240**	**203**	**443**			**500**	**466**	**966**			**352**	**352**	**704**	
Bayley	**203**	**165**	**368**			**428**	**386**	**814**			**279**	**278**	**557**	
Parent-Child Interactions	**223**	**172**	**395**			**421**	**373**	**794**			**269**	**274**	**543**	

SOURCE: Parent interviews, child assessments, interviewer observations, and assessments of semi-structured parent-child interactions conducted when children were approximately 24 months old.

NOTE: All estimates were calculated using regression models, where each site was weighted equally. Only sites with at least 10 program group members and 10 control group members in the subgroup are included in the estimates for each subgroup.

TABLE E.IV.1 *(continued)*

[a]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had instead been assigned to the program group. This unobserved mean is estimated as the difference between the program group mean for participants and the impact per participant. A participant is defined as a program group member who received more than one Early Head Start home visit, met with an Early Head Start case manager more than once, received at least two weeks of Early Head Start center-based services, and/or participated in Early Head Start parent-child group activities.

[b]The estimated impact per participant is measured as the estimated impact per eligible applicant divided by the proportion of program group members who participated in Early Head Start services (which varied by site). The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for program and control group members.

[c]The effect size is calculated by dividing the estimated impact per participant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact per participant expressed as a percentage of a standard deviation).

[d]Asterisks next to variable names indicate significance levels for statistical tests of differences in impacts across the subgroups.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

TABLE E.IV.2

IMPACTS ON CHILD OUTCOMES AT AGE 2, BY PATTERN OF IMPLEMENTATION

	Early Implementers					Later Implementers					Incomplete Implementers			
Outcome	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]		Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]		Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]
CHILD COGNITIVE DEVELOPMENT														
Average Bayley Mental Development Index (MDI)	92.0	89.8	2.2*	16.2		86.3	84.2	2.1*	15.5		92.5	91.6	0.9	6.3
Percentage with MDI < 85***[d]	29.3	35.7	-6.4	-13.1		44.7	51.3	-6.6	-13.5		25.6	30.8	-5.3	-10.8
Percentage with MDI < 100***	67.3	72.3	-5.0	-12.1		84.3	90.7	-6.4**	-15.6		72.3	68.8	3.5	8.4
CHILD LANGUAGE DEVELOPMENT														
Average MacArthur CDI—Vocabulary Production	60.0	55.8	4.2**	18.5		52.9	51.7	1.2	5.3		56.0	54.1	1.8	8.1
Percentage with Vocabulary Production < 25***	7.4	8.7	-1.3	-4.0		12.3	13.7	-1.4	-4.4		8.8	8.2	0.6	2.0
Percent MacArthur CDI—Combining Words***	86.1	80.2	5.9*	14.2		71.7	70.6	1.1	2.6		86.2	84.9	1.3	3.1
Average MacArthur CDI—Sentence Complexity	9.9	8.4	1.5**	18.8		7.5	6.5	1.0	12.5		8.5	8.5	0.0	-0.3
Percentage with Sentence Complexity < 2***	22.9	25.5	-2.6	-5.8		36.0	37.2	-1.2	-2.6		20.3	22.8	-2.5	-5.5
CHILD SOCIAL-EMOTIONAL DEVELOPMENT														
Bayley BRS—Emotional Regulation*	3.8	3.7	0.1*	14.2		3.6	3.6	0.0	-2.0		3.4	3.6	-0.2	-18.3
Bayley BRS—Orientation/Engagement	3.9	3.9	0.0	-1.1		3.5	3.4	0.0	4.4		3.6	3.7	0.0	-5.5
Child Behavior Checklist—Aggression	9.3	10.6	-1.3***	-23.4		10.5	10.5	0.0	-0.7		9.8	10.4	-0.6	-10.5
Parent-Child Structured Play: Child Sustained Attention with Objects	5.2	5.0	0.2**	22.6		5.0	4.9	0.1	12.9		4.9	5.0	-0.1	-10.5
Parent-Child Structured Play: Child Negativity Toward Parent	1.6	1.8	-0.1	-13.1		1.7	1.8	-0.1	-5.8		1.9	1.9	0.0	2.6
Parent-Child Structured Play: Child Engagement**	4.6	4.4	0.2**	18.7		4.3	4.1	0.2*	14.9		4.0	4.2	-0.2	-18.0
Sample Size														
Parent Interview	**381**	**352**	**733**			**417**	**391**	**808**			**294**	**278**	**572**	
Bayley	**328**	**301**	**629**			**331**	**289**	**620**			**251**	**239**	**490**	
Parent-Child Interactions	**318**	**294**	**612**			**359**	**315**	**674**			**236**	**210**	**446**	

SOURCE: Parent interviews, child assessments, interviewer observations, and assessments of semi-structured parent-child interactions conducted when children were approximately 24 months old.

NOTE: All estimates were calculated using regression models, where each site was weighted equally. Only sites with at least 10 program group members and 10 control group members in the subgroup are included in the estimates for each subgroup.

TABLE E.IV.2 *(continued)*

[a]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had instead been assigned to the program group. This unobserved mean is estimated as the difference between the program group mean for participants and the impact per participant. A participant is defined as a program group member who received more than one Early Head Start home visit, met with an Early Head Start case manager more than once, received at least two weeks of Early Head Start center-based services, and/or participated in Early Head Start parent-child group activities.

[b]The estimated impact per participant is measured as the estimated impact per eligible applicant divided by the proportion of program group members who participated in Early Head Start services (which varied by site). The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for program and control group members.

[c]The effect size is calculated by dividing the estimated impact per participant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact per participant expressed as a percentage of a standard deviation).

[d]Asterisks next to variable names indicate significance levels for statistical tests of differences in impacts across the subgroups.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

APPENDIX TABLE E.IV.3

IMPACTS ON CHILD OUTCOMES AT AGE 2, BY PATTERN OF IMPLEMENTATION OF CHILD DEVELOPMENT SERVICES

	Early Implementers				Implementers In One Period But Not Both				Incomplete Implementers			
Outcome	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]
CHILD COGNITIVE DEVELOPMENT												
Average Bayley Mental Development Index (MDI)	91.3	88.5	2.9**	21.3	86.3	85.5	0.8	6.0	92.1	90.4	1.6	12.1
Percentage with MDI < 85***[d]	30.8	41.5	-10.7**	-22.0	44.6	47.8	-3.2	-6.6	27.4	32.9	-5.5	-11.3
Percentage with MDI < 100***	70.1	75.4	-5.3	-13.0	82.4	85.6	-3.1	-7.6	73.2	75.3	-2.1	-5.1
CHILD LANGUAGE DEVELOPMENT												
Average MacArthur CDI— Vocabulary Production	59.0	55.2	3.8**	16.9	50.4	51.1	-0.7	-3.0	58.5	54.1	4.4**	19.7
Percentage with Vocabulary Production < 25***	8.5	9.0	-0.5	-1.4	12.6	10.9	1.8	5.5	7.6	11.4	-3.8	-11.9
MacArthur CDI— Percentage Combining Words***	86.2	80.2	6.0*	14.4	74.4	75.5	-1.1	-2.6	81.3	79.0	2.3	5.6
Average MacArthur CDI— Sentence Complexity	9.8	8.2	1.6**	19.9	6.9	7.4	-0.5	-5.8	8.9	7.7	1.2*	14.5
Percentage with Sentence Complexity < 2***	25.3	28.7	-3.4	-7.5	31.8	28.9	2.9	6.3	24.4	27.9	-3.5	-7.7
CHILD SOCIAL-EMOTIONAL DEVELOPMENT												
Bayley BRS—Emotional Regulation	3.8	3.7	0.1**	16.8	3.6	3.6	0.0	-4.1	3.5	3.6	-0.1	-13.7
Bayley BRS— Orientation/Engagement	3.8	3.7	0.0	3.0	3.5	3.5	0.0	1.0	3.7	3.7	-0.1	-6.9
Child Behavior Checklist— Aggression	9.1	10.5	-1.4***	-24.8	10.4	10.7	-0.3	-5.7	10.2	10.6	-0.4	-6.2
Parent-Child Structured Play: Child Sustained Attention with Objects	5.1	4.9	0.2**	23.8	5.0	5.0	-0.1	-5.0	5.0	5.0	0.0	3.1
Parent-Child Structured Play: Child Negativity Toward Parent	1.7	1.8	-0.1	-8.8	1.8	1.9	-0.1	-10.7	1.8	1.8	0.0	-1.7
Parent-Child Structured Play: Child Engagement	4.5	4.3	0.3***	23.4	4.2	4.2	0.0	-0.9	4.3	4.2	0.1	4.7
Sample Size												
Parent Interview	**389**	**348**	**737**		**302**	**290**	**592**		**401**	**383**	**784**	
Bayley	**340**	**288**	**628**		**254**	**239**	**493**		**316**	**302**	**618**	
Parent-Child Interactions	**348**	**297**	**645**		**245**	**235**	**480**		**320**	**287**	**607**	

SOURCE: Parent interviews, child assessments, interviewer observations, and assessments of semi-structured parent-child interactions conducted when children were approximately 24 months old.

NOTE: All estimates were calculated using regression models, where each site was weighted equally. Only sites with at least 10 program group members and 10 control group members in the subgroup are included in the estimates for each subgroup.

TABLE E.IV.3 *(continued)*

[a]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had instead been assigned to the program group. This unobserved mean is estimated as the difference between the program group mean for participants and the impact per participant. A participant is defined as a program group member who received more than one Early Head Start home visit, met with an Early Head Start case manager more than once, received at least two weeks of Early Head Start center-based services, and/or participated in Early Head Start parent-child group activities.

[b]The estimated impact per participant is measured as the estimated impact per eligible applicant divided by the proportion of program group members who participated in Early Head Start services (which varied by site). The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for program and control group members.

[c]The effect size is calculated by dividing the estimated impact per participant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact per participant expressed as a percentage of a standard deviation).

[d]Asterisks next to variable names indicate significance levels for statistical tests of differences in impacts across the subgroups.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

APPENDIX TABLE E.IV.4

IMPACTS ON CHILD OUTCOMES AT AGE 2, BY PATTERN OF IMPLEMENTATION OF FAMILY DEVELOPMENT SERVICES

	Early Implementers				Implementers In One Period But Not Both				Incomplete Implementers			
Outcome	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]
CHILD COGNITIVE DEVELOPMENT												
Average Bayley Mental Development Index (MDI)	90.1	88.5	1.6	12.0	89.0	86.8	2.2**	16.3	93.2	92.6	0.6	4.2
Percentage with MDI < 85***[d]	35.5	38.8	–3.3	–6.8	36.0	45.3	–9.3**	–19.0	22.8	22.9	–0.1	–0.2
Percentage with MDI < 100***	73.6	75.4	–1.8	–4.4	79.0	82.2	–3.2	–7.8	66.5	70.7	–4.1	–10.1
CHILD LANGUAGE DEVELOPMENT												
Average MacArthur CDI— Vocabulary Production	59.5	54.7	4.8***	21.4	52.4	52.9	–0.4	-1.9	57.9	53.8	4.1	18.1
Percentage with Vocabulary Production < 25***	7.5	8.6	–1.1	–3.3	11.9	11.3	0.7	2.1	8.5	13.2	–4.7	–14.6
MacArthur CDI— Percentage Combining Words***	86.3	81.8	4.5*	10.8	74.2	75.3	–1.1	–2.6	85.0	78.5	6.5	15.5
Average MacArthur CDI— Sentence Complexity	9.9	8.8	1.1*	13.4	7.2	6.8	0.4	4.6	9.5	7.4	2.1*	26.4
Percentage with Sentence Complexity < 2***	21.5	24.2	–2.7	–5.8	34.6	32.4	2.2	4.9	20.4	30.1	–9.8*	–21.4
CHILD SOCIAL–EMOTIONAL DEVELOPMENT												
Bayley BRS—Emotional Regulation	3.6	3.6	0.0	1.6	3.6	3.6	0.0	–2.5	3.7	3.8	-0.1	-6.3
Bayley BRS— Orientation/Engagement	3.8	3.8	0.0	0.7	3.5	3.4	0.0	4.4	3.8	3.9	–0.1	–13.1
Child Behavior Checklist— Aggression	9.8	10.7	–0.9**	–16.6	10.5	10.5	0.0	–0.2	8.8	9.7	–0.9	–16.6
Parent-Child Structured Play: Child Sustained Attention with Objects	5.2	5.0	0.2**	16.8	5.0	4.9	0.1	7.6	4.9	4.9	–0.1	–5.0
Parent-Child Structured Play: Child Negativity Toward Parent	1.7	1.8	–0.1	–12.1	1.7	1.8	–0.1	–7.0	1.8	1.8	0.0	1.5
Parent-Child Structured Play: Child Engagement*	4.4	4.2	0.2**	16.7	4.3	4.2	0.1	5.1	4.2	4.4	–0.3	–21.6
Sample Size												
Parent Interview	**461**	**441**	**902**		**449**	**429**	**878**		**182**	**151**	**333**	
Bayley	**390**	**382**	**772**		**369**	**328**	**697**		**151**	**119**	**270**	
Parent-Child Interactions	**386**	**373**	**759**		**375**	**331**	**706**		**152**	**115**	**267**	

SOURCE: Parent interviews, child assessments, interviewer observations, and assessments of semi–structured parent–child interactions conducted when children were approximately 24 months old.

NOTE: All estimates were calculated using regression models, where each site was weighted equally. Only sites with at least 10 program group members and 10 control group members in the subgroup are included in the estimates for each subgroup.

TABLE E.IV.4 *(continued)*

[a]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had instead been assigned to the program group. This unobserved mean is estimated as the difference between the program group mean for participants and the impact per participant. A participant is defined as a program group member who received more than one Early Head Start home visit, met with an Early Head Start case manager more than once, received at least two weeks of Early Head Start center–based services, and/or participated in Early Head Start parent–child group activities.

[b]The estimated impact per participant is measured as the estimated impact per eligible applicant divided by the proportion of program group members who participated in Early Head Start services (which varied by site). The estimated impact per eligible applicant is measured as the difference between the regression–adjusted means for program and control group members.

[c]The effect size is calculated by dividing the estimated impact per participant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact per participant expressed as a percentage of a standard deviation).

[d]Asterisks next to variable names indicate significance levels for statistical tests of differences in impacts across the subgroups.

*Significantly different from zero at the .10 level, two–tailed test.
**Significantly different from zero at the .05 level, two–tailed test.
***Significantly different from zero at the .01 level, two–tailed test.

APPENDIX TABLE E.IV.5

IMPACTS ON CHILD OUTCOMES AT AGE 2, BY WORK REQUIREMENTS FOR MOTHERS RECEIVING CASH ASSISTANCE

	Welfare Mothers of Children Under 1 Required to Work					Welfare Mothers of Children Under 1 Not Required to Work			
Outcome	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]		Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]
CHILD COGNITIVE DEVELOPMENT									
Average Bayley Mental Development Index (MDI)	92.0	89.4	2.6***	19.4		88.8	87.4	1.4	10.0
Percentage with MDI < 85*[d]	29.8	36.1	–6.2*	–12.8		36.4	42.6	–6.2*	–12.6
Percentage with MDI < 100***	68.8	77.0	–8.2**	–20.0		78.8	80.9	–2.1	–5.1
CHILD LANGUAGE DEVELOPMENT									
Average MacArthur CDI—Vocabulary Production	56.6	55.4	1.2	5.4		56.0	53.1	3.0*	13.3
Percentage with Vocabulary Production < 25***	10.5	12.2	–1.7	–5.3		8.8	8.9	–0.2	–0.5
Average MacArthur CDI—Combining Words***	82.9	83.1	–0.2	–0.6		79.8	73.7	6.0**	14.4
Average MacArthur CDI—Sentence Complexity	9.3	8.7	0.6	7.6		8.2	7.1	1.1*	13.9
Percentage with Sentence Complexity < 2***	27.4	24.8	2.6	5.8		26.5	32.2	–5.7*	–12.6
CHILD SOCIAL–EMOTIONAL DEVELOPMENT									
Bayley BRS—Emotional Regulation	3.7	3.7	0.0	2.9		3.6	3.6	–0.1	–7.1
Bayley BRS—Orientation/Engagement	3.7	3.7	0.0	3.3		3.6	3.6	0.0	–2.3
Child Behavior Checklist—Aggression	9.7	10.0	–0.3	–5.4		10.0	10.7	–0.7*	–12.1
Parent-Child Structured Play: Child Sustained Attention with Objects	5.1	5.0	0.1	8.2		5.0	4.9	0.0	4.7
Parent-Child Structured Play: Child Negativity Toward Parent	1.6	1.7	–0.1	–10.0		1.8	1.9	–0.1	–6.9
Parent-Child Structured Play: Child Engagement	4.5	4.4	0.2**	14.6		4.2	4.2	0.0	2.4
Sample Size									
Parent Interview	**589**	**555**	**1,144**			**503**	**466**	**969**	
Bayley	**501**	**447**	**948**			**409**	**382**	**791**	
Parent-Child Interactions	**468**	**425**	**893**			**445**	**394**	**839**	

SOURCE: Parent interviews, child assessments, interviewer observations, and assessments of semi–structured parent–child interactions conducted when children were approximately 24 months old.

NOTE: All estimates were calculated using regression models, where each site was weighted equally. Only sites with at least 10 program group members and 10 control group members in the subgroup are included in the estimates for each subgroup.

TABLE E.IV.5 *(continued)*

[a]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had instead been assigned to the program group. This unobserved mean is estimated as the difference between the program group mean for participants and the impact per participant. A participant is defined as a program group member who received more than one Early Head Start home visit, met with an Early Head Start case manager more than once, received at least two weeks of Early Head Start center–based services, and/or participated in Early Head Start parent–child group activities.

[b]The estimated impact per participant is measured as the estimated impact per eligible applicant divided by the proportion of program group members who participated in Early Head Start services (which varied by site). The estimated impact per eligible applicant is measured as the difference between the regression–adjusted means for program and control group members.

[c]The effect size is calculated by dividing the estimated impact per participant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact per participant expressed as a percentage of a standard deviation).

[d]Asterisks next to variable names indicate significance levels for statistical tests of differences in impacts across the subgroups.

*Significantly different from zero at the .10 level, two–tailed test.
**Significantly different from zero at the .05 level, two–tailed test.
***Significantly different from zero at the .01 level, two–tailed test.

APPENDIX E.V TABLES

TABLE E.V.1

IMPACTS ON PARENTING BEHAVIOR AT AGE 2, BY PROGRAM APPROACH IN 1997

	Center-Based Programs					Home-Based Programs					Mixed-Approach Programs			
Outcome	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]		Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]		Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]
QUALITY OF THE HOME ENVIRONMENT AND PARENTING: EMOTIONAL SUPPORT														
Home Observation for Measurement of the Environment (HOME) Emotional Responsivity	5.9	6.0	-0.1	-4.4		6.5	6.4	0.1*	9.7		6.0	5.9	0.2	11.3
Parent-Child Structured Play: Parent Supportiveness	4.0	4.1	-0.1	-4.7		4.0	3.9	0.1*	13.5		4.1	3.9	0.2**	22.9
QUALITY OF THE HOME ENVIRONMENT AND PARENTING: STIMULATION OF LANGUAGE AND LEARNING														
HOME Total Score	26.1	26.4	-0.3	-8.5		26.9	26.4	0.5**	12.8		26.3	25.6	0.7**	18.5
HOME Support of Cognitive, Language, and Literacy Environment*[d]	10.2	10.4	-0.2	-8.2		10.3	10.1	0.2*	10.4		10.4	10.0	0.4***	22.3
Percentage of Parents who set a Regular Bedtime for Child***	71.3	59.7	11.6*	23.4		58.7	54.0	4.6	9.3		59.7	55.0	4.7	9.5
Percentage of Parents and Children Who have Regular Bedtime Routines***	72.6	68.0	4.7	10.0		69.2	65.1	4.2	8.9		66.4	65.6	0.8	1.6
Percentage of Parents Who Read to Child Daily***	59.4	50.9	8.5	16.9		55.5	54.4	1.1	2.2		60.6	48.1	12.5***	25.1
Percentage of Parents Who Read to Child as Part of Bedtime Routine***	34.5	21.5	13.0**	30.8		26.0	19.5	6.5**	15.5		30.0	25.4	4.6	10.9
Reading Frequency**	4.7	4.5	0.2	13.4		4.6	4.6	0.0	-1.2		4.7	4.3	0.4***	28.7
Parent-Child Activities to Stimulate Cognitive and Language Development	4.6	4.4	0.1	13.4		4.5	4.5	0.0	4.5		4.6	4.4	0.2***	23.3
HOME Maternal Verbal/Social Skills	2.8	2.8	-0.1	-8.1		2.9	2.9	0.0	4.9		2.6	2.6	0.1	14.0
QUALITY OF THE HOME ENVIRONMENT AND PARENTING: NEGATIVE PARENTING BEHAVIOR														
Parent-Child Structured Play: Parent Detachment	1.5	1.4	0.1	8.3		1.4	1.5	-0.1*	-15.1		1.4	1.5	-0.2**	-17.5
Parent-Child Structured Play: Parent Intrusiveness	2.1	1.9	0.2	16.9		1.8	1.9	-0.1	-6.9		1.9	2.0	-0.2	-16.2
Parent-Child Structured Play: Negative Regard	1.6	1.5	0.1	17.3		1.4	1.5	0.0	-4.5		1.4	1.4	0.0	5.5
HOME Absence of Punitive Interactions	4.4	4.4	0.0	-1.6		4.3	4.3	0.0	-0.5		4.4	4.5	-0.1	-4.8
Spanked Child in Last Week***	51.0	53.9	-2.9	-5.7		49.0	52.4	-3.4	-6.9		43.6	51.9	-8.2*	-16.5
Sample Size														
Parent Interview	**240**	**203**	**443**			**500**	**466**	**966**			**352**	**352**	**704**	
Parent-Child Interactions	**223**	**172**	**395**			**421**	**373**	**794**			**269**	**274**	**543**	

SOURCE: Parent interviews and assessments of parent-child interactions during semi-structured tasks conducted when children were approximately 24 months old.

NOTE: All estimates were calculated using regression models, where each site was weighted equally. Only sites with at least 10 program group members and 10 control group members in the subgroup are included in the estimates for each subgroup.

TABLE E.V.1 *(continued)*

[a]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had instead been assigned to the program group. This unobserved mean is estimated as the difference between the program group mean for participants and the impact per participant. A participant is defined as a program group member who received more than one Early Head Start home visit, met with an Early Head Start case manager more than once, received at least two weeks of Early Head Start center-based services, and/or participated in Early Head Start parent-child group activities.

[b]The estimated impact per participant is measured as the estimated impact per eligible applicant divided by the proportion of program group members who participated in Early Head Start services (which varied by site). The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for program and control group members.

[c]The effect size is calculated by dividing the estimated impact per participant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact per participant expressed as a percentage of a standard deviation).

[d]Asterisks next to variable names indicate significance levels for statistical tests of differences in impacts across the subgroups.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

APPENDIX TABLE E.V.2

IMPACTS ON PARENTING KNOWLEDGE AT AGE 2, BY PROGRAM APPROACH IN 1997

	Center-Based Programs					Home-Based Programs					Mixed-Approach Programs			
Outcome	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]		Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]		Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]
KNOWLEDGE OF CHILD DEVELOPMENT														
Knowledge of Infant Development Inventory (KIDI)	3.4	3.4	0.0	-4.8		3.4	3.3	0.1**	16.5		3.4	3.4	0.1**	16.0
DISCIPLINE STRATEGIES														
Percentage of Parents Who Suggested Responses to Hypothetical Conflicts with Child:														
Prevent or Distract***[d]	73.1	57.4	15.8**	33.5		69.6	66.6	3.0	6.5		76.8	72.1	4.6	9.8
Remove Child or Object***	78.4	82.7	-4.4	-11.4		78.6	80.4	-1.8	-4.8		83.4	82.7	0.7	1.8
Talk and Explain***	28.0	31.2	-3.1	-6.7		34.1	28.1	6.0*	12.8		47.5	32.2	15.3***	32.7
Threaten or Command***	33.2	48.8	-15.5**	-33.1		28.8	28.2	0.5	1.1		32.9	30.0	2.9	6.1
Shout***	3.4	6.4	-3.0	-14.5		6.0	3.6	2.4	11.4		5.9	3.7	2.2	10.3
Physical Punishment***	39.6	31.0	8.7	18.9		23.0	26.1	-3.1	-6.7		25.3	31.9	-6.6*	-14.5
Percentage of Parents Suggesting Only Mild Responses to the Hypothetical Conflicts***	37.0	28.4	8.7	17.7		48.0	45.1	2.9	5.9		42.0	40.1	1.9	3.9
Index of Discipline Severity	3.0	3.0	0.0	0.9		2.5	2.6	-0.1	-5.9		2.6	2.8	-0.2	-8.9
SAFETY PRACTICES														
Has Syrup of Ipecac at Home***	19.9	22.6	-2.7	-5.9		30.2	30.6	-0.3	-0.7		35.4	33.0	2.4	5.3
Has Poison Control Number***	32.8	35.6	-2.8	-5.9		36.5	36.4	0.1	0.3		42.4	36.8	5.6	11.7
Has Gates or Doors in Front of Stairs***	86.8	89.6	-2.8	-7.1		72.7	75.5	-2.8	-7.1		82.6	80.6	2.1	5.2
Uses Guards or Gates for Windows***	78.9	85.9	-6.9	-14.5		52.6	55.4	-2.7	-5.7		62.7	63.2	-0.5	-1.1
Covers Electric Outlets***	49.1	72.1	-23.0***	-46.9		61.0	57.2	3.8	7.6		65.8	60.5	5.3	10.8
Home has Working Smoke Alarm***	90.1	83.8	6.4	17.6		83.2	83.3	-0.1	-0.3		89.8	86.4	3.4	9.4
Uses a Car Seat***	75.5	81.8	-6.3	-16.5		81.1	80.7	0.4	1.0		84.0	84.7	-0.7	-1.7
Observed Child Play Area is Safe***	51.8	58.3	-6.6	-14.0		74.6	74.2	0.4	0.9		73.3	71.4	1.9	4.1
Sample Size	**240**	**203**	**443**			**500**	**466**	**966**			**352**	**352**	**704**	

SOURCE: Parent interviews and assessments of parent-child interactions conducted when children were approximately 24 months old.

NOTE: All estimates were calculated using regression models, where each site was weighted equally. Only sites with at least 10 program group members and 10 control group members in the subgroup are included in the estimates for each subgroup.

TABLE E.V.2 *(continued)*

[a]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had instead been assigned to the program group. This unobserved mean is estimated as the difference between the program group mean for participants and the impact per participant. A participant is defined as a program group member who received more than one Early Head Start home visit, met with an Early Head Start case manager more than once, received at least two weeks of Early Head Start center-based services, and/or participated in Early Head Start parent-child group activities.

[b]The estimated impact per participant is measured as the estimated impact per eligible applicant divided by the proportion of program group members who participated in Early Head Start services (which varied by site). The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for program and control group members.

[c]The effect size is calculated by dividing the estimated impact per participant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact per participant expressed as a percentage of a standard deviation).

[d]Asterisks next to variable names indicate significance levels for statistical tests of differences in impacts across the subgroups.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

APPENDIX TABLE E.V.3

IMPACTS ON PARENTING BEHAVIOR AT AGE 2, BY PATTERN OF IMPLEMENTATION

	Early Implementers				Later Implementers				Incomplete Implementers			
Outcome	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]
QUALITY OF THE HOME ENVIRONMENT AND PARENTING: EMOTIONAL SUPPORT												
Home Observation for Measurement of the Environment (HOME) Emotional Responsivity	6.1	5.9	0.1	9.7	6.2	6.2	0.0	0.2	6.3	6.3	0.1	4.9
Parent-Child Structured Play: Parent Supportiveness	4.4	4.2	0.2**	21.1	3.9	3.7	0.2*	15.4	3.8	3.9	-0.1	-4.9
QUALITY OF THE HOME ENVIRONMENT AND PARENTING: STIMULATION OF LANGUAGE AND LEARNING												
HOME Total Score	27.1	26.5	0.7**	17.0	25.6	25.5	0.1	2.2	26.8	26.6	0.1	3.1
HOME Support of Cognitive, Language, and Literacy Environment	10.7	10.4	0.4***	20.1	9.8	9.7	0.0	1.6	10.5	10.3	0.2	10.6
Percentage of Parents who set a Regular Bedtime for Child***[d]	65.8	60.9	4.9	9.9	55.3	51.0	4.2	8.6	64.3	57.3	7.0	14.1
Percentage of Parents and Children Who have Regular Bedtime Routines***	73.9	68.9	5.0	10.7	61.5	64.2	-2.7	-5.8	71.9	66.5	5.4	11.6
Percentage of Parents Who Read to Child Daily***	62.9	49.0	13.8***	27.7	50.0	45.5	4.5	9.0	62.4	60.0	2.4	4.9
Percentage of Parents Who Read to Child as Part of Bedtime Routine***	34.3	27.2	7.1*	16.8	19.4	15.7	3.7	8.7	36.6	21.6	15.1***	35.7
Reading Frequency*	4.8	4.4	0.4***	28.0	4.4	4.3	0.1	4.7	4.7	4.7	0.1	4.8
Parent-Child Activities to Stimulate Cognitive and Language Development	4.6	4.4	0.2**	19.5	4.5	4.4	0.1	11.8	4.6	4.6	0.0	4.2
HOME Maternal Verbal/Social Skills	2.8	2.7	0.1*	12.5	2.7	2.7	0.0	-1.3	2.9	2.9	0.0	1.3
QUALITY OF THE HOME ENVIRONMENT AND PARENTING: NEGATIVE PARENTING BEHAVIOR												
Parent-Child Structured Play: Parent Detachment	1.3	1.4	-0.1*	-13.9	1.4	1.6	-0.2**	-20.7	1.5	1.5	0.0	-3.5
Parent-Child Structured Play: Parent Intrusiveness	1.7	1.7	-0.1	-4.5	1.9	1.9	-0.1	-5.9	2.2	2.2	0.0	1.0
Parent-Child Structured Play: Negative Regard	1.3	1.3	0.0	-0.5	1.5	1.5	0.0	0.2	1.7	1.6	0.1	12.6
HOME Absence of Punitive Interactions	4.5	4.5	0.0	0.4	4.3	4.4	-0.1	-5.0	4.2	4.3	-0.1	-9.7
Spanked Child in Last Week***	44.3	51.7	-7.4*	-14.9	49.3	54.7	-5.4	-10.9	48.2	53.4	-5.2	-10.3
Sample Size												
Parent Interview	**381**	**352**	**733**		**417**	**391**	**808**		**294**	**278**	**572**	
Parent-Child Interactions	**318**	**294**	**612**		**359**	**315**	**674**		**236**	**210**	**446**	

SOURCE: Parent interviews, child assessments, interviewer observations, and assessments of parent-child interactions during semi-structured tasks conducted when children were approximately 24 months old.

NOTE: All estimates were calculated using regression models, where each site was weighted equally. Only sites with at least 10 program group members and 10 control group members in the subgroup are included in the estimates for each subgroup.

TABLE E.V.3 *(continued)*

[a]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had instead been assigned to the program group. This unobserved mean is estimated as the difference between the program group mean for participants and the impact per participant. A participant is defined as a program group member who received more than one Early Head Start home visit, met with an Early Head Start case manager more than once, received at least two weeks of Early Head Start center-based services, and/or participated in Early Head Start parent-child group activities.

[b]The estimated impact per participant is measured as the estimated impact per eligible applicant divided by the proportion of program group members who participated in Early Head Start services (which varied by site). The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for program and control group members.

[c]The effect size is calculated by dividing the estimated impact per participant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact per participant expressed as a percentage of a standard deviation).

[d]Asterisks next to variable names indicate significance levels for statistical tests of differences in impacts across the subgroups.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

TABLE E.V.4

IMPACTS ON PARENTING KNOWLEDGE AT AGE 2, BY PATTERN OF IMPLEMENTATION

	Early Implementers					Later Implementers					Incomplete Implementers			
Outcome	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]		Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]		Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]
KNOWLEDGE OF CHILD DEVELOPMENT														
Knowledge of Infant Development Inventory (KIDI)	3.5	3.4	0.0	7.4		3.3	3.2	0.1**	17.8		3.4	3.4	0.1	10.8
DISCIPLINE STRATEGIES														
Percentage of Parents Who Suggested Responses to Hypothetical Conflicts with Child:														
Prevent or Distract***[d]	74.5	63.5	11.0***	23.3		74.3	69.4	4.9	10.3		69.1	66.9	2.2	4.8
Remove Child or Object***	84.6	85.5	-0.9	-2.4		81.4	84.8	-3.4	-8.9		73.8	73.5	0.3	0.8
Talk and Explain***	41.1	30.2	10.9***	23.3		39.6	33.1	6.5*	13.9		30.0	26.7	3.3	7.1
Threaten or Command***	31.6	38.4	-6.9*	-14.6		38.0	38.4	-0.4	-0.9		23.9	23.7	0.2	0.4
Shout***	5.6	3.8	1.8	8.7		4.6	4.9	-0.3	-1.5		5.2	5.4	-0.2	-0.7
Physical Punishment***	16.1	23.6	-7.6**	-16.5		32.9	35.4	-2.5	-5.5		35.5	30.5	5.0	10.9
Percentage of Parents Suggesting Only Mild Responses to the Hypothetical Conflicts***	49.5	40.8	8.6**	17.6		37.4	35.4	2.0	4.1		42.1	42.6	-0.5	-0.9
Index of Discipline Severity	2.3	2.6	-0.3**	-17.0		2.9	3.0	-0.1	-4.3		2.8	2.7	0.1	6.1
SAFETY PRACTICES														
Has Syrup of Ipecac at Home***	40.9	38.4	2.5	5.4		15.4	17.6	-2.3	-5.0		34.1	36.3	-2.2	-4.9
Has Poison Control Number***	47.6	44.3	3.3	6.8		24.2	23.2	1.0	2.1		42.2	40.0	2.1	4.4
Has Gates or Doors in Front of Stairs***	78.0	76.9	1.1	2.7		84.1	87.5	-3.5	-8.8		75.3	78.8	-3.5	-8.8
Uses Guards or Gates for Windows***	64.1	67.6	-3.5	-7.2		76.5	73.2	3.3	6.8		43.6	54.7	-11.1*	-23.1
Covers Electric Outlets***	62.0	60.4	1.6	3.3		57.0	56.9	0.1	0.3		61.8	63.3	-1.5	-3.0
Home has Working Smoke Alarm***	87.6	84.1	3.5	9.7		84.1	82.4	1.7	4.8		90.4	89.5	0.9	2.5
Uses a Car Seat***	82.9	82.7	0.2	0.5		83.8	83.6	0.2	0.5		74.2	79.7	-5.6	-14.6
Observed Child Play Area is Safe***	67.0	63.7	3.3	7.1		63.9	66.8	-2.9	-6.1		76.0	75.0	1.1	2.2
Sample Size	**381**	**352**	**733**			**417**	**391**	**808**			**294**	**278**	**572**	

SOURCE: Parent interviews conducted when children were approximately 24 months old.

NOTE: All estimates were calculated using regression models, where each site was weighted equally. Only sites with at least 10 program group members and 10 control group members in the subgroup are included in the estimates for each subgroup.

TABLE E.V.4 *(continued)*

[a]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had instead been assigned to the program group. This unobserved mean is estimated as the difference between the program group mean for participants and the impact per participant. A participant is defined as a program group member who received more than one Early Head Start home visit, met with an Early Head Start case manager more than once, received at least two weeks of Early Head Start center-based services, and/or participated in Early Head Start parent-child group activities.

[b]The estimated impact per participant is measured as the estimated impact per eligible applicant divided by the proportion of program group members who participated in Early Head Start services (which varied by site). The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for program and control group members.

[c]The effect size is calculated by dividing the estimated impact per participant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact per participant expressed as a percentage of a standard deviation).

[d]Asterisks next to variable names indicate significance levels for statistical tests of differences in impacts across the subgroups.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

TABLE E.V.5

IMPACTS ON PARENTING BEHAVIOR AT AGE 2, BY PATTERN OF IMPLEMENTATION OF CHILD DEVELOPMENT SERVICES

	Early Implementers					Implementers In One Period But Not Both					Incomplete Implementers			
Outcome	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]		Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]		Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]
QUALITY OF THE HOME ENVIRONMENT AND PARENTING: EMOTIONAL SUPPORT														
Home Observation for Measurement of the Environment (HOME) Emotional Responsivity	6.0	5.8	0.2	10.3		6.3	6.3	0.0	-2.4		6.3	6.2	0.1	7.7
Parent-Child Structured Play: Parent Supportiveness	4.3	4.0	0.2***	23.5		3.9	3.9	0.0	0.4		4.0	3.8	0.2**	18.5
QUALITY OF THE HOME ENVIRONMENT AND PARENTING: STIMULATION OF LANGUAGE AND LEARNING														
HOME Total Score*[d]	26.8	26.1	0.7**	18.4		25.8	26.1	-0.2	-6.5		26.7	26.2	0.5**	14.7
HOME Support of Cognitive, Language, and Literacy Environment	10.5	10.2	0.3**	16.4		9.9	9.8	0.1	6.1		10.5	10.3	0.2**	13.4
Percentage of Parents who set a Regular Bedtime for Child***	66.4	58.9	7.6*	15.3		60.7	55.7	5.0	10.0		57.2	54.3	2.9	5.9
Percentage of Parents and Children Who have Regular Bedtime Routines***	73.1	68.5	4.6	9.7		65.7	63.6	2.1	4.5		67.6	64.1	3.5	7.4
Percentage of Parents Who Read to Child Daily***	57.4	49.7	7.7*	15.4		58.3	48.2	10.1*	20.1		58.2	55.5	2.7	5.5
Percentage of Parents Who Read to Child as Part of Bedtime Routine***	33.4	24.5	8.9**	21.1		27.4	20.9	6.5	15.4		27.0	18.4	8.6***	20.4
Reading Frequency	4.7	4.4	0.2**	17.1		4.6	4.4	0.2	15.6		4.6	4.6	0.0	2.3
Parent-Child Activities to Stimulate Cognitive and Language Development	4.5	4.4	0.1*	13.9		4.6	4.4	0.2*	19.2		4.6	4.6	0.0	1.8
HOME Maternal Verbal/Social Skills	2.8	2.7	0.1	8.7		2.8	2.7	0.0	2.9		2.9	2.8	0.0	3.6
QUALITY OF THE HOME ENVIRONMENT AND PARENTING: NEGATIVE PARENTING BEHAVIOR														
Parent-Child Structured Play: Parent Detachment	1.3	1.5	-0.1	-12.1		1.5	1.5	-0.1	-6.3		1.4	1.6	-0.2*	-17.8
Parent-Child Structured Play: Parent Intrusiveness	1.8	1.8	0.0	-2.6		2.1	2.1	0.0	0.8		1.9	1.9	-0.1	-7.4
Parent-Child Structured Play: Negative Regard	1.4	1.4	0.0	-3.4		1.6	1.4	0.2	19.5		1.5	1.6	0.0	-4.8
HOME Absence of Punitive Interactions	4.6	4.6	0.0	0.2		4.4	4.5	-0.1	-8.9		4.1	4.1	-0.1	-4.9
Spanked Child in Last Week***	48.0	53.5	-5.5	-10.9		44.2	47.7	-3.5	-7.0		48.6	55.3	-6.7*	-13.3
Sample Size														
Parent Interview	**389**	**348**	**737**			**302**	**290**	**592**			**401**	**383**	**784**	
Parent-Child Interactions	**348**	**297**	**645**			**245**	**235**	**480**			**320**	**287**	**607**	

SOURCE: Parent interviews and assessments of parent-child interactions during semi-structured tasks conducted when children were approximately 24 months old.

NOTE: All estimates were calculated using regression models, where each site was weighted equally. Only sites with at least 10 program group members and 10 control group members in the subgroup are included in the estimates for each subgroup.

TABLE E.V.5 *(continued)*

[a]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had instead been assigned to the program group. This unobserved mean is estimated as the difference between the program group mean for participants and the impact per participant. A participant is defined as a program group member who received more than one Early Head Start home visit, met with an Early Head Start case manager more than once, received at least two weeks of Early Head Start center-based services, and/or participated in Early Head Start parent-child group activities.

[b]The estimated impact per participant is measured as the estimated impact per eligible applicant divided by the proportion of program group members who participated in Early Head Start services (which varied by site). The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for program and control group members.

[c]The effect size is calculated by dividing the estimated impact per participant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact per participant expressed as a percentage of a standard deviation).

