Early Head Start Children in Grade 5: Long-Term Follow-Up of the Early Head Start Research and Evaluation Project Study Sample

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EXECUTIVE SUMMARY

Early Head Start is a two-generation program for low-income pregnant women, and families with infants or toddlers that is designed to enhance children's development and health and to strengthen family and community partnerships. A rigorous evaluation, the Early Head Start Research and Evaluation Project, was initiated the same time the program was authorized, following 3,001 children and families in 17 of the first programs funded. The children were randomly assigned either to the program group, or to the control group who were precluded from enrolling in Early Head Start, although they could receive other services in the community. The initial phase of the evaluation included an implementation study to document program services as well as an impact study, which followed children and their families until they were 3 years old with an ambitious measurement plan to assess the wide range of child and family outcomes that Early Head Start programs may influence. Two follow-up assessments have been conducted. Families were contacted in the prekindergarten year (when children were about 5 years old), and this latest wave of follow-up occurred when children were in fifth grade, about 10 years of age.

Summary of Impacts at Ages 3 and 5

At the end of the program, when children were 3, Early Head Start was found to benefit families across a wide range of child, parent, and family self-sufficiency outcomes, although impacts were modest in size and Early Head Start children continued to perform below national norms on cognitive and language assessments. Impacts were broader and stronger for programs that fully implemented the Head Start Program Performance Standards and for programs that provided both home based and center based services (we referred to these programs as mixed-approach). Impacts also varied according to family characteristics, for instance, program impacts were particularly strong for African American children, for families who enrolled in Early Head Start during pregnancy, and for families with a medium level of demographic risk factors.

Two years after the end of the program, prior to entering kindergarten, positive impacts of the program remained in the areas of children's social-emotional outcomes, parenting, and parent well-being. However, at this follow up, broader impacts were found for children and families who had participated in programs providing only home-based services. While impacts were still strong for African American children, some notable family impacts emerged for families at highest demographic risk. Overall, those children who experienced Early Head Start followed by formal early childhood education experience (center-based child care, state prekindergarten, or Head Start), tended to have the best overall outcomes, with benefits in social-emotional outcomes and parenting associated with Early Head Start and academic skills associated with formal care experiences at ages 3 and 4.

The Current Grade 5 Study

The goals of the grade 5 follow-up were to (1) examine whether Early Head Start's impacts on outcomes for children and families continued seven years after the end of the program and (2) explore children's and families' experiences after the children entered elementary school and investigate subsequent influences on child and family outcomes. This report presents estimates of Early Head Start impacts on the study children and families when children were in fifth grade using exploratory analyses to inform program practice and guide future research.

When children were in fifth grade, we were able to collect data from 1,632 sample members, for a response rate of 54.4 percent of the original baseline sample and 66.0 percent of those who had responded at age 5 (prekindergarten). Analyses of respondents and nonrespondents showed that overall, respondents at grade 5 were similar to the full sample on baseline characteristics, and program and control group respondents at grade 5 had similar response rates and were well aligned on baseline characteristics. Numerous sensitivity tests produced similar findings, showing that the results presented in this report are robust across models. It appears that the primary effect of sample attrition was to reduce statistical power for detecting impacts, especially among sample subgroups that were smaller to start with. However, minimum detectable effect sizes were still sufficient to capture effects the size of those found in earlier waves.

Because the impact analyses were considered exploratory, no adjustments for multiple comparisons were made in assessing the statistical significance of the impact estimates. Further, due to the exploratory nature of these analyses, we are using a significance level of $p < .10$, and identify findings with significance between .05 and .10 as trends. Nonexperimental analyses for the overall sample and for racial/ethnic groups explored contributions of experiences over time, looking at the individual contributions of Early Head Start in the birth-to-age-3 period, participation in formal early care and education programs before kindergarten, ever being in Head Start, and characteristics of elementary schools in fifth grade, as well as the accumulation of experiences over time, to selected child and family outcomes. Interpretation of the findings from this long-term follow-up was made in the context of the impacts over time in previous waves of the study.

Results at Grade 5

We summarize the findings by reporting first the impacts overall and on subgroups of families (racial/ethnic and risk groups), then moving to the nonexperimental findings about contributions of individual and cumulative experience overall and by racial/ethnic groups. We end with a brief discussion of impacts for the subgroups defined by program approach.

Impacts for the Full Sample

Impacts on the full sample of children and families in the grade 5 follow-up suggest that for the overall sample, Early Head Start did not continue to have the broad pattern of impacts for child and family outcomes seen at earlier ages; however, there were interesting patterns of impacts for some subgroups. For the overall sample, there was one significant impact at the trend level on a social-emotional success index that summarized multiple measures[1] (the individual measures did not reach significance). This continues the pattern of positive impacts on measures of children's social-emotional development seen at ages 2, 3, and 5.

Impacts for Racial/Ethnic Groups

African Americans. For African American children, where impacts had been larger at earlier time points, positive impacts persisted in the areas of child social-emotional development, parent support for education and parent mental health. African American children who had participated in

[1] We defined social-emotional success as an absence of risk on five social-emotional outcomes: externalizing behavior, internalizing behavior, attention problems, peer bullying (being bullied), and delinquent variables. Cutoff scores for each outcome were defined either based on T-scores in the publishers' manual, or on the distribution in our sample, depending on the outcome.

Early Head Start, compared to those in the control group, had less externalizing and attention problems and were less likely to report being bullied by peers (trend level); families were more involved in school, provided more support for education in the home, reported fewer family moves, fewer depressive symptoms (trend level), and less use of alcohol.

Whites. For white children, there were favorable effects at the trend level of Early Head Start on improving children's problem solving, reducing externalizing behavior problems as well as reducing parenting distress, family conflict and welfare participation.

Hispanics. For Hispanic families, Early Head Start had long-term benefits at the trend level in the area of family self-sufficiency. Hispanic mothers who had participated in Early Head Start had higher educational attainment. There were no other significant impacts.

Impacts for Risk Groups

Using counts of risk factors measured at baseline (being a single parent, receiving public assistance, being neither employed nor in school or job training, being a teenage parent, and lacking a high school diploma or GED) families were divided into groups of lower (0-2 risks), moderate (3 risks), and highest risk (4-5 risks).

Lower risk. For lower-risk children, Early Head Start had continued favorable impacts on cognitive outcomes, but a negative impact on number of books in the home. Children in lower-risk families who participated in Early Head Start scored higher on reading and problem solving tasks than their control group peers at the trend level. However, their parents were less likely to report having a sizable number of children's books in the home.

Moderate risk. For moderate-risk children, there were positive impacts on reduced internalizing behavior problems and on family outcomes, but negative impacts in the cognitive domain. Children in moderate-risk families who had participated in Early Head Start, relative to those in the control group, were reported to have fewer internalizing problems, but they scored lower on a math test as well as on an index of ability based on vocabulary and problem solving (all trends). Their parents reported lower levels of parenting distress and a trend for higher levels of maternal education.

Highest risk. For high-risk children, there were negative impacts in the cognitive/academic area. The analyses revealed a pattern of unfavorable impacts of Early Head Start on math scores, academic success, and cumulative success with trend level negative impacts on receptive vocabulary, absenteeism, and cumulative risk among children in the highest-risk families compared to those in the control group. This is consistent in part with findings from earlier waves of the study where this group had some positive and some negative impacts. The positive impacts on important family risk factors seen at age 5 were not seen at grade 5.

Nonexperimental Analyses

We did further nonexperimental analyses to help better understand how experiences after Early Head Start (which were not randomly assigned) relate to outcomes. We examined relationships of four potentially influential experiences: (1) Early Head Start, (2) being in a formal program at ages 3 and 4, (3) ever being in Head Start, and (4) current school characteristics (low concentrations of minority students and students eligible for free and reduced-price lunch, and school size) to nine

outcomes that spanned domains.[2] Because characteristics of schools varied by racial subgroups, we conducted analyses separately by race as well. White children were enrolled in schools with fewer children in poverty and fewer minorities than Hispanic and African American children, and were enrolled in schools with fewer children per teacher than was true for Hispanics. The schools African American children attended were between those for whites and Hispanics in regard to poverty and minority attendance but had the poorest student-teacher ratios. Hispanic children attended schools characterized by greater poverty, higher student/teacher ratios, and higher proportions of minority students of all groups within the sample.

We next looked at the relationship between combinations of experiences (Early Head Start, formal program at 3 and 4, and being in a lower poverty school at grade 5), creating four groupings of cumulative experiences: none, any one, any two, or all three. We examined their relationship both overall and by racial/ethnic group to the same outcomes as we did for the individual experiences.

Individual Contributions of Elementary Educational Experiences

Entire sample. Children's outcomes at elementary school were associated with how many children were in poverty in the school even after controlling for earlier experiences. Across the entire sample, after controlling for Early Head Start and subsequent formal care and formal program at 3 and 4, children who were in schools with a higher percentage of children receiving free and reduced-price lunch scored lower on tests of receptive language, reading, math and problem solving. Those in schools with fewer children receiving free and reduced-price lunch had higher scores on the cumulative success index.

Racial/Ethnic Groups. We found differences in the relationships of experiences to outcomes when we looked within racial/ethnic groups. In these models we created variables to represent the concentration of the *child's* racial/ethnic group (for example, in the African American group, the comparisons are between students in schools with lower and higher concentrations of African American students to a reference group with a concentration in the middle range). We ran successive regression models adding in each experience as it occurred chronologically (Early Head Start, formal program, Head Start, and then each grade 5 school characteristic—free/reduced-price lunch, minority concentration, and size). We summarize here the models that include all the variables simultaneously.

For white children, experiences in elementary schools had associations with outcomes, independent of earlier experiences. The higher the percentage of children receiving free and reduced-price lunch in the school, the lower children's scores on reading, problem solving, and a cumulative success index.[3] Interestingly, relative to white children in mixed race schools (25-50 percent white), white children in larger schools had higher reading scores. White children in schools with fewer than 25 percent white children had more externalizing behavior problems, while those in schools with more than 75 percent had fewer. White children with more than 75 percent white

[2] Other research has shown that the combination of high poverty and high concentration of minority students is associated both with poorer quality schools (in terms of teacher preparation) as well as poorer student outcomes (including test scores and dropout rates) (Harris 2007; Lee 2004).

[3] The cumulative success index is a composite consisting of an absence of risk on five social-emotional outcomes (externalizing, internalizing, attention, peer bullying, and delinquent behavior), performance above the normative mean on two academic outcomes (reading and mathematics), performance above the mean on two ability measures (receptive vocabulary and problem solving), and positive self rating on a measure of peer interactions.

children had more family involvement in the school but lower problem solving scores than children in mixed race schools. Problem solving scores were highest for white children in mixed-race schools.

For African American children, school poverty was associated with differences in cognitive and social-emotional development. For these children, a higher percentage of children with free and reduced-price lunch in their school was associated with lower scores in receptive vocabulary, reading, problem solving, and increased externalizing behavior problems, controlling for Early Head Start, formal program experiences, and Head Start. When African American students were in schools with greater than 75 percent African Americans, they had lower scores in reading, math, and on the cumulative success index compared to those in mixed race schools. In schools with fewer than 25 percent African American students, children had increased externalizing and attention problems. African American children fared best in schools with a concentration of African American students in the middle range (between 25 and 75 percent). These relationships with school environment were significant independent of associations with Early Head Start and being in a formal program at ages 3 and 4.

For Hispanic children, school poverty was associated with lower scores in vocabulary, problem solving and the cumulative success index. Hispanic children fared best in schools with a mix of Hispanic students (between 25 and 75 percent). In schools with higher or lower levels of Hispanics, Hispanic children scored lower in receptive vocabulary. Children in schools with a higher percentage of Hispanic students scored lower on reading and those in schools with a lower percentage of Hispanic students scored lower on the cumulative success index. These relationships with school characteristics were significant independent of associations with Early Head Start, being in a formal program at ages 3 and 4, or ever being in Head Start.

Contributions of Cumulative Educational Experiences

For these analyses we examined groupings of three cumulative experiences (Early Head Start, formal care at ages 3 and 4, and being in a lower poverty school at grade 5), and classified children who had none, any one, any two, or all three. We examined their relationships both overall and by racial/ethnic groups to the same child outcomes as we did for the individual experiences. Overall models controlled for site, race/ethnicity, family risk factors, and parent language; models by race/ethnicity had that control variable omitted.

Entire sample. There were cumulative positive relationships in all areas of cognitive development for Early Head Start, formal care at ages 3 and 4, and being in a school with fewer children receiving free and reduced-price lunch. For example, children who had all three of these experiences averaged 96.6 on receptive vocabulary in grade 5; those who had two averaged 95.6; those with one averaged 93.4, and those with none averaged 90.5.[4] The same pattern was seen in reading, math, and problem solving. For the cumulative success index having two or three experiences was better than having one or none. There were few associations for social-emotional outcomes.

Whites. There were few significant associations overall, and none were significant after controlling for site, risk factors, and language.

[4] All are significantly different from one another except the mean for all three experiences versus any two.

African Americans. For African American children, having experiences in Early Head Start, formal care at ages 3 and 4, and being in schools with a lower percentage of students who qualified for free and reduced-price lunch in grade 5 were associated with better outcomes. Similar to the patterns for the entire sample, African Americans who had all three experiences performed better than those with none on receptive vocabulary, mathematics, and problem solving, and scored better on the cumulative success index than those with only one or none.

Hispanics. For Hispanic children, having experiences in Early Head Start, formal care at ages 3 and 4, and being in schools with a lower percentage of students who qualified for free and reduced-price lunch in grade 5 were associated with better academic outcomes. Experiences were mostly similar to findings for the sample overall. Specifically, children with all three experiences performed better on receptive vocabulary than those with none. The same was true for reading and problem solving with three experiences associated with better performance than having one or none.

Impacts for Program Approach Subgroups

The Head Start Program Performance Standards outline allowable service delivery options along with quality guidelines. The standards detail five allowable options for services at the child and family level: home-based, center-based, combination, family child care, and a locally designed option (the latter requires special permission). Programs in this study fell into three groups on the basis of their program approaches in 1997 (ACF 2002c): center-based that only provided the center-based option (four programs), home-based that only provided the home-based option (seven programs), and mixed-approach that provided both home-based and center-based options (six programs).

Home-based programs appeared to evidence long-term positive impacts for children and families. Compared to the control group, parents reported children who had participated in home-based Early Head Start programs had fewer household moves and at the trend level reported lower rates of ADD/ADHD, depressive symptoms, and family conflict and higher family incomes.

Center-based programs appeared to have continued positive impacts for children while negative impacts were found for parenting stress. Children who had participated in center-based Early Head Start had a trend toward greater social-emotional success[5] and were less likely to be retained in grade in school than their peers in the control group. However, their parents reported more parenting distress and parent-child dysfunctional interaction, two scales of the Parenting Stress Index.

Mixed-approach programs appeared to have continued positive impacts for parents, but not for children. There were no significant impacts for children in mixed-approach programs, but their parents reported being more involved in their children's schools, lower levels of parenting distress, and lower levels of current welfare participation (all at the trend level).

[5] The social-emotional success index defines success as an absence of risk on five social-emotional outcomes rated by parents or reported by the child: externalizing and internalizing behavior, attention problems, peer bullying, and delinquent behaviors. Cut off scores for each outcome were defined either based on T-scores in the publishers' manual, or on the distribution in our sample, depending on the outcome. ECLS-K variables were based on the ECLS-K distribution.

Summary

Overall impacts on the full sample were evident at a trend level only for an index of children's social-emotional functioning. However, there was some evidence that favorable impacts were more likely to remain for subgroups that had demonstrated the strongest impacts in earlier waves (African American children and those who had been in home-based programs). Further research is warranted to help programs devise ways to engage highest-risk families effectively. Nonexperimental analyses showed that school characteristics at grade 5, particularly low school poverty, were positively associated with several outcomes. The proportion of minority students, moderately correlated with poverty, was also associated with some outcomes, in that lower proportions were associated with some positive outcomes. However, when examined within racial/ethnic groups, there was evidence that being in a mixed race school was associated with better outcomes than being in a high- or low-minority concentration school, particularly for African American and Hispanic students. These findings suggest the importance of contemporaneous educational environments on children's functioning, independent of the influence of family demographics and earlier experiences. Furthermore, the combination of having several positive early education experiences birth through age 5 and being in a lower poverty elementary school was associated with better outcomes for African Americans and Hispanics, but less so for whites. These findings underscore not only the importance of early investment, but the need to continue positive educational experiences into the school years.

I. INTRODUCTION

Early Head Start is a two-generation program for low-income families with pregnant women, infants, or toddlers designed to enhance children's development and health and to strengthen family and community partnerships. In 1995 and 1996, the Administration on Children, Youth and Families (ACYF) funded the first 143 programs, revised the Head Start Program Performance Standards to bring Early Head Start under the Head Start umbrella, and created an ongoing national system of training and technical assistance. Early Head Start programs are charged with tailoring their services to meet the needs of low-income pregnant women and families with infants and toddlers in their communities and may select among program options specified in the performance standards (home-based, center-based, combination, and locally designed options).

When authorizing Early Head Start, Congress stipulated that future funding would depend on an evaluation study being conducted and an interim report being submitted in June 2001 and a final report in June 2002 (U.S. Department of Health and Human Services 1998, p. 13). The evaluation, conducted in 17 of the original program sites with 3,001 children and their families, showed that the Early Head Start research programs had statistically significant, modest, favorable impacts (effect sizes mostly in the range of .10 to .20 standard deviations) across a wide range of child and family outcomes by the time children's Early Head Start eligibility ended at age 3 (Administration for Children and Families [ACF] 2002a). The programs' impacts on child and family outcomes were consistent with the substantial impacts the programs had on families' service receipt (ACF 2002a; Love et al. 2005). The overall pattern of impacts, while addressing the overall benefits of the program, obscured differing patterns of impacts across important subgroups. We examined subgroups of children and families based on demographic characteristics as well as subgroups based on program characteristics. The outcomes affected varied for different groups as did the size of impacts across outcomes, with some effect sizes, notably for fully implemented programs offering multiple service options and African American children and families, reaching the .30 to .50 range.

Congress required the evaluation to address the question of overall program effects at age 3 with an experimental design. Another important priority for the evaluation was to provide rich information to help guide the programs' development. Thus, the evaluation was structured to include local evaluation partners who could conduct additional research relevant to their local program and who could help translate research findings from both local and national measures into practice. Local program staff also participated in discussions of the research and helped researchers understand and interpret research results (ACF 2002b). The evaluation also included a thorough implementation study (ACF 2002c). In addition to the impact analyses that were based on the study's experimental design, the evaluation included extensive nonexperimental analyses to provide diverse kinds of evidence that would help program leaders understand not only the program's impacts, but also how the experiences of children and families in Early Head Start programs contributed to those impacts.

Given the potentially promising results of the congressionally mandated evaluation, and in order to look at contributions of experiences post Early Head Start, this study continued following the children and families in the research sample. Additional follow-ups were conducted just prior to children's entry into kindergarten (ACF 2006; Love et al. 2009) and when children were in fifth grade (the focus of the current report). Although the long-term impacts of the first Early Head Start programs have limited relevance to decisions about ongoing funding and operation of Early Head Start (because Early Head Start programs and the context in which they operate have changed in the years since the children and families in the study entered Early Head Start), learning about longer-

term program impacts may provide valuable insights into the possible importance of a broad range of modest impacts sustained through toddlerhood and whether reductions in risk factors and improvements in protective factors cumulate over time to support improved outcomes later on. The long term follow-up allows for the examination of the contributions of experiences post Early Head Start to child and family outcomes.

A. Research Questions

The goals of the grade 5 follow-up were to (1) examine whether Early Head Start's impacts on children and families continued seven years after the end of the program and (2) explore how children's and families' experiences at ages 3 to 5 as well as characteristics of the child's elementary school in fifth grade influence child outcomes and family involvement in school.

Given these goals, the research questions are oriented toward identifying areas that the program may need to focus on in making improvements, identifying subgroups that may merit a special focus in designing those improvements, and identifying additional descriptive and nonexperimental analyses that may help advance understanding of children's and families' experiences after Early Head Start. This report addresses four overarching research questions:

1. Did Early Head Start's effects continue for any specific child and family outcomes when children were in fifth grade?
2. Did Early Head Start's effects continue for specific child and family outcomes within particular subgroups when children were in fifth grade?
3. How did children's preschool and later school experiences, along with their Early Head Start participation, influence their academic outcomes and social-emotional well-being, as well as their parents' parenting and family well-being?
4. How did experiences in preschool and elementary school vary for children within subgroups, and how, along with Early Head Start, were these experiences associated with children's academic outcomes, social-emotional well-being, and their parents' parenting and family well-being?

B. Study Design

At the time that the first Early Head Start programs were funded, ACYF selected 17 programs from across the country to participate in a rigorous, large-scale, random-assignment evaluation. The Early Head Start Research and Evaluation Project (EHSREP) was designed to carry out the recommendation of the Advisory Committee on Services for Families with Infants and Toddlers for a strong research and evaluation component to support continuous improvement within the Early Head Start program and to meet the requirement in the 1994 reauthorization (continued in the 1998 reauthorization) for a national evaluation of the new infant-toddler program. The research programs were located in all regions of the country and in urban and rural settings. Their purposeful selection resulted in a research sample (17 programs and 3,001 families) that reflected the characteristics of all programs funded in 1995 and 1996 (ACYF 2001; ACF 2002a).

Families with a pregnant woman or a child under 12 months who were eligible for Early Head Start and applied to the research programs between 1996 and 1998 were randomly assigned either to the program (treatment) group (members of which were allowed to enroll in Early Head Start), or to the control group (members of which were precluded from enrolling in Early Head Start until age 3,

although they still could receive other services available in the community). The initial evaluation study followed these children and their families until they were 3 years old with an ambitious longitudinal measurement plan to assess the wide range of child and family outcomes that Early Head Start programs may influence.

This report presents estimates of Early Head Start impacts on the study children and families when children were in fifth grade. Sample sizes are likely insufficient to detect smaller-sized impacts across the full range of outcomes targeted by Early Head Start and as a result, we may miss true impacts that are present (that is, we face the probability of a Type II error). We attempt to quantify the issue by calculating minimum detectable effects (MDEs) for each outcome based on the current sample size; as a point of comparison, we also review the magnitude of impacts identified in prior waves. This provides a sense of how likely we would be to detect various effect sizes of significant impacts in prior waves given the current sample size. However, we must also consider the possibility of incorrectly attributing effects to the program (Type I error). Since the mid-1990s, it has become more widely recognized that the probability of incorrectly drawing conclusions about program effectiveness based on statistical significance of several of a larger group of impacts (that is, the probability of a Type I error) is much higher than the 5 percent reflected in an individual statistical test. In this analysis, we did not adjust for multiple comparisons.[6] Although we recognize the increased possibility of Type I error by not adjusting for multiple comparisons, the intent of these exploratory analyses is to inform program practice and guide future research. Thus, the consequences of Type I error are less severe, and examining impact estimates in a more exploratory way without adjustments is appropriate.

In spite of these limitations, the Early Head Start study retains two major strengths that have been its hallmark and minimize systematic bias in the impact estimates: a random assignment design accompanied by sample retention rates even at fifth grade that are highly similar for the program and control groups. In addition, we continue the standard of looking for patterns of impacts over time (that is, at age 3, prekindergarten, and fifth grade) that can provide stronger indications than the grade 5 findings alone of strengths or of areas that might need program improvement and can lead to suggestions for further research. The longitudinal data also provide a wealth of additional information and opportunities for researchers to explore, in nonexperimental ways, associations between early experiences and later outcomes.[7]

Finally, we note that these analyses of longer-term impacts reflect the program as it operated in 1996–2001, not the national program as it is being implemented today.

C. Report Structure

Following a description in Chapter II of the data collected for the fifth grade follow-up, Chapter III presents estimates of program impacts for the full sample and for key subgroups. Chapter III will identify any areas in which Early Head Start may have had an impact when children were in fifth grade, as well as areas in which Early Head Start did not have an impact. This chapter will discuss the implications for program improvement. Impact estimates for subgroups are

[6] For example, if one conducts 50 statistical tests (impacts), we could expect 2.5 to be significant by chance given an individual alpha level of 5 percent, and 5 to be significant with an individual alpha of 10 percent.

[7] For links to earlier project reports and instrumentation, go to http://www.acf.hhs.gov/programs/opre/ehs/ehs_resrch/index.html. For links to the public use data go to http://www.researchconnections.org/childcare/resources/2925.

examined to help develop hypotheses about the reasons underlying the overall impact estimates and to identify groups for which efforts to improve the program may be targeted.

Chapter IV presents the results of descriptive and nonexperimental analyses that further explore the experiences of sample children and families in fifth grade. Descriptive analyses draw on the longitudinal data to examine what happened to children after age 3, focusing especially on their experiences after entering elementary school. Nonexperimental analyses examine relationships between these experiences and outcomes, with important cautions about the limitations of the analyses. This chapter concludes with hypotheses about the reasons for the patterns of impacts that were found and discusses how future research can address these hypotheses.

The appendices present supporting tables, including impacts estimated in alternative ways as part of sensitivity analyses.

II. SAMPLE AND DATA COLLECTED AT FIFTH GRADE

As in the earlier studies with the children and families in the research sample, we collected data using multiple modes and from multiple sources. We conducted interviews with primary caregivers (usually the child's mother), observations of the home environment, direct child assessments, recorded observations of caregiver-child interactions,[8] and—for the first time—conducted interviews with the children.[9] In most of these elements, the grade 5 follow-up study design was similar to earlier phases of the study. Many questions in the parent interview and some measures used in the child assessment were also included in prior rounds.[10]

The fifth-grade follow-up also differs from previous rounds of the study in important ways. The sample of children was reduced (see the Sample section), and we did not collect data directly from children's fathers as was done in a subset of sites in prior rounds. We continued to place emphasis on using measures that were consistent with those from previous rounds of data collection, but with adaptations to be developmentally appropriate for fifth graders, as well as those that had been used in other large scale studies. The need to use developmentally appropriate measures precludes direct comparisons of current findings to those in past waves. We replaced some measures we had historically used with new ones, including replacing the Woodcock-Johnson Achievement Tests with measures from the U.S. Department of Education's Early Childhood Longitudinal Study-Kindergarten Class of 1998–99 (ECLS-K), and using new age-appropriate measures of mother-child interactions for the parent-child observation task. Finally, because children were old enough to answer interviewer questions, we included a child interview.

The remaining portion of this chapter describes the grade 5 sample, response rates, weighting, data collection approaches, and a brief overview of the measures. Further detailed information on all of these topics is available in Appendix A. For the convenience of the reader, we will describe the analytic approaches we undertook in the chapters that contain the results and conclusions of the work.

A. Sample

One major difference from earlier waves is the sample that we approached to participate in the grade 5 follow-up. The original research sample consists of 3,001 children and families; however, for reasons of logistics and cost, we opted to attempt to collect data from a smaller set of 2,701, omitting 300 sample members who had not participated in any of the four prior data collection waves (that is, at 14 months and ages 2, 3, and 5 years). We also did not approach those that we learned had moved out of the United States (n = 89), or were considered a "hard refusal" to earlier bids to participate in the study (n = 47). The working sample at grade 5 was therefore 2,565 families (Figure II.1). See Table A.1 in Appendix A for the sample sizes in subgroups.

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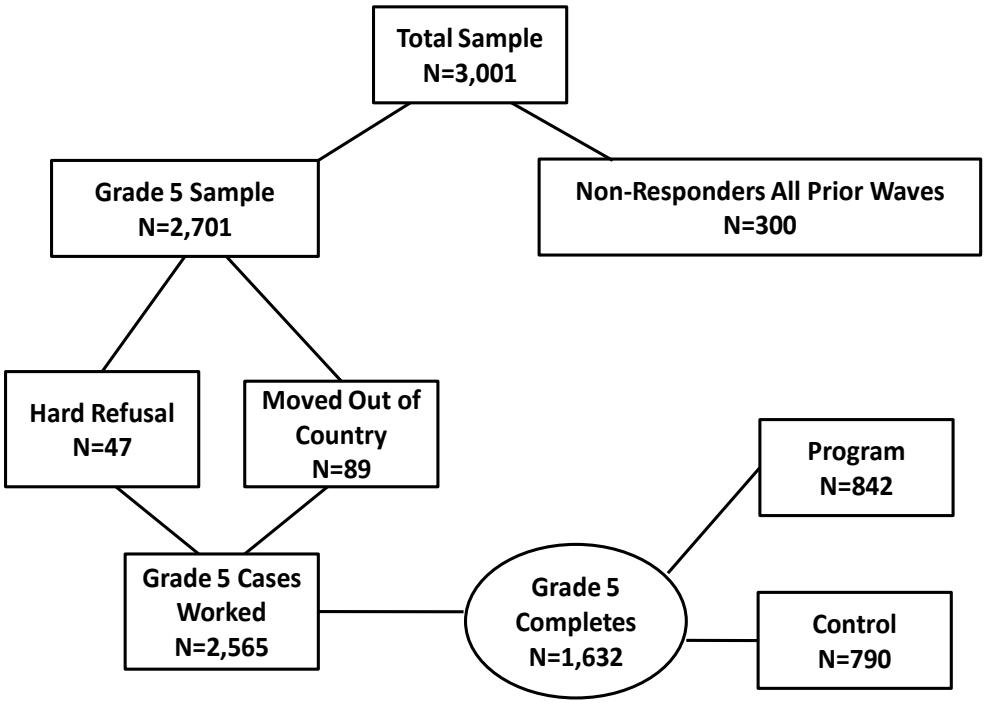
[8] The coding based on the recorded parent-child interactions was not completed in time to be included in this report. We will provide an addendum when those data are available, expected in early 2010.

[9] This report concerns only data collected from the parent and child during the home visit. With funding from the Pew Charitable Trusts we administered questionnaires to be completed by children's fifth-grade teachers when the parent gave us this information and we were able to obtain cooperation from the schools. However, difficulties in gaining school and parent cooperation resulted in our obtaining information about children's achievement and school experiences from a smaller number of their teachers. This information will be provided later in a separate report.

[10] The instruments that were administered in the grade 5 follow-up can be found in the *Grade 5 User's Manual* (West et al. 2009).

Figure II.1 Grade 5 Follow-up Sample



B. Response Rates

Not unexpectedly, response rates were lower in this round of data collection than in previous rounds, due mainly to the amount of time that had elapsed since our last contact with the families when children were about 5 years old. Despite the limitation of a six-year gap between data collection waves, we obtained data from 1,632 sample members, for a response rate of 54.4 percent of the original baseline sample and 66.0 percent of those who had responded at age 5 (prekindergarten).[11] Appendix A shows the disposition of the sample overall, with numbers of respondents by site (Tables A.2 and A.3). Appendix A provides other supporting tables that show characteristics of the sample and response rates over time.

Overall, respondents at grade 5 were similar to the full sample on baseline characteristics. We compared respondents at grade 5 to the entire sample on baseline characteristics and found large differences on two in particular: (1) mothers' education, with respondents at grade 5 more likely to have more than 12 years of schooling, and (2) risk level, with grade 5 respondents more likely to be in the lower risk category (Table A.4, Appendix A). Looking at the sample by program status also showed that program and control group respondents at grade 5 had similar response rates and were well aligned on baseline characteristics. Response rates of the program and control groups slightly favored the program group, with 54.9 and 53.1 percent responding in each group, respectively. Comparing program and control respondents at grade 5 on 43 baseline characteristics without controlling for multiple comparisons showed differences on only 3 of the characteristics (Table A.5). Despite relatively low response rates compared to baseline, it appears the internal consistency of the

[11] Of the 1,632 respondents at grade 5, 1,403 had responded at the prekindergarten wave; 229 grade 5 respondents did not participate at prekindergarten but had participated in an earlier wave. There were 723 respondents at prekindergarten who did not participate in the grade 5 follow-up.

sample has been maintained—the respondents at grade 5 represent the larger sample on most observable measures, and, further, the program and control group similarities are preserved (Carlson 2010).[12] Thus, the main consequence of the lower response rates (and smaller sample size) in this round of follow-up is reduced statistical power for detecting smaller impacts, especially for sample subgroups. We calculated the MDEs for fifth grade outcomes for our current sample and discuss these in the context of the size of earlier impacts.

C. Weighting

For the grade 5 follow-up, we created analysis weights that require either the child assessment or parent interview be complete. The weights sum to the original 3,001 children in both randomization groups in the 17 study sites, regardless of whether we attempted to contact them at grade 5. These weights also sum up to the original totals within site and randomization group. Each weight involved three types of nonresponse adjustments. The first adjustment was to account for the 300 children *not attempted* in grade 5 because we had not obtained any data since baseline. The second adjustment was for *locatability*, to account for the 459 families that were unlocatable in grade 5 plus the 89 families that were thought to have moved outside the United States. The third adjustment was for the 521 who completed neither a *child assessment nor a parent interview* among the located families.[13] As we describe in Chapter III, we conducted sensitivity analyses by calculating impacts both unweighted and weighted.

D. Data Collection Approach

Once we had located sample members, we scheduled a home visit to collect the data. The home visit had four components: (1) the child assessment, (2) the child interview, (3) the observation, and (4) the maternal interview. For the child assessments, the data collector administered the Peabody Picture Vocabulary Test-Third Edition (PPVT-III), the Matrix Reasoning subtest of the Wechsler Intelligence Scale for Children (WISC-IV), and ECLS-K math and reading tests.[14] The second component, the child interview, was administered via computer-assisted personal interviewing.[15]

The third component of the home visit, the observation, consisted first of a recorded mother-child interaction. The data collector gave the mother and child instructions, then turned on the video

[12] However, we do not argue that we can generalize findings based on this sample to the current population of Early Head Start children and families, given the changes that the program has experienced and still is experiencing.

[13] In each of these adjustment steps, we developed a response propensity logistic model starting with the following five independent variables, as well as second- and third-order interaction effects: site, randomization group, race-ethnicity, baseline maternal risk level, and mother's highest grade completed at time of randomization. We retained only those variables that met entry criterion ($p < 0.3$) for the forward selection model or met the retention criterion for the backward selection model ($p < 0.3$), or that were part of a higher order interaction that was significant. After running the model containing the union of these significant variables, those no longer significant at the 0.3 level were dropped to obtain the final model. The inverse of the resulting propensity score was used as the weighting adjustment for that stage. The final step was to do a ratio adjustment to ensure the correct number of children in each site and randomization group.

[14] The test items were presented on an easel, and the data collector entered the child's responses into a computer. The computer scoring took into account any basal, ceiling, or routing rules.

[15] In the final measure of the interview, a question about the child's pubertal development, the child was allowed to provide the answer on a form, place it in an envelope, and seal it before returning it to the data collector.

camera and left the room, returning when the time was up.[16] The second part of the observation was an adaptation of the Homelife observational scales from the Project on Human Development in Chicago Neighborhoods; these scales are an expanded version of the Home Observation for Measurement of the Environment Inventory (HOME) (Caldwell and Bradley 1984). Some were questions that the data collector asked the mother following the mother-child interaction. Other scales consisted of checklist-style items that the data collector completed based on observations of the home environment. These observational items could be completed by the data collector either while the mother-child interaction was being recorded or immediately after the visit.

E. Overview of the Measures

In Table II.1, we summarize all the child outcome measures used at grade 5. A more complete description of the measures used in the study and their psychometrics is provided in Appendix A (Tables A.6–A.9; Table A.7 provides descriptive statistics on each of the outcome measures). Here we list the outcome measures that will be the focus of the remaining chapters. We selected outcome measures based on our research questions and knowledge of impacts of the program at earlier data collection waves. We selected a few subgroups defined by family or program characteristics for examination, again based on knowledge of prior impacts and areas that we judged to be the most fruitful for program improvement. In addition to total scores and subscale scores on standardized measures, we created index variables that examined, for example, cumulative risk and success across multiple domains.

[16] As we noted earlier, the coded maternal-child interaction data were not ready in time for this report. We will submit a brief when those data are available. In this task, the child and parent were given a series of index cards listing topics adolescents and their parents often disagree about. They were instructed to pick their top three areas of disagreement, discuss them, and try to reach some resolution.

Table II.1 Brief Overview of Outcomes

Child Social-Emotional Outcomes	
Child Behavior Checklist for 6–18 Year Old Children (CBCL-6/18)	The CBCL (Achenbach and Rescorla 2001) is a parent-reported measure of child behavioral and emotional problems. Impact analyses focused on three subscales: Internalizing Behavior Problems (comprising the Anxious/Depressed, Withdrawn/ Depressed, and Somatic Complaints subscales), Externalizing Behavior Problems (comprising the Rule-Breaking and Aggressive Behavior subscales), and Attention Problems. The raw scores were also converted to T scores, which were used to determine the clinical cutoffs for constructing the risk and success indices.
Self-Reported Delinquent Behavior	Completed by the child. Items were drawn from Loeber et al. (1991), the National Institute of Child Health and Human Development Study of Early Child Care and Youth Development, or created for this study
Early Childhood Longitudinal Survey–Kindergarten Cohort Self Description Questionnaire (ECLS-K SDQ).	The ECLS-K SDQ is a short, self-reported questionnaire that asks children to rate their perceptions of competence and interests in reading, mathematics, and school in general as well as their popularity with peers and competence in peer relationships. Children also report on their own problem behaviors.
Panel Study of Income Dynamics–Child Development Supplement, Wave 2 (PSID-CDS2) Bullying Scale	The four-item PSID-CDS2 bullying scale asks children to report how often they have been bullied by peers in their school or neighborhood in the past month.
ADD/ADHD	Parents respond to a single question on whether their child had been diagnosed with Attention Deficit Disorder/Attention Deficit Hyperactivity Disorder since first grade.
Social-Emotional Risk Index	This dichotomous composite indicates whether the child is at risk based on five social-emotional outcomes: externalizing behavior, internalizing behavior, attention problems, peer bullying, and delinquent behaviors.
Social-Emotional Success Index	This dichotomous composite defines success as an absence of risk on five social-emotional outcomes: externalizing behavior, internalizing behavior, attention problems, peer bullying, and delinquent behaviors (i.e., the same variables considered for the risk index). Cutoff scores for each outcome were defined either based on T-scores in the publisher's manual, or on the distribution in our sample, depending on the outcome. ECLS-K variables were based on the ECLS-K distribution.
Child Academic Outcomes	
Peabody Picture Vocabulary Test–Third Edition (PPVT-III), English Receptive Vocabulary	The PPVT-III (Dunn and Dunn 1997) is a nationally normed measure of receptive vocabulary.
Wechsler Intelligence Scale for Children–Fourth Edition (WISC-IV), Matrix Reasoning Subscale	The Matrix Reasoning subscale of the WISC-IV (Wechsler 2003) is a direct assessment of children's cognitive abilities.
ECLS-K Reading	The ECLS-K fifth-grade reading assessment included questions in the following content areas: initial understanding, developing interpretation, personal reflection, and critical stance.
ECLS-K Mathematics	The ECLS-K fifth-grade math assessment included questions in the following content areas: number sense, properties, and operations; measurement; geometry and spatial sense; data analysis, statistics, and probability; and patterns, algebra, and functions.

Table II.1 *(continued)*

Retention	Retention is a binary variable to determine whether the child has ever repeated any grades.
Chronic Absenteeism	Absences were based on parent reports to a question asking how often the child had been absent during the current school year. We developed a binary variable indicating chronic absenteeism (child is absent a few times a month or more).
Individualized Education Plan (IEP)	This binary variable indicates whether or not the child had an IEP at the time of the interview.
Academic Success Index	The academic success index is defined by performance on two academic outcomes: ECLS-K Language and Literacy and Mathematics. For the index, children are categorized as successful if they score above the cutoff for both variables.
Ability Success Index	The ability success index is defined by performance on two cognitive outcomes: the PPVT-III and the WISC-IV Matrix Reasoning Subscale. For the index, children are categorized as successful if they score above the cutoff (the normative mean) for both variables.
Child Outcomes: Multidomain Indices	
Cumulative Risk (number of outcomes of 16)	This cumulative risk index is based on the sum of dichotomous indicators for 16 outcomes from multiple domains including social-emotional (bullying by peers, self-reported delinquent behavior, internalizing behavior, externalizing behavior, peer relations, attention problems), academic (math, language/literacy, absences, retention), cognitive ability (PPVT-III, Matrix Reasoning), and health (general health, chronic illness, body mass index (BMI), IEP).
Categorical Risk (low, medium, high)	This risk composite is based on the cumulative risk variable described above.
Cumulative Success	This success composite is based on the sum of five indicators. Four of those—social-emotional success, academic success, ability success—are defined above. The final indicator is peer success, defined as successful self reported peer relations on the SDQ.
Parenting and the Home Environment	
Parent Supervision	A three-item child-reported measure of parental supervision (Stattin and Kerr 2000).
Severity of Discipline Strategies	This composite measures the harshness of discipline strategies parent used in the past year. It is based on five discipline strategies adapted from the Parent-Child Conflict Tactics Scale coded from most to least severe: from spanking (5) to explaining why the behavior is wrong (1).
Family Involvement in School	This composite is the summed score of nine questions to parents about family involvement with the child's school, such as whether the respondent is comfortable visiting the school or talking to the teacher about the child. Higher scores on this variable indicate more involvement.
Children's Books (26 or more)	This binary variable indicates whether the parent reports the child had 26 or more children's books in the home.
Help with Homework	This variable is the mean of two parent-reported items on support for homework: the frequency an adult checks homework and the frequency someone helps the child with homework. Higher scores indicate more frequent help.

Table II.1 *(continued)*

HOME Total Score	This composite is the sum of five subscales measuring the home environment, consisting of parental warmth, parental lack of hostility, parental verbal skills, the internal environment, and the external environment. Higher scores on this measure indicate higher quality of stimulation and support available to a child in the home environment.
Support for Education	The Support for Education index summarizes nine variables that indicate how parents can support education inside the home (e.g., help with homework) and outside the home (e.g., contact school or teacher).
Family Well-Being and Mental Health	
Depressive Symptoms (CES-D)	The Center for Epidemiologic Studies Depression Scale (CES-D) Short Form (Ross et al., 1983) measures symptoms of depression. In the 12-item scale, respondents are asked the number of days in the past week they had a particular symptom (for example, poor appetite, restless sleep). Items were coded on a 4-point scale from 0 = rarely to 3 = most days.
Parent Substance Use	Parents were asked to respond to a single question on whether they have ever used any drugs during the past year.
Parent Alcohol Use	Parents were asked to report the largest number of drinks they had in a single day during the past year. Response categories ranged from 1 = none to 5 = more than 20 drinks.
Parenting Distress (PSI)	The Parenting Stress Index (PSI) Short Form measures the degree of stress in parent-child relationships. The Parenting Distress subscale measures the level of distress the parent is feeling in his or her role as a parent, including a low sense of competence as a parent and stress because of perceived restrictions stemming from parenting.
Number of Moves	Parents were asked to respond to a single question on how many different places child has lived for at least four months or longer since first grade.
Homelessness	Parents were asked to respond to a single question on whether child has ever been homeless since first grade.
Family Conflict (FES)	The Family Environment Scale (FES) measures the social environments of families (Moos and Moos 1976). We measured family conflict, which captures the extent to which acting out and lack of cohesion are characteristics of the family. Parents respond to items on a 4-point scale, with higher scores indicating agreement with statements such as "We fight a lot," and "We sometimes hit each other."
Parent Child Dysfunctional Interaction (PSI)	Parent Child Dysfunctional Interaction is a PSI subscale measuring whether parents perceive that the child does not meet the parent's expectations and whether interactions with the child are not reinforcing the parent. Parents respond to statements such as "Most times, you feel that your child does not like you and does not want to be close to you," and "When you do things for your child you get the feeling that your efforts are not appreciated very much" on a 5-point scale. Higher scores indicate higher levels of parent-child dysfunctional interaction.

Table II.1 *(continued)*

Child Reported Relationship with Mother, with Father	Children were asked to report on their relationship with their mother and father using eight items from the ECLS-K SDQ Parent Relationship Scale. Sample items include "Mother/Father understands me," and "Mother/Father and I spend a lot of time together." Children responded on a 4-point scale, and higher scores indicate better relationship with parents.
Child Exposure to Domestic Violence	Parents responded to a single question on whether child has been a witness to domestic violence in the past year.
Parent Self-Sufficiency	
Household Annual Income	Parents reported annual household income in categories ranging from $5K or less (1) to more than $200K (13). To be consistent with earlier waves, values were recoded to the dollar value equal to the midpoint of each income category.
Income to Needs Ratio	This ratio is equal to reported household income divided by the poverty threshold for a household of that size.
Mother's Highest Education Level	Mothers reported their highest level of education. Categories include less than high school (1); high school or GED (2); some postsecondary education, no degree (3); and associate degree, bachelor's degree, or higher (4).
Mother's Employment Status	Mothers responded to questions on whether they are working for pay and the number of hours per week usually worked. Coded categories include full time (1), part time (2), and not working (3).
Current Welfare Participation	This binary variable indicates family current welfare participation and is based on parent report on receipt of TANF, food stamps, general assistance, or SSI or SSA benefits.

III. IMPACT ANALYSES

The impact analyses presented in this section address two of our overarching research questions:

- Did Early Head Start's impacts continue for any specific child and family outcomes when children were in fifth grade?
- Did Early Head Start's impacts continue for specific child and family outcomes within particular subgroups when children were in fifth grade?

We begin with an overview of our methods. We then present results of our main impact analyses, which included the full sample of children and families, followed by results for key subgroups including program type (center-based, home-based, mixed approach), race/ethnicity (white, African American, Hispanic), and risk group (0–2 risks, 3 risks, 4–5 risks).[17]

A. Methods

Random assignment occurred at the point of eligibility and not when families started receiving services. Hence, program and control group differences yield *combined* impact estimates for those who participated in Early Head Start and those who enrolled but did not participate. An important evaluation goal, however, is to estimate impacts on those who received program services. Estimating impacts for this group is complicated by the fact that a straightforward comparison of the outcomes of program group participants and *all* control group members does not yield the desired impact on participants in the program. Ideally, we would compare the outcomes of program group participants with control group families who would have participated in Early Head Start had they been in the program group. However, we cannot know who these control group families would have been.

We can overcome these complications by applying a standard adjustment that requires only assuming that Early Head Start had no effect on families who enrolled but did not receive Early Head Start services. For these families, the impact per participant in a site can be obtained by dividing the impact per eligible applicant in that site by the site's program group participation rate (Bloom 1984). The estimated global impact per participant across all sites can then be calculated as the average across sites of the estimated impacts per participant.

A crucial issue is how to define a program participant. The key assumption that allows us to estimate impacts for participants is that the outcomes of those in the program group who enrolled but did not receive services would have been the same if they had instead been assigned to the control group (that is, the program had no effect on nonparticipants). Thus, to be confident that this (untestable) assumption holds, we need a conservative definition of a program participant. Therefore, we considered a program group family to be an Early Head Start participant if during the 26 months after random assignment the family received more than one home visit, met with a case manager more than once, enrolled its child in center care for at least two weeks, *or* participated in a group activity. This participation rate was 91 percent for the full program group included in the baseline sample.[18]

[17] Analyses of additional subgroups are also described in Appendix B.

[18] All the impact analyses reported at ages 2 and 3 were analyses of the per-participant impacts, as participant is defined here (ACYF 2001; ACF 2002a).

We used regression procedures to estimate program impacts, for two reasons. First, the regression procedures produce more-precise impact estimates than calculating the difference between unadjusted program and control group means. Second, they can adjust for any differences in the observable characteristics of program and control group members due to random sampling and interview nonresponse. We estimated variants of the following regression model:

$$y = \sum_{j=1}^{17} \alpha_j (S_j * T) + X\beta + \varepsilon$$

where yij is an outcome variable at a specific time point, Sj is an indicator variable equal to 1 if the family is in site j, T is an indicator variable equal to 1 if the family is in the program group, Xs are explanatory variables measured at baseline (that include site indicator variables), ε is a mean zero disturbance term, and αj and β are parameters to be estimated. In this formulation, the estimate of αj represents the regression-adjusted impact estimate for site j; sites are treated as fixed effects. For all analyses, we restricted the minimum sample per site to 10 participants and controls.[19]

Note that the equation above provides the impact estimate for families assigned to the program group, not just those that participated based on the definition laid out above. We used a two-step procedure to estimate impacts per participants. 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 regardless of sample sizes within the sites. Early Head Start services are administered at the site level and differ substantially across programs; thus, estimating impacts within each site is the appropriate level of analysis. Then, we obtained the global impact estimates by taking the simple average of the regression-adjusted impact estimates in each site. The associated t-tests were used to test the statistical significance of the impact estimates.

We included a large number of explanatory variables in the regression models (Table III.1 lists the categories of variables, and Tables A.7 and A.8 in Appendix A provide means). These variables pertain to characteristics and experiences of families and children prior to random assignment. We used two main criteria to select the explanatory variables: (1) they should have some predictive power in the regression models for key outcome variables (to increase the precision of the impact estimates) and (2) they should be predictors of interview nonresponse.[20] In addition to adjustments using the explanatory variables in Table III.1, we adjusted all analyses for child age at the time of the interview.

In the following sections, where we report program effects on child, parenting, and family outcomes and the effects on these outcomes for population subgroups, we present impact results for program participants (sometimes called the effect of treatment on the treated).

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[19] Requiring this minimum sample size per site means that sites falling short of this mark are not included in those models. No sites dropped out of the main sample analyses, but in some cases they did when we estimated outcomes for subgroups. This is a bigger problem for smaller subgroups, and for the risk groups we estimated the impacts pooled across sites (without averaging across ***sites***), and therefore programs with more sample members contributed more to the estimates. Impacts for the risk group pooled in this way are presented in Tables B.1 and B.2 in Appendix B. This form of sensitivity analysis yielded results similar to those obtained by averaging across sites, and therefore we discuss those findings in the body of the report.

[20] The same control variables we used at earlier waves (ages 2, 3, and 5) were used in this wave.

Table III.1 Categories of Explanatory Variables for Regressions

Family and Parent Characteristics
Age of Mother
Race
English-Language Ability
Education Level
Primary Occupation
Living Arrangements
Number of Children in the Household
Poverty Level
Welfare Receipt (AFDC/TANF; Food Stamps; WIC; SSI)
Has Inadequate Resources (Food, Housing, Money, Medical Care, Transportation)
Previously Enrolled in Head Start or Another Child Development Program
Mobility in the Previous Year
Random Assignment Date
Child Characteristics
Age of Focus Child at Random Assignment
Birth Weight Less than 2,500 Grams
Gestational Age
Gender
Evaluation History Risk Categories (Established, Biological/Medical, Environmental)

Source: Head Start Family Information System application and enrollment forms.

We conducted a number of sensitivity tests by estimating impacts using different forms of the models and found that in most cases results were similar under different assumptions. In one sensitivity test, we estimated impacts per eligible applicant (intent-to-treat models) by computing differences in the average outcomes of all program families (regardless of participation) and control group families. This approach yields unbiased estimates of program impacts on the offer of Early Head Start services, because the random assignment design ensures that no systematic differences between program and control group members existed at the point of random assignment except for the opportunity to receive Early Head Start services (also supported by our examination of program-control baseline characteristics in Chapter II). Because the participation rate was fairly high in most sites, the estimated impacts per eligible applicant and the estimated impacts per participant are similar, with mean differences in effect sizes overall and across subgroups ranging between 0.00 and 0.03. Impacts per eligible applicant are available in Appendix B (Tables B.3 to B.10). In another sensitivity test, we estimated all impact analyses weighted for nonresponse; the weights accounted for attrition from the baseline sample of 3,001 participants. The pattern of these results is also consistent with those presented here, though the significance of some of the impacts shifts (Tables B.11 to B.18, Appendix B). One further sensitivity analysis estimated models that did not control for child age at grade 5.[21] We found a few impacts were sensitive to this model specification, with some marginal impacts obtaining statistical significance and others becoming insignificant. We summarize differences in models that do and do not adjust for child age (Table B.19, Appendix B).

To provide further context and to quantify the effect of sample attrition and power, we calculated the MDEs for each of the 49 outcomes for the main sample and for key subgroups. We

[21] There were no program-control differences in the main sample on age at grade 5, and among the program type, race/ethnicity, and risk subgroups, only one comparison reached (marginal) significance.

assumed two different alpha levels (.05 and .10) and power of .50 (meaning that this is the smallest impact that could possibly be detected given the alpha level).[22] For the main sample and subgroups MDEs are discussed in the text and not shown in the tables.

For the main sample and the key subgroups, outcomes and tables are organized in the same way. To provide additional context for interpreting grade 5 impacts, the discussion for each group begins with a review of earlier patterns of impacts over time. We had less confidence when impacts found at grade 5 were inconsistent in direction or inconsistent with earlier impacts. The central impact table for the main sample (Table III.2) presents impacts on 49 outcomes, with child outcomes first, followed by outcomes related to the family and parenting. Child outcomes are organized into three broad categories: Child Social-Emotional Outcomes (11 outcomes), Child Academic Outcomes (10 outcomes), and three Multidomain Indices. Note that the former two categories include a number of composite variables as well. Family and parenting outcomes are organized into the following: Parenting and the Home Environment (9 outcomes), Family Well-Being and Mental Health (11 outcomes), and Parent Self-Sufficiency (5 outcomes). Given 49 comparisons, in the absence of any true program impact, we expect 5 comparisons to be significant by chance using $\alpha = .10$, or 2 to 3 using $\alpha = .05$. Within the larger domains, one significant outcome could be expected by chance. A supplementary impact table (Table III.3) presents results for additional negative social-emotional outcomes measured by subscales of the CBCL. We present findings for key subgroups (program approach, race/ethnicity, and risk) in the same way (Tables III.4 to III.9). Impacts within other subgroups can be found in Appendix B. Descriptive statistics for outcome variables can be found in Tables A.7 and A.8, Appendix A, and an overview of their construction is available in Chapter II (additional detail on variable constructions is provided in Table A.6).

In the impact tables, we present the following statistics:

1. ***The Mean Outcome for Participants in the Program Group.*** This mean was calculated using program group members who participated in Early Head Start (using the definition of participation discussed above). Of the 842 program group members identified at grade 5, 771 (91.6 percent) participated in Early Head Start.
2. ***The Mean Outcome for Control Group Members Who Would Have Been Early Head Start Participants if They Had Instead Been Assigned to the Program Group.*** This mean is not observed, but is estimated as the difference between the program group participant mean and the estimated impact per participant. We sacrifice technical accuracy for simplicity in the text and refer to this mean as the "control group mean."
3. ***The Estimated Impact per Participant.*** As discussed, this impact was obtained by (1) dividing the regression-adjusted impacts per eligible applicant in each site by the program group participation rate in each site and (2) averaging these site-specific impacts across sites.
4. ***The Size of the Impact in Effect Size Units.*** This statistic was calculated as the impact per participant divided by the standard deviation of the outcome variable for the control group.

[22] Power is typically set at 80 percent to denote differences that have a high probability of being detected. In this case we opted to set power at .50 to identify impacts of the smallest size that could possibly be detected with our sample.

5. ***The Significance Level of the Estimated Impact.*** We indicate whether the estimated impact is statistically significant at the 1 percent, 5 percent, or 10 percent level, using a two-tailed test. We indicate marginally significant findings at the 10 percent level because we seek to identify patterns of program effects across the large number of outcomes and subgroups under investigation and thus relax the traditional 5 percent significance level threshold.[23]

We estimated subgroup impacts by averaging site level impacts across sites where there were at least 10 program and 10 control families in the subgroup. We calculated chi-square statistics to assess whether the differences in impacts across levels of the subgroup were statistically significant. If the chi-square was significant, we indicate this with the appropriate symbol after the outcome variable label in the stem of the table.

B. Main Impacts

At age 3, at the end of the program, we found modest sized impacts across all domains of child outcomes assessed, including health, cognitive, language, and social-emotional outcomes, as well as for many parent outcomes, including parenting behaviors during play, discipline techniques, support for children's learning and development, and parent well-being and self-sufficiency (effect sizes were concentrated in the .09 to .20 range). At the time of the prekindergarten assessment, two years after the end of the program, impacts were sustained in the areas of children's social-emotional development as well as for several parent outcomes including support for children's learning and parent well-being (effect sizes in the .08 to .21 range).

Table III.2 shows impact estimates on 49 outcomes within child and family domains for the full sample of 1,632 respondents. One of the impacts is statistically significant at the .10 level. Across all outcomes, most of the observed effect sizes are .05 or smaller; in comparison, the MDEs are as small as .08 with most in the .09 to .13 range whether the given alpha is .05 or .10 (not shown). Thus, we are unable to detect impacts smaller than about .08 to .10 for the full sample. We note that in the earlier waves of the study (ages 3 and 5), effect sizes for significant impacts were about this size or larger (most in the range of .10 to .20 for the full sample). However it may not be warranted to expect impacts of the same size at this point.

Focusing first on child social-emotional outcomes, only one is statistically significant. Participants in Early Head Start had higher levels of social-emotional success—that is, absence of risk—see Table II.1 (effect size (ES) = 0.10, $p < .10$). For a discussion of impacts on additional social-emotional outcomes measured by CBCL subscales, see Box III.1. Thus, the only remaining impact for children is in a domain where impacts were seen at the prekindergarten follow-up; however, impacts in other domains that were present at age 5 were no longer present at grade 5.

We found no statistically significant impacts on academic outcomes, and none of the estimated impacts on multidomain indices of child outcomes or parenting and family outcomes are statistically significant.

[23] We used a two-tailed test because it was not reasonable to assume a priori that Early Head Start would have only beneficial impacts on all outcomes, given that control group families could obtain other services in the community. The convention used throughout the report is that + indicates $p < .10$, * indicates $p < .05$, and ** indicates $p < .01$.

Box III.1: Impacts on Selected Child Negative Social-Emotional Outcomes at Grade 5, Main Sample

Table III.3 presents results of analyses using additional CBCL subscales. Anxious/Depressed, Withdrawn/Depressed, and Somatic Complaints comprise the internalizing scale, and Aggressive Behavior and Rule-Breaking Behavior comprise the externalizing scale. Parents reported that Early Head Start participants, on average, were less anxious or depressed than comparison group members (ES = −0.09, $p < .10$).

C. Variations in Impacts by Program Approach

For the analysis of impacts by program approach, we divided programs into three groups on the basis of their program approaches in 1997 (ACF 2002c): center-based (four programs), home-based (seven programs), and mixed-approach (six programs). Of the 1,632 children and families in the sample, 346 (21.2 percent) came from center-based programs, 749 (45.9 percent) came from home-based programs, and 537 (32.9 percent) came from mixed-approach programs. Because the three approaches offer different configurations of services focused on enhancing different child outcomes through different pathways, we might expect differences in the pattern of impacts by approach.[24] Table III.4 presents impact estimates for the program-approach subgroups.

In earlier waves of data collection, we found that the pattern of impacts varied across different approaches to service delivery. For example, home-based programs tended to have more impacts on parents than on children, and impacts were sustained two years after the end of the program, especially in the domains of children's social-emotional development, approaches toward learning, parenting and the home environment, and family income. Mediated analysis showed that earlier impacts on parents predicted later impacts on children's social-emotional outcomes. At age 3, center-based programs had few impacts, and these were mostly on children and were not sustained by age 5, two years after the program ended. While the program was still in progress, mixed-approach programs that offered both home- and center-based services had the greatest impacts across child and parent outcomes, but this broad pattern of impacts was not sustained by age 5.

In the earlier waves of data collection, significant impacts for program-approach subgroups had effect sizes in the range of about .14 to .30. The MDEs in subgroups of the current grade 5 sample are also within this range (center-based programs: .19 to .44; home-based programs: .10 to .17; mixed-approach programs: .14 to .24, respectively).[25] Thus, impacts at grade 5 would need to be comparable in magnitude to those found at earlier waves to be detected with the current sample.

1. Center-Based Programs

Children who participated in center-based programs exhibited greater social-emotional success (ES = 0.28, $p < .10$) and were less likely to be retained a grade in school than children who did not participate (ES = −0.32, $p < .05$). At the parent/family level, we identified two significant impacts, but they both favored the control group. Relative to their counterparts in the control group, center-based Early Head Start participants reported higher levels of parenting distress (ES = 0.34, $p < .05$) and higher levels of parent-child dysfunctional interaction (ES = 0.34, $p < .05$).

[24] Programs following a center-based model attempt to affect child development directly by providing developmentally appropriate care; home-based models attempt to affect child development by enhancing parenting and the parent-child relationship. Mixed-approach models offer both approaches.

[25] Reported MDEs assume power of .50 and alpha of .10.

2. Home-Based Programs

Children in home-based programs were less likely to have ADD/ADHD (according to their parents) relative to children in the control group (ES = −0.14, $p < .10$). Parents in the participant group reported fewer depressive symptoms (ES = −0.13, $p < .10$), fewer household moves (ES = −0.15, $p < .05$), lower family conflict (ES = −0.15, $p < .10$), and higher family incomes (ES = 0.12, $p < .10$) than parents in the control group.

3. Mixed-Approach Programs

There were no significant impacts on child outcomes among participants from mixed-approach programs, but three impacts on parenting and family-level outcomes were statistically significant. Early Head Start participants were more involved in their children's schools (ES = 0.20, $p < .10$), reported lower levels of parenting distress (ES = −0.19, $p < .10$), and lower levels of current welfare participation (ES = −0.18, $p < .10$).

Box III.2: Impacts on Selected Child Negative Social-Emotional Outcomes at Grade 5, by Program Approach

Table III.5 breaks the CBCL into its individual subscales and compares outcomes for participants and control group members in center-based, home-based, and mixed-approach programs. In home-based programs only, Early Head Start participants reported lower levels of anxious/depressed behavior than control group members (ES = −0.15, $p < .10$). Though one significant impact emerged among center-based programs, it favored control group members (social problems, ES = 0.26, $p < .10$). No significant impacts on outcomes measured by CBCL subscales emerged in mixed-approach programs.

D. Variations in Impacts by Child and Family Characteristics

Beyond examining impacts overall and by program type, it is important to look at variations in impacts among key subgroups of families. For whom did Early Head Start make a significant difference in outcomes? And how did the impacts differ among families? Variations in impacts might provide insights into how the programs influenced children and families with different characteristics.

Program impacts at earlier ages varied by the race/ethnicity of the families (African American, white, and Hispanic). African American children had better social-emotional development and language and literacy outcomes and their parents displayed more supportive and fewer negative parenting behaviors through age 5, two years after the end of the program. While in the program, impacts for Hispanic children and families tended to be in the realms of parent support for learning and parent self-sufficiency activities. These impacts were sustained two years after the end of the program when children were entering kindergarten, and new impacts emerged for children's approaches toward learning and Spanish vocabulary. Impacts for white children and parents were fewer, although at both ages 3 and 5, those children who had received Early Head Start services were more likely to have received an Individualized Education Plan.

Effect sizes of significant impacts across race/ethnicity subgroups at earlier waves were relatively large (.18 to .48 at ages 3 and 5). The MDEs for the current sample are also within this

range (white families: .11 to .21; African American families: .16 to .40; Hispanic families: .19 to .38).[26]

1. Subgroup Impacts: Race/Ethnicity

Subgroup analyses were conducted for three racial/ethnic groups: white, African American, and Hispanic. Of the 1,632 children and families in the sample, 620 (38.0 percent) are white, 562 (34.4 percent) are African American, and 353 (21.6 percent) are Hispanic; the remaining 68 (4.2 percent) are of another race or ethnicity. Impacts may differ among racial/ethnic groups because of cultural differences affecting families' receptiveness to formal support services, and in the case of some Hispanic families, language barriers that may interfere with receipt of services. The impacts may also differ because preexisting cultural practices or attitudes related to parenting or child development may interact in unique ways with program services. Further, as addressed to a greater degree in Chapter IV of this report, experiences since Early Head Start ended may differ by race/ethnicity as well.

Table III.6 shows impacts for all three groups. The pattern of impacts is consistent with those found in prior rounds in that impacts are stronger for African American participants than white or Hispanic participants, though for all groups few of the impacts reach statistical significance.

African Americans. Eight outcomes reached statistical significance for African Americans. First, at the child level, participation in Early Head Start improved three social-emotional outcomes. Parents of children who participated in Early Head Start reported lower levels of externalizing behavior (ES = −0.26; $p < .05$) and attention problems (ES = −0.22, $p < .05$) than parents with children in the control group. For a discussion of impacts on CBCL subscales, see Box III.3. African American children in the program group also reported lower levels of bullying by peers than children in the control group (ES = −0.21, $p < .10$). There were no significant impacts on academic outcomes or the multidomain indices.

Five of the impacts on parenting and family level outcomes were significant. African American parents who participated in Early Head Start were more involved in their children's schools (ES = 0.37, $p < .01$) and showed higher levels of support for education within the home (ES = 0.19, $p < .10$) than families in the control group. In terms of family well-being and mental health, African American parents in the participant group also reported fewer depressive symptoms (ES = −0.20, $p < .10$), lower levels of alcohol use (ES = −0.34, $p < .01$), and fewer moves (ES = −0.21, $p < .10$).

Whites. Among whites, five impacts reached statistical significance at the 0.10 level. Two of those impacts were on child outcomes. Parent-reported externalizing behavior was lower for program group than control group members (ES = −0.17; $p < .10$), and Matrix Reasoning scores were higher for program group members (ES = 0.18, $p < .10$) than control group members. Of the impacts estimated on parenting and family-level outcomes, three were statistically significant. Families that participated in Early Head Start reported lower parenting distress (ES = −0.18, $p < .10$), less family conflict (ES = −0.21, $p < .10$), and lower welfare participation (ES = −0.17, $p < .10$).

Hispanics. For Hispanics, only one of the estimated impacts was statistically significant. Early Head Start participation had a positive impact on mother's educational attainment (ES = 0.22, $p < .10$).

[26] Reported MDEs assume power of .50 and alpha of .10.

Box III.3: Impacts on Selected Child Negative Social-Emotional Outcomes at Grade 5, by Race/Ethnicity

Table III.7 breaks the CBCL into its individual subscales, and results are generally consistent with the summary scales. For African American children, parents report Early Head Start participants were less aggressive (ES = −0.24, $p < .05$) or anxious and depressed (ES = −0.20, $p < .05$) and showed fewer rule-breaking behaviors (ES = −0.25, $p < .05$), social problems (ES = −0.22, $p < .05$), or thought problems (ES = −0.16, $p < .10$). Among whites, parents report that Early Head Start participants engaged in less rule-breaking behavior than those in the control group (ES = −0.16, $p < .10$). White parents also report improvements in anxiousness and depression (ES = −0.19, $p < .10$). No significant impacts on outcomes measured by CBCL subscales emerged among Hispanics.

2. Subgroup Impacts: Risk Group

The families whom Early Head Start serves are all at risk to some degree because of their low incomes. However, families facing many risks usually pose difficult challenges for early intervention and family support programs, and this was true for the Early Head Start research programs as well. For our analyses, we considered five demographic risk factors in addition to income (and whatever other family circumstances may not have been measured). These were (1) being a single parent, (2) receiving public assistance, (3) being neither employed nor in school or job training, (4) being a teenage parent, and (5) lacking a high school diploma or GED. Families were considered low risk (0–2 risks), medium risk (3 risks), or high risk (4–5 risks). Of the 1,632 children and families in the sample, 721 (44.2 percent) were considered low risk, 459 (28.1 percent) moderate risk, and 348 (21.3 percent) high risk. Table III.8 reports impacts by risk status and Box III.4 describes impacts on the CBCL by risk status.

Over time, positive impacts have been more consistent for the moderate-risk group than for the low- or high-risk groups. While in the program, Early Head Start had positive impacts for families at moderate risk in the areas of children's language and cognitive development, parent and child behaviors during play interactions, parent support for learning, and parent well-being and self-sufficiency. Two years after the end of the program, sustained impacts were seen for parent support for learning and parent well-being and new impacts emerged for child social-emotional development. Although impacts were fewer, the low-risk group also appeared to benefit from Early Head Start. While in the program, positive impacts for low-risk families were seen in the areas of the parent-child relationship, child immunizations, and child receiving an Individualized Education Plan, the last of which was sustained two years after the end of the program. The pattern for high-risk families has been less consistent over time. While in the program, it appeared that this group of children and families did not benefit from the program. In fact, there was a suggestion (trend) that the program had a negative impact on children's vocabulary at age 3. At age 5, a consistent pattern of positive impacts emerged across several family risk factors and there was also a positive impact for children's approaches toward learning. However, there was a negative impact on the children's academic skills, specifically identification of letters.

Effect sizes of significant impacts within risk subgroups at earlier waves ranged between .09 to .42 at age 3 and age 5. The MDEs detectable in subgroups with the current sample are approximately in this range, with larger MDEs in smaller subgroups (low-risk families: .11 to .15; moderate-risk families: .18 to .30; high-risk families: .21 to .37).[27]

[27] Reported MDEs assume power of .50 and alpha of .10.

Lowest Risk. For children in families experiencing a lower level of risk, three of the estimated impacts were statistically significant, one of which favored the control group. Early Head Start participants scored higher on the ECLS-K reading test (ES = 0.13, $p < .10$) and on Matrix Reasoning (ES = 0.15, $p < .10$) than children in the control group. At the parent/family level, Early Head Start parents were less likely than control group parents to report having at least 26 books in the home (ES = −0.17, $p < .05$).

Box III.4: Impacts on Selected Child Negative Social-Emotional Outcomes at Grade 5, by Risk Status

Table III.9 breaks the CBCL into its individual subscales for families in the low-risk, moderate-risk, and high-risk subgroups. No significant impacts on outcomes measured by CBCL subscales emerged among children in the low- or high-risk groups. For the medium-risk group, parents reported less anxious/depressed behavior for children who participated in Early Head Start (ES = −0.27, $p < .05$).

Moderate Risk. For the moderate-risk group, five estimated impacts were statistically significant. At the child level, two of the three significant impacts favored the participant group. For social-emotional outcomes, internalizing scores on the CBCL were lower for the program group than control group (ES = −0.27, $p < .10$). The estimated impacts on mathematics achievement (ES = −0.22, $p < .10$) and an ability index reflecting scores on both the PPVT-III and Matrix Reasoning (ES = −0.27, $p < .10$) favored the control group. On the other hand, Early Head Start parents in the medium-risk group reported lower levels of parenting distress (ES = −0.28, $p < .05$) and higher levels of maternal education (ES = 0.21, $p < .10$) than parents in the control group.

Highest Risk. Finally, for children in the highest-risk group, six impacts were statistically significant, all of which were at the child level and all of which favored the control group. Children in the program group scored significantly lower than children in the control group on the PPVT-III (ES = −0.21, $p < .10$) and the mathematics test (ES = −0.33, $p < .05$) and had lower scores on the academic success index (ES = −0.29, $p < .05$). Parents reports indicated that chronic absenteeism was higher in the program group than the control group (ES = 0.37, $p < .10$). Children in the program group also scored higher on the cumulative risk index (ES = 0.35, $p < .10$) and lower on the cumulative success index (ES = −0.31, $p < .05$) than children in the control group. There were no significant impacts on parenting and family-level outcomes in the highest-risk group. [28, 29]

[28] Relative to other subgroups in our sample, the high-risk group experienced high attrition over time. Defining a respondent as a case with a complete parent interview or child assessment, 71 percent of the high-risk group did not respond at one or more waves, and 13 percent did not respond at any wave of the follow-up. In light of this level of attrition, we explored the possibility that changes in the sample could be contributing to the change in the pattern of outcomes over time; at grade 5, all significant impacts are negative, but at prekindergarten, four of five significant impacts were positive (approaches to learning, speech problems, parent supportiveness during play, alcohol or drug use in the household) (Love et al. in preparation). First, we conducted supplementary nonresponse analyses. Specifically, we compared baseline characteristics of respondents at grade 5 to (1) the full sample at baseline and (2) respondents at the prekindergarten wave, focusing only on those in the high-risk subgroup. In both cases, characteristics did not differ over time for either the combined group or for the program and control groups separately. We also explored the possibility that the respondents at grade 5 were simply different from respondents at the age 5 wave. Among those responding at either grade 5 or age 5, 56 percent responded at both waves. For the moderate- and low-risk groups, the percentages are 59 percent and 67 percent, respectively.

[29] We conducted numerous additional sensitivity tests to determine the robustness of findings to different estimation approaches and samples. First, focusing on the group of respondents present at both age 5 and grade 5 (N = 323), we reran impacts from both waves, doing so both by weighting sites equally and by pooling across sites, Next we reran impacts for the group of 306 respondents who were present at all three of the age 3, 5, and grade 5 waves to

E. Conclusions

The impact analyses show that for the overall sample, the positive effects of Early Head Start for children and parents did not continue when children were in fifth grade. In the analyses of the full sample, no estimated impacts were significant at the $p < .05$ level and only one was significant at the trend level. The one remaining positive impact for children was in the social-emotional domain, where sustained impacts were found at age 5, two years after the end of the program. It appears that the modest impacts across multiple domains that were observed in earlier waves of follow-up did not persist by the time children were in fifth grade. For the most part, examining MDEs for the current sample showed that detectable effects were roughly in the range of those found in earlier waves; however if we expect program-control differences to attenuate over time, then smaller impacts would not be detectable.

We found some evidence suggesting that for subgroups in which earlier impacts were larger, impacts were more likely to be significant as children got older. In previous waves of follow-up, the Early Head Start programs had the strongest impacts on African American children, with positive effects noted on social-emotional development, receptive vocabulary, and several aspects of parenting and the home environment. At those earlier waves, we found significant impacts on a larger number of outcomes, and the effect sizes tended to be larger for this subgroup (ranging from about .10 to .48). When African American children were in fifth grade, we found more significant impacts in more domains than for other racial/ethnic groups. In many cases, the effects that remained when children were in fifth grade are consistent with the patterns of impacts found in earlier waves of follow-up. For Hispanics, the one remaining positive impact was for parent self-sufficiency, where earlier positive impacts had been found at ages 3 and 5.

In the subgroup of home-based programs, for which relatively stronger favorable impacts were found when children were entering kindergarten (primarily in the areas of child social-emotional development, approaches to learning, parenting and the home environment, and parent self-sufficiency), it appears that favorable impacts may have continued for program group families in the areas of family well-being and mental health and economic self-sufficiency.

The impact evaluation results continue to suggest that program improvement efforts need to focus on children from the highest-risk families. The unfavorable impacts at grade 5 on academic outcomes are part of a pattern of weak but consistently unfavorable impacts on academic outcomes over time among the highest-risk families. It appears most likely that this pattern reflects difficulties implementing Early Head Start with this subgroup.

In other subgroups for which the estimated impacts in earlier waves of follow-up showed weaker patterns of favorable results, we found very few significant impacts when children were in fifth grade, and patterns of impacts over time were weaker or inconsistent in direction.

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further explore whether the group present at all points in time differed from the group present at any given point, and finally ran impacts that relaxed the requirement for 10 program and control families per site to 6. The latter approach allows additional sites that were present in the prekindergarten impacts to enter the grade 5 estimates and thus tests the hypothesis that site specific differences are accounting for the negative impacts at grade 5. Regardless of approach, we found similar patterns of effects. Although we cannot explain why we found negative impacts for the highest-risk group, they are robust to multiple different estimation approaches.