[d]Asterisks next to variable names indicate significance levels for statistical tests of differences in impacts across the subgroups.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

APPENDIX TABLE E.V.6

IMPACTS ON PARENTING KNOWLEDGE AT AGE 2, BY PATTERN OF IMPLEMENTATION OF CHILD DEVELOPMENT SERVICES

	Early Implementers					Implementers In One Period But Not Both					Incomplete Implementers			
Outcome	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]		Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]		Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]
KNOWLEDGE OF CHILD DEVELOPMENT														
Knowledge of Infant Development Inventory (KIDI)	3.4	3.4	0.0	4.3		3.4	3.3	0.1	14.1		3.4	3.3	0.1**	16.8
DISCIPLINE STRATEGIES														
Percentage of Parents Who Suggested Responses to Hypothetical Conflicts with Child:														
Prevent or Distract***[d]	73.3	61.6	11.7***	24.9		74.3	73.3	1.0	2.2		71.8	63.4	8.4**	17.9
Remove Child or Object***	84.7	85.1	-0.4	-1.0		73.1	76.4	-3.2	-8.4		82.2	80.9	1.3	3.4
Talk and Explain***	37.5	27.9	9.7**	20.7		35.0	35.3	-0.2	-0.5		38.6	30.6	8.0**	17.2
Threaten or Command***	35.6	45.4	-9.8**	-20.9		24.4	20.3	4.0	8.6		33.8	32.5	1.3	2.8
Shout***	5.7	3.7	2.0	9.8		5.1	5.6	-0.5	-2.4		4.7	4.0	0.7	3.2
Physical Punishment***	23.5	29.9	-6.4*	-13.9		33.5	26.9	6.6	14.3		26.9	32.9	-6.0*	-13.2
Percentage of Parents Suggesting Only Mild Responses to the Hypothetical Conflicts***	43.7	35.4	8.4**	17.1		43.1	46.2	-3.1	-6.3		42.6	38.1	4.5	9.1
Index of Discipline Severity*	2.6	2.8	-0.2**	-14.5		2.8	2.5	0.2	13.4		2.6	2.9	-0.2*	-13.3
SAFETY PRACTICES														
Has Syrup of Ipecac at Home***	31.5	31.5	0.0	0.1		24.3	24.5	-0.2	-0.4		32.4	33.2	-0.8	-1.8
Has Poison Control Number***	39.5	40.3	-0.8	1.7		31.5	28.8	2.7	5.6		41.1	36.1	4.9	10.3
Has Gates or Doors in Front of Stairs***	80.6	79.5	1.0	2.6		87.7	87.8	-0.1	-0.2		71.7	76.5	-4.9	-12.3
Uses Guards or Gates for Windows***	70.4	70.3	0.1	0.2		71.6	80.9	-9.3**	-19.3		46.8	49.6	-2.8	-5.9
Covers Electric Outlets***	61.2	63.9	-2.7	-5.5		53.0	57.4	-4.4	-9.0		65.4	60.6	4.8	9.8
Home has Working Smoke Alarm***	88.7	83.8	4.9	13.6		87.3	81.6	5.7	15.9		85.7	88.6	-2.9	-7.9
Uses a Car Seat***	82.4	83.1	-0.7	-1.8		77.9	81.9	-4.0	-10.5		81.4	80.5	0.9	2.4
Observed Child Play Area is Safe***	61.5	58.0	3.6	7.7		79.7	81.2	-1.5	-3.1		66.7	70.0	-3.3	-7.1
Sample Size	**389**	**348**	**737**			**302**	**290**	**592**			**401**	**383**	**784**	

SOURCE: Parent interviews conducted when children were approximately 24 months old.

NOTE: All estimates were calculated using regression models, where each site was weighted equally. Only sites with at least 10 program group members and 10 control group members in the subgroup are included in the estimates for each subgroup.

TABLE E.V.6 *(continued)*

[a]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had instead been assigned to the program group. This unobserved mean is estimated as the difference between the program group mean for participants and the impact per participant. A participant is defined as a program group member who received more than one Early Head Start home visit, met with an Early Head Start case manager more than once, received at least two weeks of Early Head Start center-based services, and/or participated in Early Head Start parent-child group activities.

[b]The estimated impact per participant is measured as the estimated impact per eligible applicant divided by the proportion of program group members who participated in Early Head Start services (which varied by site). The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for program and control group members.

[c]The effect size is calculated by dividing the estimated impact per participant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact per participant expressed as a percentage of a standard deviation).

[d]Asterisks next to variable names indicate significance levels for statistical tests of differences in impacts across the subgroups.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

TABLE E.V.7

IMPACTS ON PARENTING BEHAVIOR AT AGE 2, BY PATTERN OF IMPLEMENTATION OF FAMILY DEVELOPMENT SERVICES

	Early Implementers				Implementers In One Period But Not Both				Incomplete Implementers			
Outcome	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]
QUALITY OF THE HOME ENVIRONMENT AND PARENTING: EMOTIONAL SUPPORT												
Home Observation for Measurement of the Environment (HOME) Emotional Responsivity*[d]	6.1	5.8	0.2**	14.9	6.2	6.1	0.1	3.8	6.5	6.7	-0.1	-9.7
Parent-Child Structured Play: Parent Supportiveness	4.2	4.1	0.1*	14.0	3.9	3.8	0.1	13.4	4.0	4.0	0.0	-0.4
QUALITY OF THE HOME ENVIRONMENT AND PARENTING: STIMULATION OF LANGUAGE AND LEARNING												
HOME Total Score	26.8	26.2	0.6***	16.7	25.8	25.9	0.0	-0.4	27.2	26.7	0.6	15.1
HOME Support of Cognitive, Language, and Literacy Environment**	10.7	10.3	0.4***	20.8	9.9	9.9	0.0	-1.5	10.4	10.1	0.4**	20.8
Percentage of Parents Who Set a Regular Bedtime for Child***	64.1	58.1	6.0*	12.2	61.5	51.5	10.0**	20.1	56.9	58.4	-1.5	-3.0
Percentage of Parents and Children Who have Regular Bedtime Routines***	70.6	66.2	4.4	9.4	66.3	65.8	0.5	1.1	72.0	67.6	4.4	9.4
Percentage of Parents Who Read to Child Daily***	59.7	49.6	10.1***	20.2	53.9	50.1	3.7	7.4	64.3	58.9	5.4	10.7
Percentage of Parents Who Read to Child as Part of Bedtime Routine***	30.2	22.3	7.9**	18.6	26.5	18.4	8.1**	19.2	35.2	31.1	4.1	9.7
Reading Frequency***	4.8	4.4	0.4***	28.9	4.5	4.4	0.0	3.5	4.7	4.7	-0.1	-4.4
Parent-Child Activities to Stimulate Cognitive and Language Development	4.6	4.4	0.2***	24.2	4.5	4.5	0.1	7.9	4.6	4.6	0.0	-2.7
HOME Maternal Verbal/Social Skills	2.9	2.8	0.1**	11.4	2.7	2.7	0.0	2.3	2.9	2.9	0.0	-0.2
QUALITY OF THE HOME ENVIRONMENT AND PARENTING: NEGATIVE PARENTING BEHAVIOR												
Parent-Child Structured Play: Parent Detachment	1.4	1.5	-0.1	-8.9	1.4	1.5	-0.1	-14.2	1.4	1.4	0.0	-3.6
Parent-Child Structured Play: Parent Intrusiveness	1.7	1.8	0.0	-4.2	2.0	2.0	-0.1	-4.8	2.1	2.1	0.1	5.2
Parent-Child Structured Play: Negative Regard	1.4	1.4	0.0	0.3	1.5	1.4	0.1	11.4	1.5	1.6	-0.1	-8.1
HOME Absence of Punitive Interactions	4.2	4.3	-0.1	-10.9	4.5	4.5	0.0	-3.7	4.5	4.3	0.1	12.6
Spanked Child in Last Week***	49.5	56.1	-6.6*	-13.3	47.7	48.1	-0.5	-0.9	42.4	53.1	-10.7*	-21.5
Sample Size												
Parent Interview	**461**	**441**	**902**		**449**	**429**	**878**		**182**	**151**	**333**	
Parent-Child Interactions	**386**	**373**	**759**		**375**	**331**	**706**		**152**	**115**	**267**	

SOURCE: Parent interviews and assessments of parent-child interactions during semi-structured tasks conducted when children were approximately 24 months old.

TABLE E.V.7 *(continued)*

NOTE: All estimates were calculated using regression models, where each site was weighted equally. Only sites with at least 10 program group members and 10 control group members in the subgroup are included in the estimates for each subgroup.

[a]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had instead been assigned to the program group. This unobserved mean is estimated as the difference between the program group mean for participants and the impact per participant. A participant is defined as a program group member who received more than one Early Head Start home visit, met with an Early Head Start case manager more than once, received at least two weeks of Early Head Start center-based services, and/or participated in Early Head Start parent-child group activities.

[b]The estimated impact per participant is measured as the estimated impact per eligible applicant divided by the proportion of program group members who participated in Early Head Start services (which varied by site). The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for program and control group members.

[c]The effect size is calculated by dividing the estimated impact per participant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact per participant expressed as a percentage of a standard deviation).

[d]Asterisks next to variable names indicate significance levels for statistical tests of differences in impacts across the subgroups.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

TABLE E.V.8

IMPACTS ON PARENTING KNOWLEDGE AT AGE 2, BY PATTERN OF IMPLEMENTATION OF FAMILY DEVELOPMENT SERVICES

	Early Implementers					Implementers In One Period But Not Both					Incomplete Implementers			
Outcome	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]		Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]		Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]
KNOWLEDGE OF CHILD DEVELOPMENT														
Knowledge of Infant Development Inventory (KIDI)	3.5	3.4	0.1**	14.1		3.3	3.3	0.0	10.3		3.4	3.4	0.0	-8.8
DISCIPLINE STRATEGIES														
Percentage of Parents Who Suggested Responses to Hypothetical Conflicts with Child:														
Prevent or Distract***[d]	71.7	65.4	6.3*	13.3		74.1	65.6	8.5**	18.0		73.6	72.9	0.7	1.6
Remove Child or Object***	85.6	83.5	2.1	5.5		76.1	82.1	-6.0*	-15.6		77.1	78.3	-1.2	-3.0
Talk and Explain***	38.2	27.9	10.3***	22.0		38.8	34.8	4.0	8.6		30.6	29.0	1.6	3.5
Threaten or Command***	30.4	35.8	-5.4	-11.6		30.9	31.9	-0.9	-2.0		35.2	36.2	-1.0	-2.2
Shout***	5.6	3.6	2.0	9.8		3.5	6.8	-3.2	-15.5		8.0	3.6	4.4	21.1
Physical Punishment***	21.2	29.2	-8.0***	-17.4		32.8	30.0	2.8	6.0		31.5	31.4	0.2	0.3
Percentage of Parents Suggesting Only Mild Responses to the Hypothetical Conflicts***	46.7	39.6	7.1**	14.5		41.9	40.9	1.0	2.1		38.5	31.4	7.1	14.4
Index of Discipline Severity	2.5	2.8	-0.3**	-16.3		2.8	2.7	0.0	1.4		2.8	2.9	-0.1	-5.8
SAFETY PRACTICES														
Has Syrup of Ipecac at Home***	42.9	37.3	5.6	12.1		15.2	19.4	-4.3	-9.3		33.2	38.4	-5.3	-11.4
Has Poison Control Number***	46.5	41.9	4.6	9.5		28.6	26.3	2.3	4.7		38.4	41.8	-3.4	-7.0
Has Gates or Doors in Front of Stairs***	76.8	73.3	3.5	9.0		87.5	89.0	-1.5	-3.7		68.6	77.0	-8.4	-21.2
Uses Guards or Gates for Windows***	56.4	58.6	-2.2	-4.7		77.0	78.1	-1.1	-2.3		43.5	52.5	-9.0	-18.9
Covers Electric Outlets***	59.3	58.3	1.0	2.0		57.4	61.2	-3.8	-7.7		68.4	56.3	12.2**	24.8
Home has Working Smoke Alarm***	88.2	85.3	2.9	8.1		83.7	81.7	2.0	5.6		92.7	91.9	0.8	2.2
Uses a Car Seat***	79.4	76.4	3.0	7.9		79.8	84.0	-4.2	-11.1		85.4	94.4	-9.0**	-23.6
Observed Child Play Area is Safe***	64.2	62.5	1.6	3.5		70.2	74.1	-3.9	-8.4		75.8	72.1	3.7	7.9
Sample Size	**461**	**441**	**902**			**449**	**429**	**878**			**182**	**151**	**333**	

SOURCE: Parent interviews conducted when children were approximately 24 months old.

NOTE: All estimates were calculated using regression models, where each site was weighted equally. Only sites with at least 10 program group members and 10 control group members in the subgroup are included in the estimates for each subgroup.

TABLE E.V.8 *(continued)*

[a]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had instead been assigned to the program group. This unobserved mean is estimated as the difference between the program group mean for participants and the impact per participant. A participant is defined as a program group member who received more than one Early Head Start home visit, met with an Early Head Start case manager more than once, received at least two weeks of Early Head Start center-based services, and/or participated in Early Head Start parent-child group activities.

[b]The estimated impact per participant is measured as the estimated impact per eligible applicant divided by the proportion of program group members who participated in Early Head Start services (which varied by site). The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for program and control group members.

[c]The effect size is calculated by dividing the estimated impact per participant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact per participant expressed as a percentage of a standard deviation).

[d]Asterisks next to variable names indicate significance levels for statistical tests of differences in impacts across the subgroups.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

TABLE E.V.9

IMPACTS ON PARENTING BEHAVIOR AT AGE 2, BY WORK REQUIREMENTS FOR MOTHERS RECEIVING CASH ASSISTANCE

	Welfare Mothers Of Children Under 1 Required to Work					Welfare Mothers of Children Under 1 Not Required to Work			
Outcome	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]		Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]
QUALITY OF THE HOME ENVIRONMENT AND PARENTING: EMOTIONAL SUPPORT									
Home Observation for Measurement of the Environment (HOME) Emotional Responsivity	6.1	6.1	0.0	-0.5		6.3	6.1	0.2**	14.1
Parent-Child Structured Play: Parent Supportiveness	4.2	4.0	0.2**	15.2		4.0	3.9	0.1	11.7
QUALITY OF THE HOME ENVIRONMENT AND PARENTING: STIMULATION OF LANGUAGE AND LEARNING									
HOME Total Score	26.7	26.6	0.1	3.1		26.3	25.9	0.5**	12.8
HOME Support of Cognitive, Language, and Literacy Environment	10.6	10.4	0.1	7.1		10.2	9.9	0.3**	15.0
Percentage of Parents who set a Regular Bedtime for Child***[d]	61.0	61.3	-0.4	-0.7		61.9	51.9	10.1***	20.3
Percentage of Parents and Children Who have Regular Bedtime Routines***	70.5	70.8	-0.2	-0.5		67.8	62.6	5.2	11.1
Percentage of Parents Who Read to Child Daily***	61.8	55.9	5.9*	11.9		55.2	49.1	6.1*	12.2
Percentage of Parents Who Read to Child as Part of Bedtime Routine***	32.7	26.5	6.2*	14.8		27.1	20.2	6.9**	16.5
Reading Frequency	4.7	4.6	0.1*	11.2		4.6	4.4	0.2*	12.9
Parent-Child Activities to Stimulate Cognitive and Language Development	4.6	4.5	0.1	5.5		4.6	4.4	0.1**	16.2
HOME Maternal Verbal/Social Skills*	2.8	2.8	0.0	-2.4		2.8	2.7	0.1*	12.9
QUALITY OF THE HOME ENVIRONMENT AND PARENTING: NEGATIVE PARENTING BEHAVIOR									
Parent-Child Structured Play: Parent Detachment	1.4	1.5	-0.1	-11.6		1.4	1.5	-0.1	-10.1
Parent-Child Structured Play: Parent Intrusiveness	1.7	1.8	-0.1	-10.2		2.0	2.0	0.0	0.7
Parent-Child Structured Play: Negative Regard	1.4	1.4	0.0	5.3		1.5	1.5	0.0	4.7
HOME Absence of Punitive Interactions	4.4	4.4	-0.1	-4.5		4.3	4.4	-0.1	-7.8
Spanked Child in Last Week***	47.5	52.9	-5.4	-10.9		47.2	50.9	-3.8	-7.5
Sample Size									
Parent Interview	**589**	**555**	**1,144**			**503**	**466**	**969**	
Parent-Child Interactions	**468**	**425**	**893**			**445**	**394**	**839**	

SOURCE: Parent interviews and assessments of parent-child interactions during semi-structured tasks conducted when children were approximately 24 months old.

NOTE: All estimates were calculated using regression models, where each site was weighted equally. Only sites with at least 10 program group members and 10 control group members in the subgroup are included in the estimates for each subgroup.

[a]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had instead been assigned to the program group. This unobserved mean is estimated as the difference between the program group mean for participants and the impact per participant. A participant is defined as a program group member who received more than one Early Head Start home visit, met with an Early Head Start case manager more than once, received at least two weeks of Early Head Start center-based services, and/or participated in Early Head Start parent-child group activities.

[b]The estimated impact per participant is measured as the estimated impact per eligible applicant divided by the proportion of program group members who participated in Early Head Start services (which varied by site). The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for program and control group members.

[c]The effect size is calculated by dividing the estimated impact per participant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact per participant expressed as a percentage of a standard deviation).

[d]Asterisks next to variable names indicate significance levels for statistical tests of differences in impacts across the subgroups.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

TABLE E.V.10

IMPACTS ON PARENTING KNOWLEDGE AT AGE 2, BY WORK REQUIREMENTS FOR MOTHERS RECEIVING CASH ASSISTANCE

	Welfare Mothers of Children Under 1 Required to Work					Welfare Mothers of Children Under 1 Not Required to Work			
Outcome	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]		Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]
KNOWLEDGE OF CHILD DEVELOPMENT									
Knowledge of Infant Development Inventory (KIDI)	3.4	3.4	0.0	8.8		3.4	3.3	0.1**	15.8
DISCIPLINE STRATEGIES									
Percentage of Parents Who Suggested Responses to Hypothetical Conflicts with Child:									
Prevent or Distract***[d]	72.4	62.7	9.7***	20.6		73.1	69.5	3.6	7.7
Remove Child or Object***	85.6	87.0	-1.3	-3.4		76.7	77.3	-0.6	-1.6
Talk and Explain**	38.9	34.3	4.6	9.8		36.0	29.6	6.3*	13.5
Threaten or Command***	33.5	40.4	-6.9**	-14.7		30.3	28.5	1.8	3.8
Shout***	3.7	4.8	-1.2	-5.6		6.5	4.7	1.8	8.8
Physical Punishment***	23.8	29.8	-6.0**	-13.1		30.4	30.2	0.2	0.4
Percentage of Parents Suggesting Only Mild Responses to the Hypothetical Conflicts	45.8	37.6	8.1**	16.6		41.2	41.6	-0.4	-0.8
Index of Discipline Severity**	2.5	2.8	-0.3***	-17.5		2.8	2.7	0.1	2.7
SAFETY PRACTICES									
Has Syrup of Ipecac at Home***	28.0	29.5	-1.6	-3.4		31.0	29.4	1.6	3.4
Has Poison Control Number***	40.5	41.8	-1.3	-2.6		36.0	32.3	3.7	7.6
Has Gates or Doors in Front of Stairs***	75.1	82.4	-7.4**	-18.7		82.7	80.0	2.7	7.0
Uses Guards or Gates for Windows***	62.9	62.6	0.3	0.6		62.6	67.1	-4.6	-9.6
Covers Electric Outlets***	58.7	62.6	-4.0	-8.1		61.3	59.8	1.6	3.2
Home has Working Smoke Alarm***	85.6	84.5	1.2	3.2		88.5	84.9	3.6	10.1
Uses a Car Seat***	83.9	84.3	-0.4	-1.0		78.4	81.4	-3.0	-7.9
Observed Child Play Area is Safe***	57.4	61.0	-3.6	-7.8		76.5	74.8	1.8	3.7
Sample Size	**589**	**555**	**1,144**			**503**	**466**	**969**	

SOURCE: Parent interviews conducted when children were approximately 24 months old.

NOTE: All estimates were calculated using regression models, where each site was weighted equally. Only sites with at least 10 program group members and 10 control group members in the subgroup are included in the estimates for each subgroup.

[a]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had instead been assigned to the program group. This unobserved mean is estimated as the difference between the program group mean for participants and the impact per participant. A participant is defined as a program group member who received more than one Early Head Start home visit, met with an Early Head Start case manager more than once, received at least two weeks of Early Head Start center-based services, and/or participated in Early Head Start parent-child group activities.

[b]The estimated impact per participant is measured as the estimated impact per eligible applicant divided by the proportion of program group members who participated in Early Head Start services (which varied by site). The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for program and control group members.

[c]The effect size is calculated by dividing the estimated impact per participant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact per participant expressed as a percentage of a standard deviation).

[d]Asterisks next to variable names indicate significance levels for statistical tests of differences in impacts across the subgroups.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

APPENDIX E.VI

TABLE E.VI.1

IMPACTS ON SELF-SUFFICIENCY, BY PROGRAM APPROACH IN 1997

	Center-Based Programs					Home-Based Programs					Mixed-Approach Programs			
Outcome	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]		Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]		Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]
EDUCATION/JOB TRAINING														
Ever in Education/Training***[d]	52.6	51.7	0.9	1.9		45.5	39.6	5.9**	11.9		49.5	44.0	5.4	11.0
Ever in High School***	12.6	10.9	1.7	5.9		11.5	6.2	5.3***	18.1		13.2	12.4	0.8	2.9
Ever in ESL Class***	1.7	0.6	1.1	10.0		2.3	0.7	1.6**	14.5		3.7	3.0	0.7	5.9
Ever in Vocational Program***	10.9	12.2	-1.3	-4.6		12.7	8.5	4.3**	14.8		11.7	8.5	3.2	11.1
Average Hours/Week in Education//Training	6.5	5.3	1.2	15.0		4.9	3.7	1.3***	16.4		4.9	3.8	1.1*	13.9
In Education/Training:														
1st Quarter***	29.9	33.0	-3.1	-7.2		24.5	23.3	1.1	2.7		24.6	21.9	2.7	6.3
2nd Quarter***	34.8	36.7	-1.9	-4.3		28.9	24.6	4.3	9.7		28.8	23.5	5.3	12.0
3rd Quarter***	38.5	30.5	8.0	18.3		29.5	26.7	2.7	6.2		31.8	25.0	6.8*	15.4
4th Quarter***	39.0	30.2	8.8	20.5		28.2	22.6	5.6**	13.0		32.0	25.9	6.1	14.2
5th Quarter***	40.1	25.5	14.5**	33.8		30.5	23.6	6.9**	16.1		30.4	27.1	3.3	7.6
Have High School Diploma***	50.2	51.4	-1.2	-2.5		46.5	45.9	0.6	1.3		46.1	44.5	1.6	3.2
Have GED***	14.7	11.6	3.1	10.5		8.2	9.0	-0.8	-2.7		8.1	6.9	1.2	4.2
EMPLOYMENT														
Ever Employed***	79.9	82.4	-2.5	-5.6		66.9	69.6	-2.7	-6.0		73.9	68.3	5.6	12.5
Average Hours/Week Employed	18.9	20.7	-1.8	-11.3		12.7	13.8	-1.1	-7.2		13.8	14.7	-0.9	-6.1
Employed in:														
1st Quarter***	54.2	54.6	-0.4	-0.9		36.0	39.2	-3.2	-6.4		37.7	39.3	-1.7	-3.3
2nd Quarter***	58.7	59.2	-0.6	-1.2		39.8	46.4	-6.5**	-13.1		47.5	44.1	3.5	6.9
3rd Quarter***	61.4	62.0	-0.6	-1.3		46.8	51.0	-4.2	-8.4		52.5	49.2	3.3	6.5
4th Quarter***	65.4	68.5	-3.1	-6.2		52.2	53.0	-0.7	-1.5		57.3	52.2	5.1	10.2
5th Quarter***	75.8	69.7	6.1	12.6		57.1	60.8	-3.7	-7.6		60.4	59.2	1.2	2.5
ANY SELF-SUFFICIENCY-ORIENTED ACTIVITY (EDUCATION/TRAINING OR EMPLOYMENT)														
Ever Employed or in Education/Training***	93.5	92.3	1.1	3.0		79.2	80.2	-1.0	-2.5		86.9	80.5	6.3**	16.5
Percentage of Weeks in Any Activity	71.0	69.6	1.4	3.6		51.9	52.0	-0.1	-0.2		55.6	52.4	3.2	8.2
Average Hours/Week in Employment or Education/Training	25.9	26.5	-0.6	-3.6		17.8	17.7	0.2	1.0		18.9	18.6	0.4	2.1
In Activities in:														
1st Quarter***	72.9	73.4	-0.5	-1.1		53.0	52.9	0.1	0.3		55.3	55.9	-0.6	-1.3
2nd Quarter***	80.0	79.6	0.4	0.8		57.9	59.9	-2.0	-4.1		66.3	57.9	8.4**	17.4
3rd Quarter***	82.5	77.9	4.6	9.7		62.5	64.0	-1.5	-3.2		70.5	63.8	6.7*	14.2
4th Quarter***	84.2	79.5	4.7	10.0		65.3	63.4	1.9	4.0		71.9	65.0	6.9*	14.5
5th Quarter***	87.8	81.3	6.6	14.4		69.3	70.5	-1.2	-2.6		73.9	69.3	4.6	10.1
AFDC/TANF RECEIPT														
Ever Received AFDC/TANF***	26.8	25.5	1.3	2.5		54.1	52.6	1.5	3.1		46.2	43.5	2.7	5.3
Received AFDC/TANF in:														
1st Quarter***	20.1	16.9	3.2	6.7		43.2	40.4	2.7	5.8		33.7	30.3	3.4	7.1
2nd Quarter***	19.3	16.7	2.6	5.5		42.6	43.0	-0.4	-0.8		35.8	33.2	2.6	5.4
3rd Quarter***	18.4	20.3	-1.9	-4.0		47.0	44.5	2.5	5.2		38.3	34.0	4.3	8.8

TABLE E.VI.1 *(continued)*

Outcome	Center-Based Programs				Home-Based Programs				Mixed-Approach Programs			
	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]
4th Quarter***	18.0	17.8	0.2	0.5	39.2	39.5	-0.3	-0.7	31.6	28.2	3.4	7.3
5th Quarter***	19.2	15.2	3.9	8.5	37.8	38.8	-1.0	-2.2	30.8	27.1	3.6	7.9
Total AFDC/TANF Benefits ($)	602.5	536.2	66.3	2.8	1,976.8	1,927.5	49.3	2.1	1,673.5	1,456.8	216.7	9.1
RECEIPT OF OTHER WELFARE BENEFITS												
Ever Received Welfare***	56.0	60.9	-4.8	-10.2	72.3	69.6	2.7	5.7	63.0	61.7	1.3	2.8
Total Welfare Benefits ($)	2,713.3	2,593.4	1,20.0	2.8	4,141.4	3,911.7	229.7	5.3	3,662.8	3,399.1	263.7	6.1
Ever Received Food Stamps***	44.7	53.4	-8.7	-17.6	66.0	64.2	1.8	3.7	53.8	52.7	1.2	2.4
Total Food Stamp Benefits ($)	1,074.4	1,115.4	-40.9	-2.6	1,435.8	1,400.9	34.9	2.2	1,298.6	1,212.3	86.3	5.4
INCOME/POVERTY												
Income Above Poverty Level***	33.4	41.6	-8.2	-17.1	30.5	29.7	0.8	1.6	36.8	41.4	-4.6	-9.5
Sample Size	**234**	**204**	**438**		**537**	**522**	**1,059**		**368**	**371**	**739**	

SOURCE: Parent Services Follow-Up Interviews completed an average of 7 and 16 months after random assignment.

NOTE: All estimates were calculated using regression models, where each site was weighted equally. Only sites with at least 10 program group members and 10 control group members in the subgroup are included in the estimates for each subgroup.

[a]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had instead been assigned to the program group. This unobserved mean is estimated as the difference between the program group mean for participants and the impact per participant. A participant is defined as a program group member who received more than one Early Head Start home visit, met with an Early Head Start case manager more than once, received at least two weeks of Early Head Start center-based services, and/or participated in Early Head Start parent-child group activities.

[b]The estimated impact per participant is measured as the estimated impact per eligible applicant divided by the proportion of program group members who participated in Early Head Start services (which varied by site). The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for program and control group members.

[c]The effect size is calculated by dividing the estimated impact per participant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact per participant expressed as a percentage of a standard deviation).

[d]Asterisks next to variable names indicate significance levels for statistical tests of differences in impacts across the subgroups.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

TABLE E.VI.2

IMPACTS ON PARENT HEALTH AND FAMILY FUNCTIONING AT AGE 2, BY PROGRAM APPROACH IN 1997

	Center-Based Programs					Home-Based Programs					Mixed-Approach Programs			
Outcome	Program Group Participants[a]	Control Group[b]	Impact Estimate Per Participant[c]	Effect Size[d]		Program Group Participants[a]	Control Group[b]	Impact Estimate Per Participant[c]	Effect Size[d]		Program Group Participnts[a]	Control Group[b]	Impact Estimate Per Participant[c]	Effect Size[d]
PARENT'S PHYSICAL HEALTH														
Overall Health Status	3.5	3.6	-0.1	-13.2		3.4	3.4	0.0	0.2		3.6	3.5	0.1	4.7
PARENT'S MENTAL HEALTH														
Parenting Stress Index: Parental Distress	25.3	24.8	0.5	5.4		25.1	26.2	-1.1	-11.3		24.7	26.8	-2.1***	-22.5
Parenting Stress Index: Parent-Child Dysfunctional Interaction	16.4	17.5	-1.2	-19.7		17.1	17.5	-0.4	-7.3		17.0	17.5	-0.5	-7.7
Composite International Diagnostic Interview (CIDI) Short Screening Scales: Major Depression (probability)	9.2	9.6	-0.3	-1.1		14.7	12.0	2.8	9.2		11.5	12.7	-1.2	-3.8
FAMILY FUNCTIONING														
FES Family Conflict	1.7	1.8	-0.1	-9.8		1.7	1.7	-0.1	-11.9		1.7	1.7	0.0	-7.0
Sample Size	**240**	**203**	**443**			**500**	**466**	**966**			**352**	**352**	**704**	

SOURCE: Parent interviews, child assessments, and videotaped interactions conducted when children were approximately 24 months old.

NOTE: All estimates were calculated using regression models, where each site was weighted equally. Only sites with at least 10 program group members and 10 control group members in the subgroup are included in the estimates for each subgroup.

[a]A participant is defined as a program group member who received more than one Early Head Start home visit, met with an Early Head Start case manager more than once, received at least two weeks of Early Head Start center-based care, and/or participated in Early Head Start group parent-child activities.

[b]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had instead been assigned to the program group. This unobserved mean is estimated as the difference between the program group mean for participants and the impact per participant. A participant is defined as a program group member who received more than one Early Head Start home visit, met with an Early Head Start case manager more than once, received at least two weeks of Early Head Start center-based services, and/or participated in Early Head Start parent-child group activities.

[c]The estimated impact per participant is measured as the estimated impact per eligible applicant divided by the proportion of program group members who participated in Early Head Start services (which varied by site). The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for program and control group members.

[d]The effect size is calculated by dividing the estimated impact per participant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact per participant expressed as a percentage of a standard deviation).

[e]Asterisks next to variable names indicate significance levels for statistical tests of differences in impacts across the subgroups.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

TABLE E.VI.3

IMPACTS ON SELF-SUFFICIENCY, BY PATTERN OF IMPLEMENTATION

Outcome	Early Implementers				Late Implementers				Incomplete Implementers			
	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]
EDUCATION/JOB TRAINING												
Ever in Education/Training***[d]	47.1	43.4	3.7	7.4	44.8	43.0	1.9	3.8	54.4	47.1	7.3	14.8
Ever in High School***	7.6	6.8	0.8	2.7	14.5	11.8	2.7	9.1	15.6	9.0	6.6**	22.4
Ever in ESL Class***	2.3	1.3	0.9	8.3	2.0	0.9	1.1	10.1	3.7	2.8	0.9	7.7
Ever in Vocational Program***	10.6	11.3	-0.6	-2.2	10.1	10.5	-0.4	-1.4	16.5	7.9	8.6***	30.0
Average Hours/Week in Education//Training	3.9	3.2	0.7	8.7	5.2	4.1	1.1*	14.0	7.0	5.2	1.9**	23.9
In Education/Training:												
1st Quarter***	28.7	21.9	6.8**	15.9	22.2	25.1	-3.0	-6.9	25.9	28.4	-2.6	-6.0
2nd Quarter***	27.7	25.5	2.3	5.1	28.1	25.5	2.6	6.0	34.8	31.8	3.0	6.7
3rd Quarter***	27.8	24.4	3.3	7.6	30.3	26.7	3.6	8.1	40.2	31.2	9.1**	20.6
4th Quarter***	29.8	23.0	6.8**	15.8	29.4	24.5	4.9	11.4	38.1	30.3	7.8*	18.2
5th Quarter***	29.8	23.5	6.2	14.5	28.9	26.1	2.8	6.5	40.1	27.8	12.3**	28.7
Have High School Diploma***	53.6	52.8	0.7	1.5	36.9	39.6	-2.7	-5.4	52.5	48.0	4.5	9.1
Have GED***	14.0	9.9	4.1	14.0	7.3	5.9	1.4	4.7	6.3	13.0	-6.7**	-22.8
EMPLOYMENT												
Ever Employed***	80.6	74.8	5.8*	12.8	67.9	69.0	-1.1	-2.4	67.8	71.8	-4.0	-8.9
Average Hours/Week Employed*	17.3	16.1	1.2	7.9	12.9	14.8	-1.9*	-12.3	13.4	15.7	-2.3	-15.1
Employed in:												
1st Quarter***	48.5	46.8	1.7	3.4	38.3	38.5	-0.2	-0.5	35.6	42.1	-6.5	-13.2
2nd Quarter***	56.5	53.0	3.6	7.1	42.7	47.1	-4.4	-8.8	40.0	47.4	-7.3	-14.7
3rd Quarter***	61.8	57.4	4.4	8.8	45.3	50.9	-5.5	-11.1	49.5	50.8	-1.3	-2.5
4th Quarter***	67.1	59.8	7.3*	14.7	49.5	51.7	-2.2	-4.5	54.2	56.5	-2.3	-4.6
5th Quarter***	68.9	61.8	7.1	14.5	57.0	58.7	-1.7	-3.5	61.3	62.0	-0.7	-1.4
ANY SELF-SUFFICIENCY-ORIENTED ACTIVITY (EDUCATION/TRAINING OR EMPLOYMENT)												
Ever Employed or in Education/Training***	87.8	84.4	3.4	8.8	82.3	80.4	1.9	5.0	85.6	83.4	2.2	5.8
Percentage of Weeks in Any Activity	61.6	58.0	3.6	9.2	52.3	52.1	0.2	0.4	59.4	57.5	1.9	4.8
Average Hours/Week in Employment or Education/Training	21.3	19.7	1.6	9.7	18.6	19.1	-0.5	-3.0	20.6	20.8	-0.2	-1.0
In Activities in:												
1st Quarter***	63.6	58.3	5.3	10.7	54.9	56.2	-1.3	-2.6	56.3	60.4	-4.1	-8.3
2nd Quarter***	68.9	64.0	4.8	10.0	63.0	62.4	0.6	1.3	66.1	64.6	1.5	3.1
3rd Quarter***	72.6	70.5	2.1	4.4	64.0	64.1	-0.1	-0.2	74.6	66.4	8.2*	17.3
4th Quarter***	77.9	68.6	9.3***	19.6	65.8	65.4	0.4	0.9	72.9	67.2	5.8	12.2
5th Quarter***	77.2	74.3	3.0	6.5	70.5	69.2	1.3	2.9	78.2	70.3	7.8*	17.1
AFDC/TANF RECEIPT												
Ever Received AFDC/TANF***	38.9	34.7	4.2	8.4	44.8	45.1	-0.4	-0.7	52.6	47.3	5.3	10.7
Received AFDC/TANF in:												
1st Quarter***	30.4	25.4	5.0*	10.7	34.5	31.7	2.9	6.1	38.9	36.1	2.8	5.9
2nd Quarter***	31.1	26.2	4.9*	10.3	34.2	33.1	1.1	2.3	40.4	40.4	0.0	-0.1
3rd Quarter***	31.8	27.3	4.5	9.4	36.0	36.1	-0.2	-0.3	45.9	42.0	3.8	8.0

TABLE E.VI.3 *(continued)*

Outcome	Early Implementers				Late Implementers				Incomplete Implementers			
	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]
4th Quarter***	25.0	23.5	1.6	3.4	30.4	31.1	-0.7	-1.6	41.1	37.4	3.7	7.9
5th Quarter***	22.3	24.7	-2.4	-5.2	31.2	28.7	2.5	5.5	40.6	36.6	4.0	8.7
Total AFDC/TANF Benefits ($)	1,492.8	1,330.5	162.3	6.8	1,522.9	1,448.6	74.3	3.1	1,629.6	1,545.4	84.2	3.5
RECEIPT OF OTHER WELFARE BENEFITS												
Ever Received Welfare***	63.1	61.7	1.4	3.0	67.4	66.9	0.4	0.9	65.9	64.5	1.4	3.0
Total Welfare Benefits ($)	3,649.7	3,169.9	479.8	11.0	3,729.7	3,566.9	162.8	3.7	3,526.0	3,359.9	166.0	3.8
Ever Received Food Stamps***	53.2	55.2	-2.0	-4.0	58.0	58.4	-0.4	-0.7	60.6	58.1	2.5	5.1
Total Food Stamp Benefits ($)	1,270.4	1,267.2	3.3	0.2	1,254.9	1,197.3	57.6	3.6	1,428.2	1,416.7	11.5	0.7
INCOME/POVERTY												
Income Above Poverty Level*	39.9	44.0	-4.1	-8.7	27.2	30.0	-2.8	-5.8	34.0	36.8	-2.8	-5.8
Sample Size	**390**	**374**	**764**		**429**	**405**	**834**		**320**	**318**	**638**	**638**

SOURCE: Parent Services Follow-Up Interviews completed an average of 7 and 16 months after random assignment.

NOTE: All estimates were calculated using regression models, where each site was weighted equally. Only sites with at least 10 program group members and 10 control group members in the subgroup are included in the estimates for each subgroup.

[a]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had instead been assigned to the program group. This unobserved mean is estimated as the difference between the program group mean for participants and the impact per participant. A participant is defined as a program group member who received more than one Early Head Start home visit, met with an Early Head Start case manager more than once, received at least two weeks of Early Head Start center-based services, and/or participated in Early Head Start parent-child group activities.

[b]The estimated impact per participant is measured as the estimated impact per eligible applicant divided by the proportion of program group members who participated in Early Head Start services (which varied by site). The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for program and control group members.

[c]The effect size is calculated by dividing the estimated impact per participant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact per participant expressed as a percentage of a standard deviation).

[d]Asterisks next to variable names indicate significance levels for statistical tests of differences in impacts across the subgroups.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

TABLE E.VI.4

IMPACTS ON PARENT HEALTH AND FAMILY FUNCTIONING AT AGE 2, BY PATTERN OF IMPLEMENTATION

	Early Implementers				Late Implementers				Incomplete Implementers			
Outcome	Program Group Participants[a]	Control Group[b]	Impact Estimate Per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Impact Estimate Per Participant[c]	Effect Size[d]	Program Group Participnts[a]	Control Group[b]	Impact Estimate Per Participant[c]	Effect Size[d]
PARENT'S PHYSICAL HEALTH												
Overall Health Status	3.5	3.4	0.1	9.6	3.4	3.4	0.1	4.5	3.5	3.6	-0.1	-8.5
PARENT'S MENTAL HEALTH												
Parenting Stress Index: Parental Distress	24.2	25.7	-1.5**	-15.8	25.8	27.4	-1.6**	-17.1	24.9	24.7	0.2	2.1
Parenting Stress Index: Parent-Child Dysfunctional Interaction	16.9	17.1	-0.2	-3.6	17.7	18.1	-0.4	-6.0	15.8	17.1	-1.3**	-20.9
Composite International Diagnostic Interview (CIDI) Short Screening Scales: Major Depression (probability)	12.4	17.0	-4.6*	-15.1	13.4	9.7	3.7	12.3	9.9	11.4	-1.5	-4.9
FAMILY FUNCTIONING												
FES Family Conflict	1.7	1.7	-0.1	-12.2	1.7	1.8	0.0	-3.3	1.6	1.7	-0.1*	-19.9
Sample Size	**381**	**352**	**733**		**417**	**391**	**808**		**294**	**278**	**572**	

SOURCE: Parent interviews, child assessments, and videotaped interactions conducted when children were approximately 24 months old.