Table III.2 Impacts on Child and Family Outcomes at Grade 5

Outcome	Program-Control Differences, Full Sample			
	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
Child Social-Emotional Outcomes				
CBCL Internalizing Behavior	5.5	5.8	-0.3	-0.05
CBCL Externalizing Behavior	7.7	8.0	-0.3	-0.04
CBCL Attention Problems	3.9	4.1	-0.2	-0.06
Self-Reported Delinquent Behavior	1.5	1.5	0.0	0.02
ECLS-K SDQ Anger/Distractibility	2.1	2.1	0.0	0.01
ECLS-K SDQ Sad/Lonely/Anxious	2.3	2.3	0.0	0.02
ECLS-K SDQ Peer Relations	3.1	3.1	0.0	-0.03
Self-Reported Bullying by Peers	6.7	6.8	-0.1	-0.02
ADD/ADHD since First Grade (parent report)	14.7	15.1	-0.4	-0.01
Social-Emotional Risk Index	44.4	47.4	-3.0	-0.06
Social-Emotional Success Index	47.2	42.1	5.1+	0.10
Child Academic Outcomes				
English Receptive Vocabulary (PPVT-III)	94.1	93.6	0.5	0.03
PPVT-III Standard Score < 85	28.7	29.4	-0.7	-0.02
Matrix Reasoning (WISC)	8.5	8.4	0.1	0.03
ECLS-K Reading	128.4	126.9	1.5	0.05
ECLS-K Mathematics	8.3	8.5	-0.3	-0.05
Retention (parent report)	13.2	14.0	-0.8	-0.02
Chronic Absenteeism (parent report)	11.3	9.0	2.3	0.08
Child Has IEP (parent report)	15.3	17.4	-2.1	-0.06
Academic Success Index	26.8	26.9	-0.1	0.00
Ability Success Index	21.1	21.3	-0.3	-0.01
Child Outcomes: Multidomain Indices				
Cumulative Risk (number of outcomes of 16)[g]	3.4	3.4	0.0	0.01
Categorical Risk (low, medium, high)	1.3	1.3	0.0	0.04
Cumulative Success (number of domains of 5)[h]	2.2	2.2	0.0	-0.01
Parenting and the Home Environment				
Parent Supervision	3.2	3.2	0.0	0.03
Severity of Discipline Strategies	3.8	3.8	0.0	0.02
Family Involvement in School	36.6	36.5	0.2	0.03
Children's Books (26 or more)	57.0	60.5	-3.5	-0.07
Help with Homework	3.3	3.3	0.0	0.06
HOME Total Score	27.1	27.2	-0.1	-0.02
Total Support for Education	-0.1	0.0	0.0	-0.01
Support for Education, Internal to the Home	0.1	0.0	0.1	0.02
Support for Education, External to the Home	-0.1	0.0	-0.1	-0.03
Family Well-Being and Mental Health				
Depressive Symptoms CES-D (count)	7.0	7.3	-0.4	-0.05
Parent Substance Use	7.8	7.9	-0.1	0.00
Parent Alcohol Use	0.7	0.7	0.0	-0.02
Parenting Distress (PSI)	8.4	8.4	0.0	-0.01
Number of Moves	2.3	2.4	-0.1	-0.07
Homelessness	5.7	6.0	-0.3	-0.01
Family Conflict (FES)	1.4	1.4	0.0	-0.08
Parent-Child Dysfunctional Interaction (PSI)	9.7	9.7	0.0	0.00
Child-Reported Relationship with Mother	3.6	3.6	0.0	-0.02
Child-Reported Relationship with Father	3.5	3.4	0.0	0.09
Child Exposure to Domestic Violence	5.3	5.9	-0.6	-0.02

Table III.2 *(continued)*

Outcome	Program-Control Differences, Full Sample			
	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
Parent Self-Sufficiency				
Household Annual Income (continuous)	36111.6	35477.6	634.0	0.02
Income-to-Needs Ratio (continuous)	1.6	1.5	0.0	0.02
Mother's Highest Educational Level	2.5	2.5	0.0	-0.01
Mother's Employment Status	1.8	1.8	-0.1	-0.06
Current Welfare Participation	43.7	46.7	-3.0	-0.06
Sample Size	**437-765**	**468-857**		

Source: Parent interviews, interviewer observations, and child assessments conducted when children were in grade 5. CBCL = Child Behavior Check List; ADD/ADHD = Attention Deficit Disorder/Attention Deficit Hyperactivity Disorder; ECLS-K = Early Childhood Longitudinal Study-Kindergarten Class of 1998-99; SDQ = Self Description Questionnaire; PPVT-III = Peabody Picture Vocabulary Test-Third Edition; HOME = Home Observation for Measurement of the Environment; FES = Shortened Family Environment Scale; PSI = Parenting Stress Index-Short Form.

Note: All impact estimates were calculated using regression models in which each site was weighted equally. Psychometric information on specific outcome measures, including descriptive statistics, is available in Appendix A.

[a]Program group includes all families assigned to Early Head Start who received more than one home visit, met with a case manager more than once, enrolled their children in center care for at least two weeks, or participated in a group activity during the 26 months after random assignment. Thus, impacts should be interpreted as the effect of receiving treatment.

[b]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had been assigned to the program group instead. This unobserved mean was estimated as the difference between the program group mean for participants and the impact per participant.

[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 all program and control group members.

[d]The effect size was calculated by dividing the estimated impact by the standard deviation of the outcome measure for the control group.

[e]Minimum detectable effect (MDE) for an impact with $\alpha = .05$ and power $(1-\beta) = 0.5$ (indicating this is the smallest impact with a possibility of detection given the alpha).

[f]Minimum detectable effect (MDE) for an impact with $\alpha = .10$ and power $(1-\beta) = 0.5$ (indicating this is the smallest impact with a possibility of detection given the alpha).

[g]This cumulative risk index is based on the sum of 16 outcomes from multiple domains including social-emotional (bullying by peers, self-reported delinquent behavior, internalizing behavior, externalizing behavior, peer relations, attention problems), academic (math, language/literacy, absences, retention), cognitive ability (PPVT-III, Matrix Reasoning), and health (general health, chronic illness, body mass index (BMI),IEP).

[h]This cumulative success index is based on the sum of success indices from five domains including social-emotional, peer relations, academic, retention/absence, and cognitive ability. Each domain-specific index is equal to 1 if success is present and 0 if absent.

$+p < .10$, $*p < .05$, $**p < .0$.

Table III.3 Impacts on Child Negative Social-Emotional Outcomes at Grade 5

Outcome	Program-Control Differences, Full Sample			
	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
CBCL Aggressive Behavior	5.5	5.6	-0.1	-0.02
CBCL Rule-Breaking Behavior	2.2	2.3	-0.2	-0.06
CBCL Social Problems	2.6	2.6	0.0	-0.01
CBCL Anxious/Depressed	2.8	3.1	-0.3+	-0.09
CBCL Withdrawn/Depressed	1.6	1.6	0.0	-0.01
CBCL Somatic Complaints	1.0	1.0	0.0	0.00
CBCL Thought Problems	2.1	2.1	-0.1	-0.02
Sample Size	**765**	**857**		

Source: Parent interviews conducted when children were in grade 5. CBCL = Child Behavior Check List.

Note: All impact estimates were calculated using regression models in which each site was weighted equally. Psychometric information on specific outcome measures, including descriptive statistics is available in Appendix A.

[a]Program group includes all families assigned to Early Head Start who received more than one home visit, met with a case manager more than once, enrolled their children in center care for at least two weeks, or participated in a group activity during the 26 months after random assignment. Thus, impacts should be interpreted as the effect of receiving treatment.

[b]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had been assigned to the program group instead. This unobserved mean was estimated as the difference between the program group mean for participants and the impact per participant.

[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 all program and control group members.

[d]The effect size was calculated by dividing the estimated impact by the standard deviation of the outcome measure for the control group.

+p < .10, *p < .05, **p < .01.

Table III.4 Impacts on Child and Family Outcomes at Grade 5, by Program Type

Outcome	Center-Based				Home-Based				Mixed-Approach			
	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
Child Social-Emotional Outcomes												
CBCL Internalizing Behavior	4.5	4.9	-0.4	-0.07	6.2	6.8	-0.7	-0.11	5.1	5.4	-0.2	-0.04
CBCL Externalizing Behavior	7.2	7.0	0.2	0.03	8.2	9.0	-0.9	-0.11	7.1	7.6	-0.5	-0.07
CBCL Attention Problems	3.5	3.7	-0.3	-0.07	4.1	4.6	-0.5	-0.12	3.7	3.9	-0.3	-0.07
Self-Reported Delinquent Behavior	1.5	1.4	0.1	0.05	1.6	1.6	0.0	0.01	1.4	1.5	-0.1	-0.07
ECLS-K SDQ Anger/Distractibility	2.0	2.0	0.0	-0.05	2.2	2.1	0.0	0.04	2.1	2.1	0.0	-0.02
ECLS-K SDQ Sad/Lonely/Anxious	2.3	2.2	0.0	0.03	2.3	2.3	0.0	0.00	2.3	2.3	0.0	-0.01
ECLS-K SDQ Peer Relations	3.1	3.1	-0.1	-0.10	3.1	3.2	-0.1	-0.10	3.1	3.1	0.0	-0.03
Self-Reported Bullying by Peers	6.8	6.3	0.4	0.16	6.8	7.0	-0.2	-0.06	6.7	6.8	0.0	-0.01
ADD/ADHD since First Grade (parent report)+	11.9	14.1	-2.2	-0.06	12.6	17.6	-5.0+	-0.14	18.7	13.2	5.5	0.15
Social-Emotional Risk Index	36.4	41.0	-4.6	-0.09	50.5	53.5	-3.0	-0.06	43.3	44.0	-0.7	-0.01
Social-Emotional Success Index	58.0	44.1	14.0+	0.28	42.3	36.8	5.5	0.11	45.9	46.4	-0.5	-0.01
Child Academic Outcomes												
English Receptive Vocabulary (PPVT-III)	93.0	90.3	2.7	0.16	93.9	94.4	-0.5	-0.03	95.0	94.7	0.3	0.02
PPVT-III Standard Score < 85	30.9	38.8	-7.9	-0.17	28.1	28.4	-0.3	-0.01	27.8	24.4	3.4	0.08
Matrix Reasoning (WISC)	8.6	8.3	0.3	0.08	8.3	8.2	0.1	0.02	8.8	8.7	0.1	0.03
ECLS-K Reading	129.3	123.6	5.6	0.20	128.9	128.1	0.8	0.03	128.3	126.2	2.1	0.08
ECLS-K Mathematics	8.3	7.9	0.4	0.09	8.2	8.4	-0.2	-0.04	8.3	8.9	-0.6	-0.12
Retention (parent report)+	8.3	19.2	-10.9*	-0.32	13.2	11.8	1.4	0.04	16.3	13.0	3.3	0.10
Chronic Absenteeism (parent report)	15.6	7.6	8.0	0.28	10.7	9.6	1.1	0.04	10.7	8.6	2.0	0.07
Child Has IEP (parent Report)	12.1	17.4	-5.3	-0.14	16.5	14.7	1.8	0.05	16.0	21.0	-5.0	-0.13
Academic Success Index	28.8	20.5	8.3	0.19	28.1	25.7	2.4	0.05	25.6	31.2	-5.6	-0.13
Ability Success Index	15.4	17.5	-2.1	-0.05	21.3	21.9	-0.5	-0.01	24.6	23.0	1.6	0.04
Child Outcomes: Multidomain Indices												
Cumulative Risk (number of outcomes of 16)[e]	3.4	3.6	-0.2	-0.07	3.4	3.4	0.0	-0.01	3.3	3.3	0.1	0.04
Categorical Risk (low, medium, high)	1.3	1.4	-0.1	-0.12	1.3	1.3	0.0	-0.01	1.4	1.3	0.1	0.15
Cumulative Success (number of domains of 5)[f]	2.3	2.1	0.2	0.15	2.1	2.2	0.0	-0.03	2.2	2.4	-0.2	-0.14
Parenting and the Home Environment												
Parent Supervision	3.2	3.2	0.0	0.05	3.2	3.2	0.0	-0.02	3.2	3.2	0.0	0.03
Severity of Discipline Strategies+	4.0	3.7	0.3	0.25	3.9	3.8	0.1	0.08	3.7	3.8	-0.2	-0.14
Family Involvement in School	36.1	36.9	-0.8	-0.12	36.0	36.1	0.0	-0.01	37.8	36.5	1.3+	0.20
Children's Books (26 or more)	46.5	54.0	-7.5	-0.15	59.4	61.1	-1.7	-0.03	63.2	62.7	0.5	0.01
Help with Homework	3.2	3.1	0.0	0.03	3.3	3.3	0.0	0.03	3.4	3.3	0.1	0.12
HOME Total Score	27.1	27.5	-0.4	-0.09	27.5	26.9	0.6	0.13	26.9	27.3	-0.3	-0.07

Table III.4 *(continued)*

Outcome	Center-Based				Home-Based				Mixed-Approach			
	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
Total Support for Education	-0.7	-0.2	-0.5	-0.10	-0.5	-0.5	0.0	0.01	1.0	0.5	0.5	0.10
Support for Education, Internal to the Home	-0.2	-0.1	-0.1	-0.03	-0.2	-0.2	-0.1	-0.03	0.6	0.2	0.4	0.13
Support for Education, External to the Home	-0.5	-0.1	-0.4	-0.12	-0.2	-0.4	0.1	0.04	0.4	0.3	0.1	0.03
Family Well-Being and Mental Health												
Depressive Symptoms CES-D (count)+	7.6	6.0	1.6	0.23	6.9	7.8	-0.9+	-0.13	6.6	7.7	-1.0	-0.15
Parent Substance Use	5.3	3.9	1.4	0.05	8.0	10.3	-2.3	-0.08	8.5	7.9	0.6	0.02
Parent Alcohol Use	0.7	0.5	0.1	0.18	0.7	0.7	-0.1	-0.08	0.6	0.7	-0.1	-0.09
Parenting Distress (PSI) *	9.2	7.9	1.3*	0.34	8.3	8.8	-0.4	-0.11	7.8	8.5	-0.7+	-0.17
Number of Moves	2.4	2.2	0.2	0.13	2.2	2.4	-0.2*	-0.15	2.3	2.4	-0.1	-0.05
Homelessness	9.1	5.4	3.7	0.15	3.4	5.7	-2.3	-0.10	5.6	7.1	-1.5	-0.06
Family Conflict (FES)	1.4	1.4	0.0	0.01	1.4	1.5	-0.1+	-0.15	1.4	1.4	-0.1	-0.11
Parent Child Dysfunctional Interaction (PSI)**	10.4	8.8	1.6*	0.34	9.7	10.3	-0.6	-0.12	9.1	9.7	-0.6	-0.13
Child Reported Relationship with Mother	3.6	3.6	0.0	0.08	3.5	3.6	-0.1	-0.13	3.6	3.6	0.0	-0.01
Child Reported Relationship with Father	3.5	3.4	0.0	0.08	3.5	3.5	0.0	-0.02	3.5	3.4	0.0	0.07
Child Exposure to Domestic Violence	6.7	3.0	3.6	0.15	7.6	7.4	0.3	0.01	2.7	5.4	-2.7	-0.11
Parent Self-Sufficiency												
Household Annual Income (continuous)	36793.0	32481.0	4312.1	0.14	36226.2	32325.5	3900.6+	0.12	37132.7	39704.9	-2572.2	-0.08
Income to Needs Ratio (continuous)	1.7	1.5	0.2	0.15	1.5	1.4	0.2	0.12	1.6	1.7	-0.1	-0.11
Mother's Highest Educational Level	2.6	2.6	0.0	-0.03	2.4	2.3	0.1	0.05	2.5	2.5	0.0	-0.02
Mother's Employment Status	1.7	1.7	0.0	-0.04	1.9	1.9	0.0	-0.02	1.8	1.8	0.0	-0.02
Current Welfare Participation	42.9	41.6	1.3	0.03	46.5	45.3	1.2	0.02	42.2	51.0	-8.8+	-0.18
Sample Size	**69-156**	**70-186**			**223-370**	**238-377**			**145-239**	**160-294**		

Source: Parent interviews, interviewer observations, and child assessments conducted when children were in grade 5. CBCL = Child Behavior Check List; ADD/ADHD = Attention Deficit Disorder/Attention Deficit Hyperactivity Disorder; ECLS-K = Early Childhood Longitudinal Study-Kindergarten Class of 1998-99; SDQ = Self Description Questionnaire; PPVT-III = Peabody Picture Vocabulary Test-Third Edition; HOME = Home Observation for Measurement of the Environment; FES = Shortened Family Environment Scale; PSI = Parenting Stress Index-Short Form.

Note: All impact estimates were calculated using regression models in which each site was weighted equally. Psychometric information on specific outcome measures, including descriptive statistics is available in Appendix A.

[a]Program group includes all families assigned to Early Head Start who received more than one home visit, met with a case manager more than once, enrolled its child in center care for at least two weeks, or participated in a group activity during the 26 months after random assignment. Thus, impacts should be interpreted as the effect of receiving treatment.

Table III.4 *(continued)*

[b]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had been assigned to the program group instead. This unobserved mean was estimated as the difference between the program group mean for participants and the impact per participant.

[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 all program and control group members.

[d]The effect size was calculated by dividing the estimated impact by the standard deviation of the outcome measure for the control group.

[e]This cumulative risk index is based on the sum of 16 outcomes from multiple domains including social-emotional (bullying by peers, self-reported delinquent behavior, internalizing behavior, externalizing behavior, peer relations, attention problems), academic (math, language/literacy, absences, retention), cognitive ability (PPVT-III, Matrix Reasoning), and health (general health, chronic illness, body mass index (BMI), IEP).

[f]This cumulative success index is based on the sum of success indices from five domains including social-emotional, peer relations, academic, retention/absence, and cognitive ability. Each domain-specific index is equal to 1 if success is present and 0 if absent.

Asterisks next to variable names in the first column indicate significance levels for chi-square tests of differences in impacts across the subgroups.

$+p < .10$, $*p < .05$, $**p < .01$.

Table III.5 Impacts on Child Negative Social-Emotional Outcomes at Grade 5, by Program Type

	Center-Based				Home-Based				Mixed-Approach			
Outcome	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
CBCL Aggressive Behavior	5.2	4.9	0.3	0.06	5.9	6.5	-0.6	-0.11	5.1	5.3	-0.2	-0.04
CBCL Rule-Breaking Behavior	2.0	2.1	-0.1	-0.04	2.3	2.5	-0.2	-0.08	2.0	2.3	-0.3	-0.12
CBCL Social Problems+	2.8	2.1	0.7+	0.26	2.8	3.1	-0.3	-0.12	2.2	2.6	-0.4	-0.13
CBCL Anxious/Depressed	2.4	2.6	-0.2	-0.07	3.2	3.7	-0.5+	-0.15	2.6	3.0	-0.4	-0.13
CBCL Withdrawn/Depressed	1.3	1.5	-0.2	-0.07	1.9	1.9	0.0	-0.02	1.5	1.4	0.0	0.00
CBCL Somatic Complaints	0.8	0.9	0.0	-0.02	1.1	1.2	-0.1	-0.08	1.1	0.9	0.2	0.09
CBCL Thought Problems	1.8	2.2	-0.4	-0.16	2.2	2.4	-0.2	-0.08	2.0	1.9	0.1	0.02
Sample Size	**156**	**186**			**370**	**377**			**239**	**294**		

Source: Parent interviews, interviewer observations, and child assessments conducted when children were in grade 5. CBCL = Child Behavior Check List.

Note: All impact estimates were calculated using regression models in which each site was weighted equally. Psychometric information on specific outcome measures, including descriptive statistics is available in Appendix A.

[a]Program group includes all families assigned to Early Head Start who received more than one home visit, met with a case manager more than once, enrolled its child in center care for at least two weeks, or participated in a group activity during the 26 months after random assignment. Thus, impacts should be interpreted as the effect of receiving treatment.

[b]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had been assigned to the program group instead. This unobserved mean was estimated as the difference between the program group mean for participants and the impact per participant.

[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 all program and control group members.

[d]The effect size was calculated by dividing the estimated impact by the standard deviation of the outcome measure for the control group.

Asterisks next to variable names in the first column indicate significance levels for chi-square tests of differences in impacts across the subgroups.

+$p < .10$, *$p < .05$, **$p < .01$.

Table III.6 Impacts on Child and Family Outcomes at Grade 5, by Race/Ethnicity

Outcome	White				African American				Hispanic			
	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
Child Social-Emotional Outcomes												
CBCL Internalizing Behavior	6.4	7.2	-0.7	-0.12	4.3	5.1	-0.8	-0.13	4.6	5.6	-0.9	-0.15
CBCL Externalizing Behavior	8.6	10.0	-1.4+	-0.17	6.5	8.7	-2.1*	-0.26	5.4	5.6	-0.2	-0.02
CBCL Attention Problems	4.7	5.1	-0.4	-0.10	3.4	4.3	-0.9*	-0.22	2.9	2.9	0.0	0.00
Self-Reported Delinquent Behavior	1.4	1.4	0.1	0.03	1.6	1.8	-0.3	-0.14	1.4	1.2	0.2	0.12
ECLS-K SDQ Anger/Distractibility	2.1	2.1	0.0	0.05	2.1	2.2	-0.1	-0.16	2.0	2.1	-0.1	-0.12
ECLS-K SDQ Sad/Lonely/Anxious	2.2	2.2	0.1	0.13	2.3	2.4	-0.1	-0.13	2.3	2.4	-0.1	-0.15
ECLS-K SDQ Peer Relations	3.0	3.0	0.0	0.00	3.2	3.2	0.0	-0.02	3.2	3.1	0.1	0.12
Self-Reported Bullying by Peers	6.8	7.0	-0.2	-0.06	6.6	7.1	-0.6+	-0.21	6.4	6.2	0.2	0.07
ADD/ADHD since First Grade (parent report)	19.5	23.4	-3.9	-0.11	18.2	12.9	5.3	0.15	5.0	5.8	-0.8	-0.02
Social-Emotional Risk Index	48.6	49.7	-1.1	-0.02	43.6	52.0	-8.4	-0.17	37.0	44.4	-7.4	-0.15
Social-Emotional Success Index	44.3	38.9	5.4	0.11	46.4	40.0	6.4	0.13	53.7	43.2	10.5	0.21
Child Academic Outcomes												
English Receptive Vocabulary (PPVT-III)	102.9	101.9	1.0	0.06	89.4	88.5	0.9	0.06	88.9	89.0	-0.1	-0.01
PPVT-III Standard Score < 85	8.9	10.2	-1.3	-0.03	40.2	44.7	-4.4	-0.10	39.1	32.1	6.9	0.15
Matrix Reasoning (WISC)	9.4	8.8	0.6+	0.18	8.2	8.1	0.1	0.04	7.8	8.5	-0.7	-0.22
ECLS-K Reading	138.4	134.3	4.1	0.15	123.8	121.4	2.3	0.08	122.5	125.7	-3.2	-0.12
ECLS-K Mathematics	10.1	9.8	0.3	0.06	7.1	7.1	0.1	0.01	8.0	9.0	-0.9	-0.20
Retention (parent report)	10.3	10.7	-0.4	-0.01	11.9	16.9	-5.0	-0.15	22.1	10.7	11.4	0.33
Chronic Absenteeism (parent report)	11.4	7.9	3.6	0.12	12.0	8,8	3.2	0.11	5.4	7.2	-1.8	-0.06
Child Has IEP (parent Report)	18.6	22.6	-4.1	-0.11	16.6	22.5	-5.9	-0.16	8.6	11.0	-2.3	-0.06
Academic Success Index	43.9	40.3	3.6	0.08	16.8	23.2	-6.4	-0.14	10.6	20.8	-10.1+	-0.23
Ability Success Index	37.4	31.0	6.4	0.16	17.6	14.7	2.9	0.07	10.0	11.3	-1.3	-0.03
Child Outcomes: Multidomain Indices												
Cumulative Risk (number of outcomes of 16)[e]	2.9	3.1	-0.1	-0.05	3.6	3.8	-0.2	-0.07	3.1	3.1	0.0	0.01
Categorical Risk (low, medium, high)	1.2	1.2	0.0	0.02	1.4	1.5	0.0	-0.04	1.2	1.3	-0.1	-0.14
Cumulative Success (number of domains of 5)[f]	2.4	2.4	0.0	0.00	2.2	2.1	0.1	0.04	2.1	2.1	0.0	-0.02
Parenting and the Home Environment												
Parent Supervision	3.4	3.3	0.1	0.09	3.2	3.1	0.1	0.14	3.2	3.1	0.1	0.18
Severity of Discipline Strategies	3.7	3.9	-0.1	-0.11	4.0	4.1	-0.1	-0.10	3.7	3.3	0.3	0.27
Family Involvement in School*	36.9	37.0	-0.1	-0.02	38.5	36.1	2.4**	0.37	35.1	36.6	-1.5	-0.22
Children's Books (26 or more)	75.5	75.6	-0.1	0.00	49.8	47.5	2.3	0.05	62.5	61.4	1.1	0.02
Help with Homework	3.1	3.2	0.0	-0.06	3.5	3.4	0.1	0.17	3.3	3.2	0.1	0.08
HOME Total Score	26.8	27.1	-0.3	-0.06	26.8	26.7	0.1	0.03	28.6	28.2	0.5	0.11

Table III.6 *(continued)*

Outcome	White				African American				Hispanic			
	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
Total Support for Education	-0.4	-0.1	-0.3	-0.06	1.6	0.7	0.9	0.19	-0.2	-0.8	0.6	0.13
Support for Education, Internal to the Home	-0.3	-0.2	0.0	-0.02	1.0	0.5	0.5+	0.19	-0.1	-0.4	0.3	0.09
Support for Education, External to the Home	-0.1	0.1	-0.2	-0.07	0.6	0.2	0.4	0.11	-0.1	-0.4	0.4	0.11
Family Well-Being and Mental Health												
Depressive Symptoms CES-D (count)	7.1	8.0	-0.9	-0.13	6.8	8.2	-1.4+	-0.20	6.6	5.8	0.8	0.11
Parent Substance Use	9.9	11.8	-1.8	-0.07	9.9	11.5	-1.6	-0.06	5.5	2.7	2.9	0.10
Parent Alcohol Use**	0.9	0.8	0.1	0.09	0.6	0.8	-0.3**	-0.34	0.6	0.5	0.1	0.10
Parenting Distress (PSI)	7.6	8.3	-0.7+	-0.18	8.2	8.6	-0.3	-0.09	8.4	8.9	-0.4	-0.11
Number of Moves	2.4	2.6	-0.1	-0.08	2.4	2.7	-0.3+	-0.21	2.1	1.9	0.1	0.09
Homelessness	6.1	7.9	-1.7	-0.07	6.3	7.1	-0.7	-0.03	5.6	5.1	0.5	0.02
Family Conflict (FES)	1.4	1.5	-0.1+	-0.21	1.3	1.4	-0.1	-0.13	1.4	1.4	-0.1	-0.13
Parent Child Dysfunctional Interaction (PSI)	9.5	9.8	-0.3	-0.06	9.2	9.9	-0.7	-0.14	9.1	9.6	-0.5	-0.12
Child Reported Relationship with Mother	3.6	3.6	0.0	-0.09	3.6	3.6	0.0	0.02	3.6	3.6	0.1	0.12
Child Reported Relationship with Father	3.4	3.5	-0.1	-0.09	3.4	3.4	0.0	0.08	3.5	3.5	0.0	0.04
Child Exposure to Domestic Violence	8.0	6.1	1.9	0.08	2.3	3.8	-1.5	-0.06	7.9	6.5	1.4	0.06
Parent Self-Sufficiency												
Household Annual Income (continuous)	44770.3	43448.8	1321.5	0.04	30406.8	34540.9	-4134.1	-0.13	31048.5	33022.7	-1974.2	-0.06
Income to Needs Ratio (continuous)	1.9	1.8	0.1	0.06	1.4	1.6	-0.2	-0.15	1.3	1.4	-0.1	-0.06
Mother's Highest Educational Level+	2.8	2.8	0.1	0.06	2.5	2.7	-0.2	-0.16	1.9	1.7	0.2+	0.22
Mother's Employment Status	1.9	1.9	-0.1	-0.07	1.8	1.7	0.1	0.13	1.7	1.9	-0.2	-0.24
Current Welfare Participation	37.5	46.1	-8.6+	-0.17	50.5	57.4	-6.9	-0.14	35.1	33.2	1.8	0.04
Sample Size	**168-250**	**175-253**			**80-220**	**82-262**			**76-145**	**89-152**		

Source: Parent interviews, interviewer observations, and child assessments conducted when children were in grade 5. CBCL = Child Behavior Check List; ADD/ADHD = Attention Deficit Disorder/Attention Deficit Hyperactivity Disorder; ECLS-K = Early Childhood Longitudinal Study-Kindergarten Class of 1998-99; SDQ = Self Description Questionnaire; PPVT-III = Peabody Picture Vocabulary Test-Third Edition; HOME = Home Observation for Measurement of the Environment; FES = Shortened Family Environment Scale; PSI = Parenting Stress Index-Short Form.

Note: All impact estimates were calculated using regression models in which each site was weighted equally. Psychometric information on specific outcome measures, including descriptive statistics is available in Appendix A.

[a]Program group includes all families assigned to Early Head Start who received more than one home visit, met with a case manager more than once, enrolled its child in center care for at least two weeks, or participated in a group activity during the 26 months after random assignment. Thus, impacts should be interpreted as the effect of receiving treatment.

[b]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had been assigned to the program group instead. This unobserved mean was estimated as the difference between the program group mean for participants and the impact per participant.

Table III.6 *(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 all program and control group members.

[d]The effect size was calculated by dividing the estimated impact by the standard deviation of the outcome measure for the control group.

[e]This cumulative risk index is based on the sum of 16 outcomes from multiple domains including social-emotional (bullying by peers, self-reported delinquent behavior, internalizing behavior, externalizing behavior, peer relations, attention problems), academic (math, language/literacy, absences, retention), cognitive ability (PPVT-III, Matrix Reasoning), and health (general health, chronic illness, body mass index (BMI), IEP).

[f]This cumulative success index is based on the sum of success indices from five domains including social-emotional, peer relations, academic, retention/absence, and cognitive ability. Each domain-specific index is equal to 1 if success is present and 0 if absent.

Asterisks next to variable names in the first column indicate significance levels for chi-square tests of differences in impacts across the subgroups.

$+p < .10$, $*p < .05$, $**p < .01$.

Table III.7 Impacts on Child Negative Social-Emotional Outcomes at Grade 5, by Race/Ethnicity

	White				African American				Hispanic			
Outcome	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
CBCL Aggressive Behavior	6.3	7.3	-0.9	-0.16	4.5	5.9	-1.4*	-0.24	3.8	4.0	-0.2	-0.03
CBCL Rule-Breaking Behavior	2.3	2.7	-0.4+	-0.16	2.0	2.7	-0.7*	-0.25	1.6	1.6	0.0	0.00
CBCL Social Problems	2.9	3.3	-0.5	-0.17	2.0	2.6	-0.6*	-0.22	2.2	2.1	0.1	0.04
CBCL Anxious/Depressed	3.4	4.0	-0.6+	-0.19	2.0	2.6	-0.6*	-0.20	2.2	2.9	-0.7	-0.22
CBCL Withdrawn/Depressed	1.7	1.8	-0.1	-0.05	1.4	1.5	-0.1	-0.04	1.5	1.8	-0.3	-0.15
CBCL Somatic Complaints	1.3	1.3	0.0	-0.02	1.0	1.0	0.0	-0.03	0.9	0.8	0.1	0.07
CBCL Thought Problems	2.9	3.2	-0.3	-0.11	1.5	2.0	-0.4+	-0.16	1.4	1.5	-0.2	-0.06
Sample Size	**250**	**253**			**220**	**262**			**139**	**152**		

Source: Parent interviews, interviewer observations, and child assessments conducted when children were in grade 5. CBCL = Child Behavior Check List.

Note: All impact estimates were calculated using regression models in which each site was weighted equally. Psychometric information on specific outcome measures, including descriptive statistics is available in Appendix A.

[a]Program group includes all families assigned to Early Head Start who received more than one home visit, met with a case manager more than once, enrolled its child in center care for at least two weeks, or participated in a group activity during the 26 months after random assignment. Thus, impacts should be interpreted as the effect of receiving treatment.

[b]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had been assigned to the program group instead. This unobserved mean was estimated as the difference between the program group mean for participants and the impact per participant.

[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 all program and control group members.

[d]The effect size was calculated by dividing the estimated impact by the standard deviation of the outcome measure for the control group.

Asterisks next to variable names in the first column indicate significance levels for chi-square tests of differences in impacts across the subgroups.

$+p < .10$, $*p < .05$, $**p < .01$.

Table III.8 Impacts on Child and Family Outcomes at Grade 5, by Risk Group

Outcome	Low Risk (0-2 Risks)				Moderate Risk (3 Risks)				High Risk (4-5 Risks)			
	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
Child Social-Emotional Outcomes												
CBCL Internalizing Behavior	5.5	5.7	-0.2	-0.03	5.7	7.3	-1.6+	-0.27	6.3	6.4	-0.1	-0.02
CBCL Externalizing Behavior	7.0	7.4	-0.4	-0.05	8.4	9.4	-1.0	-0.12	9.6	10.5	-1.0	-0.12
CBCL Attention Problems	3.8	3.9	-0.1	-0.03	4.2	4.4	-0.2	-0.06	4.3	4.8	-0.5	-0.13
Self-Reported Delinquent Behavior	1.3	1.4	-0.1	-0.03	1.8	1.5	0.3	0.17	1.7	2.1	-0.3	-0.19
ECLS-K SDQ Anger/Distractibility	2.0	2.1	0.0	-0.06	2.2	2.1	0.1	0.14	2.3	2.3	0.0	0.00
ECLS-K SDQ Sad/Lonely/Anxious	2.2	2.3	0.0	-0.02	2.4	2.3	0.1	0.10	2.4	2.4	0.0	0.07
ECLS-K SDQ Peer Relations	3.1	3.1	0.0	0.00	3.1	3.1	0.0	-0.07	3.2	3.3	-0.1	-0.08
Self-Reported Bullying by Peers	6.6	6.4	0.2	0.06	6.8	7.3	-0.5	-0.18	7.2	6.9	0.2	0.09
ADD/ADHD since First Grade (parent report)	12.3	13.3	-1.1	-0.03	17.3	20.9	-3.5	-0.10	17.8	15.2	2.6	0.07
Social-Emotional Risk Index	42.3	42.8	-0.6	-0.01	49.6	50.4	-0.8	-0.02	56.0	58.1	-2.1	-0.04
Social-Emotional Success Index	48.8	47.9	0.8	0.02	42.6	38.3	4.3	0.09	34.5	34.7	-0.2	0.00
Child Academic Outcomes												
English Receptive Vocabulary (PPVT-III)	96.6	95.7	0.9	0.05	93.1	94.9	-1.8	-0.11	86.9	90.3	-3.5+	-0.21
PPVT-III Standard Score < 85	23.1	24.2	-1.1	-0.02	29.9	26.5	3.5	0.08	48.4	37.7	10.8	0.24
Matrix Reasoning (WISC)*	8.8	8.3	0.5+	0.15	8.3	8.9	-0.6	-0.18	7.6	8.3	-0.7	-0.21
ECLS-K Reading+	133.7	130.0	3.7+	0.13	126.9	128.3	-1.5	-0.05	115.1	122.5	-7.3	-0.27
ECLS-K Mathematics+	9.1	9.0	0.1	0.03	8.1	9.1	-1.0+	-0.22	6.1	7.6	-1.6*	-0.33
Retention (parent report)	7.9	9.3	-1.5	-0.04	14.8	16.8	-2.0	-0.06	28.6	17.1	11.5	0.34
Chronic Absenteeism (parent report)	9.0	8.7	0.3	0.01	11.5	13.7	-2.3	-0.08	17.3	6.7	10.6+	0.37
Child Has IEP (parent Report)	11.9	15.8	-3.9	-0.10	17.6	16.8	0.8	0.02	19.5	22.1	-2.6	-0.07
Academic Success Index+	34.8	30.7	4.2	0.09	24.9	23.8	1.0	0.02	12.2	25.1	-12.9*	-0.29
Ability Success Index+	27.0	23.5	3.5	0.09	13.5	24.7	-11.2*	-0.27	11.5	15.8	-4.3	-0.11
Child Outcomes: Multidomain Indices												
Cumulative Risk (number of outcomes of 16)[e]	3.0	3.0	-0.1	-0.04	3.7	3.5	0.2	0.07	4.7	3.8	0.9+	0.35
Categorical Risk (low, medium, high)	1.2	1.2	0.0	0.01	1.5	1.4	0.1	0.09	1.6	1.5	0.1	0.09
Cumulative Success (number of domains of 5)[f]	2.4	2.4	0.0	0.01	2.0	2.0	0.0	-0.03	1.7	2.1	-0.4*	-0.31
Parenting and the Home Environment												
Parent Supervision	3.2	3.3	0.0	-0.05	3.2	3.2	0.0	0.06	3.1	3.1	0.0	0.00
Severity of Discipline Strategies	3.7	3.8	0.0	-0.03	3.9	3.9	0.0	0.00	4.1	3.9	0.2	0.14
Family Involvement in School	36.6	36.7	-0.1	-0.02	36.3	36.2	0.0	0.00	37.1	36.0	1.1	0.16
Children's Books (26 or more)+	56.3	64.5	-8.3*	-0.17	64.8	55.5	9.3	0.19	52.0	57.3	-5.2	-0.11
Help with Homework	3.3	3.2	0.1	0.09	3.3	3.2	0.1	0.12	3.3	3.4	-0.1	-0.13
HOME Total Score	27.7	28.2	-0.5	-0.11	26.6	26.8	-0.2	-0..05	25.6	25.7	-0.1	-0.04

Table III.8 *(continued)*

Outcome	Low Risk (0-2 Risks)				Moderate Risk (3 Risks)				High Risk (4-5 Risks)			
	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
Total Support for Education	-0.2	0.1	-0.2	-0.05	-0.2	-0.5	0.3	0.07	-0.1	1.0	-1.0	-0.21
Support for Education, Internal to the Home	0.0	0.0	0.0	-0.02	0.1	-0.2	0.3	0.10	0.1	0.6	-0.6	-0.21
Support for Education, External to the Home	-0.1	0.0	-0.2	-0.06	-0.3	-0.3	0.0	0.01	-0.1	0.3	-0.4	-0.14
Family Well-Being and Mental Health												
Depressive Symptoms CES-D (count)	6.3	6.7	-0.4	-0.06	7.8	8.0	-0.2	-0.02	8.6	9.2	-0.6	-0.09
Parent Substance Use	8.2	4.9	3.4	0.12	7.8	11.6	-3.7	-0.14	11.4	11.5	-0.2	-0.01
Parent Alcohol Use	0.6	0.7	0.0	-0.03	0.7	0.8	-0.1	-0.17	0.8	0.9	-0.1	-0.18
Parenting Distress (PSI)+	8.0	8.1	-0.2	-0.04	7.8	8.9	-1.1*	-0.28	9.6	8.7	0.9	0.23
Number of Moves	2.1	2.2	-0.1	-0.06	2.4	2.6	-0.2	-0.11	2.5	2.8	-0.2	-0.15
Homelessness	4.5	4.3	0.3	0.01	5.2	10.7	-5.5	-0.23	2.5	8.2	-5.6	-0.23
Family Conflict (FES)	1.4	1.4	0.0	-0.05	1.4	1.5	-0.1	-0.19	1.4	1.5	-0.1	-0.18
Parent Child Dysfunctional Interaction (PSI)	9.1	9.6	-0.4	-0.09	10.4	10.4	0.0	-0.01	10.6	10.1	0.5	0.12
Child Reported Relationship with Mother	3.6	3.6	-0.1	-0.13	3.6	3.5	0.1	0.17	3.6	3.6	-0.1	-0.21
Child Reported Relationship with Father	--	--	--	--	--	--	--	--	--	--	--	--
Child Exposure to Domestic Violence	4.5	5.8	-1.3	-0.05	5.0	6.5	-1.5	-0.06	10.3	10.1	0.2	0.01
Parent Self-Sufficiency												
Household Annual Income (continuous)	39737.5	41582.3	-1844.8	-0.06	33847.1	34853.4	-1006.3	-0.03	24705.9	28956.1	-4250.2	-0.13
Income to Needs Ratio (continuous)	1.8	1.8	-0.1	-0.04	1.5	1.5	0.0	-0.01	1.0	1.2	-0.2	-0.17
Mother's Highest Educational Level+	2.7	2.7	0.0	-0.03	2.5	2.3	0.2+	0.21	1.7	2.0	-0.3	-0.28
Mother's Employment Status	1.7	1.7	-0.1	-0.08	2.0	2.0	0.0	0.03	1.9	2.0	-0.1	-0.15
Current Welfare Participation	32.0	36.0	-4.0	-0.08	46.1	56.3	-10.2	-0.20	70.2	71.4	-1.2	-0.02
Sample Size	**289-334**	**310-359**			**131-169**	**136-192**			**62-102**	**78-125**		

Source: Parent interviews, interviewer observations, and child assessments conducted when children were in grade 5. CBCL = Child Behavior Check List; ADD/ADHD = Attention Deficit Disorder/Attention Deficit Hyperactivity Disorder; ECLS-K = Early Childhood Longitudinal Study-Kindergarten Class of 1998-99; SDQ = Self Description Questionnaire; PPVT-III = Peabody Picture Vocabulary Test-Third Edition; HOME = Home Observation for Measurement of the Environment; FES = Shortened Family Environment Scale; PSI = Parenting Stress Index-Short Form.

Note: All impact estimates were calculated using regression models in which each site was weighted equally. Psychometric information on specific outcome measures, including descriptive statistics is available in Appendix A.

[a]Program group includes all families assigned to Early Head Start who received more than one home visit, met with a case manager more than once, enrolled its child in center care for at least two weeks, or participated in a group activity during the 26 months after random assignment. Thus, impacts should be interpreted as the effect of receiving treatment.

[b]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had been assigned to the program group instead. This unobserved mean was estimated as the difference between the program group mean for participants and the impact per participant.

Table III.8 *(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 all program and control group members.

[d]The effect size was calculated by dividing the estimated impact by the standard deviation of the outcome measure for the control group.

[e]This cumulative risk index is based on the sum of 16 outcomes from multiple domains including social-emotional (bullying by peers, self-reported delinquent behavior, internalizing behavior, externalizing behavior, peer relations, attention problems), academic (math, language/literacy, absences, retention), cognitive ability (PPVT-III, Matrix Reasoning), and health (general health, chronic illness, body mass index (BMI), IEP).

[f]This cumulative success index is based on the sum of success indices from five domains including social-emotional, peer relations, academic, retention/absence, and cognitive ability. Each domain-specific index is equal to 1 if success is present and 0 if absent.

Asterisks next to variable names in the first column indicate significance levels for chi-square tests of differences in impacts across the subgroups.

$+p < .10$, $*p < .05$, $**p < .01$.

Table III.9 Impacts on Negative Social-Emotional Outcomes at Grade 5, by Risk Group

	Low Risk (0-2 Risks)				Moderate Risk (3 Risks)				High Risk (4-5 Risks)			
Outcome	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
CBCL Aggressive Behavior	5.0	5.3	-0.3	-0.05	6.1	6.6	-0.5	-0.08	6.6	7.4	-0.7	-0.13
CBCL Rule-Breaking Behavior	2.0	2.1	-0.1	-0.05	2.3	2.8	-0.5	-0.19	2.9	3.2	-0.2	-0.09
CBCL Social Problems	2.5	2.5	0.0	-0.01	2.6	3.3	-0.6	-0.23	2.8	2.8	0.0	0.01
CBCL Anxious/Depressed	2.9	3.2	-0.3	-0.08	2.8	3.7	-0.9*	-0.27	2.9	3.3	-0.4	-0.12
CBCL Withdrawn/Depressed	1.6	1.5	0.1	0.04	1.7	2.2	-0.5	-0.23	2.1	1.9	0.3	0.14
CBCL Somatic Complaints	1.0	1.0	0.0	0.00	1.1	1.4	-0.3	-0.15	1.2	1.3	0.0	-0.02
CBCL Thought Problems	2.0	2.1	-0.1	-0.03	2.1	2.6	-0.6	-0.21	2.4	2.5	-0.2	-0.06
Sample Size	**334**	**359**			**169**	**192**			**102**	**125**		

Source: Parent interviews, interviewer observations, and child assessments conducted when children were in grade 5. CBCL = Child Behavior Check List.

Note: All impact estimates were calculated using regression models in which each site was weighted equally. Psychometric information on specific outcome measures, including descriptive statistics is available in Appendix A.

[a]Program group includes all families assigned to Early Head Start who received more than one home visit, met with a case manager more than once, enrolled its child in center care for at least two weeks, or participated in a group activity during the 26 months after random assignment. Thus, impacts should be interpreted as the effect of receiving treatment.

[b]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had been assigned to the program group instead. This unobserved mean was estimated as the difference between the program group mean for participants and the impact per participant.

[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 all program and control group members.

[d]The effect size was calculated by dividing the estimated impact by the standard deviation of the outcome measure for the control group.

Asterisks next to variable names in the first column indicate significance levels for chi-square tests of differences in impacts across the subgroups.

$+p < .10$, $*p < .05$, $**p < .01$.

IV. NONEXPERIMENTAL ANALYSES

A. Analytic Approaches

As we described in Chapter I, we were interested in learning about the relationships of experiences in education since Early Head Start with child and family outcomes. Accordingly, we proposed the following research questions for nonexperimental analyses:

- How did children's preschool and later school experiences, along with their Early Head Start participation, relate to their academic outcomes and social-emotional well-being, as well as their parents' parenting and family well-being? (Early Head Start was never viewed as an "inoculation," and by fifth grade, children have had experiences in preschool and elementary school that need to be understood.)
- How did experiences in preschool and elementary school vary for children within subgroups, and how, along with Early Head Start, did these experiences relate to children's academic outcomes, social-emotional well-being, and their parents' parenting and family well-being?

To answer questions about how experiences beyond Early Head Start (experiences in preschool and elementary school) are associated with child and family outcomes, we conducted nonexperimental analyses that explore the individual contributions of Early Head Start, participation in formal early care and education programs at ages 3 and 4 before kindergarten, ever being in Head Start at ages 3 or 4, and characteristics of elementary schools in fifth grade, as well as cumulative experiences over time (overall and by race/ethnicity), to selected child and family outcomes. Because children with different early care and education experiences may differ in unobserved characteristics that cannot be controlled in the analyses, these associations cannot be interpreted as causal relationships. We describe each of the analytic approaches next.

1. Individual Contributions of Educational Experiences

To explore the contribution of educational experiences to child and family outcomes, we used multiple regression analyses in which the models included: Early Head Start, formal program participation at ages 3 and 4 before kindergarten, whether the child was ever in Head Start, and characteristics of the school at grade 5 (percentage of students eligible for free or reduced-price lunch, percentage of minority students in the school, and school size—a continuous measure of total school enrollment). These variables were added to the models in steps in order to show whether the later-entered variables, especially the characteristics of the schools children were attending at grade 5, explained the significant associations between earlier variables and outcomes. To address issues of missing data, the models were estimated using full information maximum likelihood estimation in Mplus (Muthén and Muthén 2007). We examined several key child and family outcomes in this way, including child academic outcomes (PPVT, ECLS-K Reading and Mathematics, and WISC-IV Matrix Reasoning), social-emotional development (CBCL Externalizing Behavior Problems, Internalizing Behavior Problems, and Attention Problems subscales), the cumulative success index,[30] and our measure of family involvement in school (Chapter II and Table A.6, Appendix A, provide

[30] As described in Chapter II, this index is based on the sum of five domain-specific success indices including social-emotional, peer relations, academic, retention/absence, and cognitive ability. Each domain-specific index is scored as 1 or 0 and the cumulative success score can therefore range from 0 to 5.

more detail on these outcome measures). In addition to the predictors noted above, we also included a large number of characteristics measured at baseline in our models (see Figure IV.1 for all the predictors in the models). The literature shows that students in schools with a high concentration of minorities do not fare as well as those in mixed-race schools (Orfield and Eaton 1996). To better understand the relationship between concentration of (any) racial/ethnic minorities in schools and outcomes, we included two dummy variables in the models to test whether there was a nonlinear relationship between percentage of any type of minority and our outcomes: low concentration (less than 25 percent) and high concentration (greater than 75 percent); 25 to 75 percent serves as the reference group.

For the questions about how the influences of earlier educational experiences and school characteristics on child and family outcomes vary by characteristics of children and families, we estimated separate models for each child race/ethnicity group. In these analyses, the percentage of students in the school who were of the *same* race (as the study child) was included for each racial subgroup. For example, the percentage of African American students in the school was included for the African American subgroup, and the percentage of Hispanic students was included in the Hispanic subgroup analyses. For the white subgroup, the percentage of white students was included. In order to test nonlinear relationships between the percentage of students who were of the same race and child and family outcomes, two dummy variables were used in those models: low concentration (less than 25 percent) and high concentration (greater than 75 percent); 25 to 75 percent serves as the reference group.

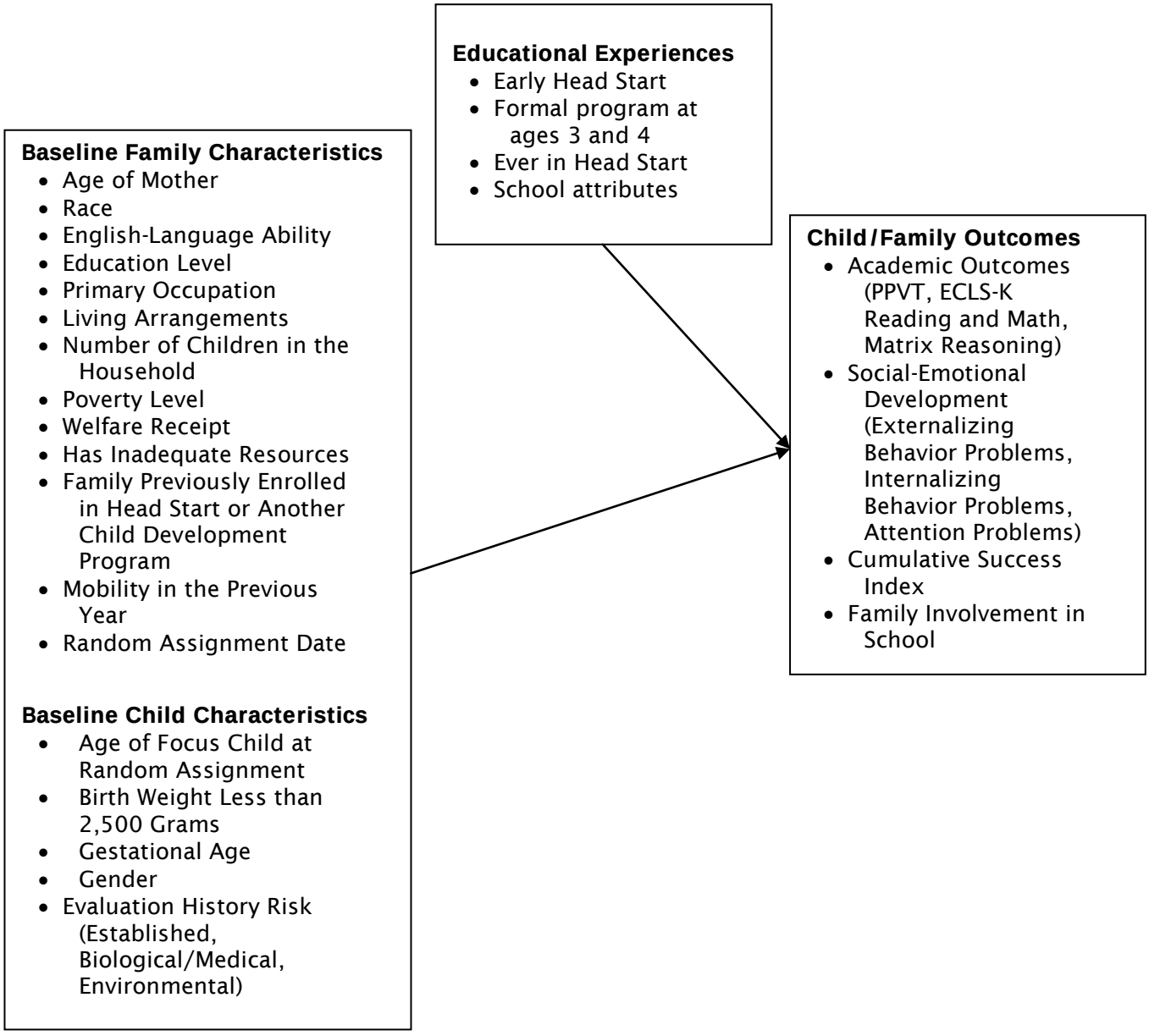
2. Cumulative Contributions of Educational Experiences

To understand the relationship between cumulative experiences over time and the outcome measures, we considered children's experiences in Early Head Start,[31] formal prekindergarten program participation at ages 3 and 4, and a measure of lower poverty school (which is defined as less than 63.8 percent[32] of students in school eligible for free or reduced-price lunch). We classified children into four groups of cumulative educational experiences: those with all three, any two, any one, or none of the experiences noted above (Figure IV.2). We expected that having more of these experiences would be associated with better outcomes than having fewer. We then compared the adjusted means of the outcomes (adjusted for site, race/ethnicity, family risk factors, and parent language), as well as the unadjusted means and the means adjusted for site only across the four groups using ANOVA, in order to show whether site and other demographics accounted for the differences across the groups. We further examined cumulative experiences by race/ethnicity using the same four experience groups, outcomes, and methods, except we substituted risk level for the race/ethnicity control variable (Figure IV.3).

[31] Only families in the program group had the opportunity to attend Early Head Start, so only program families by definition can have had all three experiences.

[32] This is the median of the sample.

Figure IV.1 Nonexperimental Models Examining the Associations Between Early Educational Experiences and Child/Family Outcomes



B. Results

1. Characteristics of Schools at Grade 5

We used information from the Common Core of Data and the Private School Survey to describe the schools children in our sample attended at grade 5. The variables include percentage of students eligible for free or reduced-price lunch, percentage minority (nonwhite) students, and school size (Table IV.1). The percentage of students eligible for free or reduced-price lunch in the school was moderately correlated with the percentage of minority students ($r = .62$, $p < .001$) in the sample. School size had a low correlation ($r = .16$, $p < .001$) with percentage minority and was not correlated with percentage of students eligible for free or reduced-price lunch.

On average, children in the sample attended schools that had 61 percent of students eligible for free or reduced-price lunch (SD = 27 percent), and racial/ethnic minorities comprised about 51 percent of the students in the schools (SD = 34 percent). Sample children attended schools in which the average enrollment was 482 students (SD = 207, with a range of 7 to 1,794).

There were no differences in the characteristics of schools attended by children who received Early Head Start services and those attended by children in the control group (see Table IV.1). The distributions of Early Head Start and control group students attending schools with high or low concentrations of racial/ethnic minority students were also similar.

Table IV.1 Means, Standard Deviations and Ranges of School Variables[a] at Grade 5

	Overall			Early Head Start			Control		
	Mean	SD	Range	Mean	SD	Range	Mean	SD	Range
Percentage FRL	61.13	26.73	0-99.65	61.45	27.07	0-99.65	60.78	26.38	0-99.54
Percentage minority	51.22	33.98	0-100	51.86	33.60	0-100	50.54	34.40	0-100
School size	482	207	7-1794	473	197	19-1380	491	217	7-1794

Source: The Common Core of Data and the Private School Survey.

Note: FRL = percentage of students eligible for free or reduced-price lunch.

[a]These are characteristics of schools attended by sample children at grade 5.

2. Contributions of Individual Experiences to Outcomes

The results from the multiple regression models that show the contribution of individual experiences to outcomes are shown in Tables C.1 to C.9 (Appendix C) and are summarized in Table IV.2. The results indicate that Early Head Start was not a significant predictor for any of the outcomes. Participation in a formal early care and education program at ages 3 and 4 was not associated with any of the cognitive outcomes, but it was associated with more externalizing behaviors, internalizing behaviors, and attention problems. The negative association between being in a formal program and social-emotional outcomes persisted even in the models that control for ever being in Head Start and school characteristics at grade 5 (Models 5 and 6). Ever being in Head Start was associated with more internalizing problems only at the trend level.

Table IV.2 Summary of Significant Predictors in Nonexperimental Models[a]

Outcomes	Overall Sample[b]	Subgroups[c]		
		White	African American	Hispanic
PPVT Scores	(–) % free/reduced-price lunch (+) <25% minority students (–) >75% minority students	(+) School size	(–) % free/reduced-price lunch	(–) % free/reduced-price lunch (–) <25% Hispanic students (–) >75% Hispanic students
ECLS-K Reading Scores	(–) % free/reduced-price lunch	(–) % free/reduced-price lunch (+) School size	(–) % free/reduced-price lunch (–) >75% African American students	(–) >75% Hispanic students
ECLS-K Mathematics Scores	(–) % free/reduced-price lunch	None	(–) <25% African American students	(–) Early Head Start
Matrix Reasoning Scores	(–) % free/reduced-price lunch	(+) Early Head Start (–) % free/reduced-price lunch (–) >75% white students (+) School size	(–) % free/reduced-price lunch	(–) % free/reduced-price lunch
CBCL Externalizing Behavior Problems	(+) Formal program ages 3&4 (+) % free/reduced-price lunch (+) >75% minority students	(–) Early Head Start (+) < 25% white students (–) >75% white students	(–) Early Head Start (+) % free/reduced-price lunch (+) <25% African American students	(+) Ever in Head Start
CBCL Internalizing Behavior Problems	(+) Formal program ages &4 (+) Ever in Head Start	None	None	None
CBCL Attention Problems	(+) Formal program ages 3&4	(+) School size	(+) <25% African American students	(+) Formal program ages 3&4
Cumulative Success	(–) % free/reduced-price lunch	(–) % free/reduced-price lunch	(–) % free/reduced-price lunch (–) >75% African American students	(+) Formal program ages 3&4 (–) % free/reduced-price lunch (–) <25% Hispanic students
Family Involvement in School	None	(–) Formal program ages 3&4 (+) >75% white students	(+) Early Head Start (+) Formal program ages 3&4	None

Note: The (+) or (-) indicates whether the characteristic is positively or negatively related to the outcome. For the overall sample, the models include the following predictors: Early Head Start enrollment, formal program at ages 3 and 4, ever being in Head Start, percentage of students eligible for free/reduced-price lunch, percentage of minority students in school, and school size. For the subgroups, the models include the same predictors except that percentage of minority students was replaced with percentage of students in the school who were of the same race as the study child for each racial subgroup. CBCL = Child Behavior Checklist; ECLS-K = Early Childhood Longitudinal Study-Kindergarten Class of 1998-99; PPVT = Peabody Picture Vocabulary Test.

[a]Summary of significant (including marginally significant) predictors from results for nonexperimental models presented in Appendix C that examine associations between child educational experiences and child outcomes. The table summarizes the results from models examining the contributions of all the individual experiences to outcomes.

[b]See Tables C.1 to C.9 in Appendix C.

[c]See Tables C.10 to C.18 in Appendix C.

We found that school characteristics at grade 5 were related to academic, social-emotional, and cumulative success outcomes. Attending a higher-poverty school was associated with poorer child academic outcomes and a lower cumulative success index. Attending a higher-poverty school was associated with more externalizing behavior problems (only in Model 4, which does not control for percentage of minority students; see Table B.5). This means that higher-poverty schools are also more likely to be higher-minority schools, and the percentage of minority students accounted for the association between poverty school and externalizing behavior problems.

The racial/ethnic mix in school was also associated with academic and social-emotional outcomes. Compared to those in mixed-race schools, children in schools with a low concentration of any minority students had higher PPVT scores, while children in schools with a high concentration of (any) minority students had lower PPVT scores. Children in schools with a high concentration of any minority students had more externalizing problems than those in mixed-race and low-minority schools.

3. Contributions of Individual Experiences to Outcomes for Racial/Ethnic Subgroups

We conducted subgroup analyses in an attempt to determine whether the relationships between earlier educational experiences and school characteristics on child and family outcomes vary by child race/ethnicity. The results are presented in Tables C.10 to C.18 (Appendix C) and are summarized in Table IV.2.

Whites. For the white subgroup, early experiences in programs were associated with cognitive and social-emotional outcomes. Early Head Start was associated with higher Matrix Reasoning scores (Table C.13, Appendix C) and fewer externalizing problems (Table C.14, Appendix C). Participation in a formal program at ages 3 and 4 was significant at the trend ($p < .10$) level with lower family involvement in school (only before controlling for percentage whites in school—Models 5 and 6, Table C.18, Appendix C). The nonsignificant association between formal program and family involvement at grade 5 after controlling for the percentage of whites in the school could be due to the fact that white children who had formal program experiences at ages 3 and 4 were less likely to attend predominantly white schools. Ever being in Head Start was not associated with any of the outcomes.

Among white children, school characteristics were associated with some outcomes. Attending a higher-poverty school at grade 5 was associated with lower ECLS-K Reading scores, but the association was not significant after controlling for the percentage of students who were white and for school size (Model 6, Table C.11, Appendix C), and with lower Matrix Reasoning scores, but only after controlling for percentage of whites (Model 5, Table C.13, Appendix C). Attending a higher-poverty school was associated with a lower cumulative success index, even after controlling for percentage of whites and school size (Model 6, Table C.17, Appendix C). Compared to those in mixed-race schools, white children in schools with a low concentration of white students had more externalizing problems, while those in predominantly white schools had fewer externalizing problems (Table C.14, Appendix C). Families of white children in predominantly white schools were more involved in school than those in mixed-race schools (Table C.18, Appendix C). However, white children in predominantly white schools had lower Matrix Reasoning scores than those in mixed-race schools (only before controlling for school size—Model 5, Table C.13, Appendix C). Larger school size was associated with higher PPVT (Table C.10, Appendix C), ECLS-K Reading, and Matrix Reasoning scores (Table C.13, Appendix C), but also more attention problems (Table C.16, Appendix C).

African Americans. Early Head Start was associated with fewer externalizing problems and more family involvement in school (marginally) for the African American subgroup (Tables C.14 and C.18, Appendix C). Participation in a formal program at ages 3 and 4 was associated with more family involvement in school. Ever being in Head Start was not associated with any of the outcomes.

For African Americans, school characteristics were related to multiple outcomes. Attending a higher-poverty school at grade 5 was associated with lower PPVT (Table C.10, Appendix C), ECLS-K Reading (Table C.11, Appendix C), and Matrix Reasoning scores (Table C.13, Appendix C), and more externalizing problems (Table C.14, Appendix C). Attending a higher-poverty school was also significantly associated with less cumulative success before controlling for the percentage of African Americans in school but no longer significant once the percentage of African Americans was included in the models (Models 5 and 6, Table C.17, Appendix C). Compared to those in mixed-race schools, African American children in schools with a high concentration of African American students had lower ECLS-K Reading and Math scores (Table C.12, Appendix C) and lower levels of cumulative success. African American children in schools with a low concentration of African American students had more externalizing behavior and attention problems (Table C16, Appendix C).

Hispanics. For the Hispanic subgroup, early program experiences were negatively associated with later outcomes. Early Head Start was associated with lower ECLS-K Math scores (Table C.12, Appendix C).[33] Participation in a formal program at ages 3 and 4 was associated with more attention problems (Table C.16, Appendix C). It was also marginally associated with higher levels of cumulative success, but only before controlling for percentage of students eligible for free or reduced-price lunch (Table C.17, Appendix C). In other words, after school poverty was accounted for, participation in a formal program at ages 3 and 4 no longer mattered. Ever being in Head Start was associated with more externalizing problems.

School characteristics were associated with a variety of outcomes for Hispanic students. Attending a higher-poverty school at grade 5 was associated with lower PPVT scores (Table C.10, Appendix C) and marginally associated with lower Matrix Reasoning scores (Table C.13, Appendix C) and lower levels of cumulative success. Compared to those in mixed-race schools, Hispanic students in schools with either a high or low concentration of Hispanics scored lower on the PPVT, and those in schools with a high concentration of Hispanics scored lower on the ECLS-K Reading test (Table C.11, Appendix C). Hispanic children in schools with a low concentration of Hispanic students had lower levels of cumulative success (Table C.17, Appendix C).

4. Cumulative Experiences and Outcomes

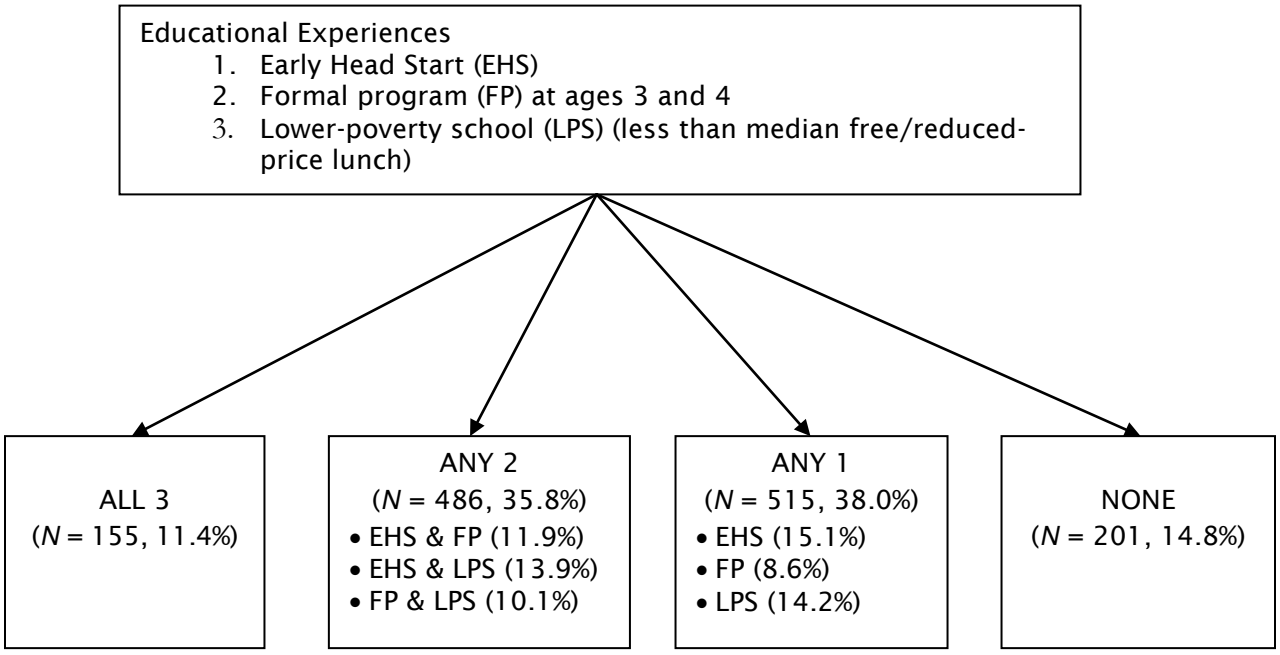
We classified children into four groups based on whether they had experiences in Early Head Start, participation in a formal early care and education program at ages 3 and 4, and a lower-poverty school at grade 5; the four groups were those with all three, any two, any one, or none of these experiences (Figure IV.2). Children with any two or any one of the experiences each comprise more than one-third of the sample, and children with all three or none of the experiences comprise 11

[33] These results are not inconsistent with the experimental impacts, as the direction of differences there were also negative for ECLS-K Math, and likely reached statistical significance in the nonexperimental models because they are based on full information maximum likelihood estimation that uses all cases, whereas the impact estimates use only cases with nonmissing data.

percent and 15 percent of the sample, respectively. Table IV.3 presents the unadjusted and adjusted means across the four groups.

As expected, cumulative experiences were significantly associated with the academic and cognitive outcomes we examined, but associations with social-emotional outcomes were much weaker or nonexistent. Children with all three experiences and those with any two performed better than those with only one or none on PPVT, ECLS-K Reading and Math, and Matrix Reasoning. They also achieved more cumulative success than those with only one or none. Families of children with all three experiences were more involved in school than those with none of these experiences. There were no differences across the groups on CBCL Externalizing and Internalizing Behavior Problems and Attention Problems subscales. For Attention Problems, there were differences across the groups when adjusting only for site, showing that children with none of the experiences had fewer attention problems than each of the other three groups. However, these differences disappeared after adjusting for race/ethnicity, family risk factors, and parent language.

Figure IV.2 Children's Cumulative Educational Experiences Groups



5. Cumulative Experience by Race/Ethnicity

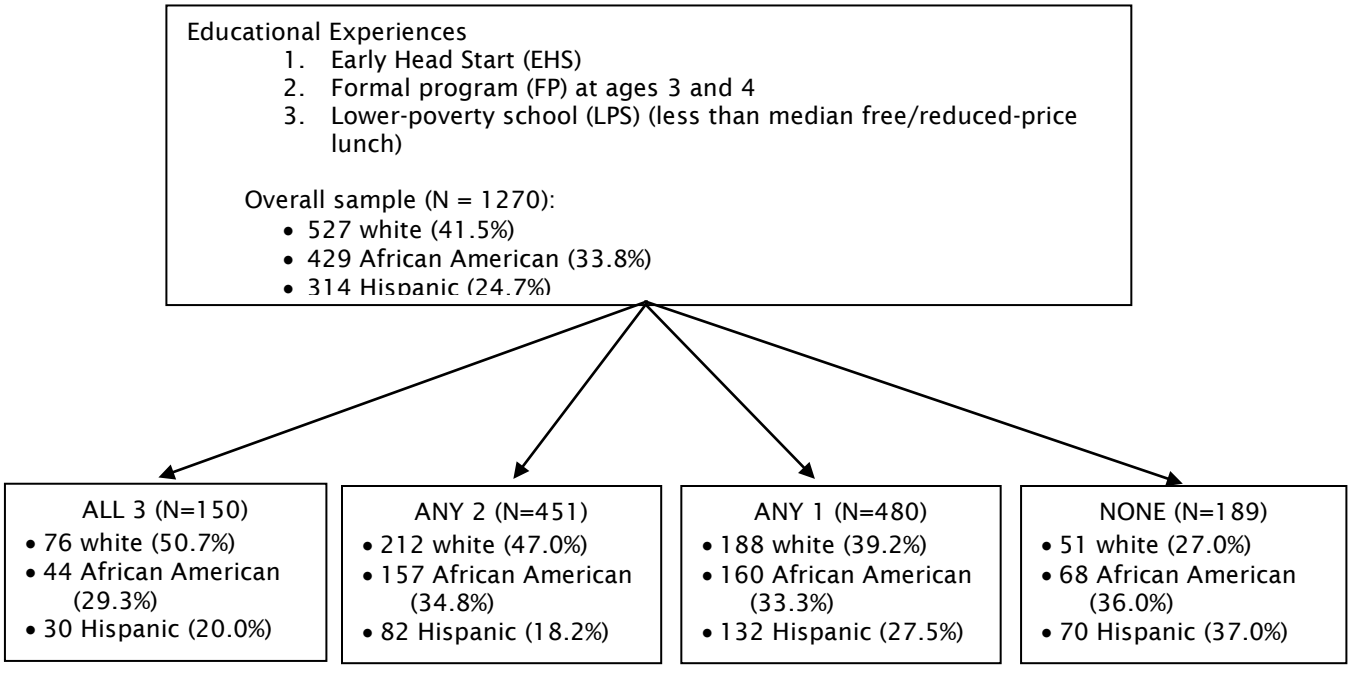
In addition to the overall examination of the relationships of cumulative experience to outcomes we looked at these independently by race/ethnicity as well. We used the same three groupings of experiences and the same control variables, except that we used level of risk rather than race. Figure IV.3 shows the makeup of each of the experience groups by race/ethnicity and Tables IV.4 to IV.6 present adjusted and unadjusted means by group. In general the results are similar to the overall findings, but there are differences within groups. The most salient finding is that having more supportive experiences generally was associated with better outcomes for African Americans and Hispanic children, but did not have the same positive relationship to outcomes for white children.

Whites. There are few significant associations overall, and none were significant after controlling for site, risk factors, and language.

African Americans. Similar to the patterns for the entire sample, African Americans who had all three experiences performed better than those with none on the PPVT, ECLS-K Math, and Matrix Reasoning, and had more cumulative success than those with only one or none.

Hispanics. Again differences were mostly similar to findings for the sample overall, although in some cases having any two experiences was better than having one or none. Specifically, children with all three experiences performed better on the PPVT, ECLS-K Reading, and Matrix Reasoning than those with one or none and any two experiences were better than one. For ECLS-K Math, Cumulative Success, and Family Involvement, having two experiences was better than having just one and in all cases except for Attention Problems, also better than having none. However, for two experiences versus one or none, the associations only held for ECLS-K Math and Family Involvement once adjusted for site, risk, and language.

Figure IV.3 Racial/Ethnic Composition for the Overall Sample and Each of the Cumulative Educational Experiences Groups (Excluding Other Race)



Context for Race/Ethnicity

By grade 5, children from the three racial/ethnic groups did not have equal access to school resources. As noted elsewhere, school poverty combined with high racial segregation is associated with poorer student outcomes (Harris 2007; Lee 2004). Considering (1) percentage of free and reduced-price lunch students, (2) percentage of (any) minority students, and (3) teacher-child ratio as indicators, white children were in the most advantaged schools and Hispanic children were in the least advantaged, with African American students in schools between the two. White children were more likely to attend schools below the sample mean in percentage of children receiving free and reduced-price lunch (44 vs. 66 percent for African American children and 69 percent for Hispanic children) and with fewer minority students (23 percent for whites vs. 66 percent for African Americans and 74 percent for Hispanic children). More than two-thirds of Hispanic students attended schools that were above the sample mean for percentage of children eligible for free and reduced-price lunch. Additionally, Hispanic students were in schools with the poorest teacher-child ratios (most children per teacher) and three-quarters were in schools that were predominantly minority.

C. Conclusions

Consistent with the impact analyses presented in Chapter III, the nonexperimental analyses show that Early Head Start enrollment was not significantly associated with key child and family outcomes when children were in fifth grade. The analyses revealed a few significant associations within racial/ethnic groups, however, with several favorable associations among white and African American children but unfavorable associations among Hispanic children. Among white and African American children, these associations reflected those found in the impact analyses. Among Hispanic children, a negative association between Early Head Start and ECLS-K Mathematics scores did not reach statistical significance in the impact models, although the direction was the same.

Participation in a formal early care and education program at ages 3 and 4 was not significantly associated with cognitive outcomes in fifth grade, but it was associated with more externalizing behaviors, internalizing behaviors, and attention problems. Similar associations were found when children were entering kindergarten; however, the associations were small and did not rise to the level of clinical importance (Kisker et al., unpublished manuscript). Among African American children, formal program participation at ages 3 and 4 was associated with more family involvement in school when children were in fifth grade.

Attending a higher-poverty school in fifth grade was associated with poorer academic outcomes and a lower cumulative success index. These associations were found within all of the racial/ethnic subgroups. Attending a school with a higher concentration of minority students was associated with lower PPVT scores and more externalizing behavior problems. Generally, minority students fared better when in schools with a moderate concentration of minorities compared to those in schools with high or low concentrations of same-minority students. For example, Hispanic students attending mixed-ethnicity schools performed better on language and literacy outcomes (PPVT and ECLS-K Reading) than those attending schools with a low or high concentration of Hispanics. African American students attending schools with a low concentration of African Americans tended to have more externalizing and attention problems compared to those attending mixed-race schools.

For the most part, the individual early care and school experiences of children prior to fifth grade were not strongly associated with children's academic and social-emotional outcomes for the sample overall relative to elementary school characteristics at fifth grade. School characteristics at fifth grade were individually associated with both social emotional and academic outcomes. However cumulatively, having a higher number of potentially supportive program and educational

experiences (Early Head Start, formal early care and education at ages 3 and 4, and attendance at a lower-poverty school) was associated with better academic outcomes in fifth grade.

Table IV.3 Unadjusted and Adjusted Means[1] of Outcomes by Cumulative Educational Experiences Groups

	All 3	Any 2	Any 1	None	F-test
PPVT					
Unadjusted	99.46 (13.27)[ab]	96.15 (15.61)[cd]	91.93 (15.82)[ac]	89.28 (15.65)[bd]	***
Adjusted for site	96. 41 (6.17)[ab]	95.12 (6.43)[cd]	93.47 (7.19)[ace]	91.04 (7.15)[bde]	***
Adjusted for site, race/ethnicity, risk factors, and language	96.60 (6.96)[ab]	95.55 (7.36)[cd]	93.42 (8.09)[ace]	90.49 (7.48)[bde]	***
ECLS-K Reading					
Unadjusted	133.51 (31.25)[ab]	130.87 (26.13)[cd]	124.27 (27.67)[ac]	122.03 (28.83)[bd]	***
Adjusted for site	129.49 (7.62)[ab]	129.08 (8.58)[cd]	127.05 (9.71)[ace]	125.04 (10.08)[bde]	***
Adjusted for site, race/ethnicity, risk factors, and language	129.72 (9.00)[ab]	129.64 (9.79)[cd]	126.90 (10.89)[ace]	124.36 (10.81)[bde]	***
ECLS-K Math					
Unadjusted	9.02 (4.70)[a]	8.94 (4.64)[bc]	8.03 (4.67)[b]	7.64 (4.63)[ac]	**
Adjusted for site	8.75 (1.24)[ab]	8.57 (1.47))[cd]	8.31 (1.51)[ace]	7.96 (1.58)[bde]	***
Adjusted for site, race/ethnicity, risk factors, and language	8.78 (1.61)[ab]	8.69 (1.76)[cd]	8.29 (1.78)[ace]	7.89 (1.80)[bde]	***
Matrix Reasoning					
Unadjusted	9.00 (3.36)[ab]	8.86 (3.27)[cd]	8.11 (3.17)[ac]	8.01 (3.36)[bd]	***
Adjusted for site	8.69 (0.76)[ab]	8.57 (0.84)[cd]	8.35 (0.94)[ace]	8.07 (1.03)[bde]	***
Adjusted for site, race/ethnicity, risk factors, and language	8.68 (0.83)[ab]	8.60 (0.89)[cd]	8.35 (1.01)[ace]	8.06 (1.10)[bde]	***
CBCL Externalizing Problems					
Unadjusted	8.33 (7.96)	7.73 (7.28)	8.29 (8.15)	7.93 (8.66)	ns
Adjusted for site	8.03 (1.61)	7.87 (1.64)	8.07 (1.63)	7.76 (1.58)	+
Adjusted for site, race/ethnicity, risk factors, and language	8.06 (2.43)	7.91 (2.23)	8.08 (2.33)	7.64 (2.54)	ns
CBCL Internalizing Problems					
Unadjusted	6.22 (6.29)	5.77 (5.94)	5.75 (5.42)	5.51 (5.78)	ns
Adjusted for site	5.85 (1.22)	5.73 (1.27)	5.90 (1.28)	5.66 (1.35)	+
Adjusted for site, race/ethnicity, risk factors, and language	5.83 (1.40)	5.75 (1.34)	5.90 (1.39)	5.63 (1.46)	+
CBCL Attention Problems					
Unadjusted	4.20 (4.14)	4.09 (3.71)	4.16 (3.84)	3.63 (3.62)	ns
Adjusted for site	4.14 (0.75)[a]	4.07 (0.71)[b]	4.12 (0.73)[c]	3.91 (0.62)[abc]	**
Adjusted for site, race/ethnicity, risk factors, and language	4.61 (1.05)	4.62 (1.01)	4.65 (1.08)	4.42 (1.21)	+
Cumulative Success					
Unadjusted	2.39 (1.38)[a]	2.38 (1.21)[b]	2.05 (1.25)[ab]	2.13 (1.25)	***
Adjusted for site	2.26 (0.25)[ab]	2.26 (0.28)[cd]	2.19 (0.31)[ac]	2.14 (0.31)[bd]	***
Adjusted for site, race/ethnicity, risk factors, and language	2.28 (0.34)[ab]	2.28 (0.34)[cd]	2.18 (0.37)[ac]	2.13 (0.38)[bd]	***
Family Involvement					
Unadjusted	36.42 (7.04)	37.01 (6.34)[a]	35.89 (6.67)[a]	36.55 (6.73)	+
Adjusted for site	36.48 (1.14)	36.65 (1.24)[ab]	36.31 (1.70)[a]	36.04 (2.02)[b]	***
Adjusted for site, race/ethnicity, risk factors, and language	36.57 (1.29)[a]	36.66 (1.40)[bc]	36.28 (1.85)[bd]	35.91 (2.15)[acd]	***

Source: Parent interviews, child interviews, and child assessments conducted when children were in grade 5. CBCL = Child Behavior Check List; ECLS-K = Early Childhood Longitudinal Study-Kindergarten Class of 1998-99; PPVT = Peabody Picture Vocabulary Test-Third Edition, ns = non-significant.