NOTE: All estimates were calculated using regression models, where each site was weighted equally. Only sites with at least 10 program group members and 10 control group members in the subgroup are included in the estimates for each subgroup.

[a]A participant is defined as a program group member who received more than one Early Head Start home visit, met with an Early Head Start case manager more than once, received at least two weeks of Early Head Start center-based care, and/or participated in Early Head Start group parent-child activities.

[b]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had instead been assigned to the program group. This unobserved mean is estimated as the difference between the program group mean for participants and the impact per participant. A participant is defined as a program group member who received more than one Early Head Start home visit, met with an Early Head Start case manager more than once, received at least two weeks of Early Head Start center-based services, and/or participated in Early Head Start parent-child group activities.

[c]The estimated impact per participant is measured as the estimated impact per eligible applicant divided by the proportion of program group members who participated in Early Head Start services (which varied by site). The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for program and control group members.

[d]The effect size is calculated by dividing the estimated impact per participant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact per participant expressed as a percentage of a standard deviation).

[e]Asterisks next to variable names indicate significance levels for statistical tests of differences in impacts across the subgroups.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

TABLE E.VI.5

IMPACTS ON SELF-SUFFICIENCY, BY PATTERN OF IMPLEMENTATION OF CHILD DEVELOPMENT SERVICES

	Early Implementers					Implementers in One Period But Not Both					Incomplete Implementers			
Outcome	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]		Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]		Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]
EDUCATION/JOB TRAINING														
Ever in Education/Training***[d]	45.6	41.3	4.3	8.6		51.9	49.3	2.5	5.1		48.7	41.3	7.4**	14.9
Ever in High School***	7.4	5.5	1.9	6.4		19.4	18.2	1.2	4.1		11.6	5.7	5.8***	20.0
Ever in ESL Class***	2.1	1.3	0.8	6.8		3.8	2.3	1.5	13.7		2.4	0.9	1.5	13.2
Ever in Vocational Program***	9.9	9.8	0.1	0.3		11.3	10.2	1.1	3.8		14.8	8.3	6.5***	22.5
Average Hours/Week in Education//Training	4.0	3.2	0.8	9.9		6.5	5.7	0.8	10.5		5.6	3.4	2.1***	27.3
In Education/Training:														
1st Quarter***	26.8	23.2	3.6	8.4		25.0	31.4	-6.4	-14.9		24.9	22.9	1.9	4.5
2nd Quarter***	27.2	26.1	1.1	2.4		32.8	30.9	1.9	4.3		30.6	26.1	4.5	10.3
3rd Quarter***	27.7	22.9	4.8	10.9		38.9	30.0	8.9**	20.3		31.8	27.6	4.2	9.6
4th Quarter***	30.2	21.6	8.7**	20.2		35.4	32.2	3.2	7.5		30.6	22.9	7.7**	17.8
5th Quarter***	27.8	22.7	5.1	11.9		37.9	29.0	9.0*	20.9		32.6	22.2	10.4***	24.3
Have High School Diploma***	55.9	55.4	0.5	1.0		38.3	36.0	2.3	4.6		46.6	46.1	0.5	0.9
Have GED***	12.6	9.5	3.0	10.3		5.7	8.3	-2.6	-8.8		9.6	10.8	-1.2	-4.1
EMPLOYMENT														
Ever Employed***	81.7	78.6	3.1	6.9		64.5	67.4	-2.9	-6.5		69.4	69.7	-0.3	-0.7
Average Hours/Week Employed	18.6	17.9	0.8	4.9		11.0	13.4	-2.4*	-15.8		13.5	14.9	-1.4	-9.2
Employed in:														
1st Quarter***	53.0	51.6	1.4	2.8		31.2	30.2	1.0	2.0		36.5	42.3	-5.8*	-11.8
2nd Quarter***	61.6	56.8	4.9	9.7		36.1	37.0	-0.9	-1.8		41.1	48.5	-7.4**	-14.8
3rd Quarter***	64.6	60.3	4.3	8.5		43.6	45.3	-1.7	-3.4		47.8	52.1	-4.3	-8.5
4th Quarter***	68.2	64.3	3.9	7.9		47.3	48.7	-1.4	-2.9		54.0	53.9	0.0	0.1
5th Quarter***	70.3	67.5	2.9	5.9		53.4	57.1	-3.7	-7.5		62.1	59.4	2.7	5.5
ANY SELF-SUFFICIENCY-ORIENTED ACTIVITY (EDUCATION/TRAINING OR EMPLOYMENT)														
Ever Employed or in Education/Training***	89.6	87.0	2.5	6.5		82.4	82.7	-0.3	-0.8		83.3	79.5	3.8	9.9
Percentage of Weeks in Any Activity	64.4	62.4	2.0	5.0		52.5	52.0	0.6	1.5		55.0	52.9	2.1	5.4
Average Hours/Week in Employment or Education/Training	22.9	21.4	1.5	8.8		17.7	19.0	-1.3	-7.9		19.5	18.7	0.8	4.6
In Activities in:														
1st Quarter***	66.6	64.5	2.1	4.2		52.5	54.1	-1.6	-3.1		55.1	55.2	-0.1	-0.1
2nd Quarter***	73.0	69.5	3.4	7.1		62.9	58.3	4.6	9.6		61.9	61.0	1.0	2.0
3rd Quarter***	75.2	73.1	2.1	4.5		68.6	63.4	5.2	11.1		66.8	64.1	2.7	5.7
4th Quarter***	79.6	72.4	7.2**	15.2		66.7	66.1	0.6	1.3		68.6	64.0	4.6	9.7
5th Quarter***	77.3	79.4	-2.2	-4.8		70.9	68.0	2.8	6.2		75.9	67.9	8.0**	17.6
AFDC/TANF RECEIPT														
Ever Received AFDC/TANF***	31.8	28.9	2.9	5.9		45.3	43.0	2.3	4.5		57.6	54.1	3.5	7.0
Received AFDC/TANF in:														
1st Quarter***	24.8	20.3	4.5	9.7		33.4	29.1	4.4	9.3		44.6	43.6	0.9	2.0
2nd Quarter***	24.3	20.7	3.6	7.6		35.6	32.1	3.5	7.3		44.5	46.2	-1.7	-3.6
3rd Quarter***	24.2	21.5	2.7	5.6		38.6	36.7	1.9	3.8		48.9	46.5	2.5	5.2

TABLE E.VI.5 *(continued)*

Outcome	Early Implementers				Implementers in One Period But Not Both				Incomplete Implementers			
	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]
4th Quarter***	19.3	19.5	-0.2	-0.4	32.9	31.2	1.7	3.6	42.2	41.2	1.1	2.3
5th Quarter***	17.7	20.2	-2.4	-5.3	32.3	29.9	2.4	5.2	42.4	39.7	2.7	5.9
Total AFDC/TANF Benefits ($)	955.0	950.6	4.4	0.2	1,747.8	1,521.7	226.0	9.5	1,952.1	1,893.8	58.3	2.5
RECEIPT OF OTHER WELFARE BENEFITS												
Ever Received Welfare***	58.9	60.1	-1.2	-2.5	63.2	63.8	-0.5	-1.1	73.4	68.4	5.0*	10.5
Total Welfare Benefits ($)	2,991.5	2,866.4	125.0	2.9	3,706.4	3,550.1	156.3	3.6	4,224.1	3,795.4	428.8*	9.8
Ever Received Food Stamps***	48.9	53.0	-4.1	-8.2	54.7	55.3	-0.6	-1.1	66.5	61.8	4.7*	9.5
Total Food Stamp Benefits ($)	1,106.1	1,198.7	-92.7	-5.8	1,378.3	1,237.3	141.0	8.8	1,449.4	1,350.7	98.7	6.2
INCOME/POVERTY												
Income Above Poverty Level***	39.1	42.1	-3.0	-6.2	34.3	39.2	-4.9	-10.2	28.2	30.9	-2.7	-5.6
Sample Size	**395**	**362**	**757**		**296**	**293**	**589**		**448**	**442**	**890**	

SOURCE: Parent Services Follow-Up Interviews completed an average of 7 and 16 months after random assignment.

NOTE: All estimates were calculated using regression models, where each site was weighted equally. Only sites with at least 10 program group members and 10 control group members in the subgroup are included in the estimates for each subgroup.

[a]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had instead been assigned to the program group. This unobserved mean is estimated as the difference between the program group mean for participants and the impact per participant. A participant is defined as a program group member who received more than one Early Head Start home visit, met with an Early Head Start case manager more than once, received at least two weeks of Early Head Start center-based services, and/or participated in Early Head Start parent-child group activities.

[b]The estimated impact per participant is measured as the estimated impact per eligible applicant divided by the proportion of program group members who participated in Early Head Start services (which varied by site). The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for program and control group members.

[c]The effect size is calculated by dividing the estimated impact per participant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact per participant expressed as a percentage of a standard deviation).

[d]Asterisks next to variable names indicate significance levels for statistical tests of differences in impacts across the subgroups.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

TABLE E.VI.6

IMPACTS ON PARENT HEALTH AND FAMILY FUNCTIONING AT AGE 2, BY PATTERN OF IMPLEMENTATION OF CHILD DEVELOPMENT SERVICES

	Early Implementers				Implementers In One Period But Not Both				Incomplete Implementers			
Outcome	Program Group Participants[a]	Control Group[b]	Impact Estimate Per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Impact Estimate Per Participant[c]	Effect Size[d]	Program Group Participnts[a]	Control Group[b]	Impact Estimate Per Participant[c]	Effect Size[d]
PARENT'S PHYSICAL HEALTH												
Overall Health Status	3.6	3.5	0.1	5.0	3.5	3.5	0.0	0.4	3.4	3.4	-0.1	-4.6
PARENT'S MENTAL HEALTH												
Parenting Stress Index: Parental Distress	24.7	25.6	-0.9	-9.1	25.5	25.9	-0.4	-4.0	24.7	26.5	-1.8**	-18.8
Parenting Stress Index: Parent-Child Dysfunctional Interaction	17.0	17.3	-0.3	-5.0	16.9	17.6	-0.7	-11.6	16.7	17.5	-0.8*	-13.2
Composite International Diagnostic Interview (CIDI) Short Screening Scales: Major Depression (probability)	11.4	13.4	-2.1	-6.9	8.1	14.8	-6.7**	-22.3	16.1	9.7	6.4***	21.2
FAMILY FUNCTIONING												
FES Family Conflict	1.7	1.7	0.0	-6.6	1.7	1.8	-0.1	-11.2	1.6	1.8	-0.1**	-19.9
Sample Size	**389**	**348**	**737**		**302**	**290**	**592**		**401**	**383**	**784**	

SOURCE: Parent interviews, child assessments, and videotaped interactions conducted when children were approximately 24 months old.

NOTE: All estimates were calculated using regression models, where each site was weighted equally. Only sites with at least 10 program group members and 10 control group members in the subgroup are included in the estimates for each subgroup.

[a]A participant is defined as a program group member who received more than one Early Head Start home visit, met with an Early Head Start case manager more than once, received at least two weeks of Early Head Start center-based care, and/or participated in Early Head Start group parent-child activities.

[b]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had instead been assigned to the program group. This unobserved mean is estimated as the difference between the program group mean for participants and the impact per participant. A participant is defined as a program group member who received more than one Early Head Start home visit, met with an Early Head Start case manager more than once, received at least two weeks of Early Head Start center-based services, and/or participated in Early Head Start parent-child group activities.

[c]The estimated impact per participant is measured as the estimated impact per eligible applicant divided by the proportion of program group members who participated in Early Head Start services (which varied by site). The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for program and control group members.

[d]The effect size is calculated by dividing the estimated impact per participant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact per participant expressed as a percentage of a standard deviation).

[e]Asterisks next to variable names indicate significance levels for statistical tests of differences in impacts across the subgroups.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

TABLE E.VI.7

IMPACTS ON SELF-SUFFICIENCY, BY PATTERN OF IMPLEMENTATION OF FAMILY DEVELOPMENT SERVICES

	Early Implementers				Implementers In One Period But Not Both				Incomplete Implementers			
Outcome	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]
EDUCATION/JOB TRAINING												
Ever in Education/Training***[d]	42.4	39.1	3.3	6.7	48.4	47.4	1.1	2.1	63.1	49.0	14.1**	28.5
Ever in High School***	7.6	6.0	1.6	5.5	16.4	13.7	2.7	9.2	14.2	9.5	4.7	16.2
Ever in ESL Class***	1.5	0.6	0.9	8.4	2.0	0.8	1.3	11.2	6.8	3.1	3.8	33.5
Ever in Vocational Program***	9.2	9.2	0.0	-0.1	11.9	9.5	2.4	8.4	20.6	13.3	7.3	25.4
Average Hours/Week in Education//Training	3.4	2.8	0.6	7.2	6.3	5.5	0.8	10.3	7.2	4.6	2.7**	34.3
In Education/Training:												
1st Quarter***	24.1	18.7	5.3**	12.5	24.7	31.4	-6.7**	-15.7	32.1	28.4	3.7	8.6
2nd Quarter***	25.1	20.7	4.4	10.0	33.2	31.7	1.5	3.3	34.8	32.7	2.1	4.7
3rd Quarter***	24.6	22.7	1.8	4.2	37.0	30.8	6.3*	14.3	39.7	28.3	11.4*	25.9
4th Quarter***	25.9	20.4	5.5*	12.8	33.9	29.2	4.7	10.9	41.7	29.7	11.9**	27.8
5th Quarter***	24.9	20.7	4.2	9.7	34.7	28.5	6.2	14.5	44.9	29.9	15.0**	35.0
Have High School Diploma***	54.8	53.7	1.0	2.1	39.3	38.7	0.6	1.1	50.0	49.6	0.4	0.8
Have GED***	13.4	9.9	3.5	11.9	5.4	7.7	-2.2	-7.6	9.9	10.9	-1.0	-3.4
EMPLOYMENT												
Ever Employed***	74.1	70.2	3.9	8.6	65.9	68.7	-2.8	-6.2	83.1	83.3	-0.2	-0.4
Average Hours/Week Employed**	15.0	13.9	1.2	7.6	12.9	14.6	-1.7	-11.3	17.6	21.7	-4.0**	-26.2
Employed in:												
1st Quarter***	40.7	39.3	1.4	2.7	38.5	39.1	-0.6	-1.3	46.9	56.9	-10.0*	-20.3
2nd Quarter***	47.0	44.6	2.4	4.8	42.3	45.4	-3.0	-6.1	57.5	62.5	-5.1	-10.1
3rd Quarter***	54.8	50.7	4.1	8.2	44.8	49.1	-4.4	-8.7	65.0	65.3	-0.3	-0.6
4th Quarter***	60.0	52.9	7.1**	14.3	48.5	53.2	-4.8	-9.5	70.9	72.7	-1.7	-3.5
5th Quarter***	63.1	58.8	4.3	8.8	59.8	59.3	0.5	1.0	68.2	72.7	-4.5	-9.3
ANY SELF-SUFFICIENCY-ORIENTED ACTIVITY (EDUCATION/TRAINING OR EMPLOYMENT)												
Ever Employed or in Education/Training***	84.3	79.8	4.6*	11.9	81.9	82.6	-0.6	-1.7	95.5	88.1	7.4**	19.1
Percentage of Weeks in Any Activity	54.9	50.2	4.7**	12.2	56.1	56.4	-0.3	-0.8	67.6	68.0	-0.4	-1.0
Average Hours/Week in Employment or Education/Training	18.5	16.9	1.6	9.4	19.6	20.5	-0.9	-5.5	25.2	25.9	-0.7	-4.0
In Activities in:												
1st Quarter***	56.9	51.1	5.8**	11.6	56.4	60.5	-4.0	-8.1	66.9	69.8	-2.9	-5.8
2nd Quarter***	62.0	56.1	5.8*	12.1	66.7	64.9	1.8	3.7	74.7	74.3	0.4	0.7
3rd Quarter***	66.9	63.0	4.0	8.4	68.3	66.5	1.8	3.7	82.1	75.6	6.5	13.7
4th Quarter***	70.8	62.6	8.3***	17.5	67.8	68.4	-0.5	-1.1	84.3	79.7	4.6	9.7
5th Quarter***	71.7	68.8	2.9	6.4	74.4	70.3	4.1	9.0	84.9	80.6	4.3	9.3

TABLE E.VI.7 *(continued)*

Outcome	Early Implementers				Implementers In One Period But Not Both				Incomplete Implementers			
	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]
AFDC/TANF RECEIPT												
Ever Received AFDC/TANF***	49.8	47.2	2.6	5.2	41.7	41.7	0.0	0.1	40.5	34.2	6.3	12.6
Received AFDC/TANF in:												
1st Quarter***	41.1	36.6	4.5*	9.6	30.7	27.1	3.6	7.7	27.4	24.1	3.3	7.0
2nd Quarter***	41.0	37.8	3.2	6.7	31.6	30.5	1.1	2.3	28.4	26.1	2.3	4.8
3rd Quarter***	42.0	39.5	2.5	5.3	33.5	34.1	-0.6	-1.2	34.5	26.6	7.9	16.4
4th Quarter***	34.9	34.6	0.3	0.7	30.1	29.0	1.2	2.5	26.4	24.2	2.2	4.8
5th Quarter***	32.3	35.5	-3.2	-7.0	31.7	25.8	6.0*	12.9	24.5	26.8	-2.2	-4.8
Total AFDC/TANF Benefits ($)	1,967.0	1,906.6	60.4	2.5	1,385.7	1,166.4	219.4	9.2	925.2	841.8	83.5	3.5
RECEIPT OF OTHER WELFARE BENEFITS												
Ever Received Welfare***	71.3	69.8	1.5	3.1	62.4	63.2	-0.8	-1.7	57.9	57.5	0.4	0.9
Total Welfare Benefits ($)	4,595.7	4,368.9	226.8	5.2	3,157.4	2,977.4	180.0	4.1	2,461.6	2,066.8	394.8	9.1
Ever Received Food Stamps***	62.9	63.7	-0.8	-1.5	54.3	55.1	-0.8	-1.5	48.4	47.3	1.1	2.2
Total Food Stamp Benefits ($)	1,547.9	1,586.5	-38.6	-2.4	1,222.9	1,166.4	56.5	3.5	930.7	815.6	115.1	7.2
INCOME/POVERTY												
Income Above Poverty Level***	35.7	36.0	-0.3	-0.7	30.8	32.0	-1.2	-2.6	38.0	47.9	-9.9*	-20.6
Sample Size	**500**	**484**	**984**		**466**	**450**	**916**		**173**	**163**	**336**	

SOURCE: Parent Services Follow-Up Interviews completed an average of 7 and 16 months after random assignment.

NOTE: All estimates were calculated using regression models, where each site was weighted equally. Only sites with at least 10 program group members and 10 control group members in the subgroup are included in the estimates for each subgroup.

[a]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had instead been assigned to the program group. This unobserved mean is estimated as the difference between the program group mean for participants and the impact per participant. A participant is defined as a program group member who received more than one Early Head Start home visit, met with an Early Head Start case manager more than once, received at least two weeks of Early Head Start center-based services, and/or participated in Early Head Start parent-child group activities.

[b]The estimated impact per participant is measured as the estimated impact per eligible applicant divided by the proportion of program group members who participated in Early Head Start services (which varied by site). The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for program and control group members.

[c]The effect size is calculated by dividing the estimated impact per participant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact per participant expressed as a percentage of a standard deviation).

[d]Asterisks next to variable names indicate significance levels for statistical tests of differences in impacts across the subgroups.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

TABLE E.VI.8

IMPACTS ON PARENT HEALTH AND FAMILY FUNCTIONING AT AGE 2, BY PATTERN OF IMPLEMENTATION OF FAMILY DEVELOPMENT SERVICES

	Early Implementers				Implementers In One Period But Not Both				Incomplete Implementers			
Outcome	Program Group Participants[a]	Control Group[b]	Impact Estimate Per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Impact Estimate Per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Impact Estimate Per Participant[c]	Effect Size[d]
PARENT'S PHYSICAL HEALTH												
Overall Health Status	3.5	3.3	0.1*	11.9	3.5	3.5	0.0	-2.9	3.6	3.6	0.0	-2.5
PARENT'S MENTAL HEALTH												
Parenting Stress Index: Parental Distress	25.0	26.3	-1.2*	-13.0	25.3	26.4	-1.1	-11.2	24.0	24.3	-0.3	-2.6
Parenting Stress Index: Parent-Child Dysfunctional Interaction	17.1	17.4	-0.2	-3.7	16.9	17.9	-1.0**	-16.9	16.1	16.4	-0.2	-4.0
Composite International Diagnostic Interview (CIDI) Short Screening Scales: Major Depression (probability)	12.8	16.2	-3.4	-11.4	11.9	10.6	1.4	4.6	11.1	7.0	4.1	13.5
FAMILY FUNCTIONING												
FES Family Conflict	1.7	1.8	-0.1	-12.1	1.7	1.8	-0.1**	-21.6	1.6	1.6	0.1	9.3
Sample Size	**461**	**441**	**902**		**449**	**429**	**878**		**182**	**151**	**333**	

SOURCE: Parent interviews, child assessments, and videotaped interactions conducted when children were approximately 24 months old.

NOTE: All estimates were calculated using regression models, where each site was weighted equally. Only sites with at least 10 program group members and 10 control group members in the subgroup are included in the estimates for each subgroup.

[a]A participant is defined as a program group member who received more than one Early Head Start home visit, met with an Early Head Start case manager more than once, received at least two weeks of Early Head Start center-based care, and/or participated in Early Head Start group parent-child activities.

[b]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had instead been assigned to the program group. This unobserved mean is estimated as the difference between the program group mean for participants and the impact per participant. A participant is defined as a program group member who received more than one Early Head Start home visit, met with an Early Head Start case manager more than once, received at least two weeks of Early Head Start center-based services, and/or participated in Early Head Start parent-child group activities.

[c]The estimated impact per participant is measured as the estimated impact per eligible applicant divided by the proportion of program group members who participated in Early Head Start services (which varied by site). The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for program and control group members.

[d]The effect size is calculated by dividing the estimated impact per participant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact per participant expressed as a percentage of a standard deviation).

[e]Asterisks next to variable names indicate significance levels for statistical tests of differences in impacts across the subgroups.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

TABLE E.VI.9

IMPACTS ON SELF-SUFFICIENCY, BY WORK REQUIREMENTS FOR MOTHERS RECEIVING CASH ASSISTANCE

	Welfare Mothers of Children Under 1 Required to Work					Welfare Mothers of Children Under 1 Not Required to Work			
Outcome	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]		Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]
EDUCATION/JOB TRAINING									
Ever in Education/Training***[d]	50.8	46.0	4.7	9.6		46.9	41.5	5.3*	10.8
Ever in High School***	9.8	5.3	4.5***	15.3		14.3	11.6	2.7	9.2
Ever in ESL Class***	1.9	0.5	1.4*	12.4		3.2	1.8	1.5	12.9
Ever in Vocational Program***	12.6	10.2	2.3	8.1		11.9	8.5	3.4*	11.9
Average Hours/Week in Education//Training	5.1	3.4	1.7***	22.2		5.4	4.7	0.7	8.7
In Education/Training:									
1st Quarter***	29.0	25.5	3.5	8.1		23.3	24.7	-1.4	-3.3
2nd Quarter***	32.7	28.9	3.7	8.5		28.1	26.0	2.1	4.8
3rd Quarter***	32.4	26.7	5.7*	12.9		32.4	26.3	6.1**	13.9
4th Quarter***	34.1	23.9	10.2***	23.7		30.3	26.8	3.4	7.9
5th Quarter***	33.7	23.0	10.8***	25.1		31.5	26.5	5.0	11.6
Have High School Diploma***	53.9	57.4	-3.6	-7.1		43.1	39.0	4.0	8.1
Have GED***	12.2	11.4	0.8	2.7		7.5	7.8	-0.3	-1.0
EMPLOYMENT									
Ever Employed***	81.4	83.9	-2.5	-5.5		65.7	64.2	1.6	3.5
Average Hours/Week Employed	18.4	19.4	-1.0	-6.3		11.9	12.8	-0.9	-5.8
Employed in:									
1st Quarter	54.3	55.4	-1.1	-2.3		31.4	32.5	-1.1	-2.2
2nd Quarter***	58.2	62.1	-4.0	-7.9		38.9	38.5	0.5	0.9
3rd Quarter***	62.2	66.1	-3.9	-7.8		45.4	44.1	1.3	2.6
4th Quarter***	66.4	69.0	-2.6	-5.3		50.3	47.7	2.6	5.1
5th Quarter***	70.8	72.8	-2.1	-4.2		56.3	54.1	2.2	4.5
ANY SELF-SUFFICIENCY-ORIENTED ACTIVITY (EDUCATION/TRAINING OR EMPLOYMENT)									
Ever Employed or in Education/Training***	91.5	91.6	-0.1	-0.3		80.6	77.1	3.5	9.1
Percentage of Weeks in Any Activity	66.7	66.1	0.6	1.6		51.1	48.7	2.4	6.1
Average Hours/Week in Employment or Education/Training	23.9	23.1	0.8	4.6		17.5	17.6	-0.1	-0.8
In Activities in:									
1st Quarter***	69.0	69.5	-0.5	-1.0		50.9	49.5	1.4	2.8
2nd Quarter***	74.2	76.0	-1.7	-3.6		60.2	54.3	5.9**	12.2
3rd Quarter***	76.8	78.4	-1.6	-3.5		65.4	59.3	6.1**	12.8
4th Quarter***	79.4	78.0	1.4	3.0		66.5	60.8	5.7*	12.1
5th Quarter***	80.9	82.1	-1.2	-2.6		70.5	65.3	5.2	11.4
AFDC/TANF RECEIPT									
Ever Received AFDC/TANF***	36.7	31.2	5.5**	11.1		50.7	50.9	-0.2	-0.4
Received AFDC/TANF in:									
1st Quarter***	26.5	22.8	3.7	7.8		39.9	37.0	2.9	6.2
2nd Quarter***	26.1	22.9	3.2	6.8		41.1	40.3	0.7	1.5
3rd Quarter***	26.6	23.6	3.0	6.2		44.8	42.7	2.1	4.4
4th Quarter***	22.1	19.7	2.4	5.2		38.1	38.3	-0.2	-0.4
5th Quarter***	23.1	18.4	4.7*	10.2		36.3	38.1	-1.8	-4.0
Total AFDC/TANF Benefits ($)	915.5	866.4	49.1	2.1		1,990.5	1,860.5	130.0	5.5

TABLE E.VI.9 *(continued)*

Outcome	Welfare Mothers of Children Under 1 Required to Work					Welfare Mothers of Children Under 1 Not Required to Work			
	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]		Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]
RECEIPT OF OTHER WELFARE BENEFITS									
Ever Received Welfare***	63.3	58.6	4.7	9.9		66.6	68.7	-2.0	-4.3
Total Welfare Benefits ($)	3,131.3	2,611.9	519.4**	11.9		4,027.0	3,974.0	53.1	1.2
Ever Received Food Stamps***	53.6	52.1	1.4	2.9		59.2	60.4	-1.3	-2.6
Total Food Stamp Benefits ($)	1,141.5	1,082.3	59.2	3.7		1,423.7	1,420.8	2.9	0.2
INCOME/POVERTY									
Income Above Poverty Level***	40.2	42.2	-2.0	-4.1		29.6	32.7	-3.1	-6.4
Sample Size	**642**	**622**	**1,264**			**497**	**475**	**972**	

SOURCE: Parent Services Follow-Up Interviews completed an average of 7 and 16 months after random assignment.

NOTE: All estimates were calculated using regression models, where each site was weighted equally. Only sites with at least 10 program group members and 10 control group members in the subgroup are included in the estimates for each subgroup.

[a]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had instead been assigned to the program group. This unobserved mean is estimated as the difference between the program group mean for participants and the impact per participant. A participant is defined as a program group member who received more than one Early Head Start home visit, met with an Early Head Start case manager more than once, received at least two weeks of Early Head Start center-based services, and/or participated in Early Head Start parent-child group activities.

[b]The estimated impact per participant is measured as the estimated impact per eligible applicant divided by the proportion of program group members who participated in Early Head Start services (which varied by site). The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for program and control group members.

[c]The effect size is calculated by dividing the estimated impact per participant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact per participant expressed as a percentage of a standard deviation).

[d]Asterisks next to variable names indicate significance levels for statistical tests of differences in impacts across the subgroups.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

TABLE E.VI.10

IMPACTS ON PARENT HEALTH AND FAMILY FUNCTIONING AT AGE 2, BYWORK REQUIREMENTS FOR MOTHERS RECEIVING CASH ASSISTANCE

Outcome	Welfare Mothers of Children Under 1 Required to Work				Welfare Mothers of Children Under 1 Not Required to Work			
	Program Group Participants[a]	Control Group[b]	Impact Estimate Per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Impact Estimate Per Participant[c]	Effect Size[d]
PARENT'S PHYSICAL HEALTH								
Overall Health Status**[e]	3.5	3.6	-0.1	-9.6	3.5	3.4	0.1	10.4
PARENT'S MENTAL HEALTH								
Parenting Stress Index: Parental Distress	24.9	25.0	-0.2	-2.0	25.0	26.5	-1.5**	-15.5
Parenting Stress Index: Parent-Child Dysfunctional Interaction	16.9	17.1	-0.2	-3.0	16.9	17.6	-0.7*	-11.8
Composite International Diagnostic Interview (CIDI) Short Screening Scales: Major Depression (probability)	14.9	12.0	2.9	9.5	10.1	12.0	-1.9	-6.2
FAMILY FUNCTIONING								
FES Family Conflict	1.7	1.7	0.0	-5.1	1.7	1.8	-0.1*	-14.4
Sample Size	**589**	**555**	**1,144**		**503**	**466**	**969**	

SOURCE: Parent interviews, child assessments, and videotaped interactions conducted when children were approximately 24 months old.

NOTE: All estimates were calculated using regression models, where each site was weighted equally. Only sites with at least 10 program group members and 10 control group members in the subgroup are included in the estimates for each subgroup.

[a]A participant is defined as a program group member who received more than one Early Head Start home visit, met with an Early Head Start case manager more than once, received at least two weeks of Early Head Start center-based care, and/or participated in Early Head Start group parent-child activities.

[b]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had instead been assigned to the program group. This unobserved mean is estimated as the difference between the program group mean for participants and the impact per participant. A participant is defined as a program group member who received more than one Early Head Start home visit, met with an Early Head Start case manager more than once, received at least two weeks of Early Head Start center-based services, and/or participated in Early Head Start parent-child group activities.

[c]The estimated impact per participant is measured as the estimated impact per eligible applicant divided by the proportion of program group members who participated in Early Head Start services (which varied by site). The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for program and control group members.

[d]The effect size is calculated by dividing the estimated impact per participant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact per participant expressed as a percentage of a standard deviation).

[e]Asterisks next to variable names indicate significance levels for statistical tests of differences in impacts across the subgroups.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

APPENDIX E.VII TABLES

ABLE E.VII.1

IMPACTS ON SERVICE RECEIPT DURING THE FIRST 16 MONTHS, BY RACE/ETHNICITY

Service	White, Non-Hispanic Families			Black, Non-Hispanic Families			Hispanic Families		
	Program Group	Control Group	Impact Estimate Per Eligible Applicant	Program Group	Control Group	Impact Estimate Per Eligible Applicant	Program Group	Control Group	Impact Estimate Per Eligible Applicant
ANY SERVICES									
Any Key Services***[a,b]	96.2	82.8	13.4***	92.9	77.7	15.2***	96.8	50.1	46.7***
Any Home Visits Or Center-Based Child Care***	94.3	53.5	40.8***	90.5	56.7	33.8***	92.7	32.4	60.4***
HOME VISITS									
Any Home Visits***	91.0	31.8	59.1***	83.5	40.9	42.6***	89.3	25.9	63.4***
Any Child Development Services During Home Visits***	89.9	29.2	60.6***	83.7	37.4	46.2***	89.4	20.9	68.5***
Weekly Home Visits (1st Followup)***	58.9	3.4	55.5***	41.3	5.0	36.3***	34.8	0.1	34.7***
CHILD CARE									
Any Child Care***	79.1	75.0	4.1	83.1	78.1	5.0	75.3	61.9	13.4**
Any Center-Based Child Care***	39.8	28.8	10.9***	43.9	32.0	11.9***	37.0	14.1	22.9***
Average Hours/Week of Center Care***	4.6	3.3	1.4**	6.2	4.0	2.2**	7.0	1.7	5.2***
Concurrent Child Care Arrangements***	30.8	35.4	-4.6	36.2	33.2	3.0	26.0	21.2	4.8
Average Weekly Out-of-Pocket Cost of Care	$5.82	$10.35	-$4.54***	$3.55	$8.95	-$5.40***	$5.66	$7.96	-$2.30
CASE MANAGEMENT									
Any Case Management Meetings***	93.3	55.0	38.3***	84.7	51.8	32.9***	83.6	24.1	59.5***
Weekly Case Management—1st Followup***	60.2	8.8	51.4***	43.1	10.9	32.3***	38.9	4.0	35.0***
GROUP ACTIVITIES									
Any Group Parenting Activities***	69.4	32.7	36.7***	61.1	30.3	30.8***	70.0	20.6	49.4***
Any Parent-Child Group Activities***	35.5	12.2	23.3***	28.4	8.7	19.7***	37.5	3.6	33.9***
EARLY INTERVENTION SERVICES									
Identification of Child's Disability***	6.1	4.5	1.6	3.3	3.2	0.1	3.0	2.8	0.2
Services for Child With Disability***	4.3	2.7	1.7	2.3	1.9	0.4	0.9	1.8	-0.9
CHILD HEALTH SERVICES									
Any Child Health Services***	100.0	99.8	0.2	99.0	99.3	-0.3	99.3	99.4	-0.1
Any Doctor Visits***	98.3	99.1	-0.8	92.1	91.3	0.8	84.6	85.9	-1.3
Any Emergency Room Visits	45.8	43.9	1.9	41.6	38.4	3.2	33.8	32.2	1.6
Any Dentist Visits***	6.9	8.4	-1.5	11.2	10.6	0.6	12.8	10.4	2.4
Any Screening Tests	52.9	52.4	0.5	61.9	62.2	-0.3	48.1	39.4	8.8
Any Immunizations***	97.5	97.8	-0.3	97.3	96.3	1.1	96.9	98.5	-1.6
FAMILY DEVELOPMENT SERVICES									
Any Education-Related Services***	82.0	50.2	31.8***	87.2	59.3	27.9***	84.6	33.5	51.1***
Any Employment-Related Services***	70.0	32.1	37.9***	68.3	39.4	28.9***	71.0	9.6	61.4***
Any Family Health Services***	100.0	99.9	0.1	98.3	98.2	0.1	94.7	94.9	-0.1

TABLE E.VII.1 (*continued*)

Service	White, Non-Hispanic Families			Black, Non-Hispanic Families			Hispanic Families		
	Program Group	Control Group	Impact Estimate Per Eligible Applicant	Program Group	Control Group	Impact Estimate Per Eligible Applicant	Program Group	Control Group	Impact Estimate Per Eligible Applicant
Any Family Mental Health Services***	26.4	23.8	2.6	11.3	11.4	-0.1	6.0	10.0	-4.0
Transportation Assistance***	28.8	23.4	5.5	32.8	25.0	7.8*	27.1	5.7	21.4***
Housing Assistance***	52.1	48.1	4.0	62.3	66.2	-3.9	34.5	18.6	15.9***
Sample Size	**429**	**404**	**833**	**385**	**375**	**760**	**261**	**237**	**498**

SOURCE: Parent Services Follow-Up Interviews completed an average of 7 and 16 months after random assignment.

NOTE: All estimates were calculated using regression models, where each site was weighted equally. Only sites with at least 10 program group members and 10 control group members in the subgroup are included in the estimates for each subgroup.

[a]Home visits, case management, center-based child care, and/or group parenting activities.

[b]Asterisks next to variable names indicate significance levels for statistical tests of differences in impacts across the subgroups.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

TABLE E.VII.2

IMPACTS ON SELF-SUFFICIENCY, BY RACE/ETHNICITY

	Black, Non-Hispanic					Hispanic					White, Non-Hispanic			
Outcome	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]		Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]		Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]
EDUCATION/JOB TRAINING														
Ever in Education/Training***[d]	53.3	52.8	0.6	1.1		40.9	28.1	12.8**	25.9		44.6	44.2	0.4	0.9
Ever in High School***	18.5	14.5	4.0	13.8		8.0	2.4	5.6*	19.1		6.6	5.9	0.7	2.4
Ever in ESL Class***	0.8	0.2	0.6*	5.5		9.5	8.4	1.1	9.4		0.4	1.0	-0.6	-5.3
Ever in Vocational Program***	19.3	16.5	2.8	8.4							14.7	14.5	0.2	0.5
Average Hours/Week in Education//Training	7.6	5.7	1.9**	24.7		3.6	1.2	2.4***	30.7		3.8	3.2	0.7	8.7
In Education/Training:														
1st Quarter***	31.5	30.9	0.6	1.4		17.4	13.3	4.2	9.7		24.2	22.9	1.3	2.9
2nd Quarter***	35.3	31.5	3.7	8.4		20.5	17.8	2.7	6.0		26.9	24.6	2.3	5.3
3rd Quarter***	38.4	32.6	5.8	13.2		24.5	14.9	9.6**	21.8		23.8	26.7	-2.9	-6.6
4th Quarter***	38.4	33.2	5.3	12.2		24.9	8.9	16.0***	37.3		27.0	23.8	3.2	7.5
5th Quarter***	40.6	34.8	5.8	13.6		28.1	16.8	11.3*	26.2		26.4	20.7	5.8	13.4
Have High School Diploma ***	45.9	47.9	-2.0	-3.9		25.9	24.9	0.9	1.9		65.2	62.4	2.9	5.8
Have GED***	9.3	8.4	0.9	3.1		7.6	2.9	4.8*	16.2		11.7	13.8	-2.1	-7.2
EMPLOYMENT														
Ever Employed***	68.9	72.7	-3.8	-8.4		74.7	69.9	4.8	10.6		80.2	77.5	2.8	6.1
Average Hours/Week Employed	12.2	14.5	-2.3*	-15.2		14.1	15.5	-1.4	-9.0		15.0	16.4	-1.4	-9.2
Employed in:														
1st Quarter***	35.0	38.3	-3.3	-6.7		39.5	44.1	-4.6	-9.4		49.2	52.9	-3.7	-7.6
2nd Quarter***	39.9	45.4	-5.5	-11.0		48.5	54.4	-5.9	-11.8		52.9	53.9	-1.0	-2.1
3rd Quarter***	48.0	47.6	0.5	1.0		49.5	56.4	-6.9	-13.8		60.8	58.4	2.5	4.9
4th Quarter***	50.3	52.7	-2.4	-4.9		58.7	53.6	5.1	10.3		60.4	57.6	2.7	5.5
5th Quarter***	53.2	61.6	-8.4	-17.2		63.8	57.3	6.5	13.3		68.3	62.7	5.6	11.4
ANY SELF-SUFFICIENCY-ORIENTED ACTIVITY (EDUCATION/TRAINING OR EMPLOYMENT)														
Ever Employed or in Education/Training***	87.3	82.4	4.9	12.7		79.4	76.0	3.4	8.7		88.8	86.4	2.4	6.3
Percentage of Weeks in Any Activity	58.5	54.6	3.9	10.1		50.6	48.7	1.9	4.8		56.6	57.4	-0.8	-2.1
Average Hours/Week in Employment or Education/Training	20.1	20.1	-0.0	-0.0		18.3	17.2	1.1			18.7	20.0	-1.3	-7.9
In Activities in:														
1st Quarter***	62.1	57.5	4.6	9.3		48.1	58.7	-10.6**	-21.4		60.2	62.5	-2.3	-4.6
2nd Quarter***	67.8	62.1	5.8	11.9		59.3	63.4	-4.2	-8.7		68.3	64.4	3.8	7.9
3rd Quarter***	74.1	65.9	8.2*	17.3		58.2	60.5	-2.3	-4.9		71.4	70.9	0.5	1.1
4th Quarter***	72.9	67.4	5.5	11.7		68.5	57.1	11.4*	24.1		71.1	72.3	3.0	6.4
5th Quarter***	77.0	73.7	3.3	7.2		75.0	61.9	13.1*	28.7		74.7	72.3	2.4	5.3

TABLE E.VII.2 *(continued)*

Outcome	Black, Non-Hispanic				Hispanic				White, Non-Hispanic			
	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]
AFDC/TANF RECEIPT												
Ever Received AFDC/TANF***	55.7	58.6	-2.9	-5.9	27.6	22.3	5.3	10.6	43.4	39.4	4.1	8.2
Received AFDC/TANF in:												
1st Quarter***	44.7	44.9	-0.2	-0.4	19.7	13.9	5.7	12.2	32.1	30.1	2.0	4.3
2nd Quarter***	45.3	49.2	-3.9	-8.2	19.6	14.5	5.1	10.7	32.5	32.0	0.5	1.0
3rd Quarter***	49.6	51.6	-2.0	-4.1	20.4	17.6	2.8	5.8	32.9	29.9	3.0	6.2
4th Quarter***	42.9	46.7	-3.7	-8.0	17.0	17.5	-0.5	-1.1	28.0	26.1	1.9	4.2
5th Quarter***	42.8	46.7	-3.9	-8.4	15.9	15.4	0.4	0.9	29.5	28.6	0.8	1.8
Total AFDC/TANF Benefits ($)*	1,959	2,310	-351*	-14.7	997	689	308	13.0	1,443	1,413	30	1.3
RECEIPT OF OTHER WELFARE BENEFITS												
Ever Received Welfare***	72.1	79.4	-7.2*	-15.2	41.8	35.4	6.3	13.3	67.9	62.5	5.4	11.5
Total Welfare Benefits ($)	4,391	4,855	-465	-10.7	1,622	1,100	523	12.0	3,935	3,381	554	12.7
Ever Received Food Stamps***	61.3	70.6	-9.3**	-18.9	36.9	31.8	5.1	10.4	60.1	57.0	3.1	6.3
Total Food Stamp Benefits ($)	1,539	1,757	-217	-13.6	616	442	174	10.9	1,400	1,313	87	5.5
INCOME/POVERTY												
Income Above Poverty Level***	28.1	31.3	-3.2	-6.6	31.9	41.4	-9.6	-20.0	45.4	48.5	-3.2	-6.6
Sample Size	**429**	**404**	**833**		**385**	**375**	**760**		**261**	**237**	**498**	

SOURCE: Parent Services Follow-Up Interviews completed an average of 7 and 16 months after random assignment.