Note: Groups with the same superscript letters are significantly different (at least $p < .05$) for pairwise comparisons.

[1]Standard deviation in parentheses

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

Table IV.4 Unadjusted and Adjusted Means of Outcomes by Cumulative Educational Experiences Groups, White

	All 3	Any 2	Any 1	None	F-test
PPVT					
Unadjusted	103.45 (11.62)	101.55 (15.28)	100.01 (14.08)	100.61 (13.67)	ns
Adjusted for site	101.71 (3.15)	101.92 (2.69)	101.58 (2.76)	101.31 (2.67)	ns
Adjusted for site, risk factors, and language	101.86 (4.56)	102.01 (3.32)	101.51 (3.73)	101.01 (3.66)	ns
ECLS-K Reading					
Unadjusted	138.05 (29.90)	135.39 (24.88)	133.02 (27.05)	136.07 (25.45)	ns
Adjusted for site	134.47 (6.95)	136.25 (7.49)	135.54 (8.16)	137.91 (8.46)	+
Adjusted for site, risk factors, and language	134.79 (8.75)	136.36 (8.55)	135.38 (9.19)	137.27 (8.76)	ns
ECLS-K Math					
Unadjusted	10.11 (4.38)	10.03 (4.35)	9.49 (4.51)	10.08 (4.35)	ns
Adjusted for site	9.60 (1.04)[a]	9.96 (1.07)	9.90 (1.04)	10.19 (1.04)[a]	*
Adjusted for site, risk factors, and language	9.66 (1.33)	9.78 (1.26)	9.87 (1.28)	10.13 (1.26)	ns
Matrix Reasoning					
Unadjusted	8.94 (3.56)	9.45 (3.23)	8.65 (2.94)	9.04 (2.83)	+
Adjusted for site	8.98 (0.51)	9.09 (0.31)	9.02 (0.56)	9.07 (0.61)	ns
Adjusted for site, risk factors, and language	8.99 (0.55)	9.09 (0.41)	9.02 (0.61)	9.07 (0.69)	ns
CBCL Externalizing Problems					
Unadjusted	10.14 (8.65)	8.23 (7.36)[a]	10.64 (9.55)[a]	9.00 (10.72)	*
Adjusted for site	9.64 (2.13)	9.23 (1.86)	9.62 (2.31)	9.63 (2.49)	ns
Adjusted for site, risk factors, and language	9.63 (2.68)	9.17 (2.27)	9.70 (2.81)	9.90 (2.94)	ns
CBCL Internalizing Problems					
Unadjusted	7.37 (6.68)	6.57 (6.30)	6.73 (5.71)	5.86 (6.31)	ns
Adjusted for site	6.77 (1.07)	6.72 (1.09)	6.88 (0.95)	7.00 (0.84)	ns
Adjusted for site, risk factors, and language	6.83 (1.23)	6.71 (1.25)	6.90 (1.21)	7.04 (1.39)	ns
CBCL Attention Problems					
Unadjusted	5.21 (4.82)	4.58 (3.89)	5.05 (4.22)	3.92 (3.98)	ns
Adjusted for site	4.92 (0.83)	4.78 (0.93)	4.93 (0.95)	4.79 (0.90)	ns
Adjusted for site, risk factors, and language	4.87 (1.05)	4.77 (0.98)	4.96 (1.03)	4.87 (0.87)	ns
Cumulative Success					
Unadjusted	2.35 (1.46)	2.41 (1.24)	2.26 (1.39)	2.52(1.49)	ns
Adjusted for site	2.33 (0.33)	2.41 (0.33)	2.37 (0.35)	2.42 (0.40)	ns
Adjusted for site, risk factors, and language	2.32 (0.38)	2.41 (0.37)	2.37 (0.40)	2.40 (0.46)	ns
Family Involvement					
Unadjusted	35.40 (7.67)	37.15 (6.23)	36.49 (6.11)	38.16 (5.92)	+
Adjusted for site	36.63 (1.33)	36.81 (1.04)	36.66 (1.05)	36.69 (1.34)	ns
Adjusted for site, risk factors, and language	36.71 (1.76)	36.77 (1.29)	36.66 (1.27)	36.61 (1.38)	ns

Source: Parent interviews, child interviews, and child assessments conducted when children were in grade 5. CBCL = Child Behavior Check List; ECLS-K = Early Childhood Longitudinal Study-Kindergarten Class of 1998-99; PPVT = Peabody Picture Vocabulary Test-Third Edition, ns = non-significant.

Note: Groups with the same superscript letters are significantly different (at least $p < .05$) for pairwise comparisons.

[1]Standard deviation in parentheses

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

Table IV.5 Unadjusted and Adjusted Means1 of Outcomes by Cumulative Educational Experiences Groups, African American

	All 3	Any 2	Any 1	None	F-test
PPVT					
Unadjusted	93.62 (13.28)[a]	89.48 (13.72)	86.55 (12.70)[a]	86.66 (14.86)	*
Adjusted for site	89.34 (5.84)	88.44 (4.74)	88.03 (4.85)	88.92 (5.09)	+
Adjusted for site, risk factors, and language	89.82 (6.34)[a]	88.27 (5.16)	88.01 (5.24)	86.71 (5.62)[a]	*
ECLS-K Reading					
Unadjusted	128.25 (31.45)	124.47 (27.28)	117.66 (26.16)	116.90 (31.23)	*
Adjusted for site	122.79 (11.52)	122.20 (7.93)	121.06 (8.36)	119.72 (9.24)	ns
Adjusted for site, risk factors, and language	123.77 (12.42)	121.85 (9.24)	121.06 (9.20)	119.14 (10.45)	+
ECLS-K Math					
Unadjusted	7.40 (4.90)	7.25 (4.56)	6.49 (4.44)	5.74 (4.65)	+
Adjusted for site	6.95 (1.94)	6.80 (1.41)[a]	6.70 (1.45)	6.22 (1.47)[a]	*
Adjusted for site, risk factors, and language	7.05 (2.06)[a]	6.77 (1.51)	6.67 (1.47)	6.19 (1.60)[a]	*
Matrix Reasoning					
Unadjusted	8.86 (3.40)	8.20 (2.25)	7.58 (3.36)	7.20 (3.47)	*
Adjusted for site	8.07 (1.21)[a]	8.01(0.97)[b]	7.88 (0.96)[c]	7.48 (1.08)[abc]	**
Adjusted for site, risk factors, and language	8.07 (1.25)[a]	7.99 (1.01)[b]	7.87 (0.98)	7.48 (1.15)[ab]	**
CBCL Externalizing Problems					
Unadjusted	7.09 (7.10)	7.39 (7.36)	7.24 (6.94)	9.00 (9.04)	ns
Adjusted for site	7.52 (2.08)	7.51 (1.76)	7.65 (1.86)	7.32 (2.11)	ns
Adjusted for site, risk factors, and language	7.39 (2.19)	7.54 (1.91)	7.60 (1.94)	7.43 (2.40)	ns
CBCL Internalizing Problems					
Unadjusted	5.41 (5.80)	4.34 (4.69)	4.63 (4.69)	4.90 (6.04)	ns
Adjusted for site	4.86 (1.90)	4.71 (1.57)	4.82 (1.62)	4.65 (1.83)	ns
Adjusted for site, risk factors, and language	4.79 (1.94)	4.73 (1.60)	4.78 (1.65)	4.72 (1.90)	ns
CBCL Attention Problems					
Unadjusted	3.25 (3.07)	3.69 (3.29)	3.78 (3.60)	4.13 (3.62)	ns
Adjusted for site	2.95 (0.62)	2.91 (0.53)	2.90 (0.55)	2.79 (0.57)	ns
Adjusted for site, risk factors, and language	4.79 (1.94)	4.83 (1.60)	4.78 (1.65)	4.72 (1.90)	ns
Cumulative Success					
Unadjusted	2.53 (1.26)[a]	2.29 (1.17)[b]	1.8 (1.15)[ab]	2.03 (1.18)	**
Adjusted for site	2.18 (0.45)	2.11 (0.30)	2.07 (0.29)	2.04 (0.24)	+
Adjusted for site, risk factors, and language	2.23 (0.47)[ab]	2.11 (0.35)	2.06 (0.31)[a]	2.02 (0.28)[b]	**
Family Involvement					
Unadjusted	39.89 (5.34)[a]	37.56 (6.42)	36.75 (6.71)[a]	37.21 (6.73)	*
Adjusted for site	37.21 (1.31)	37.38 (1.39)	37.45 (1.42)	37.34 (1.53)	ns
Adjusted for site, risk factors, and language	37.37 (.34)	37.42 (1.59)	37.42 (1.55)	37.27 (1.62)	ns

Source: Parent interviews, child interviews, and child assessments conducted when children were in grade 5. CBCL = Child Behavior Check List; ECLS-K = Early Childhood Longitudinal Study-Kindergarten Class of 1998-99; PPVT = Peabody Picture Vocabulary Test-Third Edition, ns = non-significant.

Note: Groups with the same superscript letters are significantly different (at least $p < .05$) for pairwise comparisons.

[1]Standard deviation in parentheses

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

Table IV.6 Unadjusted and Adjusted Means1 of Outcomes by Cumulative Educational Experiences Groups, Hispanic

	All 3	Any 2	Any 1	None	F-test
PPVT					
Unadjusted	98.38 (14.29)[ab]	94.40 (15.07)[cd]	87.10 (16.63)[ac]	84.52 (14.10)[bd]	***
Adjusted for site	93.64 (5.86)[ab]	91.58 (5.48) [cd]	88.22 (6.68)[ac]	87.27 (5.78)[bd]	***
Adjusted for site, risk factors, and language	94.12 (6.79)[ab]	91.69 (5.93)[cd]	88.19 (7.86)[ac]	86.67 (5.54)[bd]	***
ECLS-K Reading					
Unadjusted	126.36 (33.24)	129.88 (25.40)	120.01 (27.94)	119.67 (24.75)	*
Adjusted for site	126.07 (7.66)[a]	125.71 (6.70)[bc]	121.55 (9.48)[b]	120.33 (7.92)[ac]	***
Adjusted for site, risk factors, and language	126.36 (7.27)[ab]	125.92 (7.40)[cd]	121.61 (10.13)[ac]	119.58 (7.72)[bd]	***
ECLS-K Math					
Unadjusted	7.76 (4.26)	9.18 (4.54)	7.64 (4.42)	8.06 (4.05)	+
Adjusted for site	8.34 (1.00)	8.63 (1.04)[ab]	7.95 (1.31)[a]	7.96 (1.27)[b]	***
Adjusted for site, risk factors, and language	8.46 (1.28)	8.65 (1.31)[ab]	7.93 (1.51)[a]	7.78 (1.33)[b]	***
Matrix Reasoning					
Unadjusted	9.10 (3.64)	8.51 (3.43)	7.88 (3.36)	8.14 (3.43)	ns
Adjusted for site	8.60 (1.19)[ab]	8.46 (1.21)	7.90 (1.18)[a]	7.85 (1.10)[b]	***
Adjusted for site, risk factors, and language	8.60 (1.16)[ab]	8.47 (1.24)[cd]	7.91 (1.22)[ac]	7.81 (1.12)[bd]	***
CBCL Externalizing Problems					
Unadjusted	6.33 (6.63)	6.73 (6.98)	6.61 (7.01)	6.44 (6.54)	ns
Adjusted for site	6.97 (1.76)	6.74 (1.75)	7.00 (1.72)	6.89 (1.73)	ns
Adjusted for site, risk factors, and language	6.59 (2.67)	5.99 (1.96)	6.56 (2.30)	6.35 (2.57)	ns
CBCL Internalizing Problems					
Unadjusted	5.31 (5.93)	5.78 (5.93)	5.99 (5.78)	5.54 (4.89)	ns
Adjusted for site	5.57 (2.09)	5.38 (1.37)	5.75 (1.01)	5.72 (0.99)	ns
Adjusted for site, risk factors, and language	5.58 (2.23)	5.39 (1.37)	5.76 (1.09)	5.66 (1.18)	ns
CBCL Attention Problems					
Unadjusted	3.40 (3.08)	3.59 (3.37)	3.36 (3.48)	3.03 (3.37)	ns
Adjusted for site	3.23 (0.89)	3.16 (0.77)[a]	3.49 (0.76)[a]	3.39 (0.74)	*
Adjusted for site, risk factors, and language	3.30 (1.41)	3.17 (0.96)	3.48 (1.11)	3.27 (1.21)	ns
Cumulative Success					
Unadjusted	2.14 (1.33)	2.42 (1.16)[a]	1.90 (1.03)[a]	2.00 (1.11)	*
Adjusted for site	2.07 (0.30)	2.16 (0.26)[ab]	2.04 (0.35)[a]	2.01 (0.26)[b]	**
Adjusted for site, risk factors, and language	2.10 (0.39)	2.16 (0.35)	2.04 (0.41)	2.03 (0.35)	+
Family Involvement					
Unadjusted	33.46 (6.19)	36.44 (6.74)	34.12 (6.93)	34.99 (7.19)	+
Adjusted for site	35.02 (2.75)	35.72 (1.59)[ab]	34.46 (2.59)[a]	34.49 (2.23)[b]	***
Adjusted for site, risk factors, and language	35.11 (2.87)	35.72 (1.89)[ab]	34.45 (2.73)[a]	34.38 (2.29)[b]	***

Source: Parent interviews, child interviews, and child assessments conducted when children were in grade 5. CBCL = Child Behavior Check List; ECLS-K = Early Childhood Longitudinal Study-Kindergarten Class of 1998-99; PPVT = Peabody Picture Vocabulary Test-Third Edition, ns = non-significant.

Note: Groups with the same superscript letters are significantly different (at least $p < .05$) for pairwise comparisons.

[1]Standard deviation in parentheses

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

V. REFERENCES

Achenbach, T. M., and L. A. Rescorla. *Manual for the ASEBA School-Age Forms & Profiles*. Burlington, VT: University of Vermont, Research Center for Children, Youth, & Families, 2001.

Administration for Children and Families. "Making a Difference in the Lives of Infants and Toddlers and Their Families: The Impacts of Early Head Start." Washington, DC: U.S. Department of Health and Human Services, June 2002a.

Administration for Children and Families. "Making a Difference in the Lives of Infants and Toddlers and Their Families: The Impacts of Early Head Start Volume III: Local Contributions to Understanding Programs and Their Impacts." Washington, DC: U.S. Department of Health and Human Services, June 2002b.

Administration for Children and Families. "Pathways to Quality and Full Implementation in Early Head Start Programs." Washington, DC: U.S. Department of Health and Human Services, December 2002c.

Administration for Children and Families. "Research to Practice: Preliminary Findings from the Early Head Start Prekindergarten Followup." Washington, DC: U.S. Department of Health and Human Services, April 2006. Available at http://www.acf.hhs.gov/programs/opre/ehs/research_practice/reports/prekindergarten_followup/prekindergarten_followup.pdf.

Administration on Children, Youth and Families. "Building Their Futures: How Early Head Start Programs Are Enhancing the Lives of Infants and Toddlers in Low-Income Families." Washington, DC: U.S. Department of Health and Human Services, June 2001.

Andresen E. M., J. A. Malmgren, W. B. Carter, and D. L. Patrick. "Screening for depression in well older adults: evaluation of a short form of the CES-D (Center for Epidemiologic Studies Depression Scale)." *American Journal of Preventive Medicine*, vol. 10, 1994, pp. 77–84.

Bloom, H. "Accounting for No-Shows in Experimental Evaluation Designs." *Evaluation Review*, vol. 8, 1984.

Caldwell, Bettye, and Robert H. Bradley. *Home Observation for Measurement of the Environment: Administration Manual, Revised Edition*. Unpublished manuscript. Little Rock: University of Arkansas at Little Rock, 1984.

Carlson, Barbara. *Early Head Start Research and Evaluation Project: Nonresponse Bias Analysis Through Grade 5 Follow-Up*. Princeton NJ: Mathematica Policy Research, March 2010.

Cook, Gina, and Lori A. Roggman. Father-Toddler Interaction and Academic Outcomes in Grade 5. Head Start Research Conference, Washington, DC, June 2010.

Dunn, L. M., and L. M. Dunn. *Peabody Picture Vocabulary Test-Third Edition*. Circle Pines, MN: American Guidance Service, Inc., 1997.

Harris, D. N. "High Flying Schools, Student Disadvantage, and the Logic of NCLB." *American Journal of Education*, vol. 13, 2007, pp. 367-394. Available at http://web.ebscohost.com/ehost/

detail?hid=8&sid=a11a3b93-9fcf-4580-8d49-599d48da31cf%40sessionmgr13&vid=1&bdata=JnNpdGU9ZWhvc3QtbGl2ZQ%3d%3d#db=eoah&AN=11361338.

Kisker, Ellen Eliason, Jeanne Brooks-Gunn, and Helen Raikes, "Influences of Early Care and Education Experiences Birth to Age 5 on Prekindergarten Outcomes." In What Makes a Difference? Early Head Start Evaluation Findings in a Longitudinal Context." Love, John. M., Rachel Chazan-Cohen, Helen Raikes, and Jeanne Brooks-Gunn (eds.), Unpublished manuscript, 2010.

Lee, C. *Racial segregation and educational outcomes in metropolitan Boston.* Cambridge, MA: The Civil Rights Project at Harvard University, 2004.

Loeber, R., M. Stouthamer-Loeber, W. Van Kammen, and D. Farrington. "Initiation, Escalation and Desistence in Juvenile Offending and Their Correlates." *Journal of Criminal Law and Criminology*, vol. 82, 1991, pp. 36–49.

Love, John M., Ellen Eliason Kisker, Christine Ross, Helen Raikes, Jill Constantine, Kimberly Boller, Jeanne Brooks-Gunn, Rachel Chazan Cohen, Louisa Banks Tarullo, Christy Brady-Smith, Allison S. Fuligni, Peter Z. Schochet, Diane Paulsell, and Cheri Vogel. "The Effectiveness of Early Head Start for 3-Year-Old Children and Their Parents: Lessons for Policy and Programs." *Developmental Psychology,* vol. 41, 2005, pp. 885–901. Available at http://www.apa.org/pubs/journals/releases/dev-416885.pdf.

Love, J. M., C. Vogel, R. C. Cohen, H. H. Raikes, E. E. Kisker, and J. Brooks-Gunn. "The Early Head Start Evaluation: Impacts at the End of the Program, Two Years Later, and the Context for Ongoing Research." Poster presented at the Biennial Meeting of the Society for Research in Child Development, Denver, Colorado, April 2009.

Moos, R. H., and B. S. Moos. "A typology of family social environments." *Family Process*, vol. 15, 1976, pp. 357-372. Muthén, L. K., and B. O. Muthén. *Mplus User's Guide*, 5th ed. Los Angeles, CA: Muthén & Muthén, 2007.

Orfield, Gary, and Susan E. Eaton. Dismantling Desegregation: The Quiet Reversal of Brown v. Board of Education. New York: New Press, 1996.

Ross, C. E., J. Mirowsky, and J. Huber, "Dividing work, sharing work, and in between." Marriage Patterns and Depression, vol. 48, 1983, pp. 809-823.**r**

Stattin, H., and M. Kerr. "Parent Monitoring: A Reinterpretation." Child Development, vol. 71, 2000, pp. 1072–1085.

U.S. Department of Health and Human Services. "Compilation of the Head Start Act, 1998." Available at http://eclkc.ohs.acf.hhs.gov/hslc/Program%20Design%20and%20Management/Head%20Start%20Requirements/Head%20Start%20Act/HS_ACT_1998.pdf.

Wechsler, David. WISC-IV® Wechsler Intelligence Scale for Children**.** San Antonio, TX: The Psychological Corporation, 2003.

West, Jerry, Julie Ingels, Melissa Dugger, Andrew Frost, Anne Bloomenthal, Cheri Vogel, and Sara Skidmore. *Early Head Start 5th-Grade Follow-up Data Users Manual.* Princeton, NJ: Mathematica Policy Research, 2009.

APPENDIX A

TABLES

A.1 Early Head Start Grade 5 Sample Response Disposition by Subgroup

A.2 Early Head Start Grade 5 Sample Response Disposition and Response Rates

A.3 Evaluation Sample Sizes, by Site and Research Status

A.4 Comparison of Baseline, Wave 3, and Wave 5 Respondents (Column Percents)

A.5 Comparison of the Baseline Characteristics of Respondents and the Full Sample of Respondents and Nonrespondents at Grade 5, by Research Status

A.6 Child-Level Outcomes

A.7 Descriptive Statistics for Selected Child Outcomes at Grade 5

A.8 Descriptive Statistics for Selected Family Outcomes at Grade 5

A.9 Cronbach Alpha Coefficients for Selected Child Outcomes at Grade 5

Table A.1: Early Head Start Grade 5 Sample Response Disposition by Subgroup

	Baseline Sample	G5 Sample	Worked Cases	G5 Completes[a]	Program Completes	Control Completes
Program Type						
Center-Based	612	565	528	346	183	163
Home-Based	1,385	1,226	1,183	749	397	352
Mixed Approach	1,004	910	874	537	262	275
Race/Ethnicity						
White	1,091	992	935	620	328	292
African American	1,014	928	899	562	285	277
Hispanic	693	612	579	363	187	166
Risk Group						
Lowest Risk	1,203	1,112	1,045	721	370	351
Moderate Risk	863	785	751	459	236	223
Highest Risk	738	640	610	348	179	169
Full Sample	**3,001**	**2,701**	**2,565**	**1,632**	**842**	**790**

Source: Tracking file.

[a]Completed the parent interview or child assessment.

Table A.2: Early Head Start Grade 5 Sample Response Disposition and Response Rates

	Participants	Percentage
Final Status		
Not Worked		
Never responded since baseline	300	10.0
Moved outside U.S.	89	3.0
Harsh refusal prior wave	47	1.6
Worked but not completed		
Unlocatable	459	15.3
Located, no data collected	470	15.6
Incomplete[a]	4	0.1
Completed		
Completed[b]	1,632[a]	54.4
Total Sample at Baseline	3,001	100.0

Source: Tracking file.

[a]The 1,632 cases completed either a child assessment or a parent interview. Four cases completed only a parent-child interaction or a home observation but not the parent interview or child assessment and thus were not included.

[b]Completed the parent interview or child assessment.

Table A.3 Evaluation Sample Sizes, by Site and Research Status

Site	Program Group	Control Group	Combined Sample
1	53	48	101
2	38	28	66
3	35	42	77
4	45	36	81
5	36	37	73
6	52	48	100
7	47	50	97
8	56	58	114
9	55	56	111
10	34	26	60
11	65	43	108
12	47	44	91
13	72	62	134
14	48	47	95
15	49	55	104
16	59	57	116
17	51	53	104
All Sites	**842**	**790**	**1,632**

Note: Sites are in random order.

Table A.4 Comparison of Baseline, Wave 3, and Wave 5 Respondents (Column Percents)

Variable	Value	Baseline	Wave 3 (36 mos) Respondents	Wave 5 (grade 5) Respondents
		n = 3,001	n = 2,127	n = 1,632[b]
Site Characteristics				
Program Approach	Center-based	20.4	21.9	21.2
	Home-based	46.2	45.1	45.9
	Mixed	33.5	33.0	32.9
	Overall program fully implemented	69.7	*72.3	+72.3
Family and Parent Characteristics				
Mother <20 When Focus Child Born	No	61.7	62.7	62.3
	Yes	38.3	37.3	37.7
Highest Grade Completed	<12	47.8	45.6	*43.9
	12 or GED	28.6	29.1	29.5
	>12	23.7	25.3	26.6
Race-Ethnicity	White non-Hispanic	37.2	39.7	38.7
	Black non-Hispanic	34.6	33.1	35.1
	Hispanic	23.6	22.9	22.0
	Other	4.6	4.3	4.2
Primary Occupation	Employed	23.4	24.7	+26.3
	School/Training	21.7	21.3	22.0
	Other	54.9	54.0	51.7
Primary Language	Not English	21.4	20.4	+19.2
	English	78.6	79.6	80.8
Living Arrangement	Spouse	25.2	26.5	25.8
	Other adults	38.7	38.7	39.7
	Alone	36.1	34.8	34.4
Percent of Poverty Level	<33	30.1	28.7	29.6
	33-66	30.9	30.8	29.6
	67-99	25.3	26.3	25.8
	100+	13.8	14.2	15.1
Got AFDC	No	64.9	67.0	+67.9
	Yes	35.1	33.0	32.1
Maternal Risk Level[a]	0-2 risks	42.9	45.5	**47.2
	3 risks	30.8	30.1	30.0
	4-5 risks	26.3	24.4	22.8
Randomization Date	Before 10/96	36.3	35.6	35.7
	10/96 – 6/97	30.5	29.9	30.7
	>6/97	33.2	34.6	33.6
Characteristics of Focus Child				
Age of Focus Child at Random Assignment	Unborn	25.4	24.9	26.3
	0-4 months	35.4	35.1	34.4
	5+ months	39.2	40.1	39.3
Focus Child Gender	Female	49.0	49.5	48.8
	Male	51.0	50.5	51.2
Focus Child Birth Order	Not first	37.4	38.8	36.7
	First	62.6	61.2	63.3
Low Birthweight (<2500 g)	No	91.0	92.0	91.7
	Yes	9.0	8.0	8.3

Table A.4 *(continued)*

Variable	Value	Baseline	Wave 3 (36 mos) Respondents	Wave 5 (grade 5) Respondents
		n = 3,001	n = 2,127	n = 1,632[b]
Baby Born More Than 3 Weeks Early	No	86.4	87.2	86.7
	Yes	13.6	12.8	13.3
Newborn Stayed in Hospital – Medical Problem	No	83.0	83.2	83.5
	Yes	17.0	16.8	16.6

Source: HSFIS application and enrollment forms and Age 3 and Grade 5 follow-up data.

Note: These calculations include the final updated versions of these variables prior to any imputation. For child/family level variables, missing values were excluded. There were no missing values for the program/area level variables. These variables refer to baseline characteristics among respondents in that wave, not the value of the characteristic at the wave itself.

[a]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.

[b]The 1632 cases completed either a child assessment or a parent interview.

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

Table A.5 Comparison of the Baseline Characteristics of Respondents and the Full Sample of Respondents and Nonrespondents at Grade 5, 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	21.7	20.6	20.2	20.6
Home-based	47.2	44.6	46.7	45.6
Mixed	31.1	34.8	33.1	33.9
Overall Implementation Pattern				
Early implementers	37.3	37.7	34.5	34.8
Later implementers	34.0	35.7	35.0	35.2
Incomplete implementers	28.7	26.6	30.5	30.0
Family and Parent Characteristics				
Age of Mother at Birth of Focus Child				
Younger than 20	38.3	38.9	38.9	39.5
20 to 25	34.3	32.6	33.2	32.0
25 or older	27.3	28.5	27.9	28.5
Mother Was Younger than 19 at First Birth	40.4	39.9	42.9	41.2
Highest Grade Completed				
Less than 12	43.0	44.7	47.7+	47.8
12 or earned a GED	29.6	29.5	27.3+	29.8
More than 12	27.4	25.8	24.9+	22.4
Race and Ethnicity				
White non-Hispanic	39.4	37.9	37.3	37.1
Black non-Hispanic	34.3	35.9	34.2	35.0
Hispanic	22.5	21.5	23.8	23.4
Other	3.9	4.7	4.7	4.5
Primary Occupation				
Employed	26.3	26.3	22.9	23.8
In school or a training program	21.7	22.3	22.0	21.4
Other	52.0	51.4	55.0	54.7
English Language Ability				
Primary language is English	81.9	80.7	80.0	78.2
Primary language is not English but the applicant speaks English well	8.3	10.2	9.6	10.2
Primary language is not English and the applicant does not speak English well	9.8	9.1	10.4	11.6
Living Arrangements				
Living with a spouse	25.4	26.3	24.9	25.4
Living with other adults	39.2	40.3	38.3	39.1
Living with no other adults	35.4	33.4	36.8	35.5
Adult Male Present in the Household	39.4	40.9	38.1	39.1
Number of Adults in the Household[d]				
1	36.8	34.4	37.8	36.6
2	50.4	52.0	49.7	50.8
3 or more	12.8	13.6	12.4	12.6

Table A.5 *(continued)*

Variable	Respondents		Respondents and Nonrespondents	
	Program Group	Control Group[a]	Program Group[b]	Control Group[c]
Number of Children Less than 6 Years Old in the Household Other than the Focus Child				
0	64.7	65.8	64.2	64.7
1	28.2	25.9	27.0	26.6
2 or more	7.1	8.3	8.7	8.0
Number of Children Between 6 and 17 in the Household				
0	65.8	67.0	64.2	65.9
1	22.5	20.7	23.1	21.2
2 or more	11.8	12.3	12.6	12.2
Number of Moves in the Past Year				
0	54.1	51.2	49.5	49.8
1	27.1	27.9	28.9	28.1
2 or more	18.8	20.9	21.7	22.1
Owns Home	13.0	13.4	11.0	11.1
Household Income as a Percent of the Poverty Level (Percent)				
Less than 33	24.2	25.3	25.1	24.4
33 to 67	26.5	23.0	27.0	23.8
67 to 99	21.0	22.3	20.0	21.6
100 or more	12.5	12.8	11.0	11.6
Welfare Receipt				
AFDC/TANF[e]	31.8	32.4	35.6+	34.7
Food Stamps	44.3	43.9	48.0+	47.8+
Medicaid	76.2	73.8	76.7	74.7
SSI	7.0	7.1	7.0	7.0
WIC	88.4	86.2	87.5	86.0
Public housing	10.2	7.7	9.5	8.9
Has Inadequate Resources				
Food	4.5	7.7**	4.9	6.3
Housing	11.1	12.0+	12.3	13.3
Money to buy necessities	18.2	20.9	20.8	21.7
Medical care	13.2	15.7	14.0	14.7
Transportation	19.3	21.2	20.9	22.4
Child care	32.0	34.0	34.4	34.7
Money for supplies	21.4	31.5***	27.1*	29.4
Support from friends	10.9	11.7	13.0	14.0
Maternal Risk Index[f]				
0 or 1 (low risk)	47.1	47.2	42.3*	43.5
2 or 3 (moderate risk)	30.1	30.0	30.8*	30.7
4 or 5 (high risk)	22.8	22.8	26.9*	25.8
Random Assignment Date				
Before 10/96	35.6	35.7	36.0	36.5
10/96 to 6/97	29.6	31.9	30.2	30.9
After 6/97	34.8	32.4	33.8	32.7
Previously Enrolled in Head Start or Another Childhood Development Program[e]	13.6	14.3	12.8	13.4

Table A.5 *(continued)*

Variable	Respondents		Respondents and Nonrespondents	
	Program Group	Control Group[a]	Program Group[b]	Control Group[c]
Characteristics of Focus Child				
Age (Months)				
Unborn	25.2	27.5	24.2	26.6
Less than 5	33.7	35.2	36.1	34.7
5 or more	41.1	37.3	39.7	38.7
Male	50.6	51.8	51.7	50.4
First Born	62.8	63.9	62.3	62.8
Birthweight Less than 2,500 Grams[e]	9.0	7.9	9.9	8.4
Born more than 3 Weeks Early[e]	14.8	12.5	15.8	12.0
Stayed in Hospital After Birth[e]	17.1	17.0	18.3	16.1
People Concerned About the Child's Overall Health and Development[e]	11.7	13.9	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]	5.8	7.2	6.0	6.9
Risk Categories				
Has established risks[e]	10.3	10.1	11.6	10.6
Has biological or medical risks[e]	16.6	16.4	18.3	16.9
Has environmental risks[e]	28.6	35.7**	32.5+	36.4
Covered by Health Insurance[e]	91.0	90.8	90.1	89.6
Sample Size	**842**	**787**	**1,513**	**1,488**

Source: HSFIS application and enrollment forms and Grade 5 follow-up 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.

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

Table A.6 Child-Level Outcomes

Child Social-Emotional Outcomes	
Child Behavior Checklist for 6-18 Year Old Children (CBCL-6/18)	The CBCL (Achenbach & Rescorla, 2001) is a parent-reported measure of child behavioral and emotional problems. Subscales include Anxious/Depressed (13 items), Withdrawn/Depressed (8 items), Somatic Complaints (11 items), Social Problems (11 items), Thought Problems (15 items), Attention Problems (10 items), Rule-Breaking Behavior (17 items), and Aggressive Behavior (18 items). Impact analyses focused on three subscales: Internalizing Behavior Problems (comprised by the Anxious/Depressed, Withdrawn/ Depressed, and Somatic Complaints subscales), Externalizing Behavior Problems (comprised by the Rule-Breaking and Aggressive Behavior subscales), and Attention Problems. Parents responded on a scale ranging from 1 (very true) to 3 (somewhat or sometimes true or not true). For each subscale, raw scores were calculated as the sum of all items as long as no more than 8 items were missing from the subscale. Missing items were imputed to the mean of all other items from a subscale for a particular respondent. Prior to summing, items were reverse coded (higher scores indicate greater behavior problems) with values shifted to 0, 1, and 2. The raw scores were also converted to T scores, which were used to determine the clinical cutoffs for constructing the risk and success indices.
Self-Reported Delinquent Behavior	In this 14-item scale, children report whether they have ever engaged in a series of delinquent behaviors (e.g., purposely damaged or destroyed property that wasn't theirs; taken or stolen something from a store without paying for it; cheated on a school test; smoke). Items were drawn from Loeber, Stouthamer-Loeber, Van Kammen, and Farrington 1991, the National Institute of Child Health and Human Development Study of Early Child Care and Youth Development, or created for this study. A summary score was calculated if no more than three items were missing.
Early Childhood Longitudinal Survey – Kindergarten Cohort Self Description Questionnaire (ECLS-K SDQ).	The ECLS-K SDQ is a short self-reported questionnaire that asks children to rate their perceptions of competence and interests in reading, mathematics, and school in general as well as their popularity with peers and competence in peer relationships. Children also report on their own problem behaviors. For the ECLS-K, children responded at 3rd and 5th grade. Subscales used for the present study include Anger/Distractability (6 items), Peer Relations (6 items), and Sad/Lonely/Anxious (8 items). Children responded to items on scale ranging from 1 (not at all true) to 4 (very true). For each subscale, items were recoded and mean scores were calculated if no more than 25 percent of items from that subscale were missing.
Panel Study of Income Dynamics – Child Development Supplement, Wave 2 (PSID-CDS2) Bullying Scale	The 4-item PSID-CDS2 bullying scale asks children to report how often they have been bullied by peers in their school or neighborhood in the past month (e.g., how often have kids in your school or neighborhood taken your things, like your money or lunch, without asking). Children responded on a scale from 1 (never) to 4 (many times). For children who responded to all 4 items, responses were summed.
ADD/ADHD	Parents respond to a single question on whether their child had been diagnosed with Attention Deficit Disorder/Attention Deficit Hyperactivity Disorder since first grade.

Table A.6 *(continued)*

Social-Emotional Risk Index	This dichotomous composite indicates whether the child is at risk based on five social-emotional outcomes: externalizing behavior, internalizing behavior, attention problems, peer bullying, and delinquent behaviors. The former three variables are based on CBCL subscales. Sum scores were transformed to T-scores based on the CBCL scoring manual. Children were considered at risk if their T scores were over 63 for internalizing or externalizing or 69 for attention problems. For peer bullying, risk was defined by a score greater than or equal to 8. For delinquent behavior, risk was defined by a score greater than or equal to 4. If a child's score on any of these five variables indicated risk, then they were considered at risk based on the composite. The index is not defined if the child is missing scores for any of the variables included.
Social-Emotional Success Index	This dichotomous composite defines success as an absence of risk on five social-emotional outcomes: externalizing behavior, internalizing behavior, attention problems, peer bullying, and delinquent behaviors (i.e., the same variables considered for the risk index). For the three CBCL variables, children were considered successful if their T scores were below 60 for internalizing or externalizing or 65 for attention problems. For peer bullying, success was defined by a score less than 8. For delinquent behavior, risk was defined by a score less than 3. A child is considered successful across the variables if scores for each fell within the successful range. The index is not defined if the child is missing scores for any of the variables included.
Child Academic Outcomes	
Peabody Picture Vocabulary Test – Third Edition (PPVT-III), English Receptive Vocabulary	The PPVT-3 (Dunn and Dunn 1997) is a nationally normed measure designed to assess a child's knowledge of the meaning of words and concepts by asking the child to indicate, by pointing, which of four pictures best shows the meaning of a word that is said aloud by the assessor. A series of words is presented, ranging from easy to difficult for children of a given age, each accompanied by a picture plate consisting of four color illustrations. When the level of difficulty becomes too great (as demonstrated by the child's incorrect responses to several items in a set), the test is ended. The PPVT is organized into sets of 12 items with increasing difficulty. The raw scores were converted to age-adjusted, standardized scores with a mean of 100 and a standard deviation of 15. Children with 25 percent or more of the items between the lowest item administered and the ceiling item missing were not scored. A binary variable for children with PPVT-3 standard scores below 85 indicates children with standard scores one standard deviation or more below the mean for their age in the nationally representative, standardization sample.
Wechsler Intelligence Scale for Children – Fourth Edition (WISC-IV), Matrix Reasoning Subscale	The Matrix Reasoning subscale of the WISC-IV (Wechsler, 2003) is a direct assessment of children's cognitive abilities.
ECLS-K Reading	The ECLS-K fifth grade reading assessment included questions in the following content areas: initial understanding, developing interpretation, personal reflection, and critical stance. The Item Response Theory (IRT) scale scores estimated children's performance on the whole set of 186 assessment questions in each content domain.
ECLS-K Mathematics	The ECLS-K fifth grade math assessment included questions in the following content areas: number sense, properties, and operations, measurement, geometry and spatial sense, data analysis, statistics, and probability, and patterns, algebra, and functions. Only the routing form was administered in the EHSREP. Thus the math assessment was a single form of 18 items administered to all children. Items from all content categories were present on the routing form, with the majority of items from the number sense, properties, and operations and measurement categories. Raw scores on the routing form were computed for children.
Retention	Retention is binary variable to determine whether the child has ever repeated any grades.

Table A.6 *(continued)*

Chronic Absenteeism	Absences were based on parent reports to a question asking how often the child had been absent during the current school year. We developed binary variable indicating chronic absenteeism (child is absent a few times a month or more).
Individualized Education Plan (IEP)	This binary variable indicates whether or not the child had an Individualized Education Plan (IEP) at the time of the interview.
Academic Success Index	The academic success index is defined by performance on two academic outcomes: ECLS-K Language and Literacy and Mathematics. For Language and Literacy, children scoring at or above 50 points are considered successful. For Mathematics, the cutoff score is 9.6. For the index, children are categorized as successful if they score above the cutoff for both variables.
Ability Success Index	The ability success index is defined by performance on two cognitive outcomes: the PPVT-III and the WISC-R Matrix Reasoning Subscale. Success on the PPVT is defined by a score greater than or equal to 100. Success on Matrix Reasoning is defined by a score greater than equal to 10. For the index, children are categorized as successful if they score above the cutoff for both variables.
Child Outcomes: Multi-Domain Indices	
Cumulative Risk (number of outcomes of 16)	This cumulative risk index is based on the sum of dichotomous indicators for 16 outcomes from multiple domains including social-emotional (bullying by peers, self-reported delinquent behavior, internalizing behavior, externalizing behavior, peer relations, attention problems), academic (math, language/literacy, absences, retention), cognitive ability (PPVT-III, Matrix Reasoning), and health (general health, chronic illness, BMI, IEP). For social-emotional variables, cutoff scores for bullying by peers, self-reported delinquent behavior, internalizing behavior, externalizing behavior, and attention problems are described above. For peer relations, children scoring below 2.35. For academic variables, cutoff scores are as follows. For ECLS-K Mathematics, children scoring less than or equal to 4.7 fall in the risk category. For ECLS-K Language and Literacy, scores must fall at or below 40. Children who have been retained a grade or who have absences about once a month or more often are also considered at risk. For cognitive ability, risk on the PPVT-III is defined by scores less than or equal to 85 and on Matrix Reasoning by scores less than or equal to 7. In the health domain, children are considered at risk if their parents report they are in fair or poor health, if the child has a chronic illness or IEP, or if they have a BMI of 95 or higher.
Categorical Risk (low, medium, high)	This risk composite is based on the cumulative risk variable described above. Children at low risk have scores on the cumulative risk variable less than or equal to 0.5. Children at medium risk have scores greater than 0.5 and less than or equal to 3. Children at high risk score greater than 3 (i.e., are categorized as at risk by at least 3 of the variables included in the cumulative risk index).
Cumulative Success	This success composite is based on the sum of five indicators of success. Four of those—social-emotional success, academic success, ability success—are defined above. The final indicator is peer success. Children are defined as having successful peer relations if they score at or above 2.98.
Parenting and the Home Environment	
Parent Supervision	This is the child's report of parent monitoring/supervision (Stattin & Kerr, 2000), which includes 3 items about whether parents: (1) Know what you do during your free time? (2) Know who you have as friends during your free time? (3) Know what you spend your money on?

Table A.6 *(continued)*

Severity of Discipline Strategies	This composite measures the degree of harshness of discipline strategies parent used in the past year. It is based on the use of the following five discipline strategies adapted from the Parent-Child Conflict Tactics Scale from most to least severe: spanking (5); threatening to kick the child out or shouting, swearing or yelling at the child (4); threatening the child at all (3); grounding (2); and explaining why the behavior is wrong (1). The scores ranges from 1 to 5, with higher scores on this variable indicating harsher strategies.
Family Involvement in School	This composite is the summed score of 9 questions about family involvement with the child's school, such as whether the respondent is comfortable visiting the school or talking to the teacher about the child. Higher scores on this variable indicate more involvement.
Children's Books (26 or more)	This binary variable indicates whether the child had 26 or more children's books in the home.
Help with Homework	This variable is the mean of two items on support for homework: the frequency an adult checks homework, and the frequency someone helps the child with homework. Higher scores on this variable indicate more frequent help.
HOME Total Score	This composite is the sum of 5 subscales measuring the home environment, consisting of parental warmth, parental lack of hostility, parental verbal skills, the internal environment, and the external environment. Higher scores on this measure indicate higher quality of stimulation and support available to a child in the home environment.
Support for Education	The Support for Education index summarizes nine variables that indicate how parents can support education inside the home (e.g., help with homework) and outside the home (e.g., contact school or teacher). A principal components factor analysis of 16 variables indicated the 9 selected variables all loaded positively onto a single factor. Further analysis indicated the index could be divided into the two factors described above (that is, internal to home and external to home). The indices are based on the mean of variables that had been standardized to a mean of zero and standard deviation of one. Impact analyses explore all three indicators.
Family Well-Being and Mental Health	
Depressive Symptoms (CES-D)	The CES-D Short Form (Ross et al., 1983) measures symptoms of depression. The scale includes 12 items taken from the full, 20-item CES-D scale (Radloff, 1977). Respondents were asked the number of days in the past week they had a particular symptom. Symptoms include poor appetite, restless sleep, loneliness, sadness, and lack of energy. Items were coded on a 4-point scale from rarely (0) to most days (3). Score on the scale range from 0 to 36
Parent Substance Use	Parents were asked to respond to a single question on whether they have ever used any drugs during the past year.
Parent Alcohol Use	Parents were asked to report the largest number of drinks they had in a single day during the past year. Response categories include None (1), between 1 and 3 (2), 4-10 (3), 11-20 (4), and more than 20 drinks (5).
Parenting Distress (PSI)	The Parenting Stress Index-Short Form measures the degree of stress in parent-child relationships stemming from three possible sources: the child's challenging temperament, parental depression, and negatively reinforcing parent-child interactions (Abdin, 1995). Parenting Distress (PD) is one of the two subscales we included. The PD measures the level of distress the parent is feeling in his or her role as a parent, including a low sense of competences a parent and stress because of perceived restrictions stemming from parenting. The parent answers whether or not he or she agrees with statements such as "You have been unable to do new and different things," and "You feel trapped by your responsibilities as a parent." Item responses are coded on a 5-point scale. Scores can range from 5 o 25. Higher scores indicate high levels of parental distress.

Table A.6 *(continued)*

Number of Moves	Parents were asked to respond to a single question on how many different places the child has lived for at least four months or longer since first grade.
Homelessness	Parents were asked to respond to a single question on whether the child has ever been homeless since first grade.
Family Conflict (FES)	The Family Environment Scale (FES) measures the social environments of families, including family relationships, aspects of personal development that can be supported by families and maintenance of the family system (Moos & Moose, 1976). The Family Conflict subscale measures the extent to which acting out and lack of cohesion are characteristics of the family. Parents respond to items on a 4-point scale, where 4 indicates higher levels of agreement with statements such as "We fight a lot," and "We sometime hit each other." Scores can range from 1 to 4.
Parent Child Dysfunctional Interaction (PSI)	Parent Child Dysfunctional Interaction, also a PSI subscale, measures whether a parent perceives that the child does not meet the parent's expectations and whether interactions with the child are not reinforcing the parent.. Parents answer whether they agree or disagree with statements such as "Most times, you feel that your child does not like you and does not want to be close to you" and "When you do things for your child you get the feeling that your efforts are not appreciated very much." Item responses are coded on a 5-point scale. Scores can range from 6 to 30. Higher scores indicate higher levels of parent-child dysfunctional interaction.
Child Reported Relationship with Mother, with Father	Children were asked to report on their relationship with their mother and father using eight items from the ECLS-K SDQ Parent Relationship Scale. Sample items include "Mother/Father understands me," and "Mother/Father and I spend a lot of time together." Children responded on a 4-point scale. Scores can range from 1 to 4, with higher scores indicating better relationships with parents.
Child Exposure to Domestic Violence	Parents responded to a single question on whether the child has been a witness to domestic violence in the past year.
Parent Self-Sufficiency	
Household Annual Income	Parents reported annual household income in categories ranging from 1 ($5K or less), 2 ($5K to 10K), to 13 (more than $200K). Values were recoded to take the dollar value equal to the midpoint of the specific income category.
Income to Needs Ratio	Household's ratio of income to poverty was coded based on household size and income to measure how far below or above the federal poverty threshold their income falls. The ratio is equal to reported household income divided by the poverty threshold for a household of that size.
Mother's Highest Education Level	Mothers reported their highest level of education. Categories include less than high school (1); high school or GED (2); some post secondary education, no degree (3); and Associate degree, Bachelor's degree, or higher (4).
Mother's Employment Status	Mothers responded to questions on whether they are working for pay and the number of hours per week usually worked. Coded categories include full time (1), part time (2), and not working (3).
Current Welfare Participation	This binary variable indicates family current welfare participation and is based on parent report on receipt of TANF, food stamps, general assistance, or SSI or SSA benefits.

Table A.7 Descriptive Statistics for Selected Child Outcomes at Grade 5

Outcome	Descriptive Statistics			
	N	Mean/ Percentage	Standard Deviation	Range
Child Social-Emotional Outcomes				
CBCL Internalizing Behavior	1,622	5.79	5.79	0-37
CBCL Externalizing Behavior	1,622	8.01	7.95	0-54
CBCL Attention Problems	1,622	4.08	3.80	0-20
CBCL Aggressive Behavior	1,622	5.70	5.72	0-30
CBCL Rule-Breaking Behavior	1,622	2.31	2.65	0-24
CBCL Social Problems	1,622	2.67	2.84	0-19
CBCL Anxious/Depressed	1,622	3.06	3.16	0-20
CBCL Withdrawn/Depressed	1,622	1.67	2.12	0-13
CBCL Somatic Complaints	1,622	1.06	1.72	0-11
CBCL Thought Problems	1,622	2.17	2.71	0-19
Self-Reported Delinquent Behavior	1,551	1.51	1.79	0-11
ECLS-K SDQ Anger/Distractibility	1,555	2.12	0.75	1-4
ECLS-K SDQ Sad/Lonely/Anxious	1,554	2.29	0.68	1-4
ECLS-K SDQ Peer Relations	1,551	3.12	0.63	1-4
Self-Reported Bullying by Peers	1,547	6.78	2.69	4-16
ADD/ADHD since First Grade (parent report)	1,619	14.95	35.67	0-1
Social-Emotional Risk Index	1,536	46.88	49.91	0-1
Social-Emotional Success Index	1,536	43.68	49.62	0-1
Child Academic Outcomes				
English Receptive Vocabulary (PPVT-III)	1,544	93.97	15.74	40-138
PPVT-III Standard Score < 85	1,544	28.69	45.25	0-1
Matrix Reasoning (WISC)	1,554	8.44	3.28	1-19
ECLS-K Language and Literacy	1,554	127.57	27.90	31.5-180.7
ECLS-K Mathematics	1,552	8.37	4.66	0-18
Retention (parent report)	1,621	13.45	34.13	0-1
Chronic Absenteeism (parent report)	1,602	10.5	30.7	0-1
Child Has IEP (parent Report)	1,622	16.58	37.21	0-1
Academic Success Index	1,549	27.11	44.47	0-1
Ability Success Index	1,555	21.48	41.08	0-1
Child Outcomes: Multi-Domain Indices				
Cumulative Risk (number of outcomes of 16)	1,433	3.40	2.47	0-13.5
Categorical Risk (low, medium, high)	1,433	1.34	0.67	0-2
Cumulative Success (number of domains of 5)	1,504	2.21	1.25	0-5

Source: Parent interviews, child interviews, and child assessments conducted when children were in Grade 5. CBCL = Child Behavior Check List; ADD/ADHD = Attention Deficit Disorder/Attention Deficit Hyperactivity Disorder; ECLS-K = Early Childhood Longitudinal Study-Kindergarten Class of 1998-99; SDQ = Self Description Questionnaire; PPVT-III = Peabody Picture Vocabulary Test-Third Edition.

Table A.8 Descriptive Statistics for Selected Family Outcomes at Grade 5

Outcome	Descriptive Statistics			
	N	Mean/ Percentage	Standard Deviation	Range
Parenting and the Home Environment				
Parent Supervision	1,545	3.20	0.65	1-4
Severity of Discipline Strategies	1,606	3.84	1.26	1-5
Family Involvement in School	1,592	36.48	6.60	12-45
Children's Books (26 or more)	1,616	58.97	49.20	0-1
Help with Homework	1,602	3.27	87.56	1-4.5
HOME Total Score	1,562	31.12	4.08	9-41
Total Support for Education	1,602	-0.08	4.77	-14.7-15.6
Support for Education, Internal to the Home	1,603	-0.00	2.79	-11.2-3.9
Support for Education, External to the Home	1,602	-0.08	3.24	-7.1-11.7
Family Well-Being and Mental Health				
Depressive Symptoms CES-D (count)	1,620	7.28	6.66	0-36
Parent Substance Use	1,620	8.09	27.27	0-1
Parent Alcohol Use	1,620	0.68	0.77	0-4
Parenting Distress (PSI)	1,621	8.37	3.92	5-25
Number of Moves	1,618	2.35	1.51	1-10
Homelessness	1,622	5.67	23.14	0-1
Family Conflict (FES)	1,622	1.43	0.44	1-3.6
Parent Child Dysfunctional Interaction (PSI)	1,621	9.92	4.59	6-29
Child Reported Relationship with Mother	1,438	3.58	0.42	1.4-4
Child Reported Relationship with Father	921	3.47	0.56	1-4
Child Exposure to Domestic Violence	1,621	6.05	23.84	0-1
Child Outcomes: Multi-Domain Indices				
Household Annual Income (continuous)	1,581	36,064.20	31,057.07	2,500-201,000
Income to Needs Ratio (continuous)	1,579	1.56	1.35	0.1-12.2
Mother's Highest Educational Level	1,368	2.48	1.06	1-4
Mother's Employment Status	1,450	1.83	0.89	1-3
Current Welfare Participation	1,618	46.11	49.86	0-1

Source: Parent interviews and child interviews assessments conducted when children were in Grade 5; HOME = Home Observation for Measurement of the Environment; CES-D=Center for Epidemiological Studies-Depression; FES = Shortened Family Environment Scale; PSI = Parenting Stress Index-Short Form.

Table A.9 Cronbach Alpha Coefficients for Selected Child Outcomes at Grade 5

Outcome	Subgroups			
	All	White	African American	Hispanic
Child Outcomes: CBCL				
CBCL Internalizing Behavior	0.85	0.86	0.85	0.83
CBCL Externalizing Behavior[a]	0.91	0.92	0.91	0.88[b]
CBCL Attention Problems	0.84	0.86	0.81	0.81
CBCL Aggressive Behavior	0.90	0.91	0.89	0.87
CBCL Rule-Breaking Behavior[a]	0.73	0.77	0.71	0.61[b]
CBCL Social Problems	0.73	0.77	0.69	0.69
CBCL Anxious/Depressed	0.77	0.78	0.73	0.75
CBCL Withdrawn/Depressed	0.72	0.75	0.71	0.70
CBCL Somatic Complaints	0.66	0.67	0.69	0.60
CBCL Thought Problems	0.71	0.74	0.63	0.62
Family Well-Being and Mental Health				
Self-Reported Delinquent Behavior	0.66	0.68	0.65	0.65
ECLS-K SDQ Anger/Distractibility	0.78	0.79	0.76	0.80
ECLS-K SDQ Sad/Lonely/Anxious	0.77	0.78	0.76	0.75
ECLS-K SDQ Peer Relations	0.79	0.82	0.76	0.80
Self-Reported Bullying by Peers	0.70	0.72	0.69	0.67
Child Outcomes: Multi-Domain Indices				
Family Involvement in School	0.87	0.86	0.88	0.89
Depressive Symptoms CES-D (count)	0.87	0.88	0.84	0.89
Parenting Distress (PSI)	0.73	0.74	0.72	0.73
Family Conflict (FES)	0.78	0.79	0.78	0.76
Parent Child Dysfunctional Interaction (PSI)	0.77	0.78	0.76	0.76
Child Reported Relationship with Mother	0.85	0.85	0.84	0.86
Child Reported Relationship with Father	0.88	0.86	0.88	0.88
Support for Education	0.68	0.62	0.72	0.66
Support for Education, Internal to the Home	0.65	0.68	0.65	0.61
Support for Education, External to the Home	0.63	0.61	0.67	0.60
Parent Supervision	0.54	0.52	0.52	0.56
HOME Total	0.81	0.82	0.82	0.77

Source: Parent interviews, child interviews, and child assessments conducted when children were in Grade 5. CBCL = Child Behavior Check List; ADD/ADHD = Attention Deficit Disorder/Attention Deficit Hyperactivity Disorder; ECLS-K = Early Childhood Longitudinal Study-Kindergarten Class of 1998-99; SDQ = Self Description Questionnaire; PPVT-III = Peabody Picture Vocabulary Test-Third Edition.

[a]B5PB105 (Child: Other drugs for non-medical purposes) was excluded because it was constant across all observations.

[b]B5PB002 (Child: Drinks alcohol without parents' approval), B5PB073 (Child: Sexual problems), and B5PB099 (Child: Smokes, chews, or sniffs tobacco) were excluded because they were constant across all observations in this subgroup.

APPENDIX B

TABLES

B.1 Pooled Impacts on Child and Family Outcomes at Grade 5, by Risk Group

B.2 Pooled Impacts on Negative Social-Emotional Outcomes at Grade 5, by Risk Group

B.3 Intent-to-Treat Impacts on Child and Family Outcomes at Grade 5

B.4 Intent-to-Treat- Impacts on Child Negative Social-Emotional Outcomes at Grade 5

B.5 Intent-to-Treat Impacts on Child and Family Outcomes at Grade 5, by Program Type

B.6 Intent-to-Treat-Impacts on Child Negative Social-Emotional Outcomes at Grade 5, by Program Type

B.7 Intent-to-Treat Impacts on Child and Family Outcomes at Grade 5, by Race/Ethnicity

B.8 Intent-to-Treat-Impacts on Child Negative Social-Emotional Outcomes at Grade 5, by Race/Ethnicity

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B.15 Weighted Impacts on Child and Family Outcomes at Grade 5, by Race

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B.26 Impacts on Child and Family Outcomes at Grade 5, by Urban Status of Site

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B.37 Impacts on Child Negative Social-Emotional Outcomes at Grade 5, by Pregnancy Status of Primary Caregiver

B.38 Impacts on Child and Family Outcomes at Grade 5, by Birth Order of Child

B.39 Impacts on Child Negative Social-Emotional Outcomes at Grade 5, by Birth Order of Child

B.40 Impacts on Child and Family Outcomes at Grade 5, by Gender of Child

B.41 Impacts on Child Negative Social-Emotional Outcomes at Grade 5, by Gender of Child

Table B.1 Pooled Impacts on Child and Family Outcomes at Grade 5, by Risk Group

Outcome	Low Risk (0-2 Risks)				Moderate Risk (3 Risks)				High Risk (4-5 Risks)			
	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
Child Social-Emotional Outcomes												
CBCL Internalizing Behavior	5.5	5.7	-0.2	-0.03	5.7	6.4	-0.8	-0.13	5.9	6.1	-0.2	-0.03
CBCL Externalizing Behavior	6.8	7.3	-0.5	-0.07	8.3	8.4	-0.1	-0.01	9.2	10.1	-0.8	-0.10
CBCL Attention Problems	3.7	3.9	-0.2	-0.05	4.1	4.3	-0.2	-0.05	4.6	4.7	-0.1	-0.03
Self-Reported Delinquent Behavior	1.3	1.3	-0.1	-0.03	1.6	1.5	0.1	0.08	1.8	1.9	-0.1	-0.07
ECLS-K SDQ Anger/Distractibility	2.0	2.0	0.0	-0.06	2.2	2.1	0.1	0.10	2.3	2.3	0.1	0.07
ECLS-K SDQ Sad/Lonely/Anxious	2.2	2.2	0.0	0.06	2.3	2.3	0.0	0.02	2.4	2.4	0.0	0.04
ECLS-K SDQ Peer Relations	3.1	3.1	0.0	0.01	3.1	3.1	0.0	-0.06	3.2	3.2	0.0	-0.06
Self-Reported Bullying by Peers	6.5	6.5	0.0	0.01	6.6	7.3	-0.7*	-0.25	7.2	7.1	0.1	0.03
ADD/ADHD since First Grade (parent report)	11.5	13.6	-2.1	-0.06	17.2	19.0	-1.9	-0.05	21.5	14.7	6.8	0.19
Social-Emotional Risk Index	40.3	41.8	-1.4	-0.03	46.1	50.4	-4.3	-0.09	55.3	58.4	-3.2	-0.06
Social-Emotional Success Index	50.5	48.3	2.2	0.04	44.9	38.3	6.6	0.13	37.0	32.5	4.5	0.09
Child Academic Outcomes												
English Receptive Vocabulary (PPVT-III)	97.6	96.5	1.1	0.07	93.4	93.9	-0.5	-0.03	88.0	90.1	-2.1	-0.13
PPVT-III Standard Score < 85	21.4	22.5	-1.1	-0.02	27.1	29.0	-1.9	-0.04	46.4	36.3	10.0	0.22
Matrix Reasoning (WISC)*	9.0	8.3	0.7*	0.21	8.4	8.7	-0.3	-0.08	7.7	8.2	-0.5	-0.15
ECLS-K Reading	135.0	130.9	4.2*	0.15	126.1	126.6	-0.5	-0.02	117.1	121.1	-4.0	-0.14
ECLS-K Mathematics+	9.3	9.1	0.2	0.05	7.7	8.6	-0.9+	-0.19	6.6	7.5	-0.9	-0.20
Retention (parent report)	7.0	9.7	-2.7	-0.08	15.9	16.8	-1.0	-0.03	24.8	18.4	6.5	0.19
Chronic Absenteeism (parent report)	10.8	9.0	1.8	0.06	10.5	9.5	1.0	0.04	18.8	10.3	8.6+	0.29
Child Has IEP (parent Report)	12.5	16.3	-3.8	-0.10	18.8	14.7	4.2	0.11	18.4	24.1	-5.7	-0.15
Academic Success Index*	37.6	32.6	5.0	0.11	22.0	22.4	-0.4	-0.01	13.5	24.4	-10.9*	-0.24
Ability Success Index	29.6	25.2	4.4	0.11	15.2	22.2	-7.0	-0.17	15.8	15.2	0.7	0.02
Child Outcomes: Multi-Domain Indices												
Cumulative Risk (number of outcomes of 16)[e]	2.9	3.0	-0.1	-0.06	3.6	3.4	0.1	0.06	4.5	3.9	0.7+	0.27
Categorical Risk (low, medium, high)	1.2	1.2	0.0	-0.02	1.4	1.3	0.1	0.11	1.5	1.5	0.1	0.14
Cumulative Success (number of domains of 5)[f]	2.5	2.4	0.0	0.03	2.0	2.1	-0.1	-0.05	1.8	2.0	-0.2	-0.17
Parenting and the Home Environment												
Parent Supervision	3.3	3.3	0.0	-0.03	3.2	3.2	0.0	0.02	3.1	3.0	0.1	0.10
Severity of Discipline Strategies	3.7	3.8	-0.1	-0.06	3.9	3.8	0.1	0.04	4.0	3.9	0.1	0.11

Table B.1 *(continued)*

Outcome	Low Risk (0-2 Risks)				Moderate Risk (3 Risks)				High Risk (4-5 Risks)			
	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
Family Involvement in School	36.8	36.8	0.0	0.00	36.2	36.2	0.0	0.00	37.1	36.3	0.8	0.13
Children's Books (26 or more)*	58.1	67.2	-9.0*	-0.18	61.9	52.9	9.0+	0.18	49.2	55.7	-6.6	-0.13
Help with Homework	3.3	3.2	0.1	0.09	3.3	3.2	0.1	0.11	3.3	3.3	0.0	-0.01
HOME Total Score+	27.7	28.3	-0.6+	-0.14	27.0	26.5	0.5	0.12	26.0	25.6	0.4	0.08
Total Support for Education	-0.1	0.1	-0.2	-0.03	-0.2	-0.4	0.2	0.05	-0.1	0.4	-0.5	-0.10
Support for Education, Internal to the Home	0.0	0.0	0.0	-0.01	0.0	-0.2	0.2	0.07	0.1	0.2	-0.1	-0.02
Support for Education, External to the Home	-0.1	0.0	-0.1	-0.04	-0.2	-0.2	0.0	0.01	-0.2	0.2	-0.4	-0.13
Family Well-Being and Mental Health												
Depressive Symptoms CES-D (count)	6.2	6.7	-0.5	-0.07	7.5	8.1	-0.5	-0.08	8.2	8.3	-0.1	-0.01
Parent Substance Use	7.5	4.6	2.8	0.10	8.5	10.6	-2.2	-0.08	7.9	11.5	-3.6	-0.13
Parent Alcohol Use	0.6	0.6	0.0	-0.01	0.7	0.7	-0.1	-0.07	0.7	0.8	-0.1	-0.15
Parenting Distress (PSI)	7.9	7.9	0.0	0.00	8.0	8.8	-0.8+	-0.21	9.3	8.8	0.5	0.13
Number of Moves	2.1	2.3	-0.1	-0.07	2.3	2.5	-0.2	-0.12	2.4	2.6	-0.2	-0.15
Homelessness	4.6	5.1	-0.5	-0.02	5.7	8.5	-2.9	-0.12	4.5	5.9	-1.4	-0.06
Family Conflict (FES)	1.4	1.4	0.0	-0.03	1.4	1.5	0.0	-0.06	1.4	1.5	-0.1	-0.20
Parent Child Dysfunctional Interaction (PSI)	9.1	9.4	-0.2	-0.05	9.9	10.2	-0.2	-0.05	10.4	10.0	0.4	0.08
Child Reported Relationship with Mother	3.6	3.6	-0.1+	-0.14	3.6	3.6	0.0	0.08	3.6	3.6	0.0	0.01
Child Reported Relationship with Father	3.5	3.5	0.0	0.06	3.5	3.5	0.1	0.13	3.4	3.4	0.0	-0.07
Child Exposure to Domestic Violence	4.3	5.7	-1.5	-0.06	4.9	6.0	-1.0	-0.04	10.3	8.5	1.8	0.07
Parent Self-Sufficiency												
Household Annual Income (continuous)	42272.3	43099.5	-827.1	-0.03	34703.5	32553.3	2150.3	0.07	26478.1	26214.8	263.3	0.01
Income to Needs Ratio (continuous)	1.9	1.9	0.0	0.00	1.5	1.4	0.1	0.07	1.0	1.1	-0.1	-0.06
Mother's Highest Educational Level+	2.7	2.8	-0.1	-0.05	2.5	2.3	0.2+	0.18	1.9	2.1	-0.1	-0.13
Mother's Employment Status	1.7	1.8	0.0	-0.05	1.9	2.0	-0.1	-0.12	1.9	2.0	0.0	-0.01
Current Welfare Participation	29.7	34.0	-4.2	-0.08	45.9	54.5	-8.6	-0.17	66.3	69.8	-3.6	-0.07
Sample Size	**227-347**	**236-371**			**115-212**	**123-246**			**78-155**	**80-189**		

Table B.1 *(continued)*

Source: Parent interviews, interviewer observations, and child assessments conducted when children were in Grade 5. CBCL = Child Behavior Check List; ADD/ADHD = Attention Deficit Disorder/Attention Deficit Hyperactivity Disorder; ECLS-K = Early Childhood Longitudinal Study-Kindergarten Class of 1998-99; SDQ = Self Description Questionnaire; PPVT-III = Peabody Picture Vocabulary Test-Third Edition; HOME = Home Observation for Measurement of the Environment; FES = Shortened Family Environment Scale; PSI = Parenting Stress Index-Short Form.

Note: All impact estimates were calculated using regression models in which each site was weighted equally. Psychometric information on specific outcome measures, including descriptive statistics is available in Appendix A.

[a]Program group includes all families assigned to Early Head Start who received more than one home visit, met with a case manager more than once, enrolled its child in center care for at least two weeks, or participated in a group activity during the 26 months after random assignment. Thus, impacts should be interpreted as the effect of receiving treatment.

[b]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had been assigned to the program group instead. This unobserved mean was estimated as the difference between the program group mean for participants and the impact per participant.

[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 all program and control group members.

[d]The effect size was calculated by dividing the estimated impact by the standard deviation of the outcome measure for the control group.

[e]This cumulative risk index is based on the sum of 16 outcomes from multiple domains including social-emotional (bullying by peers, self-reported delinquent behavior, internalizing behavior, externalizing behavior, peer relations, attention problems), academic (math, language/literacy, absences, retention), cognitive ability (PPVT-III, Matrix Reasoning), and health (general health, chronic illness, BMI, IEP).

[f]This cumulative success index is based on the sum of success indices from five domains including social-emotional, peer relations, academic, retention/absence, and cognitive ability. Each domain-specific index is equal to 1 if success is present and 0 if absent.

Asterisks next to variable names in the first column indicate significance levels for chi-square tests of differences in impacts across the subgroups.

$+p < .10$, $*p < .05$, $**p < .01$.

Table B.2 Pooled Impacts on Negative Social-Emotional Outcomes at Grade 5, by Risk Group

	Low Risk (0-2 Risks)				Moderate Risk (3 Risks)				High Risk (4-5 Risks)			
Outcome	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
CBCL Aggressive Behavior	4.9	5.3	-0.3	-0.06	6.0	5.9	0.1	0.01	6.5	7.0	-0.5	-0.09
CBCL Rule-Breaking Behavior	1.8	2.1	-0.2	-0.08	2.3	2.5	-0.2	-0.06	2.8	3.1	-0.3	-0.12
CBCL Social Problems	2.5	2.5	0.0	0.00	2.6	3.0	-0.3	-0.11	3.0	2.8	0.2	0.06
CBCL Anxious/Depressed	2.9	3.2	-0.3	-0.09	2.9	3.3	-0.4	-0.14	2.8	3.1	-0.3	-0.10
CBCL Withdrawn/Depressed	1.6	1.5	0.1	0.05	1.7	1.9	-0.3	-0.12	1.9	1.8	0.1	0.03
CBCL Somatic Complaints	1.0	1.0	0.0	0.00	1.1	1.2	-0.1	-0.04	1.2	1.1	0.1	0.04
CBCL Thought Problems	2.0	2.1	-0.1	-0.02	2.1	2.3	-0.2	-0.08	2.4	2.5	0.0	-0.02
Sample Size	**347**	**371**			**212**	**246**			**155**	**189**		

Source: Parent interviews, interviewer observations, and child assessments conducted when children were in Grade 5. CBCL = Child Behavior Check List.

Note: All impact estimates were calculated using regression models in which each site was weighted equally. Psychometric information on specific outcome measures, including descriptive statistics is available in Appendix A.

[a]Program group includes all families assigned to Early Head Start who received more than one home visit, met with a case manager more than once, enrolled its child in center care for at least two weeks, or participated in a group activity during the 26 months after random assignment. Thus, impacts should be interpreted as the effect of receiving treatment.

[b]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had been assigned to the program group instead. This unobserved mean was estimated as the difference between the program group mean for participants and the impact per participant.

[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 all program and control group members.

[d]The effect size was calculated by dividing the estimated impact by the standard deviation of the outcome measure for the control group.

Asterisks next to variable names in the first column indicate significance levels for chi-square tests of differences in impacts across the subgroups.

$+p < .10$, $*p < .05$, $**p < .01$.

Table B.3 Intent-to-Treat Impacts on Child and Family Outcomes at Grade 5

Outcome	Program-Control Differences, Full Sample			
	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
Child Social-Emotional Outcomes				
CBCL Internalizing Behavior	5.5	5.8	-0.3	-0.05
CBCL Externalizing Behavior	7.7	8.0	-0.3	-0.04
CBCL Attention Problems	3.9	4.1	-0.2	-0.05
Self-Reported Delinquent Behavior	1.5	1.5	0.0	0.01
ECLS-K SDQ Anger/Distractibility	2.1	2.1	0.0	0.01
ECLS-K SDQ Sad/Lonely/Anxious	2.3	2.3	0.0	0.02
ECLS-K SDQ Peer Relations	3.1	3.1	0.0	-0.02
Self-Reported Bullying by Peers	6.7	6.8	-0.1	-0.03
ADD/ADHD since First Grade (parent report)	14.7	15.1	-0.4	-0.01
Social-Emotional Risk Index	44.9	47.4	-2.5	-0.05
Social-Emotional Success Index	46.4	42.1	4.4+	0.09
Child Academic Outcomes				
English Receptive Vocabulary (PPVT-III)	94.0	93.6	0.4	0.02
PPVT-III Standard Score < 85	28.9	29.4	-0.4	-0.01
Matrix Reasoning (WISC)	8.5	8.4	0.1	0.02
ECLS-K Reading	128.1	126.9	1.3	0.05
ECLS-K Mathematics	8.3	8.5	-0.2	-0.05
Retention (parent report)	13.4	14.0	-0.6	-0.02
Chronic Absenteeism (parent report)	11.5	9.6	1.8	0.06
Child Has IEP (parent Report)	15.7	17.4	-1.7	-0.05
Academic Success Index	26.7	26.9	-0.2	0.00
Ability Success Index	21.2	21.3	-0.1	0.00
Child Outcomes: Multi-Domain Indices				
Cumulative Risk (number of outcomes of 16)[e]	3.4	3.4	0.0	0.01
Categorical Risk (low, medium, high)	1.3	1.3	0.0	0.03
Cumulative Success (number of domains of 5)[f]	2.2	2.2	0.0	-0.02
Parenting and the Home Environment				
Parent Supervision	3.2	3.2	0.0	0.03
Severity of Discipline Strategies	3.8	3.8	0.0	0.01
Family Involvement in School	36.6	36.5	0.2	0.03
Children's Books (26 or more)	56.9	60.5	-3.6	-0.07
Help with Homework	3.3	3.3	0.0	0.05
HOME Total Score	27.2	27.2	0.0	-0.01
Total Support for Education	-0.1	0.0	0.0	-0.01
Support for Education, Internal to the Home	0.1	0.0	0.1	0.02
Support for Education, External to the Home	-0.1	0.0	-0.1	-0.03

Table B.3 *(continued)*

Outcome	Program-Control Differences, Full Sample			
	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
Family Well-Being and Mental Health				
Depressive Symptoms CES-D (count)	7.0	7.3	-0.4	-0.05
Parent Substance Use	7.7	7.9	-0.2	-0.01
Parent Alcohol Use	0.7	0.7	0.0	-0.02
Parenting Distress (PSI)	8.3	8.4	-0.1	-0.02
Number of Moves	2.3	2.4	-0.1	-0.07
Homelessness	5.5	6.0	-0.5	-0.02
Family Conflict (FES)	1.4	1.4	0.0	-0.08
Parent Child Dysfunctional Interaction (PSI)	9.6	9.7	-0.1	-0.02
Child Reported Relationship with Mother	3.6	3.6	0.0	-0.03
Child Reported Relationship with Father	3.5	3.4	0.1	0.09
Child Exposure to Domestic Violence	5.4	5.9	-0.5	-0.02
Parent Self-Sufficiency				
Household Annual Income (continuous)	35850.5	35477.6	372.9	0.01
Income to Needs Ratio (continuous)	1.6	1.5	0.0	0.01
Mother's Highest Educational Level	2.5	2.5	0.0	-0.01
Mother's Employment Status	1.8	1.8	0.0	-0.05
Current Welfare Participation	43.8	46.7	-2.9	-0.06
Sample Size	**465-835**	**440-787**		

Source: Parent interviews, interviewer observations, and child assessments conducted when children were in Grade 5. CBCL = Child Behavior Check List; ADD/ADHD = Attention Deficit Disorder/Attention Deficit Hyperactivity Disorder; ECLS-K = Early Childhood Longitudinal Study-Kindergarten Class of 1998-99; SDQ = Self Description Questionnaire; PPVT-III = Peabody Picture Vocabulary Test-Third Edition; HOME = Home Observation for Measurement of the Environment; FES = Shortened Family Environment Scale; PSI = Parenting Stress Index-Short Form.

Note: All impact estimates were calculated using regression models in which each site was weighted equally. Psychometric information on specific outcome measures, including descriptive statistics is available in Appendix A.

[a]Program group includes all families assigned to Early Head Start who received more than one home visit, met with a case manager more than once, enrolled its child in center care for at least two weeks, or participated in a group activity during the 26 months after random assignment. Thus, impacts should be interpreted as the effect of receiving treatment.

[b]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had been assigned to the program group instead. This unobserved mean was estimated as the difference between the program group mean for participants and the impact per participant.

[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 all program and control group members.

[d]The effect size was calculated by dividing the estimated impact by the standard deviation of the outcome measure for the control group.

Table B.3 *(continued)*

[e]This cumulative risk index is based on the sum of 16 outcomes from multiple domains including social-emotional (bullying by peers, self-reported delinquent behavior, internalizing behavior, externalizing behavior, peer relations, attention problems), academic (math, language/literacy, absences, retention), cognitive ability (PPVT-III, Matrix Reasoning), and health (general health, chronic illness, BMI, IEP).