NOTE: All estimates were calculated using regression models, where each site was weighted equally. Only sites with at least 10 program group members and 10 control group members in the subgroup are included in the estimates for each subgroup.

[a]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had instead been assigned to the program group. This unobserved mean is estimated as the difference between the program group mean for participants and the impact per participant. A participant is defined as a program group member who received more than one Early Head Start home visit, met with an Early Head Start case manager more than once, received at least two weeks of Early Head Start center-based services, and/or participated in Early Head Start parent-child group activities.

[b]The estimated impact per participant is measured as the estimated impact per eligible applicant divided by the proportion of program group members who participated in Early Head Start services (which varied by site). The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for program and control group members.

[c]The effect size is calculated by dividing the estimated impact per participant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact per participant expressed as a percentage of a standard deviation).

[d]Asterisks next to variable names indicate significance levels for statistical tests of differences in impacts across the subgroups.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

TABLE E.VII.3

IMPACTS ON CHILD AND FAMILY OUTCOMES AT AGE 2, BY RACE/ETHNICITY

	Black, Non-Hispanic					Hispanic					White, Non-Hispanic			
Outcome	Program Group	Control Group[a]	Impact Estimate per Participant[b]	Effect Size[c]		Program Group	Control Group[a]	Impact Estimate per Participant[b]	Effect Size[c]		Program Group	Control Group[a]	Impact Estimate per Participant[b]	Effect Size[c]
CHILD COGNITIVE DEVELOPMENT														
Average Bayley Mental Development Index (MDI)	88.7	85.2	3.5***	25.7		88.0	86.2	1.8	13.1		92.3	90.8	1.5	11.3
Percentage with MDI < 85***[d]	33.9	48.7	-14.8***	-30.3		40.9	43.1	-2.2	-4.6		31.4	31.3	0.1	0.2
Percentage with MDI < 100***	79.6	85.0	-5.4	-13.0		77.3	92.2	-14.9***	-36.1		65.8	69.4	-3.7	-8.9
CHILD LANGUAGE DEVELOPMENT														
Average MacArthur CDI—Vocabulary Production	57.0	51.6	5.5**	24.2		53.2	51.6	1.6	7.0		58.0	56.1	1.9	8.6
Percentage with Vocabulary Production < 25***	6.0	10.6	-4.6	-14.6		12.7	17.6	-5.0	-15.6		9.6	10.1	-0.6	-1.7
Average MacArthur CDI—Combining Words***	87.2	81.5	5.8	13.8		67.0	57.3	9.7	23.3		87.6	87.8	-0.2	-0.5
Average MacArthur CDI—Sentence Complexity	8.7	7.0	1.7*	20.3		6.8	5.0	1.8	21.9		10.3	9.2	1.1	13.5
Percentage with Sentence Complexity < 2***	20.5	26.0	-5.6	-12.2		44.0	49.7	-5.7	-12.5		19.5	17.8	1.7	3.7
CHILD SOCIAL-EMOTIONAL DEVELOPMENT														
Average Bayley BRS—Emotional Regulation	3.6	3.5	0.1	9.9		3.7	3.7	-0.0	-3.7		3.6	3.7	-0.1*	-15.7
Average Bayley BRS—Orientation/Engagement	3.6	3.6	0.0	4.4		3.5	3.5	-0.0	-5.2		3.8	3.9	-0.1	-9.8
Child Behavior Checklist—Aggression	9.8	11.1	-1.3**	-23.2		10.7	10.1	0.6	10.8		9.4	10.1	-0.7	-11.9
Parent-Child Structured Play: Child Sustained Attention with Objects (Average)	4.9	4.8	0.2	19.5		4.9	4.9	-0.0	-3.7		5.2	5.1	0.1	9.9
Parent-Child Structured Play: Child Negativity Toward Parent (Average)	2.1	2.2	-0.1	-14.2		1.51	1.50	0.01	1.0		1.6	1.8	-0.2**	-21.3
Parent-Child Structured Play: Child Engagement (Average)	4.1	3.8	0.2*	20.5		4.40	4.36	0.04	3.3		4.5	4.3	0.2*	16.8
QUALITY OF THE HOME ENVIRONMENT AND PARENTING: EMOTIONAL SUPPORT														
Home Observation for Measurement of the Environment (HOME) Emotional Responsivity	5.9	5.8	0.1	5.9		6.3	6.1	0.2	13.5		6.3	6.2	0.1	8.2
Parent-Child Structured Play: Parent Supportiveness	3.7	3.5	0.2**	23.8		4.0	3.9	0.2	16.0		4.3	4.2	0.1	12.9

TABLE E.VII.3 *(continued)*

Outcome	Black, Non-Hispanic				Hispanic				White, Non-Hispanic			
	Program Group	Control Group[a]	Impact Estimate per Participant[b]	Effect Size[c]	Program Group	Control Group[a]	Impact Estimate per Participant[b]	Effect Size[c]	Program Group	Control Group[a]	Impact Estimate per Participant[b]	Effect Size[c]
QUALITY OF THE HOME ENVIRONMENT AND PARENTING: STIMULATION OF LANGUAGE AND LEARNING												
HOME Cognitive, Language, and Literacy Support	10.3	10.0	0.3*	18.3	9.5	9.0	0.5*	25.8	11.0	10.9	0.1	4.9
Regular Bedtimes***	59.3	49.4	9.9*	20.0	56.8	52.9	3.9	7.8	65.7	62.0	3.8	7.6
Bedtime Routines***	61.5	57.6	3.8	8.2	70.4	67.0	3.4	7.3	73.9	69.8	4.0	8.6
Reading Daily***	57.2	47.8	9.4*	18.7	44.1	34.4	9.8	19.5	37.8	26.1	11.7**	27.7
Reading at Bedtime***	30.0	15.3	14.6***	34.7	24.5	14.4	10.1**	23.9	69.7	63.5	6.2	12.3
Father Reads to Child	3.3	2.9	0.4*	18.0	3.7	3.7	0.0	0.7	3.8	3.7	0.1	2.2
Reading Frequency	4.6	4.4	0.2*	19.5	4.2	4.0	0.2	13.8	4.9	4.8	0.1	10.4
Parent-Child Activities to Stimulate Cognitive and Language Development	4.5	4.5	0.1	8.0	4.4	4.3	0.1	10.0	4.7	4.6	0.1	12.4
Outside Activities	2.9	2.8	0.0	6.2	2.9	2.9	0.0	4.6	2.6	2.6	0.0	3.1
HOME Verbal/Social Skills	2.6	2.5	0.1	14.7	2.8	2.7	0.1	17.7	2.9	2.9	0.0	1.7
QUALITY OF THE HOME ENVIRONMENT AND PARENTING: NEGATIVE PARENTING BEHAVIOR												
HOME Absence of Punitive Interactions	4.2	4.1	0.0	2.8	4.5	4.6	-0.1	-11.6	4.6	4.5	0.1	9.7
Parent-Child Structured Play: Parent Detachment	1.6	1.8	-0.2	-18.2	1.2	1.3	-0.1	-11.1	1.3	1.4	-0.1	-12.1
Parent-Child Structured Play: Parent Intrusiveness	2.4	2.5	-0.2	-15.3	1.7	1.7	-0.0	-3.9	1.5	1.7	-0.2**	-19.4
Parent-Child Structured Play: Negative Regard	1.8	1.9	-0.1	-12.9	1.2	1.2	-0.0	-3.2	1.3	1.3	0.0	0.3
Spanked Child in Last Week***	59.5	59.6	-0.0	-0.1	38.9	41.5	-2.6	-5.1	39.7	50.4	-10.6**	-21.3
KNOWLEDGE OF CHILD DEVELOPMENT AND DISCIPLINE STRATEGIES												
Knowledge of Infant Development Inventory (KIDI)	3.3	3.3	-0.0	-1.1	3.3	3.2	0.1**	27.7	3.5	3.5	0.0	6.9
Would Use Mild Discipline Only***	27.9	22.4	5.5	11.2	58.9	55.0	3.9	8.0	54.3	44.2	10.1*	20.6
Index of Discipline Severity	3.3	3.5	-0.1	-8.3	2.0	2.1	-0.1	-5.5	2.2	2.6	-0.5***	-26.7
PARENT PHYSICAL AND MENTAL HEALTH												
PSI Parental Distress	24.6	26.7	-2.1**	-22.1	25.5	26.7	-1.2	-12.9	23.9	24.8	-0.9	-9.6
PSI Parent-Child Dysfunctional Interaction*	16.0	17.7	-1.7***	-29.2	17.6	17.4	0.2	3.8	16.9	17.0	-0.1	-1.1
FES Family Conflict	1.7	1.8	-0.0	-3.8	1.6	1.7	-0.1	-15.2	1.7	1.8	-0.1*	-17.6
CIDI Depression (Probability)*	10.1	12.3	-2.2	-7.3	12.4	7.0	5.4	17.7	14.3	16.9	-2.7	-8.9
Overall Health Status	3.7	3.6	0.1	12.8	3.3	3.4	-0.1	-8.1	3.5	3.5	0.0	0.1
Sample Size												
Parent interview	**361**	**323**	**684**		**252**	**226**	**478**		**417**	**402**	**819**	
Bayley	**297**	**253**	**550**		**214**	**174**	**388**		**348**	**341**	**689**	
Parent-child interactions	**293**	**259**	**552**		**226**	**182**	**408**		**327**	**327**	**675**	

SOURCE: Parent interviews, child assessments, interviewer observations, and assessments of semi-structured parent-child interactions conducted when children were approximately 24 months old.

TABLE E.VII.3 *(continued)*

NOTE: All estimates were calculated using regression models, where each site was weighted equally. Only sites with at least 10 program group members and 10 control group members in the subgroup are included in the estimates for each subgroup.

[a]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had instead been assigned to the program group. This unobserved mean is estimated as the difference between the program group mean for participants and the impact per participant. A participant is defined as a program group member who received more than one Early Head Start home visit, met with an Early Head Start case manager more than once, received at least two weeks of Early Head Start center-based services, and/or participated in Early Head Start parent-child group activities.

[b]The estimated impact per participant is measured as the estimated impact per eligible applicant divided by the proportion of program group members who participated in Early Head Start services (which varied by site). The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for program and control group members.

[c]The effect size is calculated by dividing the estimated impact per participant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact per participant expressed as a percentage of a standard deviation).

[d]Asterisks next to variable names indicate significance levels for statistical tests of differences in impacts across the subgroups.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

TABLE E.VII.4

IMPACTS ON SERVICE RECEIPT DURING THE FIRST 16 MONTHS, CHILD'S AGE AT ENROLLMENT

Service	Child Was Unborn			Child Was 0 to 4 Months Old			Child Was 5 to 12 Months Old		
	Program Group	Control Group	Impact Estimate per Eligible Applicant	Program Group	Control Group	Impact Estimate per Eligible Applicant	Program Group	Control Group	Impact Estimate per Eligible Applicant
ANY SERVICES									
Any Key Services***[a,b]	98.2	70.0	27.5***	95.8	75.0	20.8***	95.1	76.2	18.8***
Any Home Visits Or Center-Based Child Care***	98.2	42.3	55.8***	93.7	50.8	42.9***	91.0	53.0	38.0***
HOME VISITS									
Any Home Visits***	96.7	32.9	63.8***	91.4	28.9	62.5***	83.7	33.3	50.5***
Any Child Development Services During Home Visits***	96.3	31.5	64.8***	90.6	25.9	64.7***	83.5	31.6	51.9***
Weekly Home Visits (First Followup)***	53.0	5.1	47.8***	48.1	3.5	44.6***	42.6	3.3	39.3***
CHILD CARE									
Any Child Care***	75.9	68.7	7.3*	78.5	74.1	4.5	79.2	76.3	2.9
Any Center-Based Child Care***	27.7	15.1	12.5***	42.9	29.3	13.6***	42.3	30.6	11.7***
Average Hours/Week of Center Care***	2.3	1.4	1.0*	6.8	3.7	3.2***	7.8	4.6	3.2***
Concurrent Child Care Arrangements***	26.5	25.5	1.0	35.1	26.4	8.8**	37.7	35.7	2.0
Average Weekly Out-of-Pocket Cost of Care	$2.44	$4.42	-$1.98	$6.12	$9.17	-$3.05**	$6.79	$9.93	-$3.14**
CASE MANAGEMENT									
Any Case Management Meetings***	89.3	46.3	42.9***	89.4	47.8	41.6***	84.0	49.3	34.6***
Weekly Case Management—First Followup***	57.1	11.1	46.0***	50.3	8.3	42.0***	46.7	7.1	39.6***
GROUP ACTIVITIES									
Any Group Parenting Activities***	71.6	35.0	36.6***	66.4	28.3	38.1***	64.8	29.8	35.0***
Any Parent-Child Group Activities***	37.1	8.6	28.5***	36.2	7.3	28.9***	32.6	11.2	21.4***
EARLY INTERVENTION SERVICES									
Identification of Child's Disability*.***	1.9	0.5	1.4	5.4	3.1	2.3	4.9	5.0	-0.0
Services for Child with Disability***	1.5	0.0	1.4	4.3	1.7	2.6**	3.1	2.9	0.1
CHILD HEALTH SERVICES									
Any Child Health Services***	99.2	99.1	0.1	99.5	99.6	-0.1	99.4	99.5	-0.1
Any Doctor Visits***	92.1	92.0	0.1	94.2	94.5	-0.4	90.0	91.6	-1.5
Any Emergency Room Visits***	40.3	44.3	-4.0	43.3	38.6	4.7	40.1	38.1	1.9
Any Dentist Visits***	6.8	9.2	-2.4	8.7	8.4	0.4	13.1	11.9	1.2
Any Screening Tests***	57.6	56.1	1.5	53.8	50.2	3.6	55.6	49.5	6.1*
Any Immunizations***	98.8	97.9	0.8	98.2	97.3	1.0	95.6	95.3	0.3

TABLE E.VII.4 (*continued*)

Service	Child Was Unborn			Child Was 0 to 4 Months Old			Child Was 5 to 12 Months Old		
	Program Group	Control Group	Impact Estimate per Eligible Applicant	Program Group	Control Group	Impact Estimate per Eligible Applicant	Program Group	Control Group	Impact Estimate per Eligible Applicant
FAMILY DEVELOPMENT SERVICES									
Any Education-Related Services***	85.8	56.5	29.2***	81.9	49.3	32.6***	79.7	46.7	33.1***
Any Employment-Related Services***	74.5	33.7	40.8***	71.4	31.3	40.1***	61.7	26.2	35.5***
Any Family Health Services***	98.5	97.1	1.5	98.1	99.1	-1.0	96.7	97.5	-0.8
Any Family Mental Health Services***	17.5	17.7	-0.1	21.3	15.1	6.2**	13.7	14.6	-0.9
Transportation Assistance***	39.9	19.7	20.2***	25.4	15.2	10.1***	27.3	18.5	8.8***
Housing Assistance***	51.5	48.8	2.7	52.5	46.4	6.1*	48.2	49.2	-1.1
Sample Size	**292**	**302**	**594**	**404**	**370**	**774**	**443**	**425**	**868**

SOURCE: Parent Services Follow-Up Interviews completed an average of 7 and 16 months after enrollment.

NOTE: All estimates were calculated using regression models, where each site was weighted equally. Only sites with at least 10 program group members and 10 control group members in the subgroup are included in the estimates for each subgroup.

[a]Home visits, case management, center-based child care, and/or group parenting activities.

[b]Asterisks next to variable names indicate significance levels for statistical tests of differences in impacts across the subgroups (unborn vs. born and younger vs. older infants).

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

TABLE E.VII.5

IMPACTS ON SELF-SUFFICIENCY, BY CHILD'S AGE AT ENROLLMENT

	Child Was Unborn					Child Was 0 to 4 Months Old					Child Was 5 to 12 Months Old			
Outcome	Program Group	Control Group[a]	Impact Estimate per Participant[b]	Effect Size[c]		Program Group	Control Group[a]	Impact Estimate per Participant[b]	Effect Size[c]		Program Group	Control Group[a]	Impact Estimate per Participant[b]	Effect Size[c]
EDUCATION/JOB TRAINING														
Ever in Education/Training***[d]	47.8	47.7	0.1	0.2		46.4	37.3	9.1**	18.3		46.7	44.2	2.5	5.0
Ever in High School***	17.9	17.4	0.4	1.5		10.8	5.4	5.3**	18.3		9.8	6.0	3.7**	12.8
Ever in ESL Class***	0.6	1.3	-0.7	-5.9		2.2	0.6	1.7	14.7		3.0	1.6	1.3	11.9
Ever in Vocational Program***	13.6	14.9	-1.3	-3.9		13.9	13.4	0.5	1.5		17.3	13.1	4.2	12.7
Average Hours/Week in Education//Training	5.3	4.9	0.4	5.2		4.7	3.0	1.7***	21.9		5.1	4.2	0.9	12.2
In Education/Training:														
First Quarter***	25.6	24.1	1.5	3.6		21.1	20.4	0.7	1.6		26.8	25.9	0.9	2.1
Second Quarter***	27.7	21.0	6.8*	15.3		27.8	22.6	5.1	11.6		30.5	30.5	0.0	0.1
Third Quarter***	30.4	28.5	1.9	4.3		32.0	20.0	12.0***	27.2		30.9	29.9	1.0	2.3
Fourth Quarter***	31.0	30.2	0.8	1.9		31.4	21.5	9.9***	23.1		29.2	26.4	2.8	6.5
Fifth Quarter***	31.5	27.9	3.6	8.3		28.4	24.0	4.5	10.4		31.1	24.9	6.2	14.5
Have High School Diploma ***	37.2	39.0	-1.8	-3.6		47.8	47.3	0.5	1.1		52.3	46.3	6.1*	12.2
Have GED***	9.6	7.4	2.2	7.5		11.1	9.0	2.0	6.9		8.2	10.7	-2.5	-8.6
EMPLOYMENT														
Ever Employed***	65.0	64.4	0.6	1.4		72.8	75.8	-3.1	-6.8		71.7	72.3	-0.6	-1.3
Average Hours/Week in Employment	10.1	11.5	-1.4	-9.0		15.7	16.6	-0.9	-6.1		15.3	16.0	-0.8	-4.9
Employed in:														
First Quarter***	30.5	29.4	1.1	2.3		38.4	43.9	-5.5	-11.1		45.7	46.0	-0.3	-0.6
Second Quarter***	35.8	40.8	-5.0	-10.0		46.7	53.2	-6.5	-13.0		49.8	50.8	-1.1	-2.1
Third Quarter***	42.3	46.7	-4.4	-8.8		54.4	54.0	0.4	0.8		54.1	55.8	-1.7	-3.5
Fourth Quarter***	47.6	46.3	1.3	2.7		57.6	58.1	-0.5	-1.1		57.9	57.0	0.9	1.8
Fifth Quarter***	53.7	52.3	1.4	2.9		61.5	66.3	-4.8	-9.8		62.5	61.0	1.4	2.9
ANY SELF-SUFFICIENCY-ORIENTED ACTIVITY (EDUCATION/TRAINING OR EMPLOYMENT)														
Ever Employed or in Education/Training***	81.5	79.4	2.1	5.5		85.6	82.4	3.2	8.3		82.9	83.0	-0.1	-0.4
Percentage of Weeks in Any Activity	47.7	47.3	0.4	1.0		55.8	54.6	1.2	3.1		59.2	58.1	1.1	2.9
Average Hours/Week in Employment or Education/Training	15.7	16.5	-0.8	-4.9		20.4	19.9	0.5	2.9		20.9	20.3	0.6	3.6
In Activities in:														
First Quarter***	50.2	47.9	2.4	4.8		85.6	82.4	3.2	8.3		65.1	61.7	3.4	6.8
Second Quarter***	56.5	55.5	0.9	1.9		54.2	57.4	-3.1	-6.3		70.1	65.6	4.5	9.3
Third Quarter***	61.1	61.0	0.2	0.3		65.0	65.1	-0.1	-0.2		70.1	70.0	0.1	0.2
Fourth Quarter***	65.4	62.2	3.3	6.9		69.9	65.7	4.2	8.8		70.1	66.7	3.5	7.3
Fifth Quarter***	70.0	67.2	2.7	5.8		71.2	68.8	2.4	5.0		73.5	71.0	2.5	5.5

TABLE E.VII.5 *(continued)*

Outcome	Child Was Unborn				Child Was 0 to 4 Months Old				Child Was 5 to 12 Months Old			
	Program Group	Control Group[a]	Impact Estimate per Participant[b]	Effect Size[c]	Program Group	Control Group[a]	Impact Estimate per Participant[b]	Effect Size[c]	Program Group	Control Group[a]	Impact Estimate per Participant[b]	Effect Size[c]
AFDC/TANF RECEIPT												
Ever Received AFDC/TANF***[d]*	54.0	55.2	-1.2	-2.3	46.5	42.8	3.7	7.4	43.6	40.0	3.6	7.3
Received AFDC/TANF in:												
First Quarter***	37.2	40.4	-3.3	-7.0	33.9	33.9	0.0	0.1	38.4	27.9	10.4***	22.2
Second Quarter***	39.0	44.0	-5.0	-10.4	36.4	32.4	4.1	8.5	35.9	30.3	5.6*	11.8
Third Quarter***	48.9	43.4	5.5	11.5	36.9	33.6	3.2	6.7	36.1	33.7	2.4	5.1
Fourth Quarter***	41.0	41.3	-0.2	-0.5	32.0	29.8	2.2	4.8	29.9	27.8	2.1	4.4
Fifth Quarter***	40.0	40.3	-0.4	-0.9	31.0	30.2	0.8	1.7	28.7	27.5	1.2	2.6
Total AFDC/TANF Benefits ($)	2,051	1,996	56	2.4	1,490	1,418	71	3.0	1,499	1,388	111	4.7
RECEIPT OF OTHER WELFARE BENEFITS												
Ever Received Welfare***	72.0	74.1	-2.1	-4.4	70.6	64.4	6.2*	13.0	61.9	62.0	-0.1	-0.2
Total Welfare Benefits ($)	4,383	4,228	154	3.5	3,709	3,467	241	5.5	3,441	3,128	313	7.2
Ever Received Food Stamps***	63.7	65.6	-1.9	-3.9	61.6	56.9	4.8	9.7	52.5	54.4	-1.8	-3.7
Total Food Stamp Benefits ($)	1,414	1,589	-175	-11.0	1,389	1,300	89	5.6	1,227	1,244	-17	-1.1
INCOME/POVERTY												
Income Above Poverty Level***	24.5	24.4	0.1	0.3	34.1	51.6	-7.6*	-15.9	35.7	34.5	1.2	2.5
Sample Size	**292**	**302**	**594**		**404**	**370**	**774**		**443**	**425**	**868**	

SOURCE: Parent Services Follow-Up Interviews completed an average of 7 and 16 months after random assignment.

NOTE: All estimates were calculated using regression models, where each site was weighted equally. Only sites with at least 10 program group members and 10 control group members in the subgroup are included in the estimates for each subgroup.

[a]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had instead been assigned to the program group. This unobserved mean is estimated as the difference between the program group mean for participants and the impact per participant. A participant is defined as a program group member who received more than one Early Head Start home visit, met with an Early Head Start case manager more than once, received at least two weeks of Early Head Start center-based services, and/or participated in Early Head Start parent-child group activities.

[b]The estimated impact per participant is measured as the estimated impact per eligible applicant divided by the proportion of program group members who participated in Early Head Start services (which varied by site). The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for program and control group members.

[c]The effect size is calculated by dividing the estimated impact per participant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact per participant expressed as a percentage of a standard deviation).

[d]Asterisks next to variable names indicate significance levels for statistical tests of differences in impacts across the subgroups (unborn vs. born and younger vs. older infants).

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

TABLE E.VII.6

IMPACTS ON CHILD AND FAMILY OUTCOMES AT AGE 2, BY AGE OF CHILD AT ENROLLMENT

	Child Was Unborn				Child Was 0 to 4 Months Old				Child Was 5 to 12 Months Old			
Outcome	Program Group	Control Group[a]	Impact Estimate per Participant[b]	Effect Size[c]	Program Group	Control Group[a]	Impact Estimate per Participant[b]	Effect Size[c]	Program Group	Control Group[a]	Impact Estimate per Participant[b]	Effect Size[c]
CHILD COGNITIVE DEVELOPMENT												
Average Bayley Mental Development Index (MDI)	90.6	88.4	2.2	15.9	89.1	87.3	1.8	13.3	91.2	89.8	1.4	10.4
Percentage with MDI < 85***[d]	30.8	36.1	-5.3	-10.9	35.8	43.8	-8.0*	-16.4	31.5	35.0	-3.5	-7.2
Percentage with MDI < 100***	78.7	80.4	-1.8	-4.3	74.9	79.9	-5.0	-12.1	71.5	76.0	-4.5	-10.9
CHILD LANGUAGE DEVELOPMENT												
Average MacArthur CDI—Vocabulary Production	59.5	54.1	5.4**	24.0	54.5	53.5	1.0	4.4	57.4	53.7	3.7**	16.4
Percentage with Vocabulary Production < 25***	5.6	11.8	-6.2**	-19.4	9.7	12.4	-2.8	-8.7	10.6	9.9	0.7	2.3
Average MacArthur CDI—Combining Words***	81.8	72.6	9.2**	21.9	79.3	76.4	2.9	6.9	81.6	78.5	3.2	7.6
Average MacArthur CDI—Sentence Complexity**^	9.2	6.2	3.0***	37.5	8.1	7.8	0.3	3.6	8.8	7.9	1.0	11.7
Percentage with Sentence Complexity < 2***	23.9	38.5	-14.5***	-31.9	26.7	29.1	-2.4	-5.3	26.9	26.9	0.0	0.0
CHILD SOCIAL-EMOTIONAL DEVELOPMENT												
Average Bayley BRS—Emotional Regulation	3.7	3.7	-0.0	-3.1	3.5	3.5	-0.0	-2.1	3.6	3.7	-0.1	-11.8
Average Bayley BRS—Orientation/Engagement	3.8	3.8	-0.0	-0.5	3.6	3.5	0.1	8.4	3.7	3.7	0.0	0.5
Child Behavior Checklist—Aggression	10.2	10.6	-0.5	-8.5	10.2	10.1	0.2	2.9	9.9	10.6	-0.8*	-13.9
Parent-Child Structured Play: Child Sustained Attention with Objects (Average)	5.0	4.9	0.1	10.7	5.0	4.9	0.1	12.2	5.1	5.0	0.1	11.3
Parent-Child Structured Play: Child Negativity Toward Parent (Average)	1.9	2.0	-0.1	-13.5	1.8	1.8	-0.0	-1.2	1.7	1.8	-0.1	-12.9
Parent-Child Structured Play: Child Engagement (Average)	4.2	4.1	0.2	14.6	4.2	4.1	0.1	10.8	4.5	4.3	0.1	12.2
QUALITY OF THE HOME ENVIRONMENT AND PARENTING: EMOTIONAL SUPPORT												
Home Observation for Measurement of the Environment (HOME) Emotional Responsivity^**[e]	6.0	5.9	0.1	9.4	6.2	5.9	0.4***	26.4	6.2	6.2	0.0	0.7
Parent-Child Structured Play: Parent Supportiveness	4.0	3.7	0.3**	29.5	3.9	3.9	0.1	6.5	4.1	4.0	0.1	12.9

TABLE E.VII.6 *(continued)*

Outcome	Child Was Unborn				Child Was 0 to 4 Months Old				Child Was 5 to 12 Months Old			
	Program Group	Control Group[a]	Impact Estimate per Participant[b]	Effect Size[c]	Program Group	Control Group[a]	Impact Estimate per Participant[b]	Effect Size[c]	Program Group	Control Group[a]	Impact Estimate per Participant[b]	Effect Size[c]
QUALITY OF THE HOME ENVIRONMENT AND PARENTING: STIMULATION OF LANGUAGE AND LEARNING												
HOME Cognitive, Language, and Literacy Support	10.6	10.2	0.3**	18.0	10.3	10.1	0.3**	15.3	10.3	10.0	0.3**	16.4
Regular Bedtimes***	55.3	45.5	9.9*	19.9	56.8	56.5	0.3	0.5	65.8	55.2	10.6***	21.3
Bedtime Routines***	65.3	63.7	1.6	3.4	70.6	68.3	2.3	4.8	66.4	66.9	-0.5	-1.1
Reading Daily***	59.5	51.2	8.3	16.7	52.6	58.3	-5.7	-11.5	31.8	23.1	8.8**	20.8
Reading at Bedtime***	23.3	18.7	4.7	11.1	27.1	27.1	0.0	0.0	57.7	49.6	8.1**	16.1
Father Reads to Child	3.1	3.1	0.0	0.1	3.3	3.4	-0.1	-4.7	3.5	3.3	0.3*	13.0
Reading Frequency	4.7	4.5	0.2	16.8	4.6	4.6	-0.1	-5.5	4.6	4.4	0.2	12.2
Parent-Child Activities to Stimulate Cognitive and Language Development^,***	4.7	4.5	0.1	15.0	4.5	4.6	-0.1	-10.7	4.5	4.4	0.2**	19.9
Outside Activities	2.8	2.8	0.1	8.7	2.8	2.8	0.0	3.0	2.8	2.7	0.1	10.0
HOME Verbal/Social Skills	2.7	2.6	0.1	12.3	2.8	2.7	0.1**	16.5	2.8	2.8	0.0	4.3
QUALITY OF THE HOME ENVIRONMENT AND PARENTING: NEGATIVE PARENTING BEHAVIOR												
HOME Absence of Punitive Interactions^,***	4.2	4.2	-0.1	-5.2	4.3	4.5	-0.2**	-20.1	4.4	4.2	0.1	12.3
Parent-Child Structured Play: Parent Detachment	1.4	1.7	-0.2*	-24.3	1.4	1.6	-0.1	-12.5	1.4	1.5	-0.1	-7.1
Parent-Child Structured Play: Parent Intrusiveness	2.0	2.0	-0.1	-5.6	1.9	2.0	-0.0	-3.3	1.8	1.9	-0.1	-12.8
Parent-Child Structured Play: Negative Regard	1.6	1.6	-0.0	-1.6	1.5	1.4	0.1	7.3	1.4	1.5	-0.0	-5.4
Spanked Child in Last Week***	53.9	53.8	0.1	0.2	46.1	53.0	-6.9	-13.9	51.0	51.9	-1.0	-2.0
KNOWLEDGE OF CHILD DEVELOPMENT AND DISCIPLINE STRATEGIES												
Knowledge of Infant Development Inventory (KIDI)^,**	3.4	3.4	0.0	1.0	3.4	3.3	0.1***	28.0	3.4	3.3	0.0	5.5
Would Use Mild Discipline Only***	40.5	27.4	13.1**	26.7	42.6	37.9	4.7	9.6	44.1	42.3	1.8	3.6
Index of Discipline Severity	2.8	3.1	-0.3*	-19.3	2.7	2.8	-0.1	-6.3	2.6	2.7	-0.1	-6.1
PARENT PHYSICAL AND MENTAL HEALTH												
PSI Parental Distress	25.0	25.4	-0.4	-4.3	24.3	25.8	-1.5*	-15.8	25.3	26.4	-1.1	-11.5
PSI Parent-Child Dysfunctional Interaction	16.8	17.8	-0.9	-15.5	17.0	17.4	-0.4	-7.1	17.2	17.4	-0.2	-3.9
FES Family Conflict	1.7	1.7	-0.0	-2.5	1.6	1.7	-0.1	-9.7	1.7	1.8	-0.1**	-19.8
CIDI Depression (Probability)	13..2	14.9	-1.7	-5.7	13.8	8.7	5.1*	16.9	12.2	11.0	1.2	4.0
Overall Health Status	3.5	3.5	0.0	1.7	3.5	3.4	0.1	9.4	3.5	3.4	0.1	4.6
Sample Size												
Parent interview	**264**	**264**	**528**		**371**	**346**	**717**		**457**	**411**	**868**	
Bayley	**221**	**223**	**444**		**304**	**271**	**575**		**385**	**335**	**720**	
Parent-child interactions	**208**	**214**	**422**		**311**	**282**	**593**		**394**	**323**	**717**	

TABLE E.VII.6 *(continued)*

SOURCE: Parent interviews, child assessments, interviewer observations, and assessments of semi-structured parent-child interactions conducted when children were approximately 24 months old.

NOTE: All estimates were calculated using regression models, where each site was weighted equally. Only sites with at least 10 program group members and 10 control group members in the subgroup are included in the estimates for each subgroup.

[a]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had instead been assigned to the program group. This unobserved mean is estimated as the difference between the program group mean for participants and the impact per participant. A participant is defined as a program group member who received more than one Early Head Start home visit, met with an Early Head Start case manager more than once, received at least two weeks of Early Head Start center-based services, and/or participated in Early Head Start parent-child group activities.

[b]The estimated impact per participant is measured as the estimated impact per eligible applicant divided by the proportion of program group members who participated in Early Head Start services (which varied by site). The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for program and control group members.

[c]The effect size is calculated by dividing the estimated impact per participant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact per participant expressed as a percentage of a standard deviation).

[d]Asterisks next to variable names indicate significance levels for statistical tests of differences in impacts across the subgroups (unborn vs. born, younger vs. older infants). ^ indicates nonsignificance.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

TABLE E.VII.7

IMPACTS ON SERVICE RECEIPT DURING FIRST 16 MONTHS, BY AGE OF MOTHER AT CHILD'S BIRTH

Service	Teenage Mother				Older Mother		
	Program Group	Control Group	Impact Estimate per Eligible Applicant		Program Group	Control Group	Impact Estimate per Eligible Applicant
ANY SERVICES							
Any Key Services***[a,b]	92.5	76.9	15.6***		96.8	74.4	22.4***
Any Home Visits or Center-Based Child Care***	89.2	52.8	36.4***		93.7	47.9	45.8***
HOME VISITS							
Any Home Visits***	84.8	35.1	49.7***		87.7	30.1	57.6***
Any Child Development Services During Home Visits***	83.0	33.0	49.9***		87.5	26.8	60.7***
Weekly Home Visits (First Followup)***	43.1	4.5	38.6***		45.9	2.7	43.2***
CHILD CARE							
Any Child Care***	88.2	85.1	3.1		74.8	68.6	6.1**
Any Center-Based Child Care***	43.1	27.4	15.7***		41.4	25.6	15.9***
Average Hours/Week of Center Care**	5.3	3.6	1.7**		7.1	3.5	3.6***
Concurrent Child Care Arrangements***	38.3	38.1	0.2		33.5	27.3	6.2**
Average Weekly Out-of-Pocket Cost of Care	$4.45	$7.04	-$2.59**		$6.47	$9.53	-$3.06***
CASE MANAGEMENT							
Any Case Management Meetings***	81.1	54.2	26.9***		88.3	49.2	39.1***
Weekly Case Management—First Followup***	47.0	9.9	37.1***		49.1	7.4	41.7***
GROUP ACTIVITIES							
Any Group Parenting Activities***	62.5	32.1	30.5***		68.6	28.3	40.3***
Any Parent-Child Group Activities***	28.0	8.4	19.5***		34.6	9.9	24.7***
EARLY INTERVENTION SERVICES							
Identification of Child's Disability***	1.8	1.9	-0.1		5.6	3.5	2.1*
Services for Child With Disability***	1.6	1.1	0.5		3.7	1.7	2.0**
CHILD HEALTH SERVICES							
Any Child Health Services***	99.7	99.6	0.0		99.6	99.3	0.2
Any Doctor Visits***	95.2	94.1	1.2		93.7	93.8	-0.1
Any Emergency Room Visits***	44.7	43.2	1.5		41.9	39.5	2.4
Any Dentist Visits***	9.7	9.0	0.7		13.0	9.9	3.1*
Any Screening Tests***	50.6	54.9	-4.3		57.2	52.2	5.0*
Any Immunizations***	96.7	96.1	0.6		97.5	97.3	0.2

TABLE E.VII.7 (*continued*)

Service	Teenage Mother				Older Mother		
	Program Group	Control Group	Impact Estimate per Eligible Applicant		Program Group	Control Group	Impact Estimate per Eligible Applicant
FAMILY DEVELOPMENT SERVICES							
Any Education-Related Services***	86.2	67.0	19.2***		80.3	40.7	39.6***
Any Employment-Related Services***	69.1	36.7	32.4***		67.3	26.7	40.6***
Any Family Health Services***	99.5	97.6	1.9*		97.7	98.5	-0.8
Any Family Mental Health Services***	17.3	14.2	3.1		19.1	15.7	3.5
Transportation Assistance***	30.0	21.9	8.0**		26.7	17.2	9.5***
Housing Assistance***	51.8	48.1	3.7		51.4	48.6	2.8
Sample Size	**426**	**428**	**854**		**684**	**640**	**1,324**

SOURCE: Parent Services Follow-Up Interviews completed an average of 7 and 16 months after random assignment.

NOTE: All estimates were calculated using regression models, where each site was weighted equally. Only sites with at least 10 program group members and 10 control group members in the subgroup are included in the estimates for each subgroup.

[a]Home visits, case management, center-based child care, and/or group parenting activities.

[b]Asterisks next to variable names indicate significance levels of differences in impacts across the subgroups.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

TABLE E.VII.8

IMPACTS ON SELF-SUFFICIENCY, BY AGE OF MOTHER AT CHILD'S BIRTH

	Teenage Mother					Older Mother			
Outcome	Program Group	Control Group[a]	Impact Estimate per Participant[b]	Effect Size[c]		Program Group	Control Group[a]	Impact Estimate per Participant[b]	Effect Size[c]
EDUCATION/JOB TRAINING									
Ever in Education/Training***[d]	66.0	62.3	3.7	7.5		38.5	32.8	5.8**	11.7
Ever in High School***	31.9	24.0	7.9**	27.0		0.6	0.2	0.4	1.3
Ever in ESL Class***	NA	NA	NA	NA		3.6	1.8	1.7*	15.2
Ever in Vocational Program***	17.2	16.3	1.0	3.0		14.3	10.4	3.9*	11.8
Average Hours/Week in Education//Training*	9.7	7.6	2.1**	27.3		2.6	2.1	0.6*	7.1
In Education/Training:									
First Quarter***	43.9	39.3	4.6	10.8		15.5	16.8	-1.3	-2.9
Second Quarter***	47.2	42.5	4.7	10.7		19.8	18.0	1.8	4.1
Third Quarter***	49.4	40.7	8.7**	19.8		22.3	18.3	4.1	9.2
Fourth Quarter***	46.9	37.0	10.0**	23.2		22.9	17.7	5.1**	12.0
Fifth Quarter***	47.0	38.2	8.8*	20.6		23.8	17.4	6.4**	15.0
Have High School Diploma ***	33.5	32.6	1.0	1.9		56.5	54.8	1.7	3.4
Have GED***	11.2	10.2	1.0	3.4		9.8	9.7	0.1	0.2
EMPLOYMENT									
Ever Employed***	73.6	79.7	-6.1	-13.5		73.6	70.0	3.6	7.9
Average Hours/Week in Employment	12.8	14.0	-1.2	-7.8		16.4	16.4	0.0	0.0
Employed in:									
First Quarter***	32.7	41.5	-8.8**	-17.9		46.2	44.2	2.0	4.0
Second Quarter***	42.5	48.5	-6.0	-12.1		50.1	49.7	0.4	0.7
Third Quarter***	50.6	55.3	-4.6	-9.3		55.7	52.6	3.1	6.3
Fourth Quarter***	58.9	57.3	1.6	3.2		58.1	57.8	0.3	0.6
Fifth Quarter***	54.7	64.9	-0.2	-0.4		64.2	61.6	2.5	5.2
ANY SELF-SUFFICIENCY-ORIENTED ACTIVITY (EDUCATION/TRAINING OR EMPLOYMENT)									
Ever Employed or in Education/Training***	91.5	92.2	-0.7	-1.9		82.1	78.3	3.8	10.0
Percentage of Weeks in Any Activity	64.6	61.6	3.0	7.8		54.8	52.4	2.4	6.1
Average Hours/Week in Employment or Education/Training	22.9	21.7	1.2	7.3		19.2	18.7	0.6	3.3
In Activities in:									
First Quarter***	65.5	64.6	0.9	1.8		53.6	53.7	-0.0	-0.1
Second Quarter***	72.4	72.6	-0.2	-0.4		61.8	58.5	3.3	6.8
Third Quarter***	76.7	74.2	2.5	5.4		67.6	62.9	4.7	9.9
Fourth Quarter***	80.6	72.7	7.9**	16.8		68.5	65.4	3.1	6.5
Fifth Quarter***	83.5	79.2	4.3	9.4		71.6	69.8	1.8	3.9

TABLE E.VII.8 *(continued)*

Outcome	Teenage Mother					Older Mother			
	Program Group	Control Group[a]	Impact Estimate per Participant[b]	Effect Size[c]		Program Group	Control Group[a]	Impact Estimate per Participant[b]	Effect Size[c]
AFDC/TANF RECEIPT									
Ever Received AFDC/TANF[d]***	52.2	50.4	1.8	3.6		41.8	39.5	2.3	4.6
Received AFDC/TANF in:									
First Quarter***	39.0	31.5	7.4**	15.8		32.2	31.5	0.7	1.5
Second Quarter***	41.4	34.1	7.3**	15.3		32.0	32.5	-0.6	-1.2
Third Quarter***	43.4	37.7	5.7	11.8		34.7	34.0	0.7	1.4
Fourth Quarter***	34.5	33.2	1.3	2.9		29.6	30.0	-0.4	-1.0
Fifth Quarter***	34.1	34.0	0.2	0.4		29.6	28.7	0.9	2.0
Total AFDC/TANF Benefits ($)	1,501	1,411	90	3.8		1,581	1,535	45.3	1.9
RECEIPT OF OTHER WELFARE BENEFITS									
Ever Received Welfare***	69.8	71.2	-1.5	-3.1		64.4	61.7	2.7	5.6
Total Welfare Benefits ($)	3,503	3,157	346	8.0		3,853	3,553	300	6.9
Ever Received Food Stamps***	59.0	60.8	-1.8	-3.7		57.3	56.3	0.9	1.9
Total Food Stamp Benefits ($)	1,185	1,117	67	4.2		1,366	1,412	-46	-2.9
INCOME/POVERTY									
Income Above Poverty Level***	35.6	32.1	3.5	7.3		34.8	40.0	-5.2*	-11.0
Sample Size	**426**	**428**	**854**			**684**	**640**	**1,324**	

SOURCE: Parent Services Follow-Up Interviews completed an average of 7 and 16 months after random assignment.

NOTE: All estimates were calculated using regression models, where each site was weighted equally. Only sites with at least 10 program group members and 10 control group members in the subgroup are included in the estimates for each subgroup.

[a]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had instead been assigned to the program group. This unobserved mean is estimated as the difference between the program group mean for participants and the impact per participant. A participant is defined as a program group member who received more than one Early Head Start home visit, met with an Early Head Start case manager more than once, received at least two weeks of Early Head Start center-based services, and/or participated in Early Head Start parent-child group activities.

[b]The estimated impact per participant is measured as the estimated impact per eligible applicant divided by the proportion of program group members who participated in Early Head Start services (which varied by site). The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for program and control group members.

[c]The effect size is calculated by dividing the estimated impact per participant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact per participant expressed as a percentage of a standard deviation).

[d]Asterisks next to variable names indicate significance levels for statistical tests of differences in impacts across the subgroups.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

NA = not available (insufficient sample)

TABLE E.VII.9

IMPACTS ON CHILD AND FAMILY OUTCOMES AT AGE 2, BY AGE OF MOTHER AT CHILD'S BIRTH

	Teenage Mother					Older Mother			
Outcome	Program Group	Control Group[a]	Impact Estimate per Participant[b]	Effect Size[c]		Program Group	Control Group[a]	Impact Estimate per Participant[b]	Effect Size[c]
CHILD COGNITIVE DEVELOPMENT									
Average Bayley Mental Development Index (MDI)	90.1	88.3	1.9	13.7		90.6	88.4	2.2**	16.3
Percentage with MDI < 85***[d]	33.3	38.8	-5.5	-11.3		33.2	38.2	-4.9	-10.1
Percentage with MDI < 100***	76.2	80.2	-4.1	-9.9		72.4	80.0	-7.7***	-18.6
CHILD LANGUAGE DEVELOPMENT									
Average MacArthur CDI—Vocabulary Production	58.2	55.1	3.2*	14.0		55.5	52.9	2.6*	11.4
Percentage with Vocabulary Production < 25***	5.7	8.9	-3.2	-10.1		11.7	11.9	-0.3	-0.8
Average MacArthur CDI—Combining Words***	85.2	86.8	-1.6	-3.8		79.6	72.6	7.0***	16.7
Average MacArthur CDI—Sentence Complexity	9.5	8.6	0.9	10.6		8.4	7.3	1.2**	14.2
Percentage with Sentence Complexity < 2***	25.6	20.7	4.9	10.7		28.3	33.9	-5.6*	-12.3
CHILD SOCIAL-EMOTIONAL DEVELOPMENT									
Average Bayley BRS—Emotional Regulation	3.7	3.6	0.1	10.0		3.6	3.6	-0.0	-2.5
Average Bayley BRS—Orientation/Engagement	3.7	3.7	-0.0	-3.5		3.6	3.7	-0.0	-4.0
Child Behavior Checklist—Aggression*	9.9	11.2	-1.3**	-23.3		9.9	10.1	-0.2	-2.7
Parent-Child Structured Play: Child Sustained Attention with Objects (Average)	5.1	5.0	0.1	14.1		5.1	4.9	0.1*	13.3
Parent-Child Structured Play: Child Negativity Toward Parent (Average)	1.8	1.9	-0.1	-5.6		1.6	1.7	-0.1	-8.8
Parent-Child Structured Play: Child Engagement (Average)	4.3	4.1	0.2*	16.5		4.4	4.3	0.1	5.0
QUALITY OF THE HOME ENVIRONMENT AND PARENTING: EMOTIONAL SUPPORT									
Home Observation for Measurement of the Environment (HOME) Emotional Responsivity	5.9	5.8	0.1	5.2		6.3	6.1	0.2**	10.9
Parent-Child Structured Play: Parent Supportiveness	3.9	3.7	0.2**	20.4		4.2	4.0	0.1*	12.2
QUALITY OF THE HOME ENVIRONMENT AND PARENTING: STIMULATION OF LANGUAGE AND LEARNING									
HOME Cognitive, Language, and Literacy Support	10.4	10.3	0.1	5.4		10.3	10.0	0.3***	14.9
Regular Bedtimes***	57.9	54.5	3.4	7.0		62.2	56.1	6.2*	12.5
Bedtime Routines***	64.7	66.0	-1.4	-3.0		71.8	67.4	4.4	9.4
Reading Daily***	60.4	56.1	4.3	8.6		55.2	50.2	5.0	10.0
Reading at Bedtime***	28.5	21.4	7.1*	16.9		31.2	23.1	8.1***	19.2
Father Reads to Child*	3.2	3.4	-0.2	-10.4		3.6	3.4	0.2	10.1

TABLE E.VII.9 *(continued)*

Outcome	Teenage Mother					Older Mother			
	Program Group	Control Group[a]	Impact Estimate per Participant[b]	Effect Size[c]		Program Group	Control Group[a]	Impact Estimate per Participant[b]	Effect Size[c]
Reading Frequency	4.7	4.6	0.1	10.3		4.5	4.4	0.1*	10.2
Parent-Child Activities to Stimulate Cognitive and Language Development	4.6	4.6	0.1	8.4		4.5	4.4	0.0	4.9
Outside Activities	2.8	2.8	0.0	0.4		2.8	2.7	0.0	6.0
HOME Verbal/Social Skills***	2.6	2.7	-0.1**	-19.3		2.9	2.8	0.2***	22.3
QUALITY OF THE HOME ENVIRONMENT AND PARENTING: NEGATIVE PARENTING BEHAVIOR									
HOME Absence of Punitive Interactions*	4.3	4.2	0.1	12.1		4.4	4.5	-0.1	-8.9
Parent-Child Structured Play: Parent Detachment	1.5	1.7	-0.2*	-17.4		1.4	1.4	-0.1	-5.8
Parent-Child Structured Play: Parent Intrusiveness	2.0	2.0	-0.1	-4.8		1.8	1.8	-0.1	-5.5
High Chair and Parent-Child Structured Play: Negative Regard	1.6	1.6	-0.0	-0.5		1.4	1.4	0.0	1.2
Spanked Child in Last Week***	53.4	60.4	-7.0	-14.1		46.8	49.5	-2.7	-5.4
KNOWLEDGE OF CHILD DEVELOPMENT AND DISCIPLINE STRATEGIES									
Knowledge of Infant Development Inventory (KIDI)	3.4	3.3	0.1*	14.1		3.4	3.4	0.04*	10.2
Would Use Mild Discipline Only***	34.3	31.7	2.6	5.3		47.5	42.4	5.1	10.3
Index of Discipline Severity	2.9	3.1	-0.2	-9.9		2.5	2.6	-0.1	-8.5
Safety Precaution Index	4.2	4.3	-0.1	-5.6		4.5	4.4	0.1	8.6
Has Syrup of Ipecac at Home***	25.1	27.3	-2.2	-4.7		35.3	32.8	2.6	5.6
Has Poison Control Number***	37.7	34.4	3.3	6.8		40.7	38.4	2.3	4.7
Has Gates or Doors in Front of Stairs***	77.5	81.6	-4.1	-10.4		77.7	79.0	-1.3	-3.4
Uses a Car Seat***	76.7	81.4	-4.7	-12.3		83.3	83.1	0.2	0.5
Covers Electric Outlets***	54.2	56.1	-1.9	-3.8		63.8	61.6	2.2	4.5
PARENT PHYSICAL AND MENTAL HEALTH									
PSI Parental Distress*	24.8	26.9	-2.1**	-22.1		24.9	25.2	-0.3	-3.1
PSI Parent-Child Dysfunctional Interaction*	16.8	17.9	-1.1**	-18.7		17.1	17.1	-0.0	-0.1
FES Family Conflict	1.7	1.8	-0.1	-15.9		1.7	1.7	-0.0	-3.5
CIDI Depression (Probability)	12.7	11.4	1.3	4.5		12.8	12.9	-0.1	-0.5
Overall Health Status	3.6	3.5	0.1	6.8		3.4	3.4	0.0	2.4
Sample Size									
Parent interview	**393**	**388**	**781**			**665**	**607**	**1,272**	
Bayley	**323**	**323**	**646**			**556**	**485**	**1,041**	
Parent-child interactions	**326**	**325**	**651**			**558**	**475**	**1,033**	

SOURCE: Parent interviews, child assessments, interviewer observations, and assessments of semi-structured parent-child interactions conducted when children were approximately 24 months old.

NOTE: All estimates were calculated using regression models, where each site was weighted equally. Only sites with at least 10 program group members and 10 control group members in the subgroup are included in the estimates for each subgroup.

TABLE E.VII.9 *(continued)*

[a]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had instead been assigned to the program group. This unobserved mean is estimated as the difference between the program group mean for participants and the impact per participant. A participant is defined as a program group member who received more than one Early Head Start home visit, met with an Early Head Start case manager more than once, received at least two weeks of Early Head Start center-based services, and/or participated in Early Head Start parent-child group activities.

[b]The estimated impact per participant is measured as the estimated impact per eligible applicant divided by the proportion of program group members who participated in Early Head Start services (which varied by site). The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for program and control group members.

[c]The effect size is calculated by dividing the estimated impact per participant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact per participant expressed as a percentage of a standard deviation).

[d]Asterisks next to the variable names indicate significance levels for statistical tests of differences in impacts across the subgroups.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

TABLE E.VII.10

IMPACTS ON SERVICE RECEIPT DURING THE FIRST 16 MONTHS, BY CHILD'S BIRTH ORDER

Service	Child Was Firstborn Child				Child Was Not Firstborn Child		
	Program Group	Control Group	Impact Estimate Per Eligible Applicant		Program Group	Control Group	Impact Estimate Per Eligible Applicant
ANY SERVICES							
Any Key Services***[a,b]	94.7	74.8	19.9***		97.9	73.6	24.3***
Any Home Visits Or Center-Based Child Care***	91.8	52.7	39.1***		95.6	48.4	47.3***
HOME VISITS							
Any Home Visits***	86.0	34.9	51.1***		90.5	29.6	60.9***
Any Child Development Services During Home Visits***	85.1	32.6	52.4***		90.5	26.6	63.9***
Weekly Home Visits (1st Followup)***	43.1	4.8	38.3***		52.5	2.4	50.2***
CHILD CARE							
Any Child Care***	83.7	77.9	5.7***		71.4	67.1	4.4
Any Center-Based Child Care***	43.1	27.0	16.2***		38.7	25.9	12.7***
Average Hours/Week of Center Care	7.2	3.5	3.7***		6.6	3.3	3.3***
Concurrent Child Care Arrangements***	35.7	33.0	2.7		30.2	27.6	2.5
Average Weekly Out-of-Pocket Cost of Care	$5.55	$8.64	-$3.09***		$5.56	$7.84	-$2.27*
CASE MANAGEMENT							
Any Case Management Meetings***	84.1	50.0	34.1***		88.8	48.9	39.9***
Weekly Case Management—1st Followup***	46.2	8.6	37.7***		53.4	8.6	44.9***
GROUP ACTIVITIES							
Any Group Parenting Activities***	66.2	31.3	34.9***		68.7	28.8	39.9***
Any Parent-Child Group Activities***	33.6	11.3	22.3***		34.5	6.7	27.9***
EARLY INTERVENTION SERVICES							
Identification of Child's Disability***	3.9	3.1	0.8		6.2	3.8	2.4
Services for Child With Disability***	2.9	2.1	0.8		3.7	1.2	2.6**
CHILD HEALTH SERVICES							
Any Child Health Services***	99.6	99.5	0.1		99.3	99.4	-0.0
Any Doctor Visits***	92.1	93.6	-1.5		95.4	93.0	2.5
Any Emergency Room Visits***	44.2	40.8	3.4		40.9	38.8	2.1
Any Dentist Visits***	9.9	9.5	0.5		11.6	9.0	2.6
Any Screening Tests***	56.7	56.1	0.6		52.1	47.2	4.9
Any Immunizations***	98.3	96.5	1.8*		95.9	97.8	-1.9

TABLE E.VII.10 (*continued*)

Service	Child Was Firstborn Child				Child Was Not Firstborn Child		
	Program Group	Control Group	Impact Estimate Per Eligible Applicant		Program Group	Control Group	Impact Estimate Per Eligible Applicant
FAMILY DEVELOPMENT SERVICES							
Any Education-Related Services***	85.0	56.1	29.0***		78.6	41.1	37.5***
Any Employment-Related Services***	69.7	29.7	39.9***		62.3	27.9	34.3***
Any Family Health Services***	97.5	97.7	-0.2		98.7	98.7	-0.0
Any Family Mental Health Services***	17.2	14.2	3.0		18.2	20.7	-2.5
Transportation Assistance***	28.3	19.3	9.1***		27.8	18.0	9.8***
Housing Assistance***	49.6	47.8	1.7		52.6	49.4	3.3
Sample Size	**705**	**687**	**1,392**		**425**	**409**	**834**

SOURCE: Parent Services Follow-Up Interviews completed an average of 7 and 16 months after random assignment.

NOTE: All estimates were calculated using regression models, where each site was weighted equally. Only sites with at least 10 program group members and 10 control group members in the subgroup are included in the estimates for each subgroup.

[a] Home visits, case management, center-based child care, and/or group parenting activities.

[b] Asterisks next to variable names indicate significance levels for statistical tests of differences in impacts across the subgroups.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

TABLE E.VII.11

IMPACTS ON SELF-SUFFICIENCY, BY CHILD'S BIRTH ORDER

	Child Was Firstborn Child					Child Was Not Firstborn Child			
Outcome	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]		Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]
EDUCATION/JOB TRAINING									
Ever in Education/Training***[d]	55.5	48.0	7.4**	15.0		33.1	35.2	-2.1	-4.3
Ever in High School***	17.9	13.0	4.9**	16.9		0.7	1.7	-1.0	-3.3
Ever in ESL Class***	2.9	0.6	2.4***	21.1		3.1	2.4	0.7	6.0
Ever in Vocational Program***	15.5	13.9	1.6	4.8		12.4	12.4	0.0	0.1
Average Hours/Week in Education//Training*	6.7	5.1	1.6***	21.0		2.3	2.0	0.3	3.9
In Education/Training:									
1st Quarter***	31.0	30.0	1.0	2.4		15.1	15.1	0.0	0.1
2nd Quarter***	35.3	33.3	2.1	4.7		17.3	17.1	0.2	0.4
3rd Quarter***	38.8	29.7	9.1***	20.6		17.6	20.2	-2.6	-6.0
4th Quarter***	37.5	27.9	9.6***	22.4		19.9	16.6	3.3	7.7
5th Quarter***	38.0	28.0	10.0***	23.3		19.5	18.4	1.2	2.8
Have High School Diploma ***	46.8	46.0	0.9	1.8		48.8	50.3	-1.5	-3.0
Have GED***	9.4	9.3	0.1	0.3		10.6	10.3	0.3	0.9
EMPLOYMENT									
Ever Employed***	73.2	74.4	-1.1	-2.5		74.2	67.8	6.4*	14.2
Average Hours/Week in Employment***	13.5	15.2	-1.6*	-10.6		17.5	15.3	2.3*	14.9
Employed in:									
1st Quarter***	39.2	41.4	-2.2	-4.4		47.0	43.5	3.5	7.1
2nd Quarter***	44.7	49.4	-4.7	-9.4		52.7	46.9	5.8	11.7
3rd Quarter***	51.4	54.0	-2.5	-5.0		56.3	50.6	5.7	11.5
4th Quarter***	57.2	56.5	0.7	1.3		61.9	54.7	7.2*	14.4
5th Quarter***	61.6	62.5	-0.9	-1.9		60.9	58.5	2.4	4.9
ANY SELF-SUFFICIENCY-ORIENTED ACTIVITY (EDUCATION/TRAINING OR EMPLOYMENT)									
Ever Employed or in Education/Training***	87.3	85.6	1.7	4.4		81.8	75.9	6.0*	15.5
Percentage of Weeks in Any Activity	59.2	58.2	1.0	2.6		55.8	49.8	6.1**	15.6
Average Hours/Week in Employment or Education/Training	20.7	20.4	0.3	1.6		20.0	17.6	2.4**	14.7
In Activities in:									
1st Quarter***	60.5	59.5	1.1	2.2		55.6	54.2	1.4	2.8
2nd Quarter***	66.9	67.0	-0.1	-0.3		62.9	57.2	5.8	11.9
3rd Quarter***	71.2	69.8	1.4	3.0		65.8	61.8	4.1	8.6

TABLE E.VII.11 *(continued)*

	Child Was Firstborn Child					Child Was Not Firstborn Child			
Outcome	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]		Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]
4th Quarter***	74.0	68.8	5.2*	11.0		69.5	62.0	7.5*	15.8
5th Quarter***	77.8	73.8	4.0	8.7		66.3	67.1	-0.8	-1.8
AFDC/TANF RECEIPT									
Ever Received AFDC/TANF***	45.9	41.7	4.2	8.4		40.3	41.9	-1.6	-3.1
Received AFDC/TANF in:									
1st Quarter***	34.0	29.1	4.9**	10.5		33.0	32.9	0.1	0.2
2nd Quarter***	34.0	31.8	2.1	4.5		33.2	32.9	0.3	0.7
3rd Quarter***	37.3	33.0	4.3	8.9		33.1	35.7	-2.6	-5.4
4th Quarter***	30.3	28.3	2.0	4.3		29.9	32.6	-2.7	-5.7
5th Quarter***	29.4	28.3	1.1	2.3		29.1	31.0	-1.9	-4.2
Total AFDC/TANF Benefits ($)	1,347	1,231	117	4.9		1,823	1,853	-30	-1.2
RECEIPT OF OTHER WELFARE BENEFITS									
Ever Received Welfare***	63.1	61.8	1.3	2.7		66.7	66.9	-0.2	-0.4
Total Welfare Benefits ($)	3,054	2,796	258	5.9		4,392	4,248	144	3.3
Ever Received Food Stamps***	53.8	52.9	0.8	1.7		60.6	62.5	-2.0	-4.0
Total Food Stamp Benefits ($)	1,028	981	47	3.0		1,637	1,754	-117	-7.3
INCOME/POVERTY									
Income Above Poverty Level***	37.6	41.2	-3.6	-7.6		31.5	30.9	0.6	1.3
Sample Size	**705**	**687**	**1,392**			**425**	**409**	**834**	

SOURCE: Parent Services Follow-Up Interviews completed an average of 7 and 16 months after random assignment.

NOTE: All estimates were calculated using regression models, where each site was weighted equally. Only sites with at least 10 program group members and 10 control group members in the subgroup are included in the estimates for each subgroup.

[a]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had instead been assigned to the program group. This unobserved mean is estimated as the difference between the program group mean for participants and the impact per participant. A participant is defined as a program group member who received more than one Early Head Start home visit, met with an Early Head Start case manager more than once, received at least two weeks of Early Head Start center-based services, and/or participated in Early Head Start parent-child group activities.

[b]The estimated impact per participant is measured as the estimated impact per eligible applicant divided by the proportion of program group members who participated in Early Head Start services (which varied by site). The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for program and control group members.

[c]The effect size is calculated by dividing the estimated impact per participant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact per participant expressed as a percentage of a standard deviation).

[d]Asterisks next to variable names indicate significance levels for statistical tests of differences in impacts across the subgroups.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

TABLE E.VII.12

IMPACTS ON CHILD AND FAMILY OUTCOMES AT AGE 2, BY CHILD'S BIRTH ORDER

	Child Was Firstborn Child					Child Was Not Firstborn Child			
Outcome	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]		Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]
CHILD COGNITIVE DEVELOPMENT									
Average Bayley Mental Development Index (MDI)	90.7	88.7	2.0**	14.8		89.8	87.2	2.7**	19.9
Percentage with MDI < 85***[d]	30.8	36.8	-5.9*	-12.2		36.7	45.1	-8.4*	-17.3
Percentage with MDI < 100***	72.2	79.2	-7.0**	-16.9		75.1	81.1	-6.0	-14.6
CHILD LANGUAGE DEVELOPMENT									
Average MacArthur CDI—Vocabulary Production	56.4	54.2	2.1	9.4		55.7	54.6	1.1	4.7
Percentage with Vocabulary Production < 25***	8.9	9.4	-0.5	-1.6		12.7	10.7	2.0	6.3
Average MacArthur CDI—Combining Words***	82.7	80.5	2.2	5.2		78.0	73.3	4.6	11.1
Average MacArthur CDI—Sentence Complexity	9.2	8.0	1.2**	15.3		8.0	7.6	0.4	5.0
Percentage with Sentence Complexity < 2***	25.1	26.7	-1.6	-3.5		29.8	32.9	-3.1	-6.9
CHILD SOCIAL-EMOTIONAL DEVELOPMENT									
Average Bayley BRS—Emotional Regulation	3.6	3.6	0.0	1.8		3.6	3.7	-0.0	-1.5
Average Bayley BRS—Orientation/Engagement	3.7	3.7	-0.0	-0.9		3.6	3.6	-0.0	-2.3
Child Behavior Checklist--Aggression	9.8	10.6	-0.8**	-14.3		10.0	10.3	-0.2	-4.1
Parent-Child Structured Play: Child Sustained Attention with Objects (Average)	5.0	5.0	0.1	6.2		5.1	5.1	-0.0	-1.6
Parent-Child Structured Play: Child Negativity Toward Parent (Average)	1.8	1.9	-0.1	-6.5		1.5	1.6	-0.1	-8.1
Parent-Child Structured Play: Child Engagement (Average)	4.3	4.2	0.1	5.6		4.5	4.4	0.1	10.3
QUALITY OF THE HOME ENVIRONMENT AND PARENTING: EMOTIONAL SUPPORT									
Home Observation for Measurement of the Environment (HOME) Emotional Responsivity	6.2	6.1	0.1	6.7		6.2	6.0	0.3**	18.6
Parent-Child Structured Play: Parent Supportiveness	4.0	3.9	0.1	9.8		4.2	4.0	0.1	13.5
QUALITY OF THE HOME ENVIRONMENT AND PARENTING: STIMULATION OF LANGUAGE AND LEARNING									
HOME Cognitive, Language, and Literacy Support	10.5	10.3	0.2**	11.1		10.1	9.8	0.2	11.7
Regular Bedtimes***	60.3	54.4	5.8*	11.8		65.4	59.4	6.0	12.1
Bedtime Routines***	70.5	65.8	4.7	10.1		69.1	80.0	-0.9	-1.9
Reading Daily***	61.8	57.3	4.4	8.8		50.6	43.8	6.9	13.7
Reading at Bedtime***	29.5	23.9	5.6**	13.3		31.7	22.0	9.8***	23.2
Father Reads to Child	3.5	3.5	0.0	1.2		3.4	3.4	0.0	0.8
Reading Frequency	4.7	4.6	0.1	6.8		50.6	43.8	6.9	13.7
Parent-Child Activities to Stimulate Cognitive and Language Development	4.6	4.6	0.1	9.0		4.4	4.3	0.1	8.6
Outside Activities	2.8	2.8	0.0	0.7		2.7	2.7	0.0	2.0
HOME Verbal/Social Skills**	2.8	2.8	-0.0	-1.1		2.9	2.7	0.1***	21.3

TABLE E.VII.12 *(continued)*

Outcome	Child Was Firstborn Child					Child Was Not Firstborn Child			
	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]		Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]
QUALITY OF THE HOME ENVIRONMENT AND PARENTING: NEGATIVE PARENTING BEHAVIOR									
HOME Absence of Punitive Interactions	4.4	4.4	-0.0	-3.4		4.4	4.4	-0.0	-2.5
Parent-Child Structured Play: Parent Detachment**	1.4	1.5	-0.0	-3.1		1.3	1.6	-0.3***	-26.7
Parent-Child Structured Play: Parent Intrusiveness	1.9	2.0	-0.1	-4.4		1.8	1.7	0.1	8.2
High-Chair and Parent-Child Structured Play: Negative Regard	1.5	1.5	0.0	1.1		1.4	1.2	0.1*	13.9
Spanked Child in Last Week***	49.4	54.6	-5.3*	-10.6		45.1	47.9	-2.8	-5.7
KNOWLEDGE OF CHILD DEVELOPMENT AND DISCIPLINE STRATEGIES									
Knowledge of Infant Development Inventory (KIDI)	3.4	3.3	0.1**	11.7		3.4	3.4	0.1*	13.9
Would Use Mild Discipline Only***	43.8	36.3	7.6**	15.4		46.7	45.5	1.2	2.5
Index of Discipline Severity	2.7	2.9	-0.2*	-10.7		2.4	2.5	-0.1	-5.4
PARENT PHYSICAL AND MENTAL HEALTH									
PSI Parental Distress	25.4	25.8	-0.5	-4.8		24.6	25.7	-1.1	-11.3
PSI Parent-Child Dysfunctional Interaction	17.0	17.5	-0.5	-8.4		17.3	17.3	-0.1	-1.3
FES Family Conflict	1.6	1.7	-0.1*	-11.7		1.7	1.8	-0.0	-4.7
CIDI Depression (Probability)	11.3	11.1	0.2	0.7		14.5	14.3	0.2	0.5
Overall Health Status	3.6	3.5	0.1	5.0		3.4	3.4	0.0	4.1
Sample Size									
Parent interview	**670**	**625**	**1,295**			**411**	**394**	**805**	
Bayley	**553**	**505**	**1,058**			**347**	**323**	**670**	
Parent-child interactions	**554**	**506**	**1,060**			**351**	**312**	**663**	

SOURCE: Parent interviews, child assessments, interviewer observations, and assessments of semi-structured parent-child interactions conducted when children were approximately 24 months old.

NOTE: All estimates were calculated using regression models, where each site was weighted equally. Only sites with at least 10 program group members and 10 control group members in the subgroup are included in the estimates for each subgroup.

[a]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had instead been assigned to the program group. This unobserved mean is estimated as the difference between the program group mean for participants and the impact per participant. A participant is defined as a program group member who received more than one Early Head Start home visit, met with an Early Head Start case manager more than once, received at least two weeks of Early Head Start center-based services, and/or participated in Early Head Start parent-child group activities.

[b]The estimated impact per participant is measured as the estimated impact per eligible applicant divided by the proportion of program group members who participated in Early Head Start services (which varied by site). The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for program and control group members.

[c]The effect size is calculated by dividing the estimated impact per participant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact per participant expressed as a percentage of a standard deviation).

[d]Asterisks next to variable names indicate significance levels for statistical tests of differences in impacts across the subgroups.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

TABLE E.VII.13

IMPACTS ON SERVICE RECEIPT DURING THE FIRST 16 MONTHS, BY CHILD'S GENDER

Service	Female Child				Male Child		
	Program Group	Control Group	Impact Estimate Per Eligible Applicant		Program Group	Control Group	Impact Estimate Per Eligible Applicant
ANY SERVICES							
Any Key Services***[a,b]	95.6	73.6	22.0***		94.8	75.7	19.1***
Any Home Visits Or Center-Based Child Care***	92.5	50.4	42.2***		91.9	51.8	40.1***
HOME VISITS							
Any Home Visits***	86.6	32.9	53.7***		86.8	32.7	54.1***
Any Child Development Services During Home Visits	85.8	30.4	55.4***		86.0	30.3	55.7***
Weekly Home Visits (1st Followup)***	42.5	3.2	39.3***		46.0	4.0	42.0***
CHILD CARE							
Any Child Care***	79.9	74.9	5.0**		79.2	72.6	6.6***
Any Center-Based Child Care***	41.4	27.4	14.0***		43.0	26.9	16.1***
Average Hours/Week of Center Care	7.3	3.9	3.4***		6.9	3.5	3.4***
Concurrent Child Care Arrangements***	36.1	32.2	3.9		32.6	29.2	3.4
Average Weekly Out-of-Pocket Cost of Care	$5.38	$8.29	-$2.91***		$5.45	$8.55	-$3.10***
CASE MANAGEMENT							
Any Case Management Meetings***	84.1	49.0	35.1***		86.4	50.3	36.2***
Weekly Case Management—1st Followup***	46.5	6.8	39.7***		48.3	9.5	38.8***
GROUP ACTIVITIES							
Any Group Parenting Activities***	65.6	29.2	36.4***		69.3	32.3	37.1***
Any Parent-Child Group Activities***	25.0	4.0	21.0***		24.5	7.4	16.9***
EARLY INTERVENTION SERVICES							
Identification of Child's Disability***	3.2	2.2	0.9		5.5	4.0	1.5
Services for Child With Disability***	2.2	1.2	1.1		3.7	2.3	1.4
CHILD HEALTH SERVICES							
Any Child Health Services*	99.8	99.6	0.2		99.4	99.2	0.2
Any Doctor Visits***	91.9	91.9	0.0		93.4	94.3	-1.0
Any Emergency Room Visits***							
Any Dentist Visits***	11.1	8.7	2.4		10.3	10.8	-0.6
Any Screening Tests***							
Any Immunizations***	97.7	96.7	1.0		97.0	96.7	0.4
FAMILY DEVELOPMENT SERVICES							
Any Education-Related Services***	83.0	52.6	30.4***		82.2	49.0	33.3***
Any Employment-Related Services***	66.9	31.1	35.8***		67.4	27.4	40.1***
Any Family Health Services***	97.8	97.4	0.5		98.2	98.7	-0.5
Any Family Mental Health Services***	17.0	14.7	2.3		17.5	18.1	-0.7
Transportation Assistance***	27.6	20.0	7.5***		29.8	17.5	12.3***
Housing Assistance***	51.3	48.7	2.6		50.4	47.5	3.0
Sample Size	**563**	**556**	**1,119**		**576**	**541**	**1,117**

TABLE E.VII.13 (*continued*)

SOURCE: Parent Services Follow-Up Interviews completed an average of 7 and 16 months after random assignment.

NOTE: All estimates were calculated using regression models, where each site was weighted equally. Only sites with at least 10 program group members and 10 control group members in the subgroup are included in the estimates for each subgroup.

[a]Home visits, case management, center-based child care, and/or group parenting activities.

[b]Asterisks next to variable names indicate significance levels for statistical tests of the differences in impacts across the subgroups.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

TABLE E.VII.14

IMPACTS ON SELF-SUFFICIENCY, BY CHILD'S GENDER

	Female Children					Male Children			
Outcome	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]		Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]
EDUCATION/JOB TRAINING									
Ever in Education/Training***[d]	50.6	46.5	4.2	8.4		46.8	40.7	6.1*	12.3
Ever in High School***	11.9	8.6	3.3*	11.4		13.0	10.1	2.9	9.8
Ever in ESL Class***	3.6	1.1	2.6***	22.8		1.9	1.5	0.3	3.0
Ever in Vocational Program***	15.6	14.6	1.0	3.0		14.7	10.9	3.8*	11.5
Average Hours/Week in Education//Training	5.1	4.2	0.9*	11.3		5.6	3.9	1.7***	21.7
In Education/Training:									
1st Quarter***	27.7	25.9	1.8	4.2		23.6	24.6	-0.9	-2.1
2nd Quarter***	32.6	27.4	5.3*	12.0		28.5	27.1	1.3	3.0
3rd Quarter***	34.7	28.1	6.6**	15.0		30.9	25.2	5.7**	13.0
4th Quarter***	31.6	27.7	3.8	8.9		32.7	22.5	10.2***	23.8
5th Quarter***	30.3	27.5	2.8	6.5		35.5	21.5	13.9***	32.5
Have High School Diploma ***	49.9	47.1	2.8	5.6		45.3	46.1	-0.8	-1.6
Have GED***	8.1	9.2	-1.0	-3.4		10.6	9.5	1.1	3.7
EMPLOYMENT									
Ever Employed***	73.0	70.5	2.5	5.6		71.5	73.7	-2.3	-5.1
Average Hours/Week in Employment	15.1	14.6	0.5	3.1		14.1	15.7	-1.6*	-10.4
Employed in:									
1st Quarter***	39.8	39.0	0.8	1.7		42.2	44.1	-1.9	-3.8
2nd Quarter***	48.0	47.0	1.0	1.9		45.6	48.3	-2.7	-5.3
3rd Quarter***	54.8	51.9	2.8	5.6		49.9	51.8	-1.9	-3.8
4th Quarter***	57.4	55.7	1.7	3.4		56.5	55.4	1.1	2.2
5th Quarter***	65.4	59.3	6.1	12.5		59.3	64.2	-5.0	-10.2
ANY SELF-SUFFICIENCY-ORIENTED ACTIVITY (EDUCATION/TRAINING OR EMPLOYMENT)									
Ever Employed or in Education/Training***	86.6	82.0	4.6*	12.0		84.1	83.0	1.1	2.9
Percentage of Weeks in Any Activity	59.6	54.6	5.0**	13.0		56.2	55.1	1.1	2.7
Average Hours/Week in Employment or Education/Training	20.5	18.9	1.6	9.5		20.0	19.9	0.1	0.3
In Activities in:									
1st Quarter***	59.3	55.7	3.5	7.1		58.6	58.4	0.2	0.5
2nd Quarter***	69.2	61.8	7.5**	15.5		63.8	63.5	0.3	0.6
3rd Quarter***	73.4	66.6	6.9**	14.5		67.3	65.5	1.8	3.8

TABLE E.VII.14 *(continued)*

	Female Children					Male Children			
Outcome	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]		Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]
4th Quarter***	73.0	68.3	4.7	9.9		70.9	65.2	5.8*	12.2
5th Quarter***	77.5	71.4	6.1*	13.4		72.7	71.7	1.0	2.3
AFDC/TANF RECEIPT									
Ever Received AFDC/TANF***	44.5	42.2	2.4	4.7		45.1	43.5	1.5	3.1
Received AFDC/TANF in:									
1st Quarter***	33.2	30.1	3.2	6.7		34.9	32.4	2.5	5.3
2nd Quarter***	35.0	32.8	2.1	4.5		34.5	34.0	0.5	1.1
3rd Quarter***	35.5	34.2	1.2	2.6		38.7	36.0	2.7	5.6
4th Quarter***	28.5	31.5	-3.0	-6.4		34.0	30.9	3.1	6.7
5th Quarter***	28.0	30.3	-2.3	-5.0		33.3	30.8	2.5	5.4
Total AFDC/TANF Benefits ($)	1,398	1,473	-76	-3.2		1,649	1,496	152	6.4
RECEIPT OF OTHER WELFARE BENEFITS									
Ever Received Welfare***	63.5	64.8	-1.3	-2.7		66.4	64.2	2.3	4.7
Total Welfare Benefits ($)	3,356	3,325	32	0.7		3,946	3,526	421*	9.7
Ever Received Food Stamps***	55.3	56.8	-1.6	-3.2		57.8	57.0	0.9	1.8
Total Food Stamp Benefits ($)	1,241	1,327	-86	-5.4		1,360	1,271	90	5.6
INCOME/POVERTY									
Income Above Poverty Level***	35.1	34.2	0.8	1.8		32.3	38.5	-6.2*	-12.9
Sample Size	**563**	**556**	**1,119**			**576**	**541**	**1,117**	

SOURCE: Parent Services Follow-Up Interviews completed an average of 7 and 16 months after random assignment.

NOTE: All estimates were calculated using regression models, where each site was weighted equally. Only sites with at least 10 program group members and 10 control group members in the subgroup are included in the estimates for each subgroup.

[a]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had instead been assigned to the program group. This unobserved mean is estimated as the difference between the program group mean for participants and the impact per participant. A participant is defined as a program group member who received more than one Early Head Start home visit, met with an Early Head Start case manager more than once, received at least two weeks of Early Head Start center-based services, and/or participated in Early Head Start parent-child group activities.

[b]The estimated impact per participant is measured as the estimated impact per eligible applicant divided by the proportion of program group members who participated in Early Head Start services (which varied by site). The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for program and control group members.

[c]The effect size is calculated by dividing the estimated impact per participant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact per participant expressed as a percentage of a standard deviation).