[f]This cumulative success index is based on the sum of success indices from five domains including social-emotional, peer relations, academic, retention/absence, and cognitive ability. Each domain-specific index is equal to 1 if success is present and 0 if absent.

+p < .10, *p < .05, **p < .01.

Table B.4 Intent-to-Treat Impacts on Child Negative Social-Emotional Outcomes at Grade 5

Outcome	Program-Control Differences, Full Sample			
	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
CBCL Aggressive Behavior	5.5	5.6	-0.1	-0.02
CBCL Rule-Breaking Behavior	2.2	2.3	-0.1	-0.05
CBCL Social Problems	2.6	2.6	0.0	-0.01
CBCL Anxious/Depressed	2.9	3.1	-0.3+	-0.09
CBCL Withdrawn/Depressed	1.6	1.6	0.0	0.00
CBCL Somatic Complaints	1.0	1.0	0.0	0.00
CBCL Thought Problems	2.1	2.1	-0.1	-0.02
Sample Size	**835**	**787**		

Source: Parent interviews conducted when children were in Grade 5. CBCL = Child Behavior Check List..

Note: All impact estimates were calculated using regression models in which each site was weighted equally. Psychometric information on specific outcome measures, including descriptive statistics is available in Appendix A.

[a]Program group includes all families assigned to Early Head Start who received more than one home visit, met with a case manager more than once, enrolled its child in center care for at least two weeks, or participated in a group activity during the 26 months after random assignment. Thus, impacts should be interpreted as the effect of receiving treatment.

[b]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had been assigned to the program group instead. This unobserved mean was estimated as the difference between the program group mean for participants and the impact per participant.

[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 all program and control group members.

[d]The effect size was calculated by dividing the estimated impact by the standard deviation of the outcome measure for the control group.

$+p < .10$, $*p < .05$, $**p < .01$.

Table B.5 Intent-to-Treat Impacts on Child and Family Outcomes at Grade 5, by Program Type

Outcome	Center-Based				Home-Based				Mixed Approach			
	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
Child Social-Emotional Outcomes												
CBCL Internalizing Behavior	4.7	4.9	-0.3	-0.04	6.2	6.8	-0.6	-0.11	5.1	5.4	-0.2	-0.04
CBCL Externalizing Behavior	7.2	7.0	0.2	0.02	8.2	9.0	-0.8	-0.10	7.1	7.6	-0.5	-0.06
CBCL Attention Problems	3.5	3.7	-0.2	-0.06	4.2	4.6	-0.4	-0.11	3.7	3.9	-0.2	-0.06
Self-Reported Delinquent Behavior	1.5	1.4	0.1	0.04	1.6	1.6	0.0	0.00	1.4	1.5	-0.1	-0.06
ECLS-K SDQ Anger/Distractibility	2.0	2.0	0.0	-0.04	2.2	2.1	0.0	0.04	2.1	2.1	0.0	-0.02
ECLS-K SDQ Sad/Lonely/Anxious	2.3	2.2	0.0	0.06	2.3	2.3	0.0	0.00	2.3	2.3	0.0	-0.02
ECLS-K SDQ Peer Relations	3.1	3.1	-0.1	-0.08	3.1	3.2	-0.1	-0.09	3.1	3.1	0.0	-0.03
Self-Reported Bullying by Peers	6.7	6.3	0.4	0.13	6.8	7.0	-0.2	-0.06	6.7	6.8	0.0	-0.01
ADD/ADHD since First Grade (parent report)+	12.2	14.1	-1.9	-0.05	12.9	17.6	-4.6+	-0.13	18.3	13.2	5.1	0.14
Social-Emotional Risk Index	38.5	41.0	-2.6	-0.05	50.5	53.5	-3.0	-0.06	43.6	44.0	-0.5	-0.01
Social-Emotional Success Index	54.2	44.1	10.1+	0.20	42.1	36.8	5.4	0.11	46.0	46.4	-0.4	-0.01
Child Academic Outcomes												
English Receptive Vocabulary (PPVT-III)	92.5	90.3	2.1	0.13	94.0	94.4	-0.5	-0.03	95.0	94.7	0.3	0.02
PPVT-III Standard Score < 85	32.0	38.8	-6.8	-0.15	28.2	28.4	-0.2	0.00	27.6	24.4	3.3	0.07
Matrix Reasoning (WISC)	8.6	8.3	0.2	0.07	8.3	8.2	0.1	0.02	8.8	8.7	0.1	0.03
ECLS-K Reading	128.2	123.6	4.6	0.17	128.9	128.1	0.8	0.03	128.2	126.2	2.0	0.07
ECLS-K Mathematics	8.2	7.9	0.3	0.07	8.3	8.4	-0.1	-0.03	8.4	8.9	-0.5	-0.11
Retention (parent report)+	10.2	19.2	-9.0*	-0.26	13.1	11.8	1.2	0.04	16.1	13.0	3.1	0.09
Chronic Absenteeism (parent report)	13.9	13.5	0.4	0.01	10.8	9.0	1.9	0.06	9.3	9.3	0.0	0.00
Child Has IEP (parent Report)	12.9	17.4	-4.4	-0.12	16.4	14.7	1.7	0.04	16.4	21.0	-4.5	-0.12
Academic Success Index	26.7	20.5	6.2	0.14	28.1	25.7	2.5	0.06	26.2	31.2	-4.9	-0.11
Ability Success Index	15.9	17.5	-1.7	-0.04	21.7	21.9	-0.2	-0.01	24.5	23.0	1.5	0.04
Child Outcomes: Multi-Domain Indices												
Cumulative Risk (number of outcomes of 16)[e]	3.4	3.6	-0.2	-0.06	3.4	3.4	0.0	-0.02	3.3	3.3	0.1	0.04
Categorical Risk (low, medium, high)	1.3	1.4	-0.1	-0.10	1.3	1.3	0.0	-0.02	1.4	1.3	0.1	0.14
Cumulative Success (number of domains of 5)[f]	2.2	2.1	0.1	0.10	2.2	2.2	0.0	-0.02	2.2	2.4	-0.2	-0.13
Parenting and the Home Environment												
Parent Supervision	3.2	3.2	0.0	0.05	3.2	3.2	0.0	-0.02	3.2	3.2	0.0	0.03
Severity of Discipline Strategies+	4.0	3.7	0.3+	0.23	3.9	3.8	0.1	0.06	3.7	3.8	-0.2	-0.13
Family Involvement in School	36.2	36.9	-0.7	-0.10	36.0	36.1	0.0	0.00	37.7	36.5	1.2+	0.18
Children's Books (26 or more)	44.9	54.0	-9.0	-0.18	59.3	61.1	-1.8	-0.04	63.3	62.7	0.6	0.01
Help with Homework	3.2	3.1	0.0	0.04	3.3	3.3	0.0	0.02	3.4	3.3	0.1	0.11
HOME Total Score	27.1	27.5	-0.4	-0.09	27.4	26.9	0.5*	0.12	26.9	27.3	-0.3	-0.08

Table B.5 *(continued)*

Outcome	Center-Based				Home-Based				Mixed Approach			
	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
Total Support for Education	-0.6	-0.2	-0.4	-0.08	-0.5	-0.5	0.0	0.01	0.9	0.5	0.4	0.09
Support for Education, Internal to the Home	-0.1	-0.1	0.0	-0.01	-0.2	-0.2	-0.1	-0.03	0.5	0.2	0.3	0.12
Support for Education, External to the Home	-0.5	-0.1	-0.3	-0.10	-0.2	-0.4	0.1	0.03	0.4	0.3	0.1	0.03
Family Well-Being and Mental Health												
Depressive Symptoms CES-D (count)*	7.4	6.0	1.4+	0.20	6.9	7.8	-0.9+	-0.12	6.7	7.7	-0.9	-0.13
Parent Substance Use	5.7	3.9	1.7	0.06	8.2	10.3	-2.2	-0.08	8.4	7.9	0.6	0.02
Parent Alcohol Use	0.7	0.5	0.1	0.15	0.7	0.7	-0.1	-0.07	0.6	0.7	-0.1	-0.08
Parenting Distress (PSI)*	8.9	7.9	1.0*	0.26	8.4	8.8	-0.4	-0.11	7.8	8.5	-0.6+	-0.16
Number of Moves	2.3	2.2	0.1	0.07	2.2	2.4	-0.2*	-0.14	2.3	2.4	-0.1	-0.04
Homelessness	7.8	5.4	2.4	0.10	3.5	5.7	-2.1	-0.09	5.7	7.1	-1.3	-0.06
Family Conflict (FES)	1.4	1.4	0.0	0.02	1.4	1.5	-0.1+	-0.15	1.4	1.4	0.0	-0.11
Parent Child Dysfunctional Interaction (PSI)*	10.1	8.8	1.2*	0.26	9.7	10.3	-0.6	-0.12	9.2	9.7	-0.5	-0.12
Child Reported Relationship with Mother	3.6	3.6	0.0	0.05	3.6	3.6	-0.1	-0.12	3.6	3.6	0.0	-0.01
Child Reported Relationship with Father	3.5	3.4	0.0	0.08	3.5	3.5	0.0	-0.01	3.5	3.4	0.0	0.07
Child Exposure to Domestic Violence	6.3	3.0	3.3	0.13	7.6	7.4	0.2	0.01	2.8	5.4	-2.6	-0.11
Parent Self-Sufficiency												
Household Annual Income (continuous)	35295.0	32481.0	2814.0	0.09	36012.7	32325.5	3687.2+	0.12	37391.0	39704.9	-2313.9	-0.07
Income to Needs Ratio (continuous)	1.6	1.5	0.1	0.11	1.5	1.4	0.1+	0.11	1.6	1.7	-0.1	-0.10
Mother's Highest Educational Level	2.6	2.6	0.0	-0.03	2.4	2.3	0.0	0.05	2.5	2.5	0.0	-0.01
Mother's Employment Status	1.7	1.7	0.0	-0.03	1.9	1.9	0.0	-0.03	1.8	1.8	0.0	-0.03
Current Welfare Participation	41.9	41.6	0.3	0.01	46.4	45.3	1.1	0.02	42.8	51.0	-8.2+	-0.16
Sample Size	**73-180**	**66-162**			**237-396**	**224-351**			**155-259**	**150-274**		

Source: Parent interviews, interviewer observations, and child assessments conducted when children were in Grade 5. CBCL = Child Behavior Check List; ADD/ADHD = Attention Deficit Disorder/Attention Deficit Hyperactivity Disorder; ECLS-K = Early Childhood Longitudinal Study-Kindergarten Class of 1998-99; SDQ = Self Description Questionnaire; PPVT-III = Peabody Picture Vocabulary Test-Third Edition; HOME = Home Observation for Measurement of the Environment; FES = Shortened Family Environment Scale; PSI = Parenting Stress Index-Short Form.

Note: All impact estimates were calculated using regression models in which each site was weighted equally. Psychometric information on specific outcome measures, including descriptive statistics is available in Appendix A.

Table B.5 *(continued)*

[a]Program group includes all families assigned to Early Head Start who received more than one home visit, met with a case manager more than once, enrolled its child in center care for at least two weeks, or participated in a group activity during the 26 months after random assignment. Thus, impacts should be interpreted as the effect of receiving treatment.

[b]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had been assigned to the program group instead. This unobserved mean was estimated as the difference between the program group mean for participants and the impact per participant.

[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 all program and control group members.

[d]The effect size was calculated by dividing the estimated impact by the standard deviation of the outcome measure for the control group.

[e]This cumulative risk index is based on the sum of 16 outcomes from multiple domains including social-emotional (bullying by peers, self-reported delinquent behavior, internalizing behavior, externalizing behavior, peer relations, attention problems), academic (math, language/literacy, absences, retention), cognitive ability (PPVT-III, Matrix Reasoning), and health (general health, chronic illness, BMI, IEP).

[f]This cumulative success index is based on the sum of success indices from five domains including social-emotional, peer relations, academic, retention/absence, and cognitive ability. Each domain-specific index is equal to 1 if success is present and 0 if absent.

Asterisks next to variable names in the first column indicate significance levels for chi-square tests of differences in impacts across the subgroups.

$+p < .10$, $*p < .05$, $**p < .01$.

Table B.6 Intent-to-Treat Impacts on Child Negative Social-Emotional Outcomes at Grade 5, by Program Type

	Center-Based				Home-Based				Mixed Approach			
Outcome	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
CBCL Aggressive Behavior	5.2	4.9	0.3	0.05	5.9	6.5	-0.6	-0.11	5.1	5.3	-0.2	-0.03
CBCL Rule-Breaking Behavior	2.0	2.1	-0.1	-0.04	2.3	2.5	-0.2	-0.08	2.0	2.3	-0.3	-0.11
CBCL Social Problems*	2.7	2.1	0.7+	0.23	2.8	3.1	-0.3	-0.11	2.2	2.6	-0.3	-0.12
CBCL Anxious/Depressed	2.5	2.6	-0.1	-0.04	3.2	3.7	-0.5+	-0.14	2.6	3.0	-0.4	-0.12
CBCL Withdrawn/Depressed	1.4	1.5	-0.1	-0.05	1.9	1.9	0.0	-0.02	1.5	1.4	0.0	0.00
CBCL Somatic Complaints	0.8	0.9	0.0	-0.02	1.1	1.2	-0.1	-0.07	1.1	0.9	0.1	0.08
CBCL Thought Problems	1.8	2.2	-0.4	-0.14	2.2	2.4	-0.2	-0.08	2.0	1.9	0.1	0.02
Sample Size	**180**	**162**			**396**	**351**			**259**	**274**		

Source: Parent interviews, interviewer observations, and child assessments conducted when children were in Grade 5. CBCL = Child Behavior Check List.

Note: All impact estimates were calculated using regression models in which each site was weighted equally. Psychometric information on specific outcome measures, including descriptive statistics is available in Appendix A.

[a]Program group includes all families assigned to Early Head Start who received more than one home visit, met with a case manager more than once, enrolled its child in center care for at least two weeks, or participated in a group activity during the 26 months after random assignment. Thus, impacts should be interpreted as the effect of receiving treatment.

[b]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had been assigned to the program group instead. This unobserved mean was estimated as the difference between the program group mean for participants and the impact per participant.

[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 all program and control group members.

[d]The effect size was calculated by dividing the estimated impact by the standard deviation of the outcome measure for the control group.

Asterisks next to variable names in the first column indicate significance levels for chi-square tests of differences in impacts across the subgroups.

$+p < .10$, $*p < .05$, $**p < .01$.

Table B.7 Intent-to-Treat Impacts on Child and Family Outcomes at Grade 5, by Race/Ethnicity

Outcome	White				African American				Hispanic			
	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
Child Social-Emotional Outcomes												
CBCL Internalizing Behavior	6.5	7.2	-0.7	-0.12	4.4	5.1	-0.7	-0.11	5.0	5.6	-0.6	-0.10
CBCL Externalizing Behavior	8.7	10.0	-1.3+	-0.16	6.8	8.7	-1.9*	-0.23	5.7	5.6	0.1	0.02
CBCL Attention Problems	4.7	5.1	-0.4	-0.09	3.5	4.3	-0.7*	-0.19	3.0	2.9	0.1	0.02
Self-Reported Delinquent Behavior	1.4	1.4	0.0	0.02	1.6	1.8	-0.2	-0.13	1.4	1.2	0.2	0.12
ECLS-K SDQ Anger/Distractibility	2.1	2.1	0.0	0.05	2.1	2.2	-0.1	-0.14	2.0	2.1	-0.1	-0.11
ECLS-K SDQ Sad/Lonely/Anxious	2.2	2.2	0.1	0.12	2.3	2.4	-0.1	-0.12	2.3	2.4	-0.1	-0.14
ECLS-K SDQ Peer Relations	3.1	3.0	0.0	0.01	3.2	3.2	0.0	-0.02	3.2	3.1	0.1	0.13
Self-Reported Bullying by Peers	6.8	7.0	-0.2	-0.06	6.6	7.1	-0.5+	-0.20	6.4	6.2	0.2	0.06
ADD/ADHD since First Grade (parent report)	19.7	23.4	-3.7	-0.10	17.7	12.9	4.8	0.13	5.8	5.8	0.0	0.00
Social-Emotional Risk Index	48.5	49.7	-1.2	-0.02	44.5	52.0	-7.5	-0.15	37.0	44.4	-7.4	-0.15
Social-Emotional Success Index	44.2	38.9	5.3	0.11	45.2	40.0	5.2	0.11	53.0	43.2	9.8	0.20
Child Academic Outcomes												
English Receptive Vocabulary (PPVT-III)	102.9	101.9	1.0	0.06	89.4	88.5	0.9	0.06	88.8	89.0	-0.3	-0.02
PPVT-III Standard Score < 85	9.0	10.2	-1.2	-0.03	40.6	44.7	-4.1	-0.09	38.6	32.1	6.5	0.14
Matrix Reasoning (WISC)+	9.4	8.8	0.6+	0.18	8.2	8.1	0.1	0.04	7.8	8.5	-0.7	-0.22
ECLS-K Reading	138.2	134.3	3.9	0.14	123.6	121.4	2.2	0.08	122.6	125.7	-3.1	-0.11
ECLS-K Mathematics	10.1	9.8	0.3	0.06	7.1	7.1	0.1	0.01	8.1	9.0	-0.8	-0.18
Retention (parent report)	10.4	10.7	-0.4	-0.01	12.4	16.9	-4.5	-0.13	20.3	10.7	9.7	0.28
Chronic Absenteeism (parent report)	13.1	10.4	2.7	0.09	10.5	9.1	1.5	0.05	8.9	8.9	0.0	0.00
Child Has IEP (parent Report)	18.8	22.6	-3.9	-0.10	17.0	22.5	-5.5	-0.15	9.7	11.0	-1.2	-0.03
Academic Success Index	43.7	40.3	3.4	0.08	17.5	23.2	-5.7	-0.13	11.3	20.8	-9.4+	-0.21
Ability Success Index	37.3	31.0	6.4	0.16	17.3	14.7	2.6	0.06	9.8	11.3	-1.5	-0.04
Child Outcomes: Multi-Domain Indices												
Cumulative Risk (number of outcomes of 16)[e]	2.9	3.1	-0.1	-0.05	3.6	3.8	-0.2	-0.07	3.1	3.1	0.0	0.01
Categorical Risk (low, medium, high)	1.2	1.2	0.0	0.01	1.4	1.5	0.0	-0.04	1.2	1.3	-0.1	-0.13
Cumulative Success (number of domains of 5)[f]	2.4	2.4	0.0	0.01	2.1	2.1	0.0	0.03	2.1	2.1	0.0	-0.02
Parenting and the Home Environment												
Parent Supervision	3.4	3.3	0.1	0.09	3.2	3.1	0.1	0.14	3.2	3.1	0.1	0.15
Severity of Discipline Strategies	3.7	3.9	-0.1	-0.11	4.0	4.1	-0.1	-0.08	3.7	3.3	0.3	0.25
Family Involvement in School*	36.9	37.0	-0.1	-0.02	38.3	36.1	2.2**	0.33	35.6	36.6	-1.0	-0.15
Children's Books (26 or more)	75.6	75.6	-0.1	0.00	49.7	47.5	2.2	0.04	57.1	61.4	-4.3	-0.09
Help with Homework	3.1	3.2	0.0	-0.05	3.5	3.4	0.1	0.14	3.3	3.2	0.0	0.05
HOME Total Score	26.8	27.1	-0.3	-0.06	26.8	26.7	0.1	0.03	28.6	28.2	0.5	0.11

Table B.7 *(continued)*

Outcome	White				African American				Hispanic			
	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
Total Support for Education	-0.4	-0.1	-0.3	-0.06	1.5	0.7	0.8	0.16	-0.4	-0.8	0.4	0.07
Support for Education, Internal to the Home	-0.3	-0.2	0.0	-0.02	0.9	0.5	0.5+	0.17	-0.3	-0.4	0.1	0.05
Support for Education, External to the Home	-0.1	0.1	-0.2	-0.07	0.5	0.2	0.3	0.10	-0.2	-0.4	0.2	0.07
Family Well-Being and Mental Health												
Depressive Symptoms CES-D (count)	7.2	8.0	-0.9	-0.12	6.9	8.2	-1.3+	-0.19	6.5	5.8	0.7	0.11
Parent Substance Use	10.0	11.8	-1.8	-0.06	9.7	11.5	-1.8	-0.07	6.0	2.7	3.3	0.12
Parent Alcohol Use*	0.8	0.8	0.1	0.09	0.6	0.8	-0.2**	-0.30	0.5	0.5	0.0	0.05
Parenting Distress (PSI)	7.6	8.3	-0.7+	-0.17	8.2	8.6	-0.3	-0.09	8.5	8.9	-0.4	-0.10
Number of Moves	2.4	2.6	-0.1	-0.08	2.4	2.7	-0.3+	-0.18	2.0	1.9	0.1	0.03
Homelessness	6.2	7.9	-1.6	-0.07	6.6	7.1	-0.5	-0.02	5.1	5.1	0.0	0.00
Family Conflict (FES)	1.4	1.5	-0.1+	-0.19	1.3	1.4	0.0	-0.11	1.4	1.4	0.0	-0.05
Parent Child Dysfunctional Interaction (PSI)	9.6	9.8	-0.3	-0.06	9.3	9.9	-0.6	-0.13	9.2	9.6	-0.4	-0.09
Child Reported Relationship with Mother	3.6	3.6	0.0	-0.08	3.6	3.6	0.0	0.01	3.6	3.6	0.1	0.13
Child Reported Relationship with Father	3.4	3.5	0.0	-0.08	3.4	3.4	0.0	0.08	3.6	3.5	0.0	0.07
Child Exposure to Domestic Violence	7.9	6.1	1.8	0.07	2.6	3.8	-1.2	-0.05	8.2	6.5	1.7	0.07
Parent Self-Sufficiency												
Household Annual Income (continuous)	44597.5	43448.8	1148.6	0.04	30645.4	34540.9	-3895.5	-0.12	30979.2	33022.7	-2043.5	-0.06
Income to Needs Ratio (continuous)	1.9	1.8	0.1	0.06	1.4	1.6	-0.2	-0.14	1.3	1.4	-0.1	-0.06
Mother's Highest Educational Level+	2.8	2.8	0.1	0.06	2.5	2.7	-0.2	-0.14	1.9	1.7	0.2+	0.19
Mother's Employment Status	1.9	1.9	-0.1	-0.07	1.8	1.7	0.1	0.12	1.8	1.9	-0.2	-0.17
Current Welfare Participation	37.9	46.1	-8.2+	-0.16	51.4	57.4	-5.9	-0.12	33.3	33.2	0.0	0.00
Sample Size	**175-262**	**168-241**			**86-242**	**76-240**			**83-155**	**82-136**		

Source: Parent interviews, interviewer observations, and child assessments conducted when children were in Grade 5. CBCL = Child Behavior Check List; ADD/ADHD = Attention Deficit Disorder/Attention Deficit Hyperactivity Disorder; ECLS-K = Early Childhood Longitudinal Study-Kindergarten Class of 1998-99; SDQ = Self Description Questionnaire; PPVT-III = Peabody Picture Vocabulary Test-Third Edition; HOME = Home Observation for Measurement of the Environment; FES = Shortened Family Environment Scale; PSI = Parenting Stress Index-Short Form.

Note: All impact estimates were calculated using regression models in which each site was weighted equally. Psychometric information on specific outcome measures, including descriptive statistics is available in Appendix A.

Table B.7 *(continued)*

[a]Program group includes all families assigned to Early Head Start who received more than one home visit, met with a case manager more than once, enrolled its child in center care for at least two weeks, or participated in a group activity during the 26 months after random assignment. Thus, impacts should be interpreted as the effect of receiving treatment.

[b]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had been assigned to the program group instead. This unobserved mean was estimated as the difference between the program group mean for participants and the impact per participant.

[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 all program and control group members.

[d]The effect size was calculated by dividing the estimated impact by the standard deviation of the outcome measure for the control group.

[e]This cumulative risk index is based on the sum of 16 outcomes from multiple domains including social-emotional (bullying by peers, self-reported delinquent behavior, internalizing behavior, externalizing behavior, peer relations, attention problems), academic (math, language/literacy, absences, retention), cognitive ability (PPVT-III, Matrix Reasoning), and health (general health, chronic illness, BMI, IEP).

[f]This cumulative success index is based on the sum of success indices from five domains including social-emotional, peer relations, academic, retention/absence, and cognitive ability. Each domain-specific index is equal to 1 if success is present and 0 if absent.

Asterisks next to variable names in the first column indicate significance levels for chi-square tests of differences in impacts across the subgroups.

$+p < .10$, $*p < .05$, $**p < .01$.

Table B.8 Intent-to-Treat Impacts on Child Negative Social-Emotional Outcomes at Grade 5, by Race/Ethnicity

	White				African American				Hispanic			
Outcome	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
CBCL Aggressive Behavior	6.4	7.3	-0.9	-0.15	4.7	5.9	-1.2*	-0.21	4.1	4.0	0.1	0.01
CBCL Rule-Breaking Behavior	2.3	2.7	-0.4+	-0.16	2.1	2.7	-0.6*	-0.23	1.7	1.6	0.1	0.03
CBCL Social Problems	2.9	3.3	-0.4	-0.16	2.1	2.6	-0.5*	-0.20	2.2	2.1	0.1	0.04
CBCL Anxious/Depressed	3.4	4.0	-0.6+	-0.18	2.1	2.6	-0.6+	-0.17	2.4	2.9	-0.5	-0.17
CBCL Withdrawn/Depressed	1.8	1.8	-0.1	-0.04	1.4	1.5	-0.1	-0.03	1.7	1.8	-0.2	-0.07
CBCL Somatic Complaints	1.3	1.3	0.0	-0.02	1.0	1.0	0.0	-0.02	0.9	0.8	0.1	0.07
CBCL Thought Problems	2.9	3.2	-0.3	-0.10	1.6	2.0	-0.4	-0.14	1.5	1.5	-0.1	-0.03
Sample Size	**262**	**241**			**242**	**240**			**155**	**136**		

Source: Parent interviews, interviewer observations, and child assessments conducted when children were in Grade 5. CBCL = Child Behavior Check List.

Note: All impact estimates were calculated using regression models in which each site was weighted equally. Psychometric information on specific outcome measures, including descriptive statistics is available in Appendix A.

[a]Program group includes all families assigned to Early Head Start who received more than one home visit, met with a case manager more than once, enrolled its child in center care for at least two weeks, or participated in a group activity during the 26 months after random assignment. Thus, impacts should be interpreted as the effect of receiving treatment.

[b]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had been assigned to the program group instead. This unobserved mean was estimated as the difference between the program group mean for participants and the impact per participant.

[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 all program and control group members.

[d]The effect size was calculated by dividing the estimated impact by the standard deviation of the outcome measure for the control group.

Asterisks next to variable names in the first column indicate significance levels for chi-square tests of differences in impacts across the subgroups.

$+p < .10$, $*p < .05$, $**p < .01$.

Table B.9 Intent-to-Treat Impacts on Child and Family Outcomes at Grade 5, by Risk Group

Outcome	Low Risk (0-2 Risks)				Moderate Risk (3 Risks)				High Risk (4-5 Risks)			
	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
Child Social-Emotional Outcomes												
CBCL Internalizing Behavior	5.6	5.7	-0.2	-0.03	5.9	7.3	-1.4+	-0.24	6.2	6.4	-0.2	-0.04
CBCL Externalizing Behavior	7.0	7.4	-0.4	-0.04	8.6	9.4	-0.8	-0.09	9.4	10.5	-1.1	-0.14
CBCL Attention Problems	3.8	3.9	-0.1	-0.03	4.3	4.4	-0.2	-0.04	4.3	4.8	-0.5	-0.13
Self-Reported Delinquent Behavior	1.3	1.4	-0.1	-0.03	1.7	1.5	0.2	0.11	1.8	2.1	-0.3	-0.16
ECLS-K SDQ Anger/Distractibility	2.0	2.1	0.0	-0.05	2.2	2.1	0.1	0.14	2.3	2.3	0.0	0.01
ECLS-K SDQ Sad/Lonely/Anxious	2.2	2.3	0.0	-0.02	2.3	2.3	0.1	0.07	2.4	2.4	0.0	0.07
ECLS-K SDQ Peer Relations	3.1	3.1	0.0	-0.01	3.1	3.1	0.0	-0.05	3.2	3.3	0.0	-0.07
Self-Reported Bullying by Peers	6.6	6.4	0.2	0.06	6.8	7.3	-0.5	-0.17	7.2	6.9	0.3	0.09
ADD/ADHD since First Grade (parent report)	12.2	13.3	-1.2	-0.03	17.5	20.9	-3.4	-0.09	17.5	15.2	2.3	0.06
Social-Emotional Risk Index	42.3	42.8	-0.6	-0.01	49.6	50.4	-0.8	-0.02	56.0	58.1	-2.1	-0.04
Social-Emotional Success Index	48.8	47.9	0.9	0.02	41.6	38.3	3.2	0.07	34.3	34.7	-0.4	-0.01
Child Academic Outcomes												
English Receptive Vocabulary (PPVT-III)	96.5	95.7	0.8	0.05	93.4	94.9	-1.5	-0.09	86.9	90.3	-3.4+	-0.21
PPVT-III Standard Score < 85	23.2	24.2	-1.0	-0.02	29.6	26.5	3.2	0.07	47.3	37.7	9.6	0.21
Matrix Reasoning (WISC)*	8.8	8.3	0.5+	0.14	8.4	8.9	-0.5	-0.16	7.7	8.3	-0.6	-0.19
ECLS-K Reading+	133.3	130.0	3.3	0.12	126.8	128.3	-1.5	-0.06	115.9	122.5	-6.6	-0.24
ECLS-K Mathematics+	9.1	9.0	0.1	0.02	8.1	9.1	-1.0+	-0.20	6.2	7.6	-1.4*	-0.30
Retention (parent report)	8.2	9.3	-1.1	-0.03	15.7	16.8	-1.1	-0.03	27.4	17.1	10.3+	0.30
Chronic Absenteeism (parent report)	10.7	9.8	0.9	0.03	12.6	11.5	1.2	0.04	16.1	7.2	8.9*	0.30
Child Has IEP (parent Report)	12.2	15.8	-3.6	-0.09	17.8	16.8	1.0	0.03	19.9	22.1	-2.3	-0.06
Academic Success Index+	34.6	30.7	3.9	0.09	24.3	23.8	0.5	0.01	13.0	25.1	-12.1*	-0.27
Ability Success Index	26.6	23.5	3.2	0.08	15.4	24.7	-9.3+	-0.23	11.4	15.8	-4.4	-0.11
Child Outcomes: Multi-Domain Indices												
Cumulative Risk (number of outcomes of 16)[e]	3.0	3.0	-0.1	-0.03	3.7	3.5	0.2	0.06	4.6	3.8	0.8	0.31
Categorical Risk (low, medium, high)	1.2	1.2	0.0	0.02	1.4	1.4	0.0	0.06	1.6	1.5	0.0	0.07
Cumulative Success (number of domains of 5)[f]	2.4	2.4	0.0	0.01	2.0	2.0	0.0	-0.03	1.8	2.1	-0.4*	-0.28
Parenting and the Home Environment												
Parent Supervision	3.2	3.3	0.0	-0.05	3.2	3.2	0.0	0.05	3.1	3.1	0.0	0.00
Severity of Discipline Strategies	3.7	3.8	0.0	-0.03	3.8	3.9	0.0	-0.02	4.1	3.9	0.1	0.11
Family Involvement in School	36.6	36.7	-0.1	-0.02	36.3	36.2	0.0	0.00	36.9	36.0	0.9	0.14
Children's Books (26 or more)+	56.8	64.5	-7.8*	-0.16	64.3	55.5	8.7	0.18	53.3	57.3	-3.9	-0.08
Help with Homework	3.3	3.2	0.1	0.09	3.3	3.2	0.1	0.13	3.3	3.4	-0.1	-0.10
HOME Total Score	27.8	28.2	-0.4	-0.10	26.7	26.8	-0.1	-0.03	25.7	25.7	0.0	-0.01

Table B.9 *(continued)*

Outcome	Low Risk (0-2 Risks)				Moderate Risk (3 Risks)				High Risk (4-5 Risks)			
	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
Total Support for Education	-0.1	0.1	-0.2	-0.05	-0.1	-0.5	0.4	0.08	0.0	1.0	-0.9	-0.19
Support for Education, Internal to the Home	0.0	0.0	0.0	-0.02	0.1	-0.2	0.3	0.10	0.2	0.6	-0.5	-0.18
Support for Education, External to the Home	-0.1	0.0	-0.2	-0.05	-0.2	-0.3	0.1	0.03	-0.1	0.3	-0.4	-0.13
Family Well-Being and Mental Health												
Depressive Symptoms CES-D (count)	6.3	6.7	-0.4	-0.06	7.8	8.0	-0.2	-0.03	8.6	9.2	-0.6	-0.09
Parent Substance Use	8.0	4.9	3.2	0.11	8.8	11.6	-2.7	-0.10	11.2	11.5	-0.3	-0.01
Parent Alcohol Use	0.6	0.7	0.0	-0.03	0.7	0.8	-0.1	-0.14	0.8	0.9	-0.1	-0.16
Parenting Distress (PSI)*	8.0	8.1	-0.2	-0.04	7.9	8.9	-1.1*	-0.27	9.4	8.7	0.7	0.18
Number of Moves	2.1	2.2	-0.1	-0.06	2.4	2.6	-0.2	-0.11	2.6	2.8	-0.2	-0.13
Homelessness	4.6	4.3	0.4	0.02	4.8	10.7	-5.9+	-0.25	3.3	8.2	-4.9	-0.20
Family Conflict (FES)	1.4	1.4	0.0	-0.05	1.4	1.5	-0.1	-0.17	1.4	1.5	-0.1	-0.18
Parent Child Dysfunctional Interaction (PSI)	9.1	9.6	-0.4	-0.09	10.2	10.4	-0.2	-0.05	10.5	10.1	0.4	0.09
Child Reported Relationship with Mother	3.6	3.6	-0.1	-0.13	3.6	3.5	0.1	0.16	3.6	3.6	-0.1	-0.21
Child Reported Relationship with Father	--	--	--	--	--	--	--	--	10.3	10.1	0.2	0.01
Child Exposure to Domestic Violence	4.4	5.8	-1.3	-0.05	5.1	6.5	-1.4	-0.06	8.6	9.2	-0.6	-0.09
Parent Self-Sufficiency												
Household Annual Income (continuous)	39772.0	41582.3	-1810.4	-0.06	33987.6	34853.4	-865.8	-0.03	24793.8	28956.1	-4162.3	-0.13
Income to Needs Ratio (continuous)	1.8	1.8	-0.1	-0.04	1.5	1.5	0.0	0.00	1.0	1.2	-0.2	-0.16
Mother's Highest Educational Level*	2.7	2.7	0.0	-0.03	2.5	2.3	0.2*	0.22	1.8	2.0	-0.3	-0.26
Mother's Employment Status	1.7	1.7	-0.1	-0.07	2.0	2.0	0.0	0.05	1.9	2.0	-0.1	-0.12
Current Welfare Participation	32.4	36.0	-3.6	-0.07	47.1	56.3	-9.2	-0.18	70.8	71.4	-0.6	-0.01
Sample Size	**306-353**	**293-340**			**147-189**	**120-172**			**71-115**	**69-112**		

Source: Parent interviews, interviewer observations, and child assessments conducted when children were in Grade 5. CBCL = Child Behavior Check List; ADD/ADHD = Attention Deficit Disorder/Attention Deficit Hyperactivity Disorder; ECLS-K = Early Childhood Longitudinal Study-Kindergarten Class of 1998-99; SDQ = Self Description Questionnaire; PPVT-III = Peabody Picture Vocabulary Test-Third Edition; HOME = Home Observation for Measurement of the Environment; FES = Shortened Family Environment Scale; PSI = Parenting Stress Index-Short Form.

Note: All impact estimates were calculated using regression models in which each site was weighted equally. Psychometric information on specific outcome measures, including descriptive statistics is available in Appendix A.

Table B.9 *(continued)*

[a]Program group includes all families assigned to Early Head Start who received more than one home visit, met with a case manager more than once, enrolled its child in center care for at least two weeks, or participated in a group activity during the 26 months after random assignment. Thus, impacts should be interpreted as the effect of receiving treatment.

[b]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had been assigned to the program group instead. This unobserved mean was estimated as the difference between the program group mean for participants and the impact per participant.

[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 all program and control group members.

[d]The effect size was calculated by dividing the estimated impact by the standard deviation of the outcome measure for the control group.

[e]This cumulative risk index is based on the sum of 16 outcomes from multiple domains including social-emotional (bullying by peers, self-reported delinquent behavior, internalizing behavior, externalizing behavior, peer relations, attention problems), academic (math, language/literacy, absences, retention), cognitive ability (PPVT-III, Matrix Reasoning), and health (general health, chronic illness, BMI, IEP).

[f]This cumulative success index is based on the sum of success indices from five domains including social-emotional, peer relations, academic, retention/absence, and cognitive ability. Each domain-specific index is equal to 1 if success is present and 0 if absent.

Asterisks next to variable names in the first column indicate significance levels for chi-square tests of differences in impacts across the subgroups.

$+p < .10$, $*p < .05$, $**p < .01$.

Table B.10 Intent-to-Treat Impacts on Negative Social-Emotional Outcomes at Grade 5, by Risk Group

	Low Risk (0-2 Risks)				Moderate Risk (3 Risks)				High Risk (4-5 Risks)			
Outcome	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
CBCL Aggressive Behavior	5.1	5.3	-0.2	-0.04	6.3	6.6	-0.3	-0.05	6.6	7.4	-0.8	-0.14
CBCL Rule-Breaking Behavior	2.0	2.1	-0.1	-0.04	2.4	2.8	-0.5	-0.17	2.9	3.2	-0.3	-0.11
CBCL Social Problems	2.5	2.5	0.0	-0.01	2.8	3.3	-0.5	-0.18	2.8	2.8	0.0	-0.01
CBCL Anxious/Depressed	3.0	3.2	-0.2	-0.08	2.9	3.7	-0.7*	-0.23	2.9	3.3	-0.4	-0.12
CBCL Withdrawn/Depressed	1.6	1.5	0.1	0.04	1.8	2.2	-0.5+	-0.21	2.1	1.9	0.2	0.10
CBCL Somatic Complaints	1.0	1.0	0.0	0.00	1.2	1.4	-0.2	-0.11	1.2	1.3	-0.1	-0.04
CBCL Thought Problems	2.0	2.1	-0.1	-0.03	2.1	2.6	-0.5	-0.18	2.3	2.5	-0.2	-0.07
Sample Size	**353**	**340**			**189**	**172**			**115**	**112**		

Source: Parent interviews, interviewer observations, and child assessments conducted when children were in Grade 5. CBCL = Child Behavior Check List.