[d]Asterisks next to variable names indicate significance levels for statistical tests of differences in impacts across the subgroups.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

TABLE E.VII.15

IMPACTS ON CHILD AND FAMILY OUTCOMES AT AGE 2, BY CHILD'S GENDER

	Female Child					Male Child			
Outcome	Program Group	Control Group[a]	Impact Estimate per Participant[b]	Effect Size[c]		Program Group	Control Group[a]	Impact Estimate per Participant[b]	Effect Size[c]
CHILD COGNITIVE DEVELOPMENT									
Average Bayley Mental Development Index (MDI)	91.8	89.2	2.6***	19.1		88.7	87.2	1.5	11.2
Percentage with MDI < 85***[d]	28.3	36.4	-8.1**	-16.6		38.7	42.1	-3.4	-6.9
Percentage with MDI < 100***	70.2	77.7	-7.4**	-18.1		77.4	81.3	-3.9	-9.5
CHILD LANGUAGE DEVELOPMENT									
Average MacArthur CDI—Vocabulary Production**	60.9	56.1	4.8***	21.2		52.3	52.1	0.2	0.9
Percentage with Vocabulary Production < 25***	6.3	9.0	-2.7	-8.5		12.7	11.9	0.8	2.6
Average MacArthur CDI—Combining Words***	85.2	79.1	6.0**	14.4		77.3	76.4	0.9	2.2
Average MacArthur CDI—Sentence Complexity***	10.5	8.3	2.2***	26.6		7.3	7.4	-0.1	-1.6
Percentage with Sentence Complexity < 2***	20.5	27.9	-7.4**	-16.3		30.9	30.1	0.8	1.7
CHILD SOCIAL-EMOTIONAL DEVELOPMENT									
Average Bayley BRS—Emotional Regulation	3.8	3.7	0.0	2.1		3.5	3.5	0.0	0.1
Average Bayley BRS—Orientation/Engagement	3.7	3.7	0.1	6.4		3.6	3.6	-0.0	-1.1
Child Behavior Checklist—Aggression	9.4	10.2	-0.8**	-14.6		10.2	10.7	-0.5	-8.3
Parent-Child Structured Play: Child Sustained Attention with Objects (Average)	5.1	5.0	0.1*	15.3		5.0	4.9	0.1	6.5
Parent-Child Structured Play: Child Negativity Toward Parent (Average)	1.6	1.8	-0.1*	-13.5		1.8	1.9	-0.0	-3.4
Parent-Child Structured Play: Child Engagement (Average)**	4.5	4.2	0.2***	20.5		4.2	4.3	-0.0	-2.7
QUALITY OF THE HOME ENVIRONMENT AND PARENTING: EMOTIONAL SUPPORT									
Home Observation for Measurement of the Environment (HOME) Emotional Responsivity	6.2	6.1	0.1	6.9		6.2	6.0	0.1	9.3
Parent-Child Structured Play: Parent Supportiveness	4.1	3.9	0.2***	22.8		4.0	3.9	0.1	7.3

TABLE E.VII.15 *(continued)*

	Female Child					Male Child			
Outcome	Program Group	Control Group[a]	Impact Estimate per Participant[b]	Effect Size[c]		Program Group	Control Group[a]	Impact Estimate per Participant[b]	Effect Size[c]
QUALITY OF THE HOME ENVIRONMENT AND PARENTING: STIMULATION OF LANGUAGE AND LEARNING									
HOME Cognitive, Language, and Literacy Support	10.4	10.1	0.2**	12.6		10.3	10.1	0.2**	11.5
Regular Bedtimes***	62.4	57.0	5.4	10.9		60.6	54.2	6.4*	13.0
Bedtime Routines***	70.7	64.5	6.2*	13.2		67.0	69.2	-2.2	-4.7
Reading Daily***	58.6	51.9	6.7*	13.3		57.4	52.6	4.8	9.5
Reading at Bedtime***	30.2	23.1	7.1**	16.8		28.8	23.6	5.1*	12.2
Father Reads to Child	3.5	3.4	0.2	8.3		3.4	3.5	-0.1	-5.3
Reading Frequency	4.6	4.5	0.1	9.9		4.6	4.5	0.2**	13.5
Parent-Child Activities to Stimulate Cognitive and Language Development	4.6	4.4	0.1**	14.6		4.6	4.5	0.1	8.6
Outside Activities	2.8	2.7	0.1	11.3		2.8	2.8	-0.0	-4.6
HOME Verbal/Social Skills	2.8	2.7	0.0	3.1		2.8	2.7	0.1	8.8
QUALITY OF THE HOME ENVIRONMENT AND PARENTING: NEGATIVE PARENTING BEHAVIOR									
HOME Absence of Punitive Interactions	4.5	4.5	-0.0	-0.6		4.2	4.4	-0.1	-9.5
Parent-Child Structured Play: Parent Detachment	1.4	1.5	-0.1	-9.5		1.4	1.5	-0.1	-11.9
Parent-Child Structured Play: Parent Intrusiveness	1.8	1.9	-0.0	-2.9		1.9	2.0	-0.0	-3.9
Parent-Child Structured Play: Negative Regard	1.4	1.4	0.0	2.0		1.5	1.5	0.0	1.8
Spanked Child in Last Week***	47.9	50.4	-2.5	-5.0		47.1	54.0	-6.9**	-13.8
KNOWLEDGE OF CHILD DEVELOPMENT AND DISCIPLINE STRATEGIES									
Knowledge of Infant Development Inventory (KIDI)	3.4	3.3	0.1*	11.2		3.4	3.3	0.1**	14.6
Would Use Mild Discipline Only***	43.1	38.5	4.6	9.3		42.9	39.0	3.9	8.0
Index of Discipline Severity	2.7	2.8	-0.1	-7.3		2.6	2.7	-0.1	-6.1

TABLE E.VII.15 *(continued)*

Outcome	Female Child				Male Child			
	Program Group	Control Group[a]	Impact Estimate per Participant[b]	Effect Size[c]	Program Group	Control Group[a]	Impact Estimate per Participant[b]	Effect Size[c]
PARENT PHYSICAL AND MENTAL HEALTH								
PSI Parental Distress	24.6	25.6	-0.9	-9.7	25.1	26.1	-1.0	-10.5
PSI Parent-Child Dysfunctional Interaction	16.5	17.0	-0.4	-7.5	17.1	17.9	-0.7*	-12.5
FES Family Conflict	1.7	1.7	-0.1	-8.2	1.7	1.7	-0.1	-10.0
CIDI Depression (Probability)	13.9	12.4	1.5	4.9	10.1	11.9	-1.8	-6.0
Overall Health Status	3.5	3.5	-0.0	-3.5	3.5	3.4	0.1	8.6
Sample Size								
Parent interview	**530**	**508**	**1,038**		**562**	**513**	**1,075**	
Bayley	**453**	**415**	**868**		**457**	**414**	**871**	
Parent-child interactions	**442**	**402**	**844**		**471**	**417**	**888**	

SOURCE: Parent interviews, child assessments, interviewer observations, and assessments of semi-structured parent-child interactions conducted when children were approximately 24 months old.

NOTE: All estimates were calculated using regression models, where each site was weighted equally. Only sites with at least 10 program group members and 10 control group members in the subgroup are included in the estimates for each subgroup.

[a]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had instead been assigned to the program group. This unobserved mean is estimated as the difference between the program group mean for participants and the impact per participant. A participant is defined as a program group member who received more than one Early Head Start home visit, met with an Early Head Start case manager more than once, received at least two weeks of Early Head Start center-based services, and/or participated in Early Head Start parent-child group activities.

[b]The estimated impact per participant is measured as the estimated impact per eligible applicant divided by the proportion of program group members who participated in Early Head Start services (which varied by site). The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for program and control group members.

[c]The effect size is calculated by dividing the estimated impact per participant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact per participant expressed as a percentage of a standard deviation).

[d]Asterisks next to variable names indicate significance levels for statistical tests of differences in impacts across the subgroups.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

TABLE E.VII.16

IMPACTS ON SERVICE RECEIPT DURING THE FIRST 16 MONTHS,
BY INITIAL RECEIPT OF WELFARE CASH ASSISTANCE

Service	Family Was Receiving Cash Assistance			Family Was Not Receiving Cash Assistance		
	Program Group	Control Group	Impact Estimate Per Eligible Applicant	Program Group	Control Group	Impact Estimate Per Eligible Applicant
ANY SERVICES						
Any Key Services***[a,b]	92.5	75.4	17.1***	96.1	74.0	22.1***
Any Home Visits Or Center-Based Child Care***	88.8	53.5	35.3***	93.3	50.8	42.5***
HOME VISITS						
Any Home Visits***	84.2	33.3	51.0***	87.2	30.3	56.9***
Any Child Development Services During Home Visits***	83.2	31.6	51.6***	87.1	28.5	58.6***
Weekly Home Visits (1st Followup)***	42.3	3.5	38.8***	45.8	2.5	43.3***
CHILD CARE						
Any Child Care***	77.4	75.0	2.4	77.3	73.2	4.1*
Any Center-Based Child Care***	37.8	31.8	6.1	45.8	28.1	17.7***
Average Hours/Week of Center Care*	6.1	4.0	2.1**	7.9	3.6	4.3***
Concurrent Child Care Arrangements***	31.2	29.5	1.7	37.6	32.7	4.9*
Average Weekly Out-of-Pocket Cost of Care*	$3.28	$9.08	-$5.81***	$6.62	$9.07	-$2.45**
CASE MANAGEMENT						
Any Case Management Meetings***	82.0	52.8	29.3***	86.2	46.2	40.0***
Weekly Case Management—1st Followup***	47.0	10.5	36.4***	48.2	6.3	41.9***
GROUP ACTIVITIES						
Any Group Parenting Activities***	62.5	24.9	37.6***	68.9	30.2	38.7***
Any Parent-Child Group Activities***	33.3	6.6	26.7***	32.3	9.4	22.9***
EARLY INTERVENTION SERVICES						
Identification of Child's Disability***	3.8	1.8	2.1	5.3	4.3	1.1
Services for Child With Disability***	2.3	0.2	2.1*	3.7	2.5	1.2
CHILD HEALTH SERVICES						
Any Child Health Services***	99.7	99.2	0.5	99.2	99.5	-0.2
Any Doctor Visits***	94.0	91.3	2.7	93.3	92.1	1.1
Any Emergency Room Visits***	37.8	45.8	-7.9*	41.8	37.3	4.5
Any Dentist Visits***	12.6	10.3	2.3	9.2	9.0	0.2
Any Screening Tests***	54.5	54.4	0.1	55.1	49.6	5.6*
Any Immunizations***	96.9	95.9	1.0	96.4	96.1	0.3

TABLE E.VII.16 (*continued*)

Service	Family Was Receiving Cash Assistance				Family Was Not Receiving Cash Assistance		
	Program Group	Control Group	Impact Estimate Per Eligible Applicant		Program Group	Control Group	Impact Estimate Per Eligible Applicant
FAMILY DEVELOPMENT SERVICES							
Any Education-Related Services***	77.7	50.2	27.4***		80.3	46.3	34.0***
Any Employment-Related Services***	68.2	39.2	29.0***		63.8	23.7	40.1***
Any Family Health Services***	98.3	98.8	-0.5		97.5	97.4	0.1
Any Family Mental Health Services***	20.3	20.4	-0.0		15.6	15.4	0.2
Transportation Assistance***	38.2	25.0	13.1***		21.8	16.3	5.5**
Housing Assistance***	66.8	65.2	1.6		45.6	37.9	7.6**
Sample Size	**324**	**296**	**620**		**580**	**575**	**1,155**

SOURCE: Parent Services Follow-Up Interviews completed an average of 7 and 16 months after random assignment.

Note: All estimates were calculated using regression models, where each site was weighted equally. Only sites with at least 10 program group members and 10 control group members in the subgroup are included in the estimates for each subgroup. Excludes women who were pregnant with their first child and not eligible for AFDC/TANF.

[a]Home visits, case management, center-based child care, and/or group parenting activities.

[b]Asterisks next to variable names indicate significance levels for statistical tests of differences in impacts across the subgroups.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

TABLE E.VII.17

IMPACTS ON SELF-SUFFICIENCY, BY INITIAL RECEIPT OF WELFARE CASH ASSISTANCE

	Family Was Receiving Cash Assistance					Family Was Not Receiving Cash Assistance			
Outcome	Program Group	Control Group[a]	Impact Estimate per Participant[b]	Effect Size[c]		Program Group	Control Group[a]	Impact Estimate per Participant[b]	Effect Size[c]
EDUCATION/JOB TRAINING									
Ever in Education/Training***[d]	47.7	43.1	4.6	9.2		45.1	39.5	5.7*	11.4
Ever in High School***	6.9	4.2	2.7	9.1		10.7	7.4	3.3**	11.3
Ever in ESL Class***	0.5	2.0	-1.5	-13.0		3.7	1.1	2.5**	22.5
Ever in Vocational Program***	18.1	15.2	3.0	8.9		12.3	11.3	1.0	3.1
Average Hours/Week in Education/Training	5.1	4.0	1.2	15.3		4.9	3.8	1.2**	15.3
In Education/Training:									
First Quarter***	25.7	26.5	-0.8	-1.8		23.4	23.0	0.4	0.8
Second Quarter***	28.2	26.2	1.9	4.4		27.8	27.2	0.6	1.3
Third Quarter***	33.2	25.7	7.5	17.0		29.3	23.2	6.1**	13.8
Fourth Quarter***	28.4	22.9	5.5	12.9		30.4	22.1	8.3***	19.3
Fifth Quarter***	25.5	24.8	0.8	1.8		31.8	22.2	9.6***	22.4
Have High School Diploma ***	38.8	43.1	-4.3	-8.7		53.4	48.9	4.5	9.0
Have GED***	17.6	12.5	5.0	17.1		7.7	6.6	1.1	3.9
EMPLOYMENT									
Ever Employed***	64.4	64.2	0.2	0.3		74.9	73..3	1.6	3.5
Average Hours/Week in Employment	10.6	13.3	-2.7*	-17.3		17.1	17.1	-0.0	-0.2
Employed in:									
First Quarter***	26.2	35.3	-9.1*	-18.5		49.6	48.3	1.3	2.6
Second Quarter***	32.7	42.3	-9.6*	-19.2		55.1	53.1	2.0	4.1
Third Quarter***	41.6	45.1	-3.5	-6.9		58.1	56.3	1.8	3.6
Fourth Quarter***	51.1	42.6	8.4	16.9		61.3	60.5	0.8	1.5
Fifth Quarter***	52.0	50.2	1.8	3.7		66.1	64.8	1.3	2.6
ANY SELF-SUFFICIENCY-ORIENTED ACTIVITY (EDUCATION/TRAINING OR EMPLOYMENT)									
Ever Employed or in Education/Training***	80.4	78.9	1.5	3.8		85.4	81.4	4.0*	10.5
Percentage of Weeks in Any Activity	47.5	47.9	-0.4	-1.0		61.7	58.0	3.7	9.4
Average Hours/Week in Employment or Education/Training	16.0	17.7	-1.6	-9.8		22.3	20.9	1.4	8.2
In Activities in:									
First Quarter***	47.2	50.6	-3.4	-6.8		64.5	61.1	3.3	6.7
Second Quarter***	56.4	56.2	0.3	0.6		71.0	65.9	5.1*	10.5
Third Quarter***	63.7	60.3	3.4	7.3		71.4	67.6	3.7	7.9

TABLE E.VII.17 *(continued)*

	Family Was Receiving Cash Assistance					Family Was Not Receiving Cash Assistance			
Outcome	Program Group	Control Group[a]	Impact Estimate per Participant[b]	Effect Size[c]		Program Group	Control Group[a]	Impact Estimate per Participant[b]	Effect Size[c]
Fourth Quarter***	66.1	56.3	9.8*	20.7		73.6	68.5	5.2*	10.9
Fifth Quarter***	64.6	63.4	1.2	2.6		76.4	72.2	4.1	9.1
AFDC/TANF RECEIPT									
Ever Received AFDC/TANF***	86.0	83.8	2.2	4.3		28.1	25.2	2.9	5.7
Received AFDC/TANF in:									
First Quarter***	82.2	73.2	9.0**	19.2		16.4	14.8	1.6	3.3
Second Quarter***	79.6	73.8	5.8	12.2		18.1	16.0	2.1	4.4
Third Quarter***	77.7	72.1	5.6	11.6		21.3	20.1	1.2	2.6
Fourth Quarter***	64.1	63.8	0.3	0.6		19.3	17.3	2.0	4.3
Fifth Quarter***	60.3	62.8	-2.5	-5.4		19.2	18.1	1.1	2.3
Total AFDC/TANF Benefits ($)	3,867	3,789	79	3.3		764	728	36	1.5
RECEIPT OF OTHER WELFARE BENEFITS									
Ever Received Welfare***	93.4	94.4	-1.0	-2.1		56.2	51.1	5.1	10.7
Total Welfare Benefits ($)	7,545	7,466	79	1.8		2,494	2,269	225	5.2
Ever Received Food Stamps***	86.8	88.9	-2.1	-4.3		47.4	43.8	3.6	7.3
Total Food Stamp Benefits ($)	2,506	2,559	-53	-3.3		925	910	15	0.9
INCOME/POVERTY									
Income Above Poverty Level***	15.9	18.3	-2.3	-4.9		40.3	43.9	-3.6	-7.5
Sample Size	**324**	**296**	**620**			**580**	**575**	**1,155**	

SOURCE: Parent Services Follow-Up Interviews completed an average of 7 and 16 months after random assignment.

NOTE: All estimates were calculated using regression models, where each site was weighted equally. Only sites with at least 10 program group members and 10 control group members in the subgroup are included in the estimates for each subgroup. Excludes women who were pregnant with their first child and were not eligible for AFDC/TANF.

[a]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had instead been assigned to the program group. This unobserved mean is estimated as the difference between the program group mean for participants and the impact per participant. A participant is defined as a program group member who received more than one Early Head Start home visit, met with an Early Head Start case manager more than once, received at least two weeks of Early Head Start center-based services, and/or participated in Early Head Start parent-child group activities.

[b]The estimated impact per participant is measured as the estimated impact per eligible applicant divided by the proportion of program group members who participated in Early Head Start services (which varied by site). The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for program and control group members.

[c]The effect size is calculated by dividing the estimated impact per participant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact per participant expressed as a percentage of a standard deviation).

[d]Asterisks next to variable names indicate significance levels for statistical tests of differences in impacts across the subgroups.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

TABLE E.VII.18

IMPACTS ON CHILD AND FAMILY OUTCOMES AT AGE 2, BY INITIAL RECEIPT OF WELFARE CASH ASSISTANCE

	Family Was Receiving Cash Assistance					Family Was Not Receiving Cash Assistance			
Outcome	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]		Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]
CHILD COGNITIVE DEVELOPMENT									
Average Bayley Mental Development Index (MDI)	88.7	87.7	1.0	7.6		90.4	88.6	1.8*	13.0
Percentage with MDI < 85***[d]	37.9	39.3	-1.3	-2.7		32.9	40.2	-7.4**	-15.1
Percentage with MDI < 100***	75.4	75.2	0.2	0.4		73.6	77.2	-3.7	-8.9
CHILD LANGUAGE DEVELOPMENT									
Average MacArthur CDI—Vocabulary Production*	58.8	51.5	7.3***	32.5		55.0	53.4	1.6	7.1
Percentage with Vocabulary Production < 25***	11.2	10.9	0.3	1.0		9.3	11.1	-1.8	-5.5
Average MacArthur CDI—Combining Words***	84.5	73.3	11.2**	26.8		79.4	75.5	3.9	9.3
Average MacArthur CDI—Sentence Complexity	9.4	7.3	2.1**	26.2		8.0	7.8	0.2	2.0
Percentage with Sentence Complexity < 2***	23.7	32.9	-9.2*	-20.2		29.6	29.0	0.6	1.4
CHILD SOCIAL-EMOTIONAL DEVELOPMENT									
Average Bayley BRS—Emotional Regulation	3.4	3.5	-0.0	-4.5		3.6	3.7	-0.1**	-15.2
Average Bayley BRS—Orientation/Engagement	3.4	3.5	-0.1	-14.8		3.6	3.6	-0.0	-1.1
Child Behavior Checklist--Aggression	10.0	10.9	-0.9	-15.8		10.1	10.0	0.0	0.5
Parent-Child Structured Play: Child Sustained Attention with Objects (Average)	5.2	4.9	0.3**	32.3		5.0	5.0	0.1	5.0
Parent-Child Structured Play: Child Negativity Toward Parent (Average)	1.8	1.7	0.1	6.0		1.7	1.7	-0.0	-3.4
Parent-Child Structured Play: Child Engagement (Average)	4.2	4.1	0.1	11.2		4.4	4.4	0.0	2.1
QUALITY OF THE HOME ENVIRONMENT AND PARENTING: EMOTIONAL SUPPORT									
Home Observation for Measurement of the Environment (HOME) Emotional Responsivity	6.2	6.0	0.2	11.5		6.3	6.1	0.1	9.1
Parent-Child Structured Play: Parent Supportiveness	3.9	3.6	0.3*	24.9		4.1	4.1	0.0	3.5

TABLE E.VII.18 *(continued)*

Outcome	Family Was Receiving Cash Assistance					Family Was Not Receiving Cash Assistance			
	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]		Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]
QUALITY OF THE HOME ENVIRONMENT AND PARENTING: STIMULATION OF LANGUAGE AND LEARNING									
HOME Cognitive, Language, and Literacy Support	10.2	9.8	0.4**	21.4		10.3	10.2	0.1	4.8
Regular Bedtimes***	61.2	58.7	2.5	5.0		62.7	55.1	7.7**	15.5
Bedtime Routines***	70.2	58.4	11.9**	25.3		68.2	70.3	-2.1	-4.5
Reading Daily***	55.9	46.3	9.6*	19.2		57.6	55.5	2.1	4.2
Reading at Bedtime***	26.6	19.1	7.5	17.9		30.1	24.7	5.4*	12.8
Father Reads to Child	2.7	2.7	-0.0	-0.7		3.6	3.6	-0.0	-0.6
Reading Frequency	4.6	4.4	0.2*	19.2		4.6	4.5	0.0	3.4
Parent-Child Activities to Stimulate Cognitive and Language Development*	4.6	4.3	0.2**	27.0		4.5	4.5	0.0	4.2
Outside Activities*	2.8	2.6	0.2**	31.2		2.8	2.8	0.1	7.7
HOME Verbal/Social Skills	2.8	2.7	0.1	17.8		2.8	2.8	0.1	6.8
QUALITY OF THE HOME ENVIRONMENT AND PARENTING: NEGATIVE PARENTING BEHAVIOR									
HOME Absence of Punitive Interactions	4.1	4.1	0.0	0.4		4.4	4.5	-0.1*	-11.9
Parent-Child Structured Play: Parent Detachment	1.5	1.6	-0.1	-11.5		1.4	1.4	0.0	2.3
Parent-Child Structured Play: Parent Intrusiveness	2.0	2.0	0.1	6.2		1.8	1.9	-0.0	-2.7
High-Chair and Parent-Child Structured Play: Negative Regard	1.6	1.4	0.2	22.3		1.4	1.4	0.1*	11.3
Spanked Child in Last Week***	51.6	54.1	-2.5	-4.9		45.9	47.7	-1.8	-3.6
KNOWLEDGE OF CHILD DEVELOPMENT AND DISCIPLINE STRATEGIES									
Knowledge of Infant Development Inventory (KIDI)	3.4	3.3	0.1	17.9		3.4	3.3	0.1**	14.9
Would Use Mild Discipline Only***	40.8	37.4	3.3	6.8		45.1	42.0	3.1	6.3
Index of Discipline Severity	2.8	2.9	-0.1	-3.0		2.6	2.7	-0.1	-5.5
PARENT PHYSICAL AND MENTAL HEALTH									
PSI Parental Distress	25.3	27.1	-1.8	-18.8		24.7	25.5	-0.8	-8.8
PSI Parent-Child Dysfunctional Interaction	17.3	17.2	0.1	1.4		17.0	17.2	-0.3	-4.5
FES Family Conflict	1.7	1.9	-0.2	-27.7		1.6	1.7	-0.1	-8.9
CIDI Depression (Probability)	19.3	13.8	5.5	18.3		9.6	11.5	-1.9	-6.3
Overall Health Status	3.4	3.4	-0.0	-3.3		3.5	3.4	0.1	6.6
Sample Size									
Parent interview	**294**	**269**	**563**			**584**	**561**	**1,145**	
Bayley	**241**	**221**	**462**			**489**	**446**	**935**	
Parent-child interactions	**238**	**211**	**449**			**505**	**444**	**949**	

SOURCE: Parent interviews, child assessments, interviewer observations, and assessments of semi-structured parent-child interactions conducted when children were approximately 24 months old.

NOTE: All estimates were calculated using regression models, where each site was weighted equally. Only sites with at least 10 program group members and 10 control group members in the subgroup are included in the estimates for each subgroup. Excludes women who were pregnant with their first child and not eligible for AFDC/TANF.

TABLE E.VII.18 *(continued)*

[a]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had instead been assigned to the program group. This unobserved mean is estimated as the difference between the program group mean for participants and the impact per participant. A participant is defined as a program group member who received more than one Early Head Start home visit, met with an Early Head Start case manager more than once, received at least two weeks of Early Head Start center-based services, and/or participated in Early Head Start parent-child group activities.

[b]The estimated impact per participant is measured as the estimated impact per eligible applicant divided by the proportion of program group members who participated in Early Head Start services (which varied by site). The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for program and control group members.

[c]The effect size is calculated by dividing the estimated impact per participant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact per participant expressed as a percentage of a standard deviation).

[d]Asterisks next to variable names indicate significance levels for statistical tests of differences in impacts across subgroups.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

TABLE E.VII.19

IMPACTS ON SERVICE RECEIPT DURING THE FIRST 16 MONTHS, BY PRIMARY OCCUPATION

Service	Employed			In School or Job Training			Other		
	Program Group	Control Group	Impact Per Eligible Applicant	Program Group	Control Group	Impact Per Eligible Applicant	Program Group	Control Group	Impact Per Eligible Applicant
ANY SERVICES									
Any Key Services***[a,b]	97.8	82.1	15.7***	92.9	77.2	15.7***	95.3	73.3	22.0***
Any Home Visits Or Center-Based Child Care***	96.1	62.0	34.1***	89.8	51.4	38.3***	90.8	46.9	43.9***
HOME VISITS									
Any Home Visits***	90.9	35.6	55.3***	82.6	31.3	51.3***	85.6	31.2	54.4***
Any Child Development Services During Home Visits***	90.6	32.0	58.6***	80.8	29.5	51.3***	84.7	28.9	55.8***
Weekly Home Visits (1st Followup)***	40.5	3.5	37.0***	38.2	3.2	35.0***	46.2	2.8	43.4***
CHILD CARE									
Any Child Care***	91.9	91.3	0.6	91.2	85.0	6.3*	71.6	63.4	8.2***
Any Center-Based Child Care***	43.1	36.4	6.7	44.2	27.0	17.2***	38.7	23.4	15.3***
Average Hours/Week of Center Care	8.5	4.5	4.1***	7.1	4.2	2.9**	6.5	3.2	3.2***
Concurrent Child Care Arrangements***	46.6	46.5	0.1	39.9	40.7	-0.8	27.1	20.7	6.4**
Average Weekly Out-of-Pocket Cost of Care	$9.55	$13.76	-$4.20*	$3.99	$7.83	-$3.84**	$4.30	$7.46	-$3.16***
CASE MANAGEMENT									
Any Case Management Meetings***	90.5	53.6	37.0***	81.7	50.5	31.2***	87.1	51.3	35.9***
Weekly Case Management—1st Followup***	51.5	11.4	40.1***	51.8	4.5	47.3***	49.6	8.0	41.6***
GROUP ACTIVITIES									
Any Group Parenting Activities***	72.1	33.7	38.4***	62.8	39.9	22.9***	68.8	27.7	41.1***
Any Parent-Child Group Activities***	39.7	12.8	26.9***	31.5	12.6	18.9***	33.7	9.3	24.4***
EARLY INTERVENTION SERVICES									
Identification of Child's Disability	8.4	2.7	5.7**	0.9	1.7	-0.8	5.7	4.0	1.7
Services for Child With Disability	5.6	3.2	2.4	1.0	0.2	0.8	3.7	1.7	2.0*
CHILD HEALTH SERVICES									
Any Child Health Services***	100.0	100.0	0.0	99.7	99.0	0.7	99.5	99.3	0.2
Any Doctor Visits***	98.9	97.9	1.1	94.6	92.6	2.1	93.3	93.4	-0.1
Any Emergency Room Visits***	40.8	44.7	-4.0	44.0	39.2	4.8	44.2	40.0	4.2
Any Dentist Visits***	7.5	8.3	-0.8	11.1	6.4	4.7	13.5	11.2	2.3
Any Screening Tests***	59.1	49.1	10.0*	49.9	53.8	-4.0	56.8	53.2	3.6
Any Immunizations***	98.5	96.6	1.9	98.2	95.4	2.8	96.9	98.0	-1.1

TABLE E.VII.19 (*continued*)

Service	Employed			In School or Job Training			Other		
	Program Group	Control Group	Impact Per Eligible Applicant	Program Group	Control Group	Impact Per Eligible Applicant	Program Group	Control Group	Impact Per Eligible Applicant
FAMILY DEVELOPMENT SERVICES									
Any Education-Related Services***	80.9	43.3	37.6***	92.2	82.6	9.6**	79.8	40.7	39.0***
Any Employment-Related Services***	69.3	23.0	46.3***	62.5	35.6	26.9***	72.4	31.4	41.0***
Any Family Health Services***	100.0	99.4	0.7	98.9	97.8	1.1	97.9	98.2	-0.3
Any Family Mental Health Services***	15.7	16.5	-0.7	17.9	12.5	5.4	18.4	18.1	0.3
Transportation Assistance***	21.9	13.6	8.4**	29.1	26.8	2.3	30.2	18.9	11.3***
Housing Assistance***	48.8	41.9	6.8	49.0	55.5	-6.5	55.0	47.5	7.5***
Sample Size	**251**	**259**	**510**	**245**	**231**	**476**	**606**	**568**	**1,174**

SOURCE: Parent Services Follow-Up Interviews completed an average of 7 and 16 months after random assignment.

NOTE: All estimates were calculated using regression models, where each site was weighted equally. Only sites with at least 10 program group members and 10 control group members in the subgroup are included in the estimates for each subgroup.

The initial primary occupation is based on the primary occupation of the primary caregiver identified in the application forms. In a few families, the primary caregiver interviewed at followup was a different person than the person identified in the application forms.

[a]Home visits, case management, center-based child care, and/or group parenting activities.

[b]Asterisks next to variable names indicate significance levels for statistical tests of differences in impacts across the subgroups.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

TABLE E.VII.20

IMPACTS ON SELF-SUFFICIENCY, BY PRIMARY OCCUPATION

	Employed					In School or Job Training					Neither Employed Nor In School/Training			
Outcome	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]		Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]		Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]
EDUCATION/JOB TRAINING														
Ever in Education/Training***[d]	39.4	36.2	3.2	6.4		79.1	75.7	3.4	6.9		40.3	32.0	8.3**	16.8
Ever in High School***	6.2	1.6	4.6**	15.7		44.2	28.8	15.4***	52.8		1.8	2.5	-0.7	-2.4
Ever in ESL Class***	3.1	3.2	-0.1	-1.0		1.0	1.0	0.1	0.7		2.8	1.5	1.3	11.6
Ever in Vocational Program***	15.9	9.7	6.2	18.7		14.5	16.7	-2.2	-6.8		15.1	11.2	3.9	11.8
Average Hours/Week in Education//Training**	3.3	1.3	2.0***	25.3		13.8	10.3	3.5**	45.4		2.6	2.2	0.4	5.7
In Education/Training:														
1st Quarter***	18.4	19.2	-0.8	-1.8		62.8	59.5	3.2	7.5		13.0	13.3	-0.3	-0.6
2nd Quarter***	21.4	18.3	3.1	6.9		63.7	56.7	7.0	16.0		19.6	16.7	2.9	6.6
3rd Quarter***	25.2	14.3	10.8**	24.6		64.0	52.2	11.8*	26.8		22.0	18.0	4.0	9.2
4th Quarter***	26.3	16.2	10.2**	23.7		60.0	46.8	13.3**	30.9		23.8	17.8	6.0**	14.0
5th Quarter***	21.1	17.5	3.6	8.4		63.7	46.4	17.3**	40.3		23.1	17.2	6.0*	13.9
Have High School Diploma ***	65.0	63.2	1.7	3.5		40.4	35.4	5.0	10.1		45.0	46.9	-1.9	-3.7
Have GED***	5.0	9.3	-4.3	-14.5		9.4	10.4	-1.0	-3.4		11.8	11.7	0.2	0.6
EMPLOYMENT														
Ever Employed***	94.6	94.8	-0.2	-0.5		68.8	73.8	-5.0	-11.0		66.8	64.8	2.0	4.5
Average Hours/Week in Employment	28.4	27.1	1.3	8.6		9.9	12.0	-2.1	-13.6		11.4	12.6	-1.2	-7.6
Employed in:														
1st Quarter***	84.7	76.9	7.8*	15.8		27.6	35.2	-7.6	-15.5		30.9	33.4	-2.5	-5.1
2nd Quarter***	84.9	74.5	10.4**	20.8		40.2	41.3	-1.1	-2.2		37.1	42.4	-5.3	-10.6
3rd Quarter***	85.4	90.9	4.4	8.9		47.3	49.4	-2.1	-4.2		44.5	44.0	0.6	1.1
4th Quarter***	81.7	80.8	0.9	1.7		55.9	54.9	1.0	1.9		49.4	48.8	0.6	1.2
5th Quarter***	83.0	77.7	5.3	10.9		59.3	60.0	-0.7	-1.5		54.9	57.0	-2.1	-4.3
ANY SELF-SUFFICIENCY-ORIENTED ACTIVITY (EDUCATION/TRAINING OR EMPLOYMENT)														
Ever Employed or in Education/Training***	96.6	94.8	1.8	4.7		96.0	94.9	1.1	2.9		78.6	74.2	4.4	11.4
Percentage of Weeks in Any Activity	81.6	74.8	6.8**	17.6		73.3	69.2	4.1	10.6		43.1	43.2	-0.1	-0.2
Average Hours/Week in Employment or Education/Training*	31.9	28.3	3.6**	21.4		24.6	23.1	1.5	9.3		14.2	14.9	-0.7	-4.4

TABLE E.VII.20 *(continued)*

Outcome	Employed				In School or Job Training				Neither Employed Nor In School/Training			
	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]
In Activities in:												
1st Quarter***	87.6	81.5	6.2*	12.5	76.8	73.9	2.9	5.8	40.4	43.7	-3.4	-6.8
2nd Quarter***	86.2	79.0	7.1**	14.8	81.8	77.9	3.9	8.0	51.1	53.3	-2.2	-4.6
3rd Quarter***	88.6	84.5	4.1	8.7	85.0	80.4	4.7	9.9	58.1	54.4	3.7	7.9
4th Quarter***	86.4	84.4	2.0	4.3	85.5	80.6	4.9	10.4	62.1	56.5	5.6	11.7
5th Quarter***	84.9	82.3	2.6	5.7	89.6	81.3	8.2	18.1	65.0	64.2	0.8	1.8
AFDC/TANF RECEIPT												
Ever Received AFDC/TANF***	30.0	27.9	2.2	4.4	47.4	56.5	-9.1	-18.3	49.6	43.8	5.7**	11.6
Received AFDC/TANF in:												
1st Quarter***	15.9	12.8	3.1	6.5	38.8	38.1	0.7	1.6	40.3	36.5	3.9	8.2
2nd Quarter***	14.2	16.2	-2.0	-4.2	40.5	42.9	-2.3	-4.9	40.2	36.7	3.5	7.4
3rd Quarter***	20.3	17.5	2.8	5.8	42.5	45.7	-3.2	-6.6	42.5	36.4	6.1**	12.7
4th Quarter***	16.7	13.4	3.3	7.1	37.9	39.0	-1.1	-2.3	36.7	32.7	4.0	8.5
5th Quarter***	14.5	18.0	-3.5	-7.5	35.8	38.1	-2.3	-5.0	36.1	32.2	3.9	8.5
Total AFDC/TANF Benefits ($)*	456	655	-199	-8.4	1,588	1,594	-5.9	-0.3	1,930	1,663	267*	11.2
RECEIPT OF OTHER WELFARE BENEFITS												
Ever Received Welfare***	64.4	62.2	2.3	4.7	63.8	76.7	-12.9**	-27.1	69.1	64.5	4.6*	9.7
Total Welfare Benefits ($)	2,052	2,165	-113	-2.6	3,266	3,546	-281	-6.4	4,460	3,891	569**	13.1
Ever Received Food Stamps***	52.3	53.8	-1.4	-2.9	53.4	65.0	-11.6**	-23.5	61.9	58.8	3.1	6.4
Total Food Stamp Benefits ($)	850	1,069	-219	-13.7	1,329	1,436	-106	-6.7	1,507	1,435	72	4.5
INCOME/POVERTY												
Income Above Poverty Level***	48.4	45.7	2.7	5.6	30.3	31.3	-1.0	-2.0	29.9	36.8	-6.9**	-14.3
Sample Size	**251**	**259**	**510**		**245**	**231**	**476**		**606**	**568**	**1,174**	

SOURCE: Parent Services Follow-Up Interviews completed an average of 7 and 6 months after random assignment.

NOTE: All estimates were calculated using regression models, where each site was weighted equally. Only sites with at least 10 program group members and 10 control group members in the subgroup are included in the estimates for each subgroup.

The initial primary occupation is based on the primary occupation of the primary caregiver identified in the application forms. In a few families, the primary caregiver interviewed at followup was a different person than the person identified in the application forms.

TABLE E.VII.20 *(continued)*

[a]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had instead been assigned to the program group. This unobserved mean is estimated as the difference between the program group mean for participants and the impact per participant. A participant is defined as a program group member who received more than one Early Head Start home visit, met with an Early Head Start case manager more than once, received at least two weeks of Early Head Start center-based services, and/or participated in Early Head Start parent-child group activities.

[b]The estimated impact per participant is measured as the estimated impact per eligible applicant divided by the proportion of program group members who participated in Early Head Start services (which varied by site). The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for program and control group members.

[c]The effect size is calculated by dividing the estimated impact per participant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact per participant expressed as a percentage of a standard deviation).

[d]Asterisks next to variable names indicate significance levels for statistical tests of differences in impacts across the subgroups.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

TABLE E.VII.21

IMPACTS ON CHILD AND FAMILY OUTCOMES AT AGE 2, BY PRIMARY OCCUPATION

	Employed					In School or Training					Neither in School/Training nor Employed			
Outcome	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]		Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]		Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]
CHILD COGNITIVE DEVELOPMENT														
Average Bayley Mental Development Index (MDI)	91.4	88.5	2.9*	21.3		91.7	91.4	0.3	2.1		90.2	88.8	1.4	10.6
Percentage with MDI < 85***[d]	35.0	34.7	0.3	0.7		30.6	30.7	-0.1	-0.3		32.3	37.2	-4.9	-10.0
Percentage with MDI < 100***	68.2	75.8	-7.7	-18.6		69.6	65.9	3.7	8.9		75.9	78.4	-2.5	-6.1
CHILD LANGUAGE DEVELOPMENT														
Average MacArthur CDI—Vocabulary Production	55.7	56.3	-0.6	-2.6		55.5	53.2	2.3	10.3		56.5	53.9	2.6	11.6
Percentage with Vocabulary Production < 25***	13.6	8.9	4.7	14.8		8.4	11.2	-2.8	-8.7		9.1	11.6	-2.6	-8.0
Average MacArthur CDI—Combining Words***	81.1	80.9	0.2	0.5		87.1	86.9	0.1	0.3		78.8	74.3	4.5	10.7
Average MacArthur CDI—Sentence Complexity	9.0	8.8	0.2	2.6		9.0	7.6	1.5	18.0		8.4	7.3	1.1*	13.6
Percentage with Sentence Complexity < 2***	28.6	25.0	3.6	7.9		24.3	19.4	4.9	10.7		27.6	33.9	-6.3*	-13.9
CHILD SOCIAL-EMOTIONAL DEVELOPMENT														
Average Bayley BRS—Emotional Regulation	3.7	3.7	0.0	4.1		3.6	3.6	-0.0	-0.7		3.6	3.6	-0.0	-2.5
Average Bayley BRS—Orientation/Engagement	3.7	3.6	0.1	8.9		3.7	3.7	-0.0	-1.8		3.7	3.6	0.0	5.6
Child Behavior Checklist—Aggression*	9.9	9.7	0.2	3.3		9.0	10.9	-1.9**	-34.6		10.1	10.3	-0.3	-4.6
Parent-Child Structured Play: Child Sustained Attention with Objects (Average)	5.1	4.9	0.2	22.3		5.0	4.9	0.1	6.8		5.0	5.0	0.0	2.2
Parent-Child Structured Play: Child Negativity Toward Parent (Average)**	1.5	1.8	-0.3***	-34.9		1.9	1.8	0.1	6.4		1.7	1.7	0.0	3.4
Parent-Child Structured Play: Child Engagement (Average)**	4.6	4.2	0.4***	34.3		4.1	4.3	-0.2	-18.2		4.3	4.2	0.1	9.0
QUALITY OF THE HOME ENVIRONMENT AND PARENTING: EMOTIONAL SUPPORT														
Home Observation for Measurement of the Environment (HOME) Emotional Responsivity	6.3	6.2	0.1	4.0		6.0	5.7	0.2	16.0		6.2	6.1	0.2*	12.0
Parent-Child Structured Play: Parent Supportiveness	4.2	4.1	0.2	14.9		3.8	3.8	-0.0	-2.0		4.1	3.9	0.2**	16.9

TABLE E.VII.21 *(continued)*

Outcome	Employed				In School or Training				Neither in School/Training nor Employed			
	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]
QUALITY OF THE HOME ENVIRONMENT AND PARENTING: STIMULATION OF LANGUAGE AND LEARNING												
HOME Cognitive, Language, and Literacy Support	10.5	10.2	0.3*	14.2	10.4	10.2	0.2	9.5	10.2	10.0	0.2**	13.0
Regular Bedtimes***	68.5	61.0	7.6	15.3	57.3	53.4	3.9	7.8	58.9	57.3	1.6	3.3
Bedtime Routines***	70.5	69.8	0.7	1.5	66.1	63.4	2.7	5.7	69.5	67.6	1.9	4.0
Reading Daily***	60.3	46.2	14.1**	28.2	60.2	61.2	-1.0	-2.0	55.6	52.9	2.7	5.4
Reading at Bedtime***	33.7	25.8	7.9	18.8	30.8	25.1	5.7	13.5	30.3	22.9	7.5**	17.7
Father Reads to Child	3.9	3.4	0.5**	23.5	3.0	3.1	-0.2	-7.6	3.6	3.6	0.0	1.8
Reading Frequency*	4.7	4.3	0.4***	30.7	4.7	4.7	0.1	5.2	4.6	4.5	0.0	1.8
Parent-Child Activities to Stimulate Cognitive and Language Development	4.5	4.4	0.1	7.3	4.6	4.6	0.1	7.3	4.5	4.5	0.0	2.7
Outside Activities	2.7	2.7	0.1	14.0	2.9	2.8	0.1	12.6	2.7	2.8	-0.0	-4.0
HOME Verbal/Social Skills	2.9	2.8	0.1	8.1	2.5	2.5	-0.0	-3.3	2.9	2.7	0.1***	21.0
QUALITY OF THE HOME ENVIRONMENT AND PARENTING: NEGATIVE PARENTING BEHAVIOR												
HOME Absence of Punitive Interactions	4.7	4.6	0.1	4.2	4.4	4.5	-0.1	-10.3	4.4	4.3	0.1	6.7
Parent-Child Structured Play: Parent Detachment**	1.3	1.6	-0.3**	-36.0	1.7	1.5	0.2	21.4	1.4	1.5	-0.1	-11.2
Parent-Child Structured Play: Parent Intrusiveness*	1.6	1.9	-0.3**	-29.0	2.1	2.1	0.0	3.8	1.8	1.8	0.0	2.7
Parent-Child Structured Play: Negative Regard	1.3	1.3	-0.0	-3.7	1.7	1.4	0.2	29.6	1.4	1.4	0.0	4.0
Spanked Child in Last Week***	35.5	54.8	-19.3***	-38.7	51.1	57.5	-6.4	-12.8	50.6	51.3	-0.7	-1.4
KNOWLEDGE OF CHILD DEVELOPMENT AND DISCIPLINE STRATEGIES												
Knowledge of Infant Development Inventory (KIDI)	3.4	3.4	0.0	9.8	3.4	3.3	0.0	9.7	3.4	3.3	0.1**	13.4
Would Use Mild Discipline Only***	48.7	42.2	6.5	13.2	39.4	25.5	13.9**	28.2	44.5	44.3	0.2	0.4
Index of Discipline Severity	2.4	2.7	-0.3	-16.4	2.9	3.3	-0.4**	-22.5	2.6	2.6	0.0	0.2
PARENT PHYSICAL AND MENTAL HEALTH												
PSI Parental Distress	24.7	26.1	-1.4	-14.6	25.1	25.7	-0.6	-6.2	24.9	25.9	-1.0	-10.5
PSI Parent-Child Dysfunctional Interaction***	17.4	16.7	0.6	10.6	16.0	18.5	-2.5***	-41.1	17.2	17.2	0.1	0.8
FES Family Conflict	1.7	1.7	-0.0	-7.4	1.7	1.9	-0.2	-28.3	1.7	1.7	0.0	4.3
CIDI Depression (Probability)	9.1	13.6	-4.5	-14.9	13.5	9.6	3.8	12.8	14.2	14.0	0.2	2.2
Overall Health Status	3.6	3.5	0.1	13.8	3.6	3.8	-0.2	-17.4	3.4	3.4	0.0	0.7
Sample Size												
Parent interview	**268**	**246**	**514**		**233**	**205**	**438**		**554**	**537**	**1,091**	
Bayley	**220**	**198**	**418**		**197**	**170**	**367**		**460**	**434**	**894**	
Parent-child interactions	**236**	**194**	**430**		**198**	**169**	**367**		**448**	**429**	**877**	

TABLE E.VII.21 *(continued)*

SOURCE: Parent interviews, child assessments, interviewer observations, and assessments of semi-structured parent-child interactions conducted when children were approximately 24 months old.

NOTE: All estimates were calculated using regression models, where each site was weighted equally. Only sites with at least 10 program group members and 10 control group members in the subgroup are included in the estimates for each subgroup.

The initial primary occupation is based on the primary occupation of the primary caregiver identified in the application forms. In a few families, the primary caregiver interviewed at followup was a different person than the person identified in the application forms.

[a]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had instead been assigned to the program group. This unobserved mean is estimated as the difference between the program group mean for participants and the impact per participant. A participant is defined as a program group member who received more than one Early Head Start home visit, met with an Early Head Start case manager more than once, received at least two weeks of Early Head Start center-based services, and/or participated in Early Head Start parent-child group activities.

[b]The estimated impact per participant is measured as the estimated impact per eligible applicant divided by the proportion of program group members who participated in Early Head Start services (which varied by site). The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for program and control group members.

[c]The effect size is calculated by dividing the estimated impact per participant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact per participant expressed as a percentage of a standard deviation).

[d]Asterisks next to variable names indicate significance levels for statistical tests of differences in impacts across the subgroups.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

TABLE E.VII.22

IMPACTS ON SERVICE RECEIPT DURING THE FIRST 16 MONTHS, BY HIGHEST GRADE COMPLETED

Service	Less Than 12th Grade			12th Grade or GED			Higher than 12th Grade		
	Program Group	Control Group	Impact Estimate Per Eligible Applicant	Program Group	Control Group	Impact Estimate Per Eligible Applicant	Program Group	Control Group	Impact Estimated Per Eligible Applicant
ANY SERVICES									
Any Key Services***[a,b]	93.4	73.6	19.9***	97.9	83.4	14.5***	97.7	79.1	18.5***
Any Home Visits Or Center-Based Child Care***	89.1	48.2	40.9***	96.7	58.1	38.7***	97.3	52.2	45.1***
HOME VISITS									
Any Home Visits***	84.6	34.5	50.2***	89.8	33.7	56.0***	91.0	31.5	59.5***
Any Child Development Services During Home Visits***	84.0	32.1	52.0***	89.4	32.1	57.3***	90.7	29.5	61.1***
Weekly Home Visits (1st Followup)***	45.1	4.2	41.0***	45.9	4.8	41.1***	59.4	2.4	57.0***
CHILD CARE									
Any Child Care***	78.5	72.6	5.9**	83.0	79.5	3.5	84.3	72.7	11.6***
Any Center-Based Child Care***	37.7	21.7	16.0***	44.0	35.0	8.9**	46.7	28.9	17.8
Average Hours/Week of Center Care	5.8	2.4	3.5***	8.0	4.7	3.3***	6.8	3.7	3.2***
Concurrent Child Care Arrangements***	31.1	30.5	0.6	42.3	34.2	8.1*	33.3	35.7	-2.4
Average Weekly Out-of-Pocket Cost of Care	$3.96	$5.96	-$2.01*	$6.74	$9.76	-$3.02*	$6.85	$12.63	-$5.78***
CASE MANAGEMENT									
Any Case Management Meetings***	82.5	50.9	31.6***	91.8	58.9	32.9***	90.9	51.9	39.0***
Weekly Case Management—1st Followup***	48.4	8.3	40.0***	46.9	8.2	38.8***	64.9	10.0	54.9***
GROUP ACTIVITIES									
Any Group Parenting Activities***	64.2	29.9	34.3***	69.5	28.4	41.1***	71.1	41.4	29.7***
Any Parent-Child Group Activities***	29.8	8.0	21.8***	32.6	6.7	25.9***	36.2	18.0	19.3***
EARLY INTERVENTION SERVICES									
Identification of Child's Disability***	3.7	2.5	1.2	5.3	4.7	0.7	8.0	4.0	3.9*
Services for Child With Disability***	2.7	1.2	1.5*	3.4	3.4	-0.0	5.0	1.4	3.5**
CHILD HEALTH SERVICES									
Any Child Health Services***	99.5	98.9	0.6	99.8	99.9	-0.1	100.0	100.0	100.0
Any Doctor Visits***	92.5	90.8	1.7	96.5	99.1	-2.6*	96.4	94.0	2.4
Any Emergency Room Visits***	42.0	39.8	2.1	47.5	47.2	0.3	46.3	40.1	6.1
Any Dentist Visits***	8.2	11.0	-2.8	11.3	8.8	2.5	11.6	11.3	0.3
Any Screening Tests***	52.0	54.8	-2.9	55.1	51.4	3.7	59.0	49.3	9.7*
Any Immunizations***	96.6	95.7	1.0	98.1	97.6	0.5	97.8	97.1	0.8

TABLE E.VII.22 *(continued)*

Service	Less Than 12th Grade			12th Grade or GED			Higher than 12th Grade		
	Program Group	Control Group	Impact Estimate Per Eligible Applicant	Program Group	Control Group	Impact Estimate Per Eligible Applicant	Program Group	Control Group	Impact Estimated Per Eligible Applicant
FAMILY DEVELOPMENT SERVICES									
Any Education-Related Services***	85.8	57.5	28.3***	80.9	46.5	34.4***	82.8	48.3	34.5***
Any Employment-Related Services***	69.4	31.7	37.7***	72.9	36.2	36.8***	64.8	27.0	37.8***
Any Family Health Services***	97.7	97.0	0.7	100.0	100.0	0.0	98.5	98.8	-0.3
Any Family Mental Health Services***	17.7	14.0	3.7	19.3	22.8	-3.6	19.3	19.0	0.3
Transportation Assistance***	28.0	19.8	8.2***	31.9	22.4	9.5**	29.7	18.4	11.3***
Housing Assistance***	50.9	47.0	3.9	55.8	59.9	-4.1	51.5	41.6	10.0**
Sample Size	**493**	**498**	**991**	**317**	**302**	**619**	**291**	**253**	**544**

SOURCE: Parent Services Follow-Up Interviews completed an average of 7 and 16 months after random assignment.

NOTE: All estimates were calculated using regression models, where each site was weighted equally. Only sites with at least 10 program group members and 10 control group members in the subgroup are included in the estimates for each subgroup.

The initial educational attainment is based on the attainment of the primary caregiver identified in the application forms. In a few families, the primary caregiver interviewed at followup was a different person than the person identified in the application forms.

[a]Home visits, case management, center-based child care, and/or group parenting activities.

[b]Asterisks next to variable names indicate significance levels for statistical tests of differences in impacts across the subgroups.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

TABLE E.VII.23

IMPACTS ON SELF-SUFFICIENCY, BY HIGHEST GRADE COMPLETED

	Less Than 12th Grade					12th Grade or Equivalent					More than 12th Grade			
Outcome	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]		Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]		Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]
EDUCATION/JOB TRAINING														
Ever in Education/Training***[d]	59.3	52.5	6.8*	13.7		36.2	35.6	0.6	1.3		49.7	46.6	3.1	6.3
Ever in High School***	27.7	21.0	6.7**	23.1		0.3	0.4	-0.1	-0.2		NA	NA	NA	NA
Ever in ESL Class***	1.5	0.7	0.9	7.9		3.3	1.6	1.7	14.8		1.4	2.2	-0.8	-7.5
Ever in Vocational Program***	13.5	13.1	0.2	0.6		19.4	14.8	4.6	14.0		18.7	10.9	7.9**	23.8
Average Hours/Week in Education//Training	7.6	5.7	1.9***	24.6		2.6	2.1	0.6	7.2		4.4	3.2	1.2*	15.0
In Education/Training:														
1st Quarter***	36.2	31.5	4.7	10.9		12.4	15.3	-3.0	-6.9		27.2	25.8	1.4	3.2
2nd Quarter***	38.5	35.4	3.1	7.0		16.3	16.8	-0.5	-1.1		32.0	27.0	5.0	11.3
3rd Quarter***	39.4	33.5	5.9*	13.4		22.8	18.4	4.4	10.0		32.3	26.0	6.4	14.4
4th Quarter***	40.1	28.8	11.3***	26.3		22.0	19.4	2.6	6.1		32.3	28.2	4.2	9.7
5th Quarter***	37.9	30.3	7.7*	17.8		16.9	15.6	1.4	3.2		32.2	28.0	4.2	9.7
Have High School Diploma ***	13.4	14.1	-0.7	-1.3		73.8	69.8	4.1	8.2		77.0	78.3	-1.3	-2.5
Have GED***	10.3	8.2	2.2	7.4		15.1	17.4	-2.3	-7.7		7.4	8.1	-0.7	-2.3
EMPLOYMENT														
Ever Employed***	66.1	67.9	-1.8	-3.9		81.5	79.4	2.1	4.7		80.0	73.7	6.3	14.0
Average Hours/Week in Employment	10.3	12.1	-1.8*	-11.9		19.7	19.5	0.1	0.7		17.6	17.0	0.6	3.8
Employed in:														
1st Quarter***	28.7	33.1	-4.4	-8.9		53.5	55.9	-2.3	-4.7		54.1	46.1	8.1*	16.5
2nd Quarter***	36.6	41.2	-4.6	-9.2		59.0	61.3	-2.3	-4.6		58.5	50.8	7.7	15.5
3rd Quarter***	41.4	46.5	-5.1	-10.2		63.7	62.0	1.7	3.4		64.4	58.3	6.1	12.3
4th Quarter***	49.5	49.4	0.1	0.1		64.8	64.2	0.6	1.2		66.1	64.0	2.0	4.1
5th Quarter***	54.3	56.0	-1.7	-3.4		67.7	66.3	1.4	2.8		68.5	68.6	-0.1	-0.1
ANY SELF-SUFFICIENCY-ORIENTED ACTIVITY (EDUCATION/TRAINING OR EMPLOYMENT)														
Ever Employed or in Education/Training***	84.3	81.7	2.5	6.6		88.0	85.1	3.0	7.7		88.9	81.7	7.2**	18.7
Percentage of Weeks in Any Activity	53.7	51.4	2.3	5.9		60.6	60.0	0.6	1.6		65.4	59.3	6.1	15.9
Average Hours/Week in Employment or Education/Training	18.1	18.2	-0.1	-0.5		22.4	21.7	0.8	4.8		22.1	20.0	2.0	12.2
In Activities in:														
1st Quarter***	56.3	55.4	0.9	1.8		57.4	60.7	-3.3	-6.7		66.2	58.7	7.5*	15.1
2nd Quarter***	63.1	62.1	1.0	2.0		64.6	66.7	-2.1	-4.3		74.2	62.4	11.8***	24.4
3rd Quarter***	66.0	64.7	1.3	2.7		74.3	70.6	3.7	7.8		78.1	69.3	8.8*	18.6

TABLE E.VII.23 *(continued)*

Outcome	Less Than 12th Grade				12th Grade or Equivalent				More than 12th Grade			
	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]
4th Quarter***	69.6	64.2	5.4	11.4	75.3	70.7	4.6	9.7	75.5	71.6	3.9	8.1
5th Quarter***	71.8	68.8	3.0	6.6	73.5	73.3	0.2	0.4	76.9	78.0	-1.1	-2.3
AFDC/TANF RECEIPT												
Ever Received AFDC/TANF***	54.4	50.6	3.8	7.6	44.6	40.5	4.2	8.4	33.8	35.3	-1.5	-3.1
Received AFDC/TANF in:												
1st Quarter***	42.6	35.3	7.3**	15.6	34.4	30.3	4.1	8.8	25.5	26.2	-0.8	-1.7
2nd Quarter***	42.6	37.7	4.9	10.3	35.4	32.5	2.9	6.1	25.8	26.8	-1.0	-2.1
3rd Quarter***	44.7	40.8	3.9	8.2	36.3	33.5	2.8	5.8	27.9	27.7	0.2	0.4
4th Quarter***	40.5	35.9	4.6	9.7	28.8	29.5	-0.7	-1.4	21.1	24.9	-3.8	-8.1
5th Quarter***	38.9	36.3	2.7	5.8	31.8	31.1	0.7	1.5	19.7	23.5	-3.9	-8.4
Total AFDC/TANF Benefits ($)*	1,893	1,654	240	10.1	1,472	1,428	45	1.9	1,046	1,302	-257	-10.8
RECEIPT OF OTHER WELFARE BENEFITS												
Ever Received Welfare***	73.9	70.8	3.1	6.6	63.7	65.6	-1.9	-3.9	58.3	57.0	1.4	2.9
Total Welfare Benefits ($)	4,324	3,801	523*	12.0	3,648	3,145	503	11.5	3,219	3,096	122	2.8
Ever Received Food Stamps***	65.1	63.4	1.7	3.5	55.9	59.9	-4.0	-8.1	50.8	48.4	2.3	4.8
Total Food Stamp Benefits ($)	1,547	1,430	117	7.3	1,264	1,400	-136	-8.6	1,127	1,062	65.0	4.1
INCOME/POVERTY												
Income Above Poverty Level***	24.4	23.6	0.8	1.8	41.8	40.7	1.1	2.2	47.4	48.0	-0.6	-1.2
Sample Size	**493**	**498**	**991**		**317**	**302**	**619**		**291**	**253**	**544**	

SOURCE: Parent Services Follow-Up Interviews completed an average of 7 and 16 months after enrollment.

NOTES: All estimates were calculated using regression models, where each site was weighted equally. Only sites with at least 10 program group members and 10 control group members in the subgroup are included in the estimates for each subgroup.

The initial educational attainment is based on the attainment of the primary caregiver identified in the application forms. In a few families, the primary caregiver interviewed at followup was a different person than the person identified in the application forms.

[a]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had instead been assigned to the program group. This unobserved mean is estimated as the difference between the program group mean for participants and the impact per participant. A participant is defined as a program group member who received more than one Early Head Start home visit, met with an Early Head Start case manager more than once, received at least two weeks of Early Head Start center-based services, and/or participated in Early Head Start parent-child group activities.

[b]The estimated impact per participant is measured as the estimated impact per eligible applicant divided by the proportion of program group members who participated in Early Head Start services (which varied by site). The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for program and control group members.

[c]The effect size is calculated by dividing the estimated impact per participant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact per participant expressed as a percentage of a standard deviation).

[d]Asterisks next to variable names indicate significance levels for statistical tests of differences in impacts across the subgroups.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

NA = Not available (insufficient sample)

TABLE E.VII.24

IMPACTS ON CHILD AND FAMILY OUTCOMES AT AGE 2, BY HIGHEST GRADE COMPLETED

	Less Than 12th Grade					12th Grade or Equivalent					More Than 12th Grade			
Outcome	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]		Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]		Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]
CHILD COGNITIVE DEVELOPMENT														
Average Bayley Mental Development Index (MDI)	87.4	86.5	0.9	6.8		91.1	89.1	2.0	14.8		96.0	94.4	1.6	11.9
Percentage with MDI < 85***[d]	42.2	43.5	-1.3	-2.7		31.2	36.6	-5.4	-11.1		22.8	24.0	-1.2	-2.5
Percentage with MDI < 100***	82.2	83.0	-0.8	-1.9		72.8	77.7	-4.9	-11.9		55.7	61.8	-6.0	-14.7
CHILD LANGUAGE DEVELOPMENT														
Average MacArthur CDI—Vocabulary Production	53.2	51.7	1.5	6.7		58.4	54.0	4.4*	19.6		59.3	58.0	1.3	5.8
Percentage with Vocabulary Production < 25***	10.7	12.5	-1.8	-5.7		8.6	11.1	-2.5	-7.9		9.7	10.0	-0.3	-0.9
Average MacArthur CDI—Combining Words***	77.0	74.7	2.3	5.5		82.0	83.9	-1.9	-4.6		87.9	82.6	5.3	12.6
Average MacArthur CDI—Sentence Complexity	7.8	7.0	0.8	10.4		9.3	8.5	0.9	10.4		10.2	9.4	0.8	9.9
Percentage with Sentence Complexity < 2***	34.1	31.1	3.0	6.5		24.8	24.9	-0.1	-0.1		18.5	22.5	-4.0	-8.9
CHILD SOCIAL-EMOTIONAL DEVELOPMENT														
Average Bayley BRS—Emotional Regulation	3.6	3.6	0.0	1.5		3.6	3.7	-0.1	-8.8		3.7	3.7	-0.1	-7.6
Average Bayley BRS—Orientation/Engagement	3.6	3.6	-0.1	-11.5		3.7	3.7	0.0	4.8		3.8	3.7	0.1	13.1
Child Behavior Checklist—Aggression	10.3	11.0	-0.8	-13.6		9.9	9.9	-0.1	-1.6		9.3	9.2	0.1	1.4
Parent-Child Structured Play: Child Sustained Attention with Objects (Average)	4.9	4.9	0.0	1.4		5.2	5.0	0.2**	24.7		5.3	5.2	0.0	2.8
Parent-Child Structured Play: Child Negativity Toward Parent (Average)**	1.9	1.9	0.1	5.0		1.5	1.9	-0.3***	-35.2		1.6	1.8	-0.2	-16.9
Parent-Child Structured Play: Child Engagement (Average)	4.1	3.9	0.1	11.0		4.6	4.3	0.3**	25.1		4.6	4.5	0.1	5.6
QUALITY OF THE HOME ENVIRONMENT AND PARENTING: EMOTIONAL SUPPORT														
Home Observation for Measurement of the Environment (HOME) Emotional Responsivity	6.0	5.7	0.2**	16.0		6.3	6.3	-0.1	-3.9		6.5	6.5	-0.0	-2.9
Parent-Child Structured Play: Parent Supportiveness	3.8	3.7	0.2*	15.4		4.2	4.1	0.2	15.8		4.4	4.4	0.1	4.9

TABLE E.VII.24 *(continued)*

Outcome	Less Than 12th Grade					12th Grade or Equivalent					More Than 12th Grade			
	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]		Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]		Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]
QUALITY OF THE HOME ENVIRONMENT AND PARENTING: STIMULATION OF LANGUAGE AND LEARNING														
HOME Cognitive, Language, and Literacy Support*	9.8	9.8	-0.0	-1.2		10.7	10.4	0.3**	15.7		11.1	10.7	0.4***	20.5
Regular Bedtimes***	57.8	54.3	3.6	7.2		64.2	60.5	3.7	7.4		67.4	64.5	2.9	5.8
Bedtime Routines***	61.3	63.5	-2.2	-4.7		71.8	65.2	6.6	14.1		79.3	73.8	5.5	11.6
Reading Daily***	52.1	48.6	3.5	7.1		61.5	53.1	8.4	16.8		65.4	64.0	1.4	2.7
Reading at Bedtime***	22.5	16.0	6.5**	15.5		29.9	29.3	0.6	1.5		48.8	30.7	18.1***	42.9
Father Reads to Child	3.2	3.3	-0.1	-4.3		3.7	3.3	0.4*	17.5		4.1	3.9	0.2	11.0
Reading Frequency	4.4	4.4	0.1	3.7		4.8	4.6	0.2**	19.6		4.8	4.8	0.1	4.5
Parent-Child Activities to Stimulate Cognitive and Language Development	4.5	4.5	0.0	2.6		4.6	4.5	0.1	14.3		4.5	4.5	0.0	0.9
Outside Activities	2.7	2.8	-0.0	-3.7		2.8	2.8	0.0	2.5		2.8	2.7	0.1	7.2
HOME Verbal/Social Skills	2.7	2.7	-0.0	-4.5		2.9	2.9	0.0	5.3		3.0	2.9	0.0	4.3
QUALITY OF THE HOME ENVIRONMENT AND PARENTING: NEGATIVE PARENTING BEHAVIOR														
HOME Absence of Punitive Interactions	4.3	4.3	0.0	0.5		4.3	4.3	-0.0	-3.3		4.4	4.5	-0.1	-8.3
Parent-Child Structured Play: Parent Detachment	1.5	1.6	-0.1	-12.1		1.3	1.4	-0.1	-12.9		1.4	1.4	-0.1	-7.3
Parent-Child Structured Play: Parent Intrusiveness	2.0	2.0	0.0	2.3		1.6	1.8	-0.2*	-17.4		1.7	1.8	-0.1	-12.2
Parent-Child Structured Play: Negative Regard	1.5	1.5	0.0	2.4		1.4	1.4	-0.0	-4.6		1.3	1.3	0.0	1.6
Spanked Child in Last Week***	47.2	50.5	-3.3	-6.6		49.7	53.5	-3.8	-7.7		43.6	51.6	-8.0	-16.0
KNOWLEDGE OF CHILD DEVELOPMENT AND DISCIPLINE STRATEGIES														
Knowledge of Infant Development Inventory (KIDI)	3.3	3.3	0.1	12.2		3.4	3.4	0.0	4.4		3.5	3.5	0.1	11.2
Would Use Mild Discipline Only***	39.7	32.7	7.0*	14.2		44.9	38.1	6.9	14.0		47.7	48.2	-0.6	-1.2
Index of Discipline Severity	2.8	2.9	-0.1	-6.0		2.6	2.8	-0.2	-10.0		2.3	2.5	-0.2	-11.4

TABLE E.VII.24 *(continued)*

Outcome	Less Than 12th Grade				12th Grade or Equivalent				More Than 12th Grade			
	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]
PARENT PHYSICAL AND MENTAL HEALTH												
PSI Parental Distress	25.2	27.0	-1.8**	-19.5	24.6	26.1	-1.5	-16.1	24.5	24.5	-0.0	-0.1
PSI Parent-Child Dysfunctional Interaction*	17.4	18.5	-1.1**	-18.8	17.3	17.1	0.2	2.9	15.9	15.5	0.4	5.9
FES Family Conflict	1.7	1.8	-0.1**	-21.2	1.7	1.7	0.0	2.4	1.7	1.7	0.0	-3.6
CIDI Depression (Probability)	15.2	11.1	4.0*	13.4	12.6	16.0	-3.4	-11.3	11.0	13.1	-2.0	-6.8
Overall Health Status	3.4	3.4	0.0	-2.1	3.6	3.4	0.2	15.0	3.5	3.5	-0.0	-2.0
Sample Size												
Parent interview	**472**	**452**	**924**		**300**	**281**	**581**		**280**	**248**	**528**	
Bayley	**399**	**366**	**765**		**253**	**222**	**475**		**224**	**208**	**432**	
Parent-child interactions	**405**	**364**	**769**		**246**	**232**	**478**		**229**	**190**	**419**	

SOURCE: Parent interviews, child assessments, interviewer observations, and assessments of semi-structured parent-child interactions conducted when children were approximately 24 months old.

NOTE: All estimates were calculated using regression models, where each site was weighted equally. Only sites with at least 10 program group members and 10 control group members in the subgroup are included in the estimates for each subgroup.

The initial educational attainment is based on the attainment of the primary caregiver identified in the application forms. In a few families, the primary caregiver interviewed at followup was a different person than the person identified in the application forms.

[a]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had instead been assigned to the program group. This unobserved mean is estimated as the difference between the program group mean for participants and the impact per participant. A participant is defined as a program group member who received more than one Early Head Start home visit, met with an Early Head Start case manager more than once, received at least two weeks of Early Head Start center-based services, and/or participated in Early Head Start parent-child group activities.

[b]The estimated impact per participant is measured as the estimated impact per eligible applicant divided by the proportion of program group members who participated in Early Head Start services (which varied by site). The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for program and control group members.

[c]The effect size is calculated by dividing the estimated impact per participant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact per participant expressed as a percentage of a standard deviation).

[d]Asterisks next to variable names indicate significance levels for statistical tests of the differences in impact across the subgroups.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

TABLE E.VII.25

IMPACTS ON SERVICE RECEIPT DURING THE FIRST 16 MONTHS, BY INITIAL LIVING ARRANGEMENTS

Service	Lived With Spouse			Lived With Other Adults			Lived Alone		
	Program Group	Control Group	Impact Estimate Per Eligible Applicant	Program Group	Control Group	Impact Estimate Per Eligible Applicant	Program Group	Control Group	Impact Estimate Per Eligible Applicant
ANY SERVICES									
Any Key Services***[a,b]	99.7	74.8	24.9***	95.0	76.1	18.9***	93.1	72.9	20.2***
Any Home Visits Or Center-Based Child Care***	96.6	44.3	52.4***	92.0	50.6	41.4***	90.0	52.4	37.6***
HOME VISITS									
Any Home Visits***	93.6	25.1	68.5***	85.5	36.3	49.3***	87.1		54.7***
Any Child Development Services During Home Visits***	93.1	23.1	70.0***	84.0	34.0	49.9***	86.5	29.7	56.8***
Weekly Home Visits (1st Followup)***	57.6	2.3	55.3***	48.9	5.1	43.8***	41.9	2.5	39.4***
CHILD CARE									
Any Child Care***	65.9	60.2	5.7	82.4	77.4	4.9*	80.1	76.1	4.0
Any Center-Based Child Care***	30.0	23.0	7.0*	41.7	20.4	21.3***	42.0	31.6	10.4***
Average Hours/Week of Center Care**	4.2	2.4	1.8**	7.5	2.9	4.6***	6.3	4.4	1.9**
Concurrent Child Care Arrangements***	24.7	25.2	-0.5	39.1	32.2	7.0*	33.3	30.4	2.9
Average Weekly Out-of-Pocket Cost of Care*	$7.72	$6.72	$1.00	$4.32	$8.69	-$4.38***	$6.46	$8.80	-$2.34
CASE MANAGEMENT									
Any Case Management Meetings***	87.7	45.9	41.8***	82.5	53.2	29.2***	85.7	51.6	34.1***
Weekly Case Management—1st Followup***	55.1	4.5	50.6***	47.6	10.5	37.1***	44.4	8.4	36.1***
GROUP ACTIVITIES									
Any Group Parenting Activities***	73.2	36.8	36.4***	66.2	30.8	35.5***	60.9	25.0	35.9***
Any Parent-Child Group Activities***	40.2	11.1	29.0***	32.5	9.1	23.4***	28.2	8.0	20.2***
EARLY INTERVENTION SERVICES									
Identification of Child's Disability***	6.6	2.7	3.8*	3.0	3.0	-0.1	3.1	2.5	0.5
Services for Child With Disability***	4.7	2.4	2.4	2.1	1.5	0.6	1.5	0.8	0.7
CHILD HEALTH SERVICES									
Any Child Health Services***	99.0	99.8	-0.8	99.7	99.4	0.3	100.0	99.5	0.4
Any Doctor Visits***	93.6	93.8	-0.2	92.3	93.4	-1.1	94.5	92.3	2.2
Any Emergency Room Visits***	38.8	29.6	9.2*	45.4	38.9	6.5*	40.0	48.5	-8.5**
Any Dentist Visits***	12.1	8.5	3.7	9.4	9.6	-0.2	11.4	12.8	-1.5
Any Screening Tests***	51.6	42.5	9.1*	54.1	52.9	1.2	58.2	62.5	-4.3
Any Immunizations***	98.1	95.4	2.6	97.6	96.5	1.1	96.6	98.8	-2.2

TABLE E.VII.25 *(continued)*

Service	Lived With Spouse			Lived With Other Adults			Lived Alone		
	Program Group	Control Group	Impact Estimate Per Eligible Applicant	Program Group	Control Group	Impact Estimate Per Eligible Applicant	Program Group	Control Group	Impact Estimate Per Eligible Applicant
FAMILY DEVELOPMENT SERVICES									
Any Education-Related Services***	79.0	34.5	44.5***	84.4	56.5	27.9***	82.5	50.6	31.9***
Any Employment-Related Services***	66.8	18.8	48.0***	66.9	33.5	33.4***	67.2	34.7	32.5***
Any Family Health Services***	98.3	98.3	-0.0	97.2	98.5	-1.2	98.3	96.9	1.4
Any Family Mental Health Services***	16.3	14.8	1.5	16.2	18.1	-1.8	22.6	20.3	2.3
Transportation Assistance***	19.5	8.8	10.7***	30.2	21.8	8.5**	32.7	23.6	9.1**
Housing Assistance***	35.7	35.4	0.3	47.6	43.9	3.7	59.8	60.9	-1.2
Sample Size	**286**	**286**	**572**	**438**	**440**	**878**	**415**	**367**	**782**

SOURCE: Parent Services Follow-Up Interviews completed an average of 7 and 16 months after random assignment.

NOTE: All estimates were calculated using regression models, where each site was weighted equally. Only sites with at least 10 program group members and 10 control group members in the subgroup are included in the estimates for each subgroup.

[a]Home visits, case management, center-based child care, and/or group parenting activities.

[b]Asterisks next to variable names indicate significance levels for statistical tests of the differences in impacts across the subgroups.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

TABLE E.VII.26

IMPACTS ON SELF-SUFFICIENCY, BY INITIAL LIVING ARRANGEMENTS

	Lived With Spouse					Lived With Other Adults					Lived Alone			
Outcome	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]		Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]		Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]
EDUCATION/JOB TRAINING														
Ever in Education/Training***[d]	25.1	28.1	-3.1	-6.2		55.7	47.9	7.8**	15.7		47.3	41.5	5.8	11.7
Ever in High School***	0.6	0.9	-0.3	-1.0		22.2	16.3	6.0**	20.5		7.6	5.1	2.6	8.8
Ever in ESL Class***	4.8	1.6	3.1*	27.9		1.8	-0.2	2.0***	17.5		1.8	0.9	0.9	8.0
Ever in Vocational Program***	5.8	9.3	-3.5	-10.5		14.3	12.5	1.8	5.4		18.4	13.0	5.4	16.3
Average Hours/Week in Education/Training*	1.5	1.4	0.2	2.0		7.2	5.0	2.3***	29.3		4.4	3.8	0.5	6.7
In Education/Training:														
1st Quarter***	9.3	13.7	-4.4	-10.2		34.4	29.1	5.3	12.5		22.4	20.5	1.9	4.5
2nd Quarter***	14.9	16.5	-1.6	-0.4		38.5	29.8	8.7**	19.8		25.6	24.8	0.8	1.8
3rd Quarter***	16.5	14.2	2.3	5.2		39.1	29.7	9.5**	21.5		30.5	28.0	2.5	5.7
4th Quarter***	14.7	13.9	0.8	1.9		37.7	26.0	11.7***	27.2		30.1	26.4	3.7	8.7
5th Quarter***	13.7	14.9	-1.2	-2.8		42.7	27.4	15.3***	35.7		51.3	47.2	4.1	8.3
Have High School Diploma ***	53.7	58.1	-4.4	-8.9		38.6	38.1	0.4	0.8					
Have GED***	7.0	4.0	3.0	10.2		13.3	10.3	3.0	10.2		8.7	13.3	-4.7	-16.0
EMPLOYMENT														
Ever Employed***	72.3	70.2	2.1	4.7		71.9	73.7	-1.8	-4.0		71.6	70.3	1.3	2.9
Average Hours/Week in Employment	15.5	15.0	0.6	3.6		13.6	14.4	-0.8	-5.4		15.4	16.0	-0.7	-4.3
Employed in:														
1st Quarter***	46.7	40.2	6.5	13.2		35.2	39.6	-4.3	-8.8		45.2	44.1	1.1	2.2
2nd Quarter***	49.5	44.7	4.7	9.5		44.0	48.8	-4.8	-9.6		47.1	46.8	0.3	0.6
3rd Quarter***	56.9	51.7	5.2	10.4		51.4	54.2	-2.8	-5.6		50.2	50.3	-0.1	-0.2
4th Quarter***	60.5	54.2	6.3	12.6		55.0	57.0	-2.0	-3.9		53.9	54.5	-0.6	-1.3
5th Quarter***	62.4	58.3	4.1	8.4		59.5	63.1	-3.6	-7.4		63.2	63.6	-0.4	-0.8
ANY SELF-SUFFICIENCY-ORIENTED ACTIVITY (EDUCATION/TRAINING OR EMPLOYMENT)														
Ever Employed or in Education/Training***	76.3	75.6	0.7	1.7		85.5	86.9	-1.4	-3.6		85.2	82.1	3.0	7.9
Percentage of Weeks in Any Activity	52.5	46.3	6.2	16.0		58.7	58.6	0.1	0.2		56.7	54.5	2.2	5.8
Average Hours/Week in Employment or Education/Training	17.1	16.4	0.7	4.4		21.1	19.8	1.2	7.5		20.2	20.0	0.2	1.3

TABLE E.VII.26 *(continued)*

Outcome	Lived With Spouse				Lived With Other Adults				Lived Alone			
	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]
In Activities in:												
1st Quarter***	50.8	48.4	2.4	4.8	58.2	59.2	-1.0	-2.0	62.3	60.6	1.7	3.5
2nd Quarter***	55.7	51.8	3.9	8.1	67.7	67.5	0.1	0.3	68.4	62.8	5.6	11.6
3rd Quarter***	63.8	58.5	5.3	11.3	70.9	71.1	-0.2	-0.4	70.2	65.0	5.1	10.8
4th Quarter***	65.1	58.7	6.4	13.4	72.6	70.1	2.5	5.3	70.2	66.8	3.5	7.3
5th Quarter***	65.4	62.3	3.2	7.0	78.3	74.7	3.6	7.8	73.5	75.7	-2.2	-4.8
AFDC/TANF RECEIPT												
Ever Received AFDC/TANF***	15.7	16.6	-0.9	-1.9	48.1	48.9	-0.8	-1.5	62.2	60.9	1.4	2.8
Received AFDC/TANF in:												
1st Quarter***	10.4	8.5	1.9	4.1	36.3	33.2	3.0	6.4	50.7	47.6	3.1	6.7
2nd Quarter***	11.3	9.4	2.0	4.2	36.4	34.6	1.8	3.7	50.8	50.9	-0.0	-0.1
3rd Quarter***	10.8	13.1	-2.3	-4.8	38.4	39.3	-0.9	-1.8	53.9	52.6	1.3	2.8
4th Quarter***	8.4	10.0	-1.6	-3.5	33.3	35.9	-2.6	-5.7	49.3	46.1	3.2	6.9
5th Quarter***	8.0	8.2	-0.2	-0.5	32.5	34.8	-2.4	-5.1	46.8	48.8	-2.0	-4.4
Total AFDC/TANF Benefits ($)	518	412	106	4.4	1,620	1,517	104	4.4	2,693	2,715	-22.0	-0.9
RECEIPT OF OTHER WELFARE BENEFITS												
Ever Received Welfare***	40.9	38.3	2.5	5.3	69.1	69.2	-0.1	-0.2	78.2	78.2	-0.0	-0.1
Total Welfare Benefits ($)	1,772	1,205	568**	13.0	3,999	3,627	372	8.5	5,394	5,386	8.0	0.2
Ever Received Food Stamps***	35.4	36.7	-1.3	-2.6	59.5	60.5	-1.0	-2.0	70.4	71.6	-1.2	-2.5
Total Food Stamp Benefits ($)	721	594	127	7.9	1,370	1,261	109	6.8	1,784	1,822	-38	-2.4
INCOME/POVERTY												
Income Above Poverty Level***	50.2	52.0	-1.7	-3.6	34.7	37.6	-2.9	-6.1	26.1	23.0	3.1	6.5
Sample Size	**286**	**286**	**572**		**438**	**440**	**878**		**415**	**367**	**782**	

SOURCE: Parent Services Follow-Up Interviews completed an average of 7 and 16 months after random assignment.

NOTE: All estimates were calculated using regression models, where each site was weighted equally. Only sites with at least 10 program group members and 10 control group members in the subgroup are included in the estimates for each subgroup.

[a]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had instead been assigned to the program group. This unobserved mean is estimated as the difference between the program group mean for participants and the impact per participant. A participant is defined as a program group member who received more than one Early Head Start home visit, met with an Early Head Start case manager more than once, received at least two weeks of Early Head Start center-based services, and/or participated in Early Head Start parent-child group activities.

[b]The estimated impact per participant is measured as the estimated impact per eligible applicant divided by the proportion of program group members who participated in Early Head Start services (which varied by site). The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for program and control group members.

[c]The effect size is calculated by dividing the estimated impact per participant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact per participant expressed as a percentage of a standard deviation).

[d]Asterisks next to variable names indicate significance levels for statistical tests of differences in impacts across the subgroups.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

TABLE E.VII.27

IMPACTS ON CHILD AND FAMILY OUTCOMES AT AGE 2, BY INITIAL LIVING ARRANGEMENTS

	Lived With Spouse				Lived With Other Adults				Lived Alone			
Outcome	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]
CHILD COGNITIVE DEVELOPMENT												
Average Bayley Mental Development Index (MDI)	91.6	92.1	-0.5	-3.6	90.0	87.8	2.2*	16.2	89.9	86.6	3.3**	24.2
Percentage with MDI < 85***[d]	34.2	28.1	6.1	12.5	34.7	40.1	-5.4	-11.0	35.7	46.7	-11.0**	-22.6
Percentage with MDI < 100***	70.4	71.6	-1.2	-2.9	74.6	79.4	-4.8	-11.7	74.7	79.4	-4.7	-11.5
CHILD LANGUAGE DEVELOPMENT												
Average MacArthur CDI—Vocabulary Production	57.4	57.6	-0.2	-0.8	55.6	52.9	2.7	12.1	57.5	51.9	5.7***	25.1
Percentage with Vocabulary Production < 25***	15.0	5.4	9.7***	30.3	8.0	11.4	-3.4	-10.5	8.5	11.4	-2.9	-9.0
Average MacArthur CDI—Combining Words***	71.2	78.8	-7.6*	-18.2	82.5	78.0	4.5	10.7	84.2	71.5	12.7***	30.4
Average MacArthur CDI—Sentence Complexity	8.1	8.6	-0.6	-7.3	8.3	7.7	0.5	6.5	9.7	7.6	2.1***	25.8
Percentage with Sentence Complexity < 2***	33.9	26.5	7.4	16.2	29.3	29.2	0.1	0.2	23.0	34.7	-11.7***	-25.7
CHILD SOCIAL-EMOTIONAL DEVELOPMENT												
Average Bayley BRS—Emotional Regulation	3.7	3.8	-0.0	-2.2	3.6	3.5	0.1	10.1	3.6	3.6	-0.0	-1.5
Average Bayley BRS—Orientation/Engagement	3.7	3.6	0.1	7.7	3.7	3.6	0.0	0.8	3.6	3.6	-0.0	-2.7
Child Behavior Checklist--Aggression	9.2	9.6	-0.4	-6.7	10.1	10.9	-0.8*	-15.2	10.1	10.8	-0.7	-12.1
Parent-Child Structured Play: Child Sustained Attention with Objects (Average)	5.2	5.1	0.0	2.9	5.1	5.0	0.1	7.8	5.1	4.9	0.2**	25.4
Parent-Child Structured Play: Child Negativity Toward Parent (Average)	1.4	1.5	-0.1	-12.7	1.8	1.9	-0.1	-12.8	1.8	1.8	-0.0	-0.5
Parent-Child Structured Play: Child Engagement (Average)	4.7	4.6	0.1	7.6	4.4	4.2	0.2*	17.0	4.2	4.2	0.0	2.7
QUALITY OF THE HOME ENVIRONMENT AND PARENTING: EMOTIONAL SUPPORT												
Home Observation for Measurement of the Environment (HOME) Emotional Responsivity	6.4	6.1	0.3**	23.6	5.9	5.9	0.0	1.7	6.2	6.1	0.2	10.9
Parent-Child Structured Play: Parent Supportiveness	4.3	4.1	0.2*	21.8	4.0	3.9	0.2*	17.3	4.0	3.9	0.1	11.4

TABLE E.VII.27 *(continued)*

Outcome	Lived With Spouse				Lived With Other Adults				Lived Alone			
	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]
QUALITY OF THE HOME ENVIRONMENT AND PARENTING: STIMULATION OF LANGUAGE AND LEARNING												
HOME Cognitive, Language, and Literacy Support	10.3	10.1	0.1	7.6	10.3	10.0	0.3**	14.0	10.3	10.0	0.3**	18.4
Regular Bedtimes***	63.3	62.8	0.5	1.0	56.9	52.2	4.7	9.6	65.8	58.4	7.4	15.0
Bedtime Routines***	72.9	66.7	6.3	13.3	64.7	66.4	-1.7	-3.7	74.9	65.2	9.7**	20.7
Reading Daily***	60.8	56.9	3.8	7.7	58.2	47.4	10.7**	21.5	53.3	49.4	3.9	7.9
Reading at Bedtime***	34.9	29.5	5.5	12.9	25.0	16.5	8.5**	20.2	30.2	23.1	7.0*	16.7
Father Reads to Child	4.4	4.5	-0.0	-1.7	3.4	3.3	0.1	4.5	2.8	2.7	0.2	8.0
Reading Frequency	4.6	4.6	0.0	3.0	4.6	4.4	0.2**	19.7	4.5	4.4	0.1	8.5
Parent-Child Activities to Stimulate Cognitive and Language Development	4.5	4.5	0.1	5.7	4.6	4.5	0.1*	13.6	4.5	4.4	0.0	3.6
Outside Activities	2.7	2.7	-0.0	-0.8	2.8	2.7	0.1	13.3	2.7	2.7	-0.0	-4.1
HOME Verbal/Social Skills**	2.9	2.8	0.2***	22.6	2.7	2.7	-0.1	-7.4	2.9	2.8	0.0	5.5
QUALITY OF THE HOME ENVIRONMENT AND PARENTING: NEGATIVE PARENTING BEHAVIOR												
HOME Absence of Punitive Interactions	4.8	4.8	0.0	0.3	4.3	4.3	-0.0	-3.5	4.3	4.3	-0.1	-4.3
Parent-Child Structured Play: Parent Detachment	1.3	1.4	-0.1	-13.4	1.5	1.6	-0.1	-12.5	1.5	1.5	-0.1	-6.2
Parent-Child Structured Play: Parent Intrusiveness	1.5	1.6	-0.1	-12.3	1.8	2.0	-0.2*	-15.3	2.0	1.9	0.1	12.4
Parent-Child Structured Play: Negative Regard	1.2	1.1	0.1	10.0	1.5	1.5	-0.0	-2.3	1.6	1.5	0.1	8.5
Spanked Child in Last Week***	37.3	49.4	-12.1**	-24.2	46.6	52.9	-6.2	-12.5	53.6	51.7	1.8	3.7
KNOWLEDGE OF CHILD DEVELOPMENT AND DISCIPLINE STRATEGIES												
Knowledge of Infant Development Inventory (KIDI)	3.4	3.4	0.0	9.6	3.4	3.3	0.1	11.5	3.4	3.3	0.1*	15.4
Would Use Mild Discipline Only***	54.8	55.9	-1.0	-2.1	41.6	39.2	2.4	4.8	42.7	32.7	10.0**	20.3
Index of Discipline Severity	2.1	2.2	-0.1	-7.8	2.7	2.8	-0.1	-5.3	2.7	2.9	-0.2	-13.0

TABLE E.VII.27 *(continued)*

Outcome	Lived With Spouse				Lived With Other Adults				Lived Alone			
	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]	Program Group	Control Group[a]	Impact Estimate Per Participant[b]	Effect Size[c]
PARENT PHYSICAL AND MENTAL HEALTH												
PSI Parental Distress	23.9	24.3	-0.5	-4.9	25.6	26.8	-1.2	-13.1	25.2	26.5	-1.4	-14.7
PSI Parent-Child Dysfunctional Interaction	17.1	16.9	0.2	3.1	17.0	17.7	-0.8	-12.6	17.3	17.5	-0.2	-3.4
FES Family Conflict	1.6	1.6	-0.0	-7.5	1.7	1.8	-0.1	-15.1	1.7	1.7	0.0	0.3
CIDI Depression (Probability)	13.4	12.1	1.3	4.1	11.5	12.9	-1.4	-4.7	13.3	15.3	-1.9	-6.4
Overall Health Status	3.4	3.4	0.1	4.7	3.5	3.4	0.0	3.2	3.4	3.4	0.1	8.0
Sample Size												
Parent interview	**275**	**289**	**564**		**415**	**408**	**823**		**402**	**321**	**723**	
Bayley	**235**	**232**	**467**		**338**	**325**	**663**		**337**	**270**	**607**	
Parent-child interactions	**233**	**225**	**458**		**351**	**332**	**683**		**329**	**260**	**589**	

SOURCE: Parent interviews, child assessments, interviewer observations, and assessments of semi-structured parent-child interactions conducted when children were approximately 24 months old.

NOTE: All estimates were calculated using regression models, where each site was weighted equally. Only sites with at least 10 program group members and 10 control group members in the subgroup are included in the estimates for each subgroup.

[a]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had instead been assigned to the program group. This unobserved mean is estimated as the difference between the program group mean for participants and the impact per participant. A participant is defined as a program group member who received more than one Early Head Start home visit, met with an Early Head Start case manager more than once, received at least two weeks of Early Head Start center-based services, and/or participated in Early Head Start parent-child group activities.

[b]The estimated impact per participant is measured as the estimated impact per eligible applicant divided by the proportion of program group members who participated in Early Head Start services (which varied by site). The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for program and control group members.

[c]The effect size is calculated by dividing the estimated impact per participant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact per participant expressed as a percentage of a standard deviation).

[d]Asterisks next to variable names indicate significance levels for statistical tests of differences in impacts across the subgroups.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

TABLE E.VII.28

IMPACTS ON SERVICE RECEIPT DURING THE FIRST 16 MONTHS,
BY NUMBER OF MATERNAL RISK FACTORS

Service	0 or 1 Risk Factors[a]			2 or 3 Risk Factors[a]			4 or 5 Risk Factors[a]		
	Program Group	Control Group	Impact Estimate Per Eligible Applicant	Program Group	Control Group	Impact Estimate Per Eligible Applicant	Program Group	Control Group	Impact Estimate Per Eligible Applicant
ANY SERVICES									
Any Key Services***[b,c]	100.0	80.2	20.4***	95.4	75.4	20.0***	94.3	67.0	27.3***
Any Home Visits Or Center-Based Child Care***	99.9	44.2	55.7***	92.6	50.2	42.4***	92.2	48.2	44.0***
HOME VISITS									
Any Home Visits***	94.5	24.2	70.3***	87.7	30.7	57.0***	89.8	33.9	55.9***
Any Child Development Services During Home Visits***	94.9	23.1	71.8***	87.0	29.2	57.8***	88.6	32.4	56.3***
Weekly Home Visits (1st Followup)***	60.0	7.1	52.8***	45.4	1.9	43.5***	48.1	5.6	42.5***
CHILD CARE									
Any Child Care***	80.4	75.3	5.1	77.6	71.4	6.2**	82.0	79.5	2.5
Any Center-Based Child Care***	40.9	25.9	15.0**	42.5	27.7	14.8***	35.8	21.0	14.8***
Average Hours/Week of Center Care	6.5	3.1	3.3**	7.2	3.6	3.6***	3.7	2.2	1.6*
Concurrent Child Care Arrangements***	37.2	41.0	-3.8	35.9	32.5	3.4	30.2	22.7	7.5
Average Weekly Out-of-Pocket Cost of Care	$5.12	$9.93	-$4.81*	$5.05	$8.75	-$3.70***	$3.38	$4.20	-$0.82
CASE MANAGEMENT									
Any Case Management Meetings***	89.6	50.4	39.1***	86.0	51.1	34.9***	86.1	41.7	44.3***
Weekly Case Management—1st Followup***	59.4	7.0	52.4***	46.6	6.5	40.2***	50.5	10.9	39.6***
GROUP ACTIVITIES									
Any Group Parenting Activities***	85.5	44.7	40.8***	66.4	29.1	37.3***	63.5	27.7	35.7***
Any Parent-Child Group Activities***	42.9	11.4	31.5***	34.6	7.7	26.9***	33.1	9.7	23.3***
EARLY INTERVENTION SERVICES									
Identification of Child's Disability***	7.3	3.5	3.8	3.7	2.5	1.2	1.6	2.0	-0.4
Services for Child With Disability***	5.9	2.4	3.5	2.7	1.2	1.5*	1.5	0.5	1.0
CHILD HEALTH SERVICES									
Any Child Health Services***	99.0	99.8	-0.8	99.6	99.5	0.1	99.1	99.2	-0.1
Any Doctor Visits***	88.9	95.8	-6.9**	93.6	91.4	2.2	93.4	88.7	4.7
Any Emergency Room Visits***	53.3	28.4	24.9***	40.1	39.1	1.0	40.5	41.6	-1.1
Any Dentist Visits***	13.2	6.8	6.5	8.8	10.7	-1.9	9.1	10.7	-1.6
Any Screening Tests***	54.9	40.3	14.6	55.7	54.6	1.1	48.9	50.6	-1.7
Any Immunizations***	97.9	96.8	1.0	97.4	96.8	0.6	96.1	96.6	-0.5

TABLE E.VII.28 *(continued)*

Service	0 or 1 Risk Factors[a]			2 or 3 Risk Factors[a]			4 or 5 Risk Factors[a]		
	Program Group	Control Group	Impact Estimate Per Eligible Applicant	Program Group	Control Group	Impact Estimate Per Eligible Applicant	Program Group	Control Group	Impact Estimate Per Eligible Applicant
FAMILY DEVELOPMENT SERVICES									
Any Education-Related Services***	79.9	49.9	30.0***	82.9	49.2	33.7***	86.0	57.6	28.4***
Any Employment-Related Services***	65.7	23.8	42.0***	68.3	29.8	38.5***	73.7	36.8	36.9***
Any Family Health Services***	95.7	98.5	-2.8	97.8	97.1	0.7	98.4	96.6	1.8
Any Family Mental Health Services***	15.1	15.1	-0.1	17.1	16.8	0.2	14.5	19.0	-4.5
Transportation Assistance***	19.5	11.2	8.3	30.5	19.5	11.1***	43.4	27.0	16.4***
Housing Assistance***	36.7	31.0	5.7	51.4	47.7	3.7	58.4	58.4	-0.1
Sample Size	**201**	**177**	**378**	**556**	**546**	**1,102**	**264**	**262**	**526**

SOURCE: Parent Services Follow-Up Interviews completed an average of 7 and 16 months after enrollment.

NOTE: All estimates were calculated using regression models, where each site was weighted equally. Only sites with at least 10 program group members and 10 control group members in the subgroup are included in the estimates for each subgroup.

[a] Risk factors include: (1) mother was under 20 when focus child was born; (2) mother had not completed high school or a GED; (3) family was receiving TANF cash assistance; (4) mother was neither working nor in school or job training; and (5) mother was a single parent.

[b] Home visits, case management, center-based child care, and/or group parenting activities.

[c] Asterisks next to variable names indicate significance levels for statistical tests of differences in impacts among the subgroups.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different fromp zero at the .01 level, two-tailed test.

TABLE E.VII.29

IMPACTS ON SELF-SUFFICIENCY, BY NUMBER OF RISK FACTORS

	0 or 1 Risk Factor[a]					2 or 3 Risk Factors[a]					4 or 5 Risk Factors[a]			
Outcome	Program Group	Control Group[b]	Impact Estimate Per Participant[c]	Effect Size[d]		Program Group	Control Group[b]	Impact Estimate Per Participant[c]	Effect Size[d]		Program Group	Control Group[b]	Impact Estimate Per Participant[c]	Effect Size[d]
EDUCATION/JOB TRAINING														
Ever in Education/Training***[e]	31.8	44.3	-12.5	-25.2		48.5	41.5	7.1**	14.3		54.7	51.1	3.6	7.3
Ever in High School***	0.9	0.4	0.6	2.0		9.9	9.8	0.1	0.4		19.6	16.6	3.0	10.1
Ever in ESL Class***	5.5	2.4	3.1	27.3		1.8	1.4	0.4	3.7		2.3	1.9	0.4	3.6
Ever in Vocational Program***	14.0	14.9	-0.9	-2.8		16.3	13.9	2.5	7.4		12.4	15.8	-3.3	-10.0
Average Hours/Week in Education//Training	2.9	2.7	0.1	1.5		5.0	4.3	0.8	9.9		6.2	5.6	0.7	8.4
In Education/Training:														
1st Quarter***	18.2	23.7	-5.6	-13.0		23.5	23.2	0.3	0.6		28.2	27.2	1.1	2.5
2nd Quarter***	19.5	23.0	-3.5	-7.9		28.7	25.4	3.3	7.4		35.2	31.1	4.1	9.2
3rd Quarter***	21.6	22.7	-1.1	-2.5		31.5	26.4	5.1*	11.6		35.4	34.5	0.9	2.0
4th Quarter***	20.6	28.3	-7.7	-17.9		32.9	24.9	8.0***	18.7		32.8	34.2	-1.4	-3.2
5th Quarter***	20.8	32.1	-11.3	-26.3		31.9	25.8	6.1*	14.3		35.0	28.3	6.8	15.8
Have High School Diploma ***	75.5	75.7	-0.1	-0.3		50.9	50.3	0.5	1.1		16.9	16.4	0.6	1.1
Have GED***	6.5	3.5	3.0	10.2		9.8	10.0	-0.2	-0.6		11.5	8.6	2.9	9.9
EMPLOYMENT														
Ever Employed***	85.6	84.4	1.1	2.5		73.0	70.5	2.5	5.6		59.9	66.3	-6.4	-14.3
Average Hours/Week in Employment*	19.8	21.0	-1.2	-7.4		15.6	14.8	0.8	5.5		7.6	10.9	-3.4**	-21.8
Employed in:														
1st Quarter***	62.3	60.8	1.4	2.9		41.2	40.4	1.4	2.8		17.6	25.4	-7.8	-15.9
2nd Quarter***	61.4	58.9	2.5	5.0		49.3	47.0	2.3	4.7		27.1	35.8	-8.7	-17.4
3rd Quarter***	68.4	60.9	7.6	15.1		55.9	51.4	4.5	9.0		31.3	40.1	-8.9	-17.7
4th Quarter***	65.8	64.9	1.0	1.9		59.3	57.2	2.1	4.2		42.0	40.4	1.6	3.3
5th Quarter***	65.7	72.7	-7.0	-14.3		65.8	62.0	3.8	7.8		50.0	56.5	-6.5	-13.3
ANY SELF-SUFFICIENCY-ORIENTED ACTIVITY (EDUCATION/TRAINING OR EMPLOYMENT)														
Ever Employed or in Education/Training***	88.4	89.6	-1.3	-3.3		85.2	78.7	6.5***	17.0		81.9	81.7	0.2	0.5
Percentage of Weeks in Any Activity	65.7	65.6	0.1	0.2		58.6	53.7	5.0**	12.9		45.0	46.4	-1.4	-3.6
Average Hours/Week in Employment or Education/Training	23.0	22.6	0.4	2.1		21.0	19.3	1.7	10.0		14.6	16.8	-2.2	-13.3

TABLE E.VII.29 *(continued)*

Outcome	0 or 1 Risk Factor[a]				2 or 3 Risk Factors[a]				4 or 5 Risk Factors[a]			
	Program Group	Control Group[b]	Impact Estimate Per Participant[c]	Effect Size[d]	Program Group	Control Group[b]	Impact Estimate Per Participant[c]	Effect Size[d]	Program Group	Control Group[b]	Impact Estimate Per Participant[c]	Effect Size[d]
In Activities in:												
1st Quarter***	69.5	65.9	3.6	7.3	58.2	55.5	2.7	5.4	43.8	44.9	-1.0	-2.1
2nd Quarter***	71.8	62.1	9.7	20.1	66.3	60.6	5.7*	11.9	53.8	56.2	-2.4	-4.9
3rd Quarter***	77.0	69.7	7.3	15.5	71.4	65.2	6.2**	13.1	56.3	57.1	-0.9	-1.8
4th Quarter***	73.5	74.4	-1.0	-2.0	73.4	66.5	6.9**	14.6	62.0	59.7	2.4	5.0
5th Quarter***	72.5	87.2	-14.6*	-32.0	75.8	71.7	4.1	8.9	73.1	68.6	4.5	9.8
AFDC/TANF RECEIPT												
Ever Received AFDC/TANF***	8.4	11.5	-3.1	-6.2	44.3	43.9	0.3	0.7	81.3	66.0	15.3***	30.7
Received AFDC/TANF in:												
1st Quarter***	2.4	5.8	-3.3	-7.1	33.4	29.9	3.6	7.6	69.5	58.8	10.8**	22.9
2nd Quarter***	5.2	8.7	-3.5	-7.3	33.0	33.5	-0.5	-1.0	69.2	57.3	11.9**	25.1
3rd Quarter***	6.0	10.3	-4.3	-9.0	35.1	36.8	-1.6	-3.4	74.4	59.7	14.7***	30.5
4th Quarter***	4.9	9.2	-4.3	-9.2	29.1	32.0	-2.9	-6.3	63.8	51.5	12.2**	26.2
5th Quarter***	8.0	7.3	0.7	1.4	27.8	30.2	-2.4	-5.2	61.2	52.5	8.7	18.9
Total AFDC/TANF Benefits ($)*	181	384	-142	-6.0	1,433	1,505	-72	-3.0	3,516	2,972	544**	22.8
RECEIPT OF OTHER WELFARE BENEFITS												
Ever Received Welfare***	31.2	30.5	0.7	1.5	67.6	67.7	-0.0	-0.1				
Total Welfare Benefits ($)	988	784	204	4.7	3,647	3,603	44.2	1.0	6,716	6,122	595	13.7
Ever Received Food Stamps***	22.5	27.4	-4.8	-9.8	59.3	60.6	-1.3	-2.6				
Total Food Stamp Benefits ($)	316	384	-69	-4.3	1,361	1,378	-17.2	-1.1	2,126	1,823	302*	19.0
INCOME/POVERTY												
Income Above Poverty Level***	54.5	58.9	-4.4	-9.2	33.6	33.3	0.3	0.7	16.4	17.8	-1.4	-3.0
Sample Size	**201**	**177**	**378**		**556**	**546**	**1,102**		**264**	**262**	**526**	

SOURCE: Parent Services Follow-Up Interviews completed an average of 7 and 16 months after random assignment.

NOTE: All estimates were calculated using regression models, where each site was weighted equally. Only sites with at least 10 program group members and 10 control group members in the subgroup are included in the estimates for each subgroup.

[a]Risk factors include: (1) mother was under 20 when focus child was born; (2) mother had not completed high school or a GED; (3) family was receiving TANF cash assistance; (4) mother was neither working nor in school or job training; and (5) mother was a single parent.

[b]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had instead been assigned to the program group. This unobserved mean is estimated as the difference between the program group mean for participants and the impact per participant. A participant is defined as a program group member who received more than one Early Head Start home visit, met with an Early Head Start case manager more than once, received at least two weeks of Early Head Start center-based services, and/or participated in Early Head Start parent-child group activities.

TABLE E.VII.29 *(continued)*

[c]The estimated impact per participant is measured as the estimated impact per eligible applicant divided by the proportion of program group members who participated in Early Head Start services (which varied by site). The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for program and control group members.

[d]Effect size is calculated by dividing the estimated impact per participant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact per participant expressed as a percentage of a standard deviation).

[e]Asterisks next to variable names indicate significance levels for statistical tests of differences in impacts across the subgroups.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

TABLE E.VII.30

IMPACTS ON CHILD AND FAMILY OUTCOMES AT AGE 2, BY NUMBER OF RISK FACTORS

	0 to 1 Risk Factors[a]				2 to 3 Risk Factors[a]				4 to 5 Risk Factors[a]			
Outcome	Program Group	Control Group[b]	Impact Estimate Per Participant[c]	Effect Size[d]	Program Group	Control Group[b]	Impact Estimate Per Participant[c]	Effect Size[d]	Program Group	Control Group[b]	Impact Estimate Per Participant[c]	Effect Size[d]
CHILD COGNITIVE DEVELOPMENT												
Average Bayley Mental Development Index (MDI) ***[e]	92.4	93.1	-0.7	-5.3	91.0	86.4	4.5***	33.5	84.7	87.4	-2.7	-20.2
Percentage with MDI < 85***	32.9	29.6	3.2	6.6	31.8	43.1	-11.3***	-23.2	44.7	42.3	2.4	4.9
Percentage with MDI < 100***	65.0	66.5	-1.5	-3.7	72.2	84.8	-12.6***	-30.7	87.2	82.3	4.8	11.7
CHILD LANGUAGE DEVELOPMENT												
Average MacArthur CDI—Vocabulary Production	60.0	58.2	1.8	8.1	57.0	53.9	3.1*	13.6	52.6	48.6	4.0	17.9
Percentage with Vocabulary Production < 25***	10.7	5.0	5.7	18.0	8.9	10.7	-1.8	-5.5	8.0	17.6	-9.6**	-30.0
Average MacArthur CDI—Combining Words***	80.8	83.1	-2.3	-5.4	79.5	78.4	1.1	2.7	78.3	76.2	2.1	5.0
Average MacArthur CDI—Sentence Complexity	9.5	8.8	0.7	9.1	9.3	8.0	1.3**	16.5	7.5	6.6	0.9	10.7
Percentage with Sentence Complexity < 2***	21.8	21.4	0.4	0.8	28.3	28.6	-0.4	-0.8	32.0	30.6	1.4	3.1
CHILD SOCIAL-EMOTIONAL DEVELOPMENT												
Average Bayley BRS—Emotional Regulation**	3.5	3.8	-0.3*	-32.4	3.6	3.6	0.0	5.4	3.5	3.7	-0.2*	-25.2
Average Bayley BRS—Orientation/Engagement*	3.8	3.7	0.1	7.8	3.7	3.6	0.0	5.3	3.4	3.6	-0.2*	-23.6
Child Behavior Checklist—Aggression	10.0	9.2	0.7	13.1	9.9	10.2	-0.3	-5.7	10.7	11.6	-1.0	-17.9
Parent-Child Structured Play: Child Sustained Attention with Objects (Average)	5.1	5.3	-0.2	-19.7	5.0	4.9	0.1	13.0	4.9	4.9	-0.0	-0.1
Parent-Child Structured Play: Child Negativity Toward Parent (Average)*	1.6	1.5	0.1	11.5	1.7	1.8	-0.1	-12.1	2.2	1.8	0.3*	34.1
Parent-Child Structured Play: Child Engagement (Average)***	4.6	5.2	-0.6**	-48.6	4.3	4.1	0.2**	16.6	4.0	4.1	-0.1	-10.7
QUALITY OF THE HOME ENVIRONMENT AND PARENTING: EMOTIONAL SUPPORT												
Home Observation for Measurement of the Environment (HOME) Emotional Responsivity	6.4	6.5	-0.1	-9.8	6.3	6.0	0.2**	15.4	5.8	5.9	-0.0	-1.3
Parent-Child Structured Play: Parent Supportiveness	4.4	4.6	-0.2	-19.4	4.1	3.9	0.2**	18.8	3.7	3.5	0.2	18.1

TABLE E.VII.30 *(continued)*

Outcome	0 to 1 Risk Factors[a] Program Group	Control Group[b]	Impact Estimate Per Participant[c]	Effect Size[d]	2 to 3 Risk Factors[a] Program Group	Control Group[b]	Impact Estimate Per Participant[c]	Effect Size[d]	4 to 5 Risk Factors[a] Program Group	Control Group[b]	Impact Estimate Per Participant[c]	Effect Size[d]
QUALITY OF THE HOME ENVIRONMENT AND PARENTING: STIMULATION OF LANGUAGE AND LEARNING												
HOME Cognitive, Language, and Literacy Support	10.9	10.6	0.3*	15.5	10.3	10.0	0.3***	16.3	9.8	9.8	0.0	0.7
Regular Bedtimes***	70.2	64.8	5.5	11.0	60.1	57.9	2.3	4.6	44.8	56.2	-11.3*	-22.9
Bedtime Routines***	79.6	76.9	2.8	5.9	68.9	64.7	4.2	9.0	56.4	61.1	-4.7	-10.1
Reading Daily***	65.4	59.7	5.7	11.4	55.7	50.3	5.4	10.8	48.2	54.8	-6.6	-13.2
Reading at Bedtime***	42.6	28.3	14.4*	34.1	28.8	23.7	5.2	12.3	19.5	15.0	4.6	10.8
Father Reads to Child	4.6	4.5	0.2	7.1	3.4	3.3	0.1	5.2	2.7	2.9	-0.1	-5.2
Reading Frequency*	4.8	4.7	0.1	3.9	4.6	4.4	0.2**	17.7	4.3	4.5	-0.2	-17.5
Parent-Child Activities to Stimulate Cognitive and Language Development*	4.6	4.5	0.1	9.7	4.6	4.4	0.1**	17.0	4.4	4.6	-0.2	-17.6
Outside Activities	2.7	2.7	0.0	0.8	2.8	2.7	0.1	9.8	2.8	2.9	-0.0	-4.2
HOME Verbal/Social Skills	2.9	2.9	-0.0	-3.9	2.8	2.7	0.1	8.7	2.6	2.6	0.0	2.7
QUALITY OF THE HOME ENVIRONMENT AND PARENTING: NEGATIVE PARENTING BEHAVIOR												
HOME Absence of Punitive Interactions	4.7	4.9	-0.2**	-20.7	4.4	4.5	-0.1	-8.9	4.0	4.3	-0.3	-23.4
Parent-Child Structured Play: Parent Detachment	1.3	1.2	0.1	7.5	1.4	1.5	-0.1*	-14.8	1.6	1.8	-0.3	-28.1
Parent-Child Structured Play: Parent Intrusiveness	1.5	1.5	0.0	3.3	1.8	1.9	-0.1	-8.5	2.2	1.9	0.3	27.9
Parent-Child Structured Play: Negative Regard	1.3	1.1	0.2*	25.7	1.4	1.4	-0.0	-1.3	1.7	1.6	0.1	9.3
Spanked Child in Last Week***	34.1	40.1	-6.1	-12.1	49.5	53.7	-4.2	-8.4	58.4	65.9	-7.6	-15.1
KNOWLEDGE OF CHILD DEVELOPMENT AND DISCIPLINE STRATEGIES												
Knowledge of Infant Development Inventory (KIDI)	3.5	3.5	0.0	1.6	3.4	3.3	0.1***	19.0	3.3	3.3	0.0	7.9
Would Use Mild Discipline Only***	59.5	51.1	8.3	16.9	44.7	40.2	4.5	9.2	24.5	24.7	-0.2	-0.5
Index of Discipline Severity	2.0	2.4	-0.5**	-27.1	2.6	2.7	-0.1	-6.6	3.3	3.3	0.0	2.0
PARENT PHYSICAL AND MENTAL HEALTH												
PSI Parental Distress	24.3	24.2	0.1	0.7	25.1	25.7	-0.6	-6.4	25.8	28.1	-2.3*	-24.7
PSI Parent-Child Dysfunctional Interaction	16.7	16.3	0.3	5.7	17.0	17.3	-0.3	-5.2	17.8	19.0	-1.1	-19.1
FES Family Conflict*	1.5	1.7	-0.2**	-35.6	1.7	1.7	0.0	2.9	1.8	1.8	0.0	4.1
CIDI Depression (Probability)	13.6	13.4	0.3	0.8	11.2	12.6	-1.4	-4.8	18.9	12.3	6.6	21.9
Overall Health Status	3.5	3.7	-0.2	-15.0	3.4	3.4	0.1	6.8	3.5	3.6	-0.1	-4.5
Sample Size												
Parent interview	**203**	**174**	**377**		**529**	**516**	**1,045**		**239**	**228**	**467**	
Bayley	**165**	**141**	**306**		**448**	**414**	**862**		**197**	**186**	**383**	
Parent-child interactions	**172**	**138**	**310**		**444**	**409**	**853**		**198**	**189**	**387**	

TABLE E.VII.30 *(continued)*

SOURCE: Parent interviews, child assessments, interviewer observations, and assessments of semi-structured parent-child interactions conducted when children were approximately 24 months old.

NOTE: All estimates were calculated using regression models, where each site was weighted equally. Only sites with at least 10 program group members and 10 control group members in the subgroup are included in the estimates for each subgroup.

[a] Risk factors include: (1) mother was under 20 when focus child was born; (2) mother had not completed high school or a GED; (3) family was receiving TANF cash assistance; (4) mother was neither working nor in school or job training; and (5) mother was a single parent.

[b] The control group mean is the mean for the control group members who would have participated in Early Head Start if they had instead been assigned to the program group. This unobserved mean is estimated as the difference between the program group mean for participants and the impact per participant. A participant is defined as a program group member who received more than one Early Head Start home visit, met with an Early Head Start case manager more than once, received at least two weeks of Early Head Start center-based services, and/or participated in Early Head Start parent-child group activities.

[c] The estimated impact per participant is measured as the estimated impact per eligible applicant divided by the proportion of program group members who participated in Early Head Start services (which varied by site). The estimated impact per eligible applicant is measured as the difference between the regression-adjusted means for program and control group members.

[d] The effect size is calculated by dividing the estimated impact per participant by the standard deviation of the outcome measure for the control group times 100 (that is, it is the impact per participant expressed as a percentage of a standard deviation).

[e] Asterisks next to variable names indicate significance levels for statistical tests of differences in impacts across the subgroups.

*Significantly different from zero at the .10 level, two-tailed test.
**Significantly different from zero at the .05 level, two-tailed test.
***Significantly different from zero at the .01 level, two-tailed test.

TABLE E.VII.31
FAMILY CHARACTERISTICS, BY SITE

Subgroup	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	Average Across Sites
Race/Ethnicity																		
White non-Hispanic	27	79	4	19	77	21	75	82	1	60	12	17	27	3	4	20	92	36
Black non-Hispanic	72	1	93	5	15	58	17	4	46	23	87	40	34	9	0	78	3	34
Hispanic	1	13	3	66	5	20	3	7	40	4	1	40	31	85	92	1	3	24
Other	1	6	1	9	3	1	5	8	12	13	0	4	9	3	3	1	2	5
Primary Language																		
English	97	97	97	63	94	85	94	88	60	92	99	71	64	24	19	98	97	79
Other	3	3	3	37	6	15	6	12	40	8	1	29	36	76	81	2	3	21
Age of Child at Enrollment																		
Unborn	33	26	32	38	15	36	33	20	7	66	30	14	7	16	18	13	12	24
0-4 months	35	34	35	36	36	30	41	23	40	31	40	8	45	44	42	42	45	36
5-12 months	33	40	33	26	49	34	26	57	52	3	30	78	48	40	40	46	42	40
Child's Birth Order																		
Firstborn	43	68	100	73	45	57	61	56	89	61	84	59	45	44	53	77	53	63
Later-Born	57	32	0	27	55	43	39	44	11	39	16	41	55	56	47	23	47	37
Mother's Age When Child Was Born																		
Under 20	30	34	68	36	33	45	37	30	60	36	89	36	22	16	36	37	24	39
20 or older	70	66	32	64	67	55	63	70	40	64	11	64	78	84	64	63	76	61
Child's Gender																		
Female	55	52	44	54	47	50	47	49	45	51	52	54	42	51	44	44	49	49
Male	45	48	56	46	53	50	53	51	55	49	48	46	58	49	56	56	51	51
Family Was Receiving																		
AFDC/TANF Cash Assistance																		
Yes	69	8	53	25	12	51	50	35	32	55	41	31	13	29	31	29	36	35
No	31	92	47	75	86	49	50	65	68	45	59	69	87	71	69	71	64	65
Primary Occupation																		0
Employed	14	23	22	21	43	15	25	29	10	17	8	35	30	17	23	43	24	23
In school or training	19	20	40	17	15	27	11	19	48	14	67	31	6	5	10	19	8	22
Other	67	57	39	61	42	57	64	52	42	69	25	34	64	79	66	38	68	54
Highest Grade Completed																		
Less than 12th grade	34	35	52	49	29	57	45	33	70	42	79	45	32	66	86	38	28	48
12th grade or GED	42	30	29	22	40	25	35	34	10	33	14	24	37	14	9	40	43	28
More than 12th grade	24	35	19	29	31	19	21	33	19	25	7	31	32	20	5	22	29	24
Living Arrangements																		
With spouse	10	62	3	23	34	14	15	34	11	21	5	13	53	39	41	17	30	25
With other adults	39	29	16	62	26	46	46	22	52	43	84	57	22	26	31	40	32	40
Alone	51	9	81	14	40	39	39	44	37	36	12	30	24	36	27	44	37	35
Number of Maternal Risk Factors																		0
0-1	8	41	7	18	30	8	12	23	10	15	2	18	44	18	8	22	23	18
2-3	56	48	47	56	58	56	55	62	55	55	50	62	48	64	57	52	58	55
4-5	35	11	46	26	12	36	33	14	35	31	48	20	9	18	34	26	20	27

Source: Head Start Family Information System application and enrollment forms.

Note: Sites are presented in random order.

TABLE E.VII.32
CHARACTERISTICS OF FAMILIES IN KEY PROGRAM SUBGROUPS

Subgroup	Average Across Sites	1997 Program Approach			Overall Implementation			Implementation of Child Development			Implementation of Family Development			State Requires Parents of Infants to Work	
		Average Center	Average Home-based	Average Mixed	Average Early	Average Later	Average Other	Average Early	Average One Period	Average Never	Average Early	Average One Period	Average Never	Average Yes	Average No
Race/Ethnicity															
White nonhispanic	36	29	39	39	58	22	28	51	21	35	62	20	16	53	25
Black nonhispanic	34	45	28	35	23	33	50	33	38	33	27	33	56	23	43
Hispanic	24	22	29	21	14	41	16	14	34	28	7	42	25	19	28
Other	5	5	4	6	5	4	6	3	7	5	4	5	5	5	5
Primary Language															
English	79	81	74	83	89	66	81	90	67	77	94	64	77	86	73
Other	21	19	26	17	11	34	19	10	33	23	6	36	23	14	27
Age of Child at Enrollment															
Unborn	24	12	25	32	28	25	20	19	26	29	32	20	18	23	26
0-4 months	36	32	36	38	31	41	36	33	40	36	36	38	29	31	39
5-12 months	40	56	38	31	41	35	45	48	35	36	32	42	53	46	36
Child's Birth Order															
Firstborn	63	68	61	62	57	65	67	60	66	63	55	68	68	63	63
Later-Born	37	33	39	38	43	35	33	40	34	37	45	32	32	37	37
Mother's Age When Child Was Born															
Under 20	39	42	36	42	35	42	42	35	49	36	34	43	42	35	43
20 or older	61	59	64	58	65	58	58	65	51	64	66	57	58	65	57
Child's Gender															
Female	49	48	49	50	51	49	47	49	47	50	50	48	47	50	48
Male	51	53	51	50	50	51	53	51	53	50	50	52	53	50	52
Family Was Receiving AFDC/TANF Cash Assistance															
Yes	35	26	39	37	32	34	40	28	34	44	40	32	32	27	41
No	65	74	61	63	68	66	60	72	66	57	60	68	68	73	59
Primary Occupation															
Employed	23	33	22	19	26	23	21	31	18	21	23	22	29	31	18
In school or training	22	28	18	23	19	22	26	20	29	19	16	26	26	19	24
Other	54	39	61	57	55	56	53	49	53	60	61	52	46	50	58
Highest Grade Completed															
Less than 12th grade	48	46	50	48	39	61	44	39	62	47	39	60	43	39	55
12th grade or GED	28	29	28	29	33	22	30	34	21	29	35	20	30	32	26
More than 12th grade	24	26	22	24	28	17	25	28	18	24	26	19	27	29	20
Living Arrangements															
With spouse	25	19	29	24	29	23	22	28	26	21	27	24	23	28	23
With other adults	40	44	30	48	39	48	30	38	46	35	37	45	32	40	39
Alone	35	38	41	27	32	29	47	33	27	44	36	31	45	31	38
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Maternal Risk Factors															
0-1	18	20	17	18	23	13	18	24	16	14	20	14	23	23	14
2-3	55	57	56	54	56	56	54	56	53	57	55	57	52	56	55
4-5	27	23	27	28	22	31	28	21	31	29	25	29	25	20	31

Source: Head Start Family Information System application and enrollment forms.

Note: Site are presented in random order.

APPENDIX F

EXPANDED ACKNOWLEDGMENTS

This report is the culmination of almost six years' work by a very large number of people. Overall, the Early Head Start Research and Evaluation project could not have been undertaken without the contributions and collaboration of many, many individuals and organizations. In this appendix we acknowledge the diverse contributions of so many. We have attempted to include those who have played a key role from the beginning of the project, whether or not they were still involved at the time this report was being prepared; without their contributions, this work would not have been possible. We list the contributors that we so gratefully acknowledge in the following groups:

- Early Head Start program directors at the 17 programs participating in the research
- Early Head Start local research teams
- Federal agency staff, including those at the Administration on Children, Youth and Families; the Administration for Children and Families; Office of the Assistant Secretary for Planning and Evaluation; and the National Institute of Child Health and Human Development
- Site Coordinators
- Ellsworth Associates, Inc.
- Early Head Start National Resource Center
- Center for Children and Families, Columbia University Teachers College
- Mathematica Policy Research
- Early Head Start evaluation Technical Work Group
- Others

A. EARLY HEAD START RESEARCH PROGRAMS[1]

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[1]The program's local research partner is indicated in parentheses.

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