Note: All impact estimates were calculated using regression models in which each site was weighted equally. Psychometric information on specific outcome measures, including descriptive statistics is available in Appendix A.

[a]Program group includes all families assigned to Early Head Start who received more than one home visit, met with a case manager more than once, enrolled its child in center care for at least two weeks, or participated in a group activity during the 26 months after random assignment. Thus, impacts should be interpreted as the effect of receiving treatment.

[b]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had been assigned to the program group instead. This unobserved mean was estimated as the difference between the program group mean for participants and the impact per participant.

[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 all program and control group members.

[d]The effect size was calculated by dividing the estimated impact by the standard deviation of the outcome measure for the control group.

Asterisks next to variable names in the first column indicate significance levels for chi-square tests of differences in impacts across the subgroups.

$+p < .10$, $*p < .05$, $**p < .01$.

Table B.11 Weighted Impacts on Child and Family Outcomes at Grade 5

Outcome	Program-Control Differences, Full Sample			
	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
Child Social-Emotional Outcomes				
CBCL Internalizing Behavior	5.5	5.8	-0.3	-0.05
CBCL Externalizing Behavior	7.7	7.9	-0.2	-0.03
CBCL Attention Problems	3.9	4.1	-0.2	-0.06
Self-Reported Delinquent Behavior	1.5	1.5	0.0	0.02
ECLS-K SDQ Anger/Distractibility	2.1	2.1	0.0	0.01
ECLS-K SDQ Sad/Lonely/Anxious	2.3	2.3	0.0	0.01
ECLS-K SDQ Peer Relations	3.1	3.1	0.0	-0.04
Self-Reported Bullying by Peers	6.7	6.8	-0.1	-0.03
ADD/ADHD since First Grade (parent report)	14.9	14.9	0.0	0.00
Social-Emotional Risk Index	44.5	47.5	-3.0	-0.06
Social-Emotional Success Index	47.3	41.9	5.3+	0.11
Child Academic Outcomes				
English Receptive Vocabulary (PPVT-III)	93.9	93.5	0.4	0.03
PPVT-III Standard Score < 85	28.8	29.7	-1.0	-0.02
Matrix Reasoning (WISC)	8.5	8.4	0.1	0.02
ECLS-K Reading	128.2	126.6	1.6	0.06
ECLS-K Mathematics	8.2	8.5	-0.3	-0.05
Retention (parent report)	13.4	14.1	-0.7	-0.02
Chronic Absenteeism (parent report)	11.9	9.6	2.3	0.08
Child Has IEP (parent Report)	15.5	17.5	-2.0	-0.05
Academic Success Index	26.3	27.0	-0.8	-0.02
Ability Success Index	20.6	21.0	-0.5	-0.01
Child Outcomes: Multi-Domain Indices				
Cumulative Risk (number of outcomes of 16)[e]	3.4	3.4	0.0	0.02
Categorical Risk (low, medium, high)	1.4	1.3	0.0	0.04
Cumulative Success (number of domains of 5)[f]	2.2	2.2	0.0	-0.02
Parenting and the Home Environment				
Parent Supervision	3.2	3.2	0.0	0.05
Severity of Discipline Strategies	3.8	3.8	0.0	0.03
Family Involvement in School	36.6	36.4	0.2	0.03
Children's Books (26 or more)	56.6	60.3	-3.7	-0.08
Help with Homework	3.3	3.3	0.1	0.06
HOME Total Score	27.1	27.1	0.0	0.00
Total Support for Education	-0.1	-0.1	0.0	0.00
Support for Education, Internal to the Home	0.1	0.0	0.1	0.03

Table B.11 *(continued)*

Outcome	Program-Control Differences, Full Sample			
	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
Support for Education, External to the Home	-0.1	-0.1	-0.1	-0.03
Family Well-Being and Mental Health				
Depressive Symptoms CES-D (count)	7.0	7.3	-0.4	-0.05
Parent Substance Use	7.9	8.0	-0.1	0.00
Parent Alcohol Use	0.7	0.7	0.0	-0.02
Parenting Distress (PSI)	8.4	8.4	0.0	0.00
Number of Moves	2.3	2.4	-0.1	-0.07
Homelessness	5.8	5.9	-0.1	0.00
Family Conflict (FES)	1.4	1.4	0.0	-0.08
Parent Child Dysfunctional Interaction (PSI)	9.7	9.7	0.0	0.00
Child Reported Relationship with Mother	3.6	3.6	0.0	-0.02
Child Reported Relationship with Father	3.5	3.4	0.0	0.08
Child Exposure to Domestic Violence	5.4	5.8	-0.5	-0.02
Parent Self-Sufficiency				
Household Annual Income (continuous)	35691.3	35163.5	527.9	0.02
Income to Needs Ratio (continuous)	1.5	1.5	0.0	0.02
Mother's Highest Educational Level	2.4	2.5	0.0	-0.01
Mother's Employment Status	1.8	1.9	0.0	-0.05
Current Welfare Participation	44.9	47.3	-2.4	-0.05
Sample Size	**436-765**	**465-857**		

Source: Parent interviews, interviewer observations, and child assessments conducted when children were in Grade 5. CBCL = Child Behavior Check List; ADD/ADHD = Attention Deficit Disorder/Attention Deficit Hyperactivity Disorder; ECLS-K = Early Childhood Longitudinal Study-Kindergarten Class of 1998-99; SDQ = Self Description Questionnaire; PPVT-III = Peabody Picture Vocabulary Test-Third Edition; HOME = Home Observation for Measurement of the Environment; FES = Shortened Family Environment Scale; PSI = Parenting Stress Index-Short Form.

Note: All impact estimates were calculated using regression models in which each site was weighted equally. Psychometric information on specific outcome measures, including descriptive statistics is available in Appendix A.

[a]Program group includes all families assigned to Early Head Start who received more than one home visit, met with a case manager more than once, enrolled its child in center care for at least two weeks, or participated in a group activity during the 26 months after random assignment. Thus, impacts should be interpreted as the effect of receiving treatment.

[b]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had been assigned to the program group instead. This unobserved mean was estimated as the difference between the program group mean for participants and the impact per participant.

[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 all program and control group members.

Table B.11 *(continued)*

[d]The effect size was calculated by dividing the estimated impact by the standard deviation of the outcome measure for the control group.

[e]This cumulative risk index is based on the sum of 16 outcomes from multiple domains including social-emotional (bullying by peers, self-reported delinquent behavior, internalizing behavior, externalizing behavior, peer relations, attention problems), academic (math, language/literacy, absences, retention), cognitive ability (PPVT-III, Matrix Reasoning), and health (general health, chronic illness, BMI, IEP).

[f]This cumulative success index is based on the sum of success indices from five domains including social-emotional, peer relations, academic, retention/absence, and cognitive ability. Each domain-specific index is equal to 1 if success is present and 0 if absent.

$+p < .10$, $*p < .05$, $**p < .01$.

Table B.12 Weighted Impacts on Child Negative Social-Emotional Outcomes at Grade 5

Outcome	Program-Control Differences, Full Sample			
	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
CBCL Aggressive Behavior	5.5	5.6	-0.1	-0.02
CBCL Rule-Breaking Behavior	2.2	2.3	-0.1	-0.05
CBCL Social Problems	2.6	2.6	0.0	0.00
CBCL Anxious/Depressed	2.8	3.1	-0.3	-0.09
CBCL Withdrawn/Depressed	1.6	1.6	0.0	-0.01
CBCL Somatic Complaints	1.0	1.0	0.0	0.00
CBCL Thought Problems	2.1	2.1	-0.1	-0.03
Sample Size	**765**	**857**		

Source: Parent interviews conducted when children were in Grade 5. CBCL = Child Behavior Check List..

Note: All impact estimates were calculated using regression models in which each site was weighted equally. Psychometric information on specific outcome measures, including descriptive statistics is available in Appendix A.

[a]Program group includes all families assigned to Early Head Start who received more than one home visit, met with a case manager more than once, enrolled its child in center care for at least two weeks, or participated in a group activity during the 26 months after random assignment. Thus, impacts should be interpreted as the effect of receiving treatment.

[b]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had been assigned to the program group instead. This unobserved mean was estimated as the difference between the program group mean for participants and the impact per participant.

[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 all program and control group members.

[d]The effect size was calculated by dividing the estimated impact by the standard deviation of the outcome measure for the control group.

$+p < .10$, $*p < .05$, $**p < .01$.

Table B.13 Weighted Impacts on Child and Family Outcomes at Grade 5, by Program Type

Outcome	Center-Based				Home-Based				Mixed-Approach			
	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
Child Social-Emotional Outcomes												
CBCL Internalizing Behavior	4.5	4.9	-0.4	-0.07	6.2	6.8	-0.6	-0.10	5.1	5.3	-0.3	-0.05
CBCL Externalizing Behavior	7.3	7.0	0.3	0.03	8.3	9.0	-0.8	-0.09	7.0	7.6	-0.6	-0.07
CBCL Attention Problems	3.5	3.8	-0.3	-0.07	4.2	4.6	-0.4	-0.10	3.7	3.9	-0.3	-0.07
Self-Reported Delinquent Behavior	1.5	1.4	0.1	0.03	1.6	1.6	0.0	0.00	1.4	1.4	-0.1	-0.04
ECLS-K SDQ Anger/Distractibility	2.0	2.0	0.0	-0.05	2.2	2.1	0.0	0.05	2.1	2.1	0.0	0.00
ECLS-K SDQ Sad/Lonely/Anxious	2.2	2.3	0.0	-0.01	2.3	2.3	0.0	0.02	2.3	2.3	0.0	-0.01
ECLS-K SDQ Peer Relations	3.1	3.1	-0.1	-0.12	3.1	3.2	-0.1	-0.11	3.1	3.1	0.0	-0.03
Self-Reported Bullying by Peers	6.8	6.4	0.4	0.16	6.8	7.0	-0.2	-0.06	6.7	6.8	0.0	-0.02
ADD/ADHD since First Grade (parent report)+	12.4	14.0	-1.6	-0.04	12.8	17.5	-4.7	-0.13	18.7	12.8	5.9+	0.17
Social-Emotional Risk Index	35.5	41.7	-6.1	-0.12	51.1	53.4	-2.3	-0.05	43.5	43.7	-0.2	0.00
Social-Emotional Success Index	59.5	43.7	15.8*	0.32	41.9	36.9	4.9	0.10	45.6	46.8	-1.2	-0.02
Child Academic Outcomes												
English Receptive Vocabulary (PPVT-III)	93.0	90.2	2.9	0.18	93.6	94.3	-0.7	-0.04	94.9	94.6	0.2	0.01
PPVT-III Standard Score < 85	30.2	39.1	-9.0	-0.20	28.5	28.7	-0.2	0.00	28.2	24.6	3.5	0.08
Matrix Reasoning (WISC)	8.6	8.3	0.3	0.09	8.2	8.2	-0.1	-0.02	8.8	8.7	0.1	0.03
ECLS-K Reading	129.2	123.6	5.6	0.20	128.3	127.9	0.4	0.01	128.3	126.0	2.4	0.09
ECLS-K Mathematics	8.4	7.9	0.4	0.10	8.1	8.4	-0.3	-0.07	8.3	8.8	-0.4	-0.09
Retention (parent report)+	8.3	19.2	-10.9*	-0.32	13.3	12.1	1.3	0.04	16.7	13.0	3.7	0.11
Chronic Absenteeism (parent report)	15.4	12.7	2.7	0.09	10.9	8.5	2.4	0.08	9.5	9.2	0.3	0.01
Child Has IEP (parent Report)	11.9	16.9	-5.0	-0.13	16.9	14.8	2.1	0.06	16.3	21.4	-5.1	-0.14
Academic Success Index	28.9	21.0	8.0	0.18	26.9	26.0	0.9	0.02	25.2	31.0	-5.8	-0.13
Ability Success Index	14.3	17.6	-3.3	-0.08	20.8	21.3	-0.6	-0.01	24.3	22.7	1.7	0.04
Child Outcomes: Multi-Domain Indices												
Cumulative Risk (number of outcomes of 16)[e]	3.4	3.5	-0.1	-0.06	3.4	3.4	0.0	0.01	3.4	3.3	0.1	0.04
Categorical Risk (low, medium, high)	1.3	1.4	-0.1	-0.11	1.4	1.3	0.0	0.01	1.4	1.3	0.1	0.15
Cumulative Success (number of domains of 5)[f]	2.3	2.1	0.2	0.15	2.1	2.2	-0.1	-0.06	2.2	2.4	-0.2	-0.15
Parenting and the Home Environment												
Parent Supervision	3.3	3.2	0.1	0.12	3.2	3.2	0.0	-0.01	3.2	3.2	0.0	0.04
Severity of Discipline Strategies+	4.0	3.7	0.3+	0.27	3.9	3.8	0.1	0.07	3.7	3.8	-0.2	-0.12
Family Involvement in School	36.2	36.8	-0.6	-0.10	36.0	36.1	-0.1	-0.02	37.8	36.4	1.4+	0.21
Children's Books (26 or more)	46.3	53.7	-7.4	-0.15	59.2	60.8	-1.7	-0.03	63.0	62.7	0.3	0.01
Help with Homework	3.2	3.1	0.0	0.04	3.3	3.2	0.0	0.02	3.4	3.3	0.1	0.13
HOME Total Score	27.0	27.5	-0.5	-0.10	27.4	26.9	0.6+	0.13	26.9	27.2	-0.3	-0.07
Total Support for Education	-0.7	-0.3	-0.4	-0.07	-0.5	-0.5	0.0	0.00	1.0	0.5	0.5	0.11

Table B.13 *(continued)*

Outcome	Center-Based				Home-Based				Mixed-Approach			
	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
Support for Education, Internal to the Home	-0.2	-0.1	0.0	0.00	-0.3	-0.2	-0.1	-0.03	0.6	0.2	0.4	0.14
Support for Education, External to the Home	-0.5	-0.2	-0.3	-0.11	-0.3	-0.4	0.1	0.03	0.4	0.2	0.1	0.04
Family Well-Being and Mental Health												
Depressive Symptoms CES-D (count)*	7.6	6.0	1.7+	0.24	6.9	7.8	-0.9	-0.12	6.6	7.7	-1.1	-0.17
Parent Substance Use	5.6	3.5	2.1	0.08	8.0	10.6	-2.6	-0.09	8.4	8.1	0.3	0.01
Parent Alcohol Use	0.7	0.5	0.1	0.17	0.7	0.7	-0.1	-0.08	0.6	0.7	-0.1	-0.09
Parenting Distress (PSI)*	9.3	8.0	1.4*	0.34	8.4	8.8	-0.4	-0.10	7.8	8.5	-0.7+	-0.17
Number of Moves	2.5	2.3	0.2	0.13	2.2	2.4	-0.2*	-0.15	2.3	2.4	-0.1	-0.06
Homelessness	9.4	5.0	4.4	0.19	3.5	5.7	-2.3	-0.09	5.8	7.1	-1.4	-0.06
Family Conflict (FES)	1.4	1.4	0.0	0.00	1.4	1.5	-0.1	-0.14	1.4	1.4	0.0	-0.11
Parent Child Dysfunctional Interaction (PSI)**	10.5	8.9	1.6*	0.34	9.7	10.3	-0.5	-0.11	9.1	9.7	-0.6	-0.13
Child Reported Relationship with Mother	3.6	3.6	0.0	0.12	3.5	3.6	-0.1	-0.13	3.6	3.6	0.0	-0.02
Child Reported Relationship with Father	3.5	3.4	0.0	0.04	3.5	3.5	0.0	-0.01	3.5	3.4	0.0	0.06
Child Exposure to Domestic Violence	6.9	3.1	3.8	0.16	7.6	7.4	0.1	0.00	3.0	5.2	-2.2	-0.09
Parent Self-Sufficiency												
Household Annual Income (continuous)	36200.3	32738.3	3462.0	0.11	35645.5	32096.6	3548.9	0.11	36945.01	39046.1	-2101.0	-0.07
Income to Needs Ratio (continuous)	1.6	1.5	0.2	0.13	1.5	1.4	0.1	0.11	1.6	1.7	-0.1	-0.10
Mother's Highest Educational Level	2.6	2.6	0.0	-0.02	2.4	2.3	0.0	0.05	2.5	2.5	0.0	-0.03
Mother's Employment Status	1.7	1.7	0.0	0.01	1.9	1.9	0.0	-0.01	1.8	1.8	0.0	-0.02
Current Welfare Participation	45.3	41.6	3.7	0.07	47.8	46.2	1.6	0.03	42.9	51.6	-8.7+	-0.17
Sample Size	**69-156**	**69-186**			**223-370**	**238-377**			**144-239**	**159-294**		

Source: Parent interviews, interviewer observations, and child assessments conducted when children were in Grade 5. CBCL = Child Behavior Check List; ADD/ADHD = Attention Deficit Disorder/Attention Deficit Hyperactivity Disorder; ECLS-K = Early Childhood Longitudinal Study-Kindergarten Class of 1998-99; SDQ = Self Description Questionnaire; PPVT-III = Peabody Picture Vocabulary Test-Third Edition; HOME = Home Observation for Measurement of the Environment; FES = Shortened Family Environment Scale; PSI = Parenting Stress Index-Short Form.

Note: All impact estimates were calculated using regression models in which each site was weighted equally. Psychometric information on specific outcome measures, including descriptive statistics is available in Appendix A.

[a]Program group includes all families assigned to Early Head Start who received more than one home visit, met with a case manager more than once, enrolled its child in center care for at least two weeks, or participated in a group activity during the 26 months after random assignment. Thus, impacts should be interpreted as the effect of receiving treatment.

Table B.13 *(continued)*

[b]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had been assigned to the program group instead. This unobserved mean was estimated as the difference between the program group mean for participants and the impact per participant.

[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 all program and control group members.

[d]The effect size was calculated by dividing the estimated impact by the standard deviation of the outcome measure for the control group.

[e]This cumulative risk index is based on the sum of 16 outcomes from multiple domains including social-emotional (bullying by peers, self-reported delinquent behavior, internalizing behavior, externalizing behavior, peer relations, attention problems), academic (math, language/literacy, absences, retention), cognitive ability (PPVT-III, Matrix Reasoning), and health (general health, chronic illness, BMI, IEP).

[f]This cumulative success index is based on the sum of success indices from five domains including social-emotional, peer relations, academic, retention/absence, and cognitive ability. Each domain-specific index is equal to 1 if success is present and 0 if absent.

Asterisks next to variable names in the first column indicate significance levels for chi-square tests of differences in impacts across the subgroups.

$+p < .10$, $*p < .05$, $**p < .01$.

Table B.14 Weighted Impacts on Child Negative Social-Emotional Outcomes at Grade 5, by Program Type

	Center-Based				Home-Based				Mixed-Approach			
Outcome	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
CBCL Aggressive Behavior	5.2	4.8	0.4	0.07	5.9	6.5	-0.6	-0.10	5.0	5.3	-0.2	-0.04
CBCL Rule-Breaking Behavior	2.0	2.1	-0.1	-0.04	2.3	2.5	-0.2	-0.07	2.0	2.3	-0.3	-0.12
CBCL Social Problems+	2.8	2.1	0.7+	0.26	2.8	3.1	-0.3	-0.10	2.2	2.5	-0.4	-0.13
CBCL Anxious/Depressed	2.4	2.6	-0.2	-0.07	3.2	3.7	-0.5+	-0.14	2.6	2.9	-0.4	-0.12
CBCL Withdrawn/Depressed	1.3	1.5	-0.2	-0.08	1.9	1.9	0.0	0.00	1.4	1.5	0.0	-0.01
CBCL Somatic Complaints	0.8	0.9	0.0	-0.01	1.1	1.3	-0.2	-0.09	1.1	0.9	0.1	0.08
CBCL Thought Problems	1.7	2.2	-0.4	-0.16	2.2	2.4	-0.2	-0.08	2.0	1.9	0.0	0.01
Sample Size	**156**	**186**			**370**	**377**			**239**	**294**		

Source: Parent interviews, interviewer observations, and child assessments conducted when children were in Grade 5. CBCL = Child Behavior Check List.

Note: All impact estimates were calculated using regression models in which each site was weighted equally. Psychometric information on specific outcome measures, including descriptive statistics is available in Appendix A.

[a]Program group includes all families assigned to Early Head Start who received more than one home visit, met with a case manager more than once, enrolled its child in center care for at least two weeks, or participated in a group activity during the 26 months after random assignment. Thus, impacts should be interpreted as the effect of receiving treatment.

[b]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had been assigned to the program group instead. This unobserved mean was estimated as the difference between the program group mean for participants and the impact per participant.

[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 all program and control group members.

[d]The effect size was calculated by dividing the estimated impact by the standard deviation of the outcome measure for the control group.

Asterisks next to variable names in the first column indicate significance levels for chi-square tests of differences in impacts across the subgroups.

+p < .10, *p < .05, **p < .01.

Table B.15 Weighted Impacts on Child and Family Outcomes at Grade 5, by Race

Outcome	White				African American				Hispanic			
	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
Child Social-Emotional Outcomes												
CBCL Internalizing Behavior	6.4	7.2	-0.7	-0.13	4.3	5.1	-0.8	-0.14	4.5	5.6	-1.0	-0.18
CBCL Externalizing Behavior	8.7	10.0	-1.3	-0.16	6.5	8.7	-2.2*	-0.27	5.4	5.6	-0.2	-0.03
CBCL Attention Problems	4.7	5.0	-0.4	-0.10	3.4	4.3	-0.9*	-0.23	2.9	2.9	-0.1	-0.02
Self-Reported Delinquent Behavior	1.4	1.4	0.1	0.04	1.6	1.8	-0.2	-0.12	1.4	1.2	0.2	0.13
ECLS-K SDQ Anger/Distractibility	2.1	2.1	0.1	0.08	2.1	2.2	-0.1	-0.16	2.0	2.1	-0.1	-0.14
ECLS-K SDQ Sad/Lonely/Anxious	2.3	2.2	0.1	0.14	2.3	2.4	-0.1	-0.13	2.3	2.4	-0.1	-0.17
ECLS-K SDQ Peer Relations	3.0	3.1	0.0	-0.01	3.1	3.2	0.0	-0.01	3.2	3.1	0.1	0.17
Self-Reported Bullying by Peers	6.9	7.1	-0.2	-0.08	6.6	7.2	-0.6+	-0.23	6.3	6.2	0.1	0.04
ADD/ADHD since First Grade (parent report)	19.7	23.2	-3.5	-0.10	18.6	12.6	6.0	0.17	4.8	6.0	-1.2	-0.03
Social-Emotional Risk Index	48.7	50.1	-1.5	-0.03	43.6	52.7	-9.1	-0.18	37.3	43.7	-6.4	-0.13
Social-Emotional Success Index	44.4	38.8	5.7	0.11	46.4	39.3	7.1	0.14	53.5	43.8	9.7	0.20
Child Academic Outcomes												
English Receptive Vocabulary (PPVT-III)	102.5	101.9	0.6	0.04	89.2	88.3	0.9	0.06	89.2	89.0	0.2	0.01
PPVT-III Standard Score < 85	9.4	10.3	-1.0	-0.02	41.0	45.1	-4.1	-0.09	37.5	33.1	4.4	0.10
Matrix Reasoning (WISC)	9.3	8.8	0.6+	0.17	8.1	8.1	0.0	0.02	7.8	8.6	-0.8	-0.25
ECLS-K Reading	137.8	134.3	3.6	0.13	123.7	121.2	2.5	0.09	123.1	125.6	-2.4	-0.09
ECLS-K Mathematics	10.0	9.9	0.2	0.03	7.2	7.1	0.1	0.02	8.0	8.9	-0.9	-0.19
Retention (parent report)	10.5	10.5	-0.1	0.00	12.4	17.2	-4.8	-0.14	22.3	10.7	11.6	0.34
Chronic Absenteeism (parent report)	13.1	10.3	2.8	0.10	11.4	8.7	2.7	0.09	8.9	7.9	1.0	0.03
Child Has IEP (parent Report)	18.6	22.7	-4.1	-0.11	16.6	23.1	-6.4	-0.17	8.3	10.7	-2.5	-0.07
Academic Success Index	43.1	41.0	2.1	0.05	16.4	23.6	-7.1	-0.16	9.3	21.1	-11.8+	-0.27
Ability Success Index	36.4	31.1	5.3	0.13	17.7	14.3	3.4	0.08	9.7	11.2	-1.4	-0.04
Child Outcomes: Multi-Domain Indices												
Cumulative Risk (number of outcomes of 16)[e]	3.0	3.1	-0.1	-0.05	3.6	3.8	-0.2	-0.09	3.1	3.1	0.0	0.02
Categorical Risk (low, medium, high)	1.2	1.2	0.0	0.02	1.4	1.5	0.0	-0.06	1.2	1.3	-0.1	-0.14
Cumulative Success (number of domains of 5)[f]	2.4	2.4	0.0	0.00	2.2	2.1	0.1	0.05	2.1	2.1	-0.1	-0.05
Parenting and the Home Environment												
Parent Supervision	3.4	3.3	0.1	0.08	3.2	3.1	0.1	0.15	3.2	3.1	0.1	0.17
Severity of Discipline Strategies	3.7	3.9	-0.1	-0.10	3.9	4.1	-0.1	-0.10	3.7	3.3	0.4	0.28
Family Involvement in School**	36.8	37.0	-0.2	-0.04	38.6	36.1	2.5**	0.38	35.0	36.6	-1.6	-0.24
Children's Books (26 or more)	74.9	75.8	-0.9	-0.02	50.3	47.9	2.4	0.05	63.2	60.9	2.3	0.05
Help with Homework	3.1	3.2	0.0	-0.05	3.5	3.4	0.2	0.17	3.3	3.2	0.1	0.07
HOME Total Score	26.7	27.0	-0.3	-0.06	26.8	26.6	0.2	0.04	28.6	28.2	0.5	0.10

Table B.15 *(continued)*

Outcome	White				African American				Hispanic			
	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
Total Support for Education	-0.5	-0.1	-0.3	-0.07	1.6	0.7	0.9	0.19	-0.1	-0.9	0.7	0.15
Support for Education, Internal to the Home	-0.3	-0.2	0.0	-0.02	1.0	0.5	0.6+	0.20	-0.1	-0.4	0.3	0.10
Support for Education, External to the Home	-0.2	0.1	-0.3	-0.08	0.6	0.2	0.4	0.12	0.0	-0.5	0.5	0.15
Family Well-Being and Mental Health												
Depressive Symptoms CES-D (count)	7.2	8.1	-0.9	-0.13	6.8	8.2	-1.4+	-0.21	6.6	5.8	0.8	0.11
Parent Substance Use	10.0	12.1	-2.1	-0.08	9.9	11.5	-1.7	-0.06	5.1	2.2	2.9	0.10
Parent Alcohol Use**	0.9	0.8	0.1	0.11	0.5	0.8	-0.3**	-0.34	0.5	0.5	0.1	0.09
Parenting Distress (PSI)	7.6	8.3	-0.8*	-0.19	8.3	8.6	-0.3	-0.09	8.3	8.8	-0.5	-0.12
Number of Moves	2.4	2.6	-0.1	-0.09	2.4	2.7	-0.3+	-0.22	2.1	1.9	0.1	0.10
Homelessness	6.3	7.7	-1.4	-0.06	6.2	7.0	-0.7	-0.03	5.4	5.1	0.3	0.01
Family Conflict (FES)	1.4	1.5	-0.1+	-0.21	1.3	1.4	-0.1	-0.14	1.4	1.4	-0.1	-0.13
Parent Child Dysfunctional Interaction (PSI)	9.6	9.8	-0.2	-0.05	9.2	9.9	-0.7	-0.16	8.9	9.6	-0.6	-0.13
Child Reported Relationship with Mother	3.6	3.6	0.0	-0.08	3.6	3.6	0.0	0.03	3.6	3.6	0.0	0.11
Child Reported Relationship with Father	3.4	3.5	-0.1	-0.12	3.4	3.4	0.1	0.12	3.5	3.5	0.0	0.02
Child Exposure to Domestic Violence	8.2	6.1	2.1	0.09	2.3	3.7	-1.4	-0.06	8.3	6.2	2.1	0.09
Parent Self-Sufficiency												
Household Annual Income (continuous)	44080.6	43468.4	612.2	0.02	30159.8	33707.4	-3547.6	-0.11	31135.9	33213.0	-2077.2	-0.07
Income to Needs Ratio (continuous)	1.9	1.8	0.0	0.04	1.3	1.5	-0.2	-0.14	1.3	1.4	-0.1	-0.06
Mother's Highest Educational Level*	2.8	2.7	0.1	0.05	2.5	2.7	-0.2+	-0.18	1.9	1.7	0.2+	0.22
Mother's Employment Status	1.9	1.9	-0.1	-0.08	1.8	1.7	0.1	0.13	1.8	1.9	-0.2	-0.21
Current Welfare Participation	38.5	46.2	-7.7	-0.15	51.3	58.8	-7.5	-0.15	36.8	34.1	2.7	0.05
Sample Size	**168-250**	**175-253**			**79-220**	**80-262**			**76-139**	**89-152**		

Source: Parent interviews, interviewer observations, and child assessments conducted when children were in Grade 5. CBCL = Child Behavior Check List; ADD/ADHD = Attention Deficit Disorder/Attention Deficit Hyperactivity Disorder; ECLS-K = Early Childhood Longitudinal Study-Kindergarten Class of 1998-99; SDQ = Self Description Questionnaire; PPVT-III = Peabody Picture Vocabulary Test-Third Edition; HOME = Home Observation for Measurement of the Environment; FES = Shortened Family Environment Scale; PSI = Parenting Stress Index-Short Form.

Note: All impact estimates were calculated using regression models in which each site was weighted equally. Psychometric information on specific outcome measures, including descriptive statistics is available in Appendix A.

Table B.15 *(continued)*

[a]Program group includes all families assigned to Early Head Start who received more than one home visit, met with a case manager more than once, enrolled its child in center care for at least two weeks, or participated in a group activity during the 26 months after random assignment. Thus, impacts should be interpreted as the effect of receiving treatment.

[b]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had been assigned to the program group instead. This unobserved mean was estimated as the difference between the program group mean for participants and the impact per participant.

[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 all program and control group members.

[d]The effect size was calculated by dividing the estimated impact by the standard deviation of the outcome measure for the control group.

[e]This cumulative risk index is based on the sum of 16 outcomes from multiple domains including social-emotional (bullying by peers, self-reported delinquent behavior, internalizing behavior, externalizing behavior, peer relations, attention problems), academic (math, language/literacy, absences, retention), cognitive ability (PPVT-III, Matrix Reasoning), and health (general health, chronic illness, BMI, IEP).

[f]This cumulative success index is based on the sum of success indices from five domains including social-emotional, peer relations, academic, retention/absence, and cognitive ability. Each domain-specific index is equal to 1 if success is present and 0 if absent.

Asterisks next to variable names in the first column indicate significance levels for chi-square tests of differences in impacts across the subgroups.

$+p < .10$, $*p < .05$, $**p < .01$.

Table B.16 Weighted Impacts on Child Negative Social-Emotional Outcomes at Grade 5, by Race

Outcome	White				African American				Hispanic			
	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
CBCL Aggressive Behavior	6.4	7.3	-0.9	-0.15	4.4	5.9	-1.5*	-0.26	3.8	4.0	-0.2	-0.04
CBCL Rule-Breaking Behavior	2.3	2.7	-0.4	-0.15	2.0	2.8	-0.7*	-0.27	1.6	1.6	0.0	0.01
CBCL Social Problems	2.9	3.4	-0.5	-0.17	2.0	2.6	-0.6*	-0.23	2.2	2.1	0.1	0.05
CBCL Anxious/Depressed	3.4	4.0	-0.6+	-0.19	2.0	2.6	-0.7*	-0.20	2.2	2.9	-0.7	-0.22
CBCL Withdrawn/Depressed	1.7	1.9	-0.1	-0.05	1.4	1.5	-0.1	-0.04	1.5	1.9	-0.4	-0.19
CBCL Somatic Complaints	1.3	1.3	0.0	-0.01	0.9	1.0	-0.1	-0.04	0.9	0.8	0.1	0.05
CBCL Thought Problems	2.9	3.2	-0.3	-0.12	1.5	2.0	-0.5+	-0.17	1.3	1.5	-0.2	-0.08
Sample Size	**250**	**253**			**220**	**262**			**139**	**152**		

Source: Parent interviews, interviewer observations, and child assessments conducted when children were in Grade 5. CBCL = Child Behavior Check List.

Note: All impact estimates were calculated using regression models in which each site was weighted equally. Psychometric information on specific outcome measures, including descriptive statistics is available in Appendix A.

[a]Program group includes all families assigned to Early Head Start who received more than one home visit, met with a case manager more than once, enrolled its child in center care for at least two weeks, or participated in a group activity during the 26 months after random assignment. Thus, impacts should be interpreted as the effect of receiving treatment.

[b]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had been assigned to the program group instead. This unobserved mean was estimated as the difference between the program group mean for participants and the impact per participant.

[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 all program and control group members.

[d]The effect size was calculated by dividing the estimated impact by the standard deviation of the outcome measure for the control group.

Asterisks next to variable names in the first column indicate significance levels for chi-square tests of differences in impacts across the subgroups.

$+p < .10$, $*p < .05$, $**p < .01$.

Table B.17 Weighted Impacts on Child and Family Outcomes at Grade 5, by Risk Group

Outcome	Low Risks (0-2 Risks)				Medium Risks (3 Risks)				High Risks (4-5 Risks)			
	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
Child Social-Emotional Outcomes												
CBCL Internalizing Behavior	5.5	5.7	-0.2	-0.04	5.6	7.3	-1.6+	-0.28	6.3	6.5	-0.2	-0.03
CBCL Externalizing Behavior	7.0	7.4	-0.4	-0.05	8.4	9.3	-0.9	-0.11	9.6	10.6	-0.9	-0.11
CBCL Attention Problems	3.8	3.9	-0.1	-0.03	4.2	4.4	-0.2	-0.06	4.3	4.8	-0.5	-0.14
Self-Reported Delinquent Behavior	1.3	1.4	0.0	-0.03	1.8	1.5	0.3	0.16	1.7	2.1	-0.3	-0.19
ECLS-K SDQ Anger/Distractibility	2.0	2.1	0.0	-0.05	2.2	2.1	0.1	0.12	2.3	2.3	0.0	-0.01
ECLS-K SDQ Sad/Lonely/Anxious	2.2	2.3	0.0	-0.02	2.4	2.3	0.1	0.09	2.4	2.4	0.0	0.06
ECLS-K SDQ Peer Relations	3.1	3.1	0.0	0.00	3.1	3.1	0.0	-0.07	3.2	3.3	-0.1	-0.10
Self-Reported Bullying by Peers	6.6	6.4	0.1	0.05	6.8	7.3	-0.5	-0.18	7.2	6.9	0.3	0.10
ADD/ADHD since First Grade (parent report)	12.2	13.2	-1.0	-0.03	17.5	20.8	-3.2	-0.09	17.8	15.3	2.4	0.07
Social-Emotional Risk Index	42.0	42.8	-0.7	-0.01	49.2	51.0	-1.8	-0.04	56.3	58.1	-1.8	-0.04
Social-Emotional Success Index	49.0	47.9	1.1	0.02	42.8	38.0	4.8	0.10	34.3	34.6	-0.3	-0.01
Child Academic Outcomes												
English Receptive Vocabulary (PPVT-III)	96.4	95.8	0.6	0.04	93.0	94.8	-1.8	-0.11	86.8	90.1	-3.2	-0.20
PPVT-III Standard Score < 85	23.4	23.8	-0.4	-0.01	30.4	26.7	3.8	0.08	48.6	38.6	10.0	0.22
Matrix Reasoning (WISC)*	8.8	8.3	0.5	0.14	8.3	8.9	-0.6	-0.18	7.6	8.3	-0.7	-0.21
ECLS-K Reading+	133.7	130.0	3.7+	0.13	126.8	128.2	-1.4	-0.05	115.0	121.9	-6.9	-0.25
ECLS-K Mathematics+	9.1	8.9	0.2	0.03	8.0	9.1	-1.1+	-0.23	6.1	7.6	-1.5+	-0.32
Retention (parent report)	7.9	9.4	-1.5	-0.04	15.0	16.8	-1.9	-0.05	28.4	17.3	11.2	0.33
Chronic Absenteeism (parent report)	10.7	9.2	1.5	0.05	11.2	11.1	0.01	0.00	18.5	7.1	11.4+	0.39
Child Has IEP (parent Report)	11.9	15.8	-3.9	-0.10	17.5	16.8	0.7	0.02	19.7	22.2	-2.6	-0.07
Academic Success Index+	35.1	30.7	4.4	0.10	24.8	24.0	0.8	0.02	12.3	24.9	-12.6+	-0.28
Ability Success Index+	27.0	23.4	3.6	0.09	13.3	24.7	-11.4*	-0.28	11.3	15.0	-3.6	-0.09
Child Outcomes: Multi-Domain Indices												
Cumulative Risk (number of outcomes of 16)[e]	3.0	3.1	-0.1	-0.04	3.7	3.5	0.2	0.06	4.7	3.8	0.9+	0.36
Categorical Risk (low, medium, high)	1.3	1.2	0.0	0.01	1.5	1.4	0.1	0.09	1.6	1.5	0.1	0.10
Cumulative Success (number of domains of 5)[f]	2.4	2.4	0.0	0.02	2.0	2.0	0.0	-0.03	1.7	2.1	-0.4*	-0.31
Parenting and the Home Environment												
Parent Supervision	3.2	3.3	0.0	-0.05	3.2	3.2	0.0	0.06	3.1	3.1	0.0	0.01
Severity of Discipline Strategies	3.7	3.8	0.0	-0.03	3.9	3.9	0.0	0.00	4.1	3.9	0.2	0.14
Family Involvement in School	36.6	36.7	-0.1	-0.01	36.2	36.2	0.0	0.00	37.0	36.0	1.0	0.15
Children's Books (26 or more)+	55.8	64.6	-8.8*	-0.18	64.4	55.7	8.7	0.18	52.3	57.0	-4.7	-0.10
Help with Homework	3.3	3.2	0.1	0.10	3.3	3.2	0.1	0.12	3.3	3.4	-0.1	-0.13
HOME Total Score	27.7	28.2	-0.5	-0.11	26.7	26.8	-0.1	-0.03	25.5	25.7	-0.2	-0.04
Total Support for Education	-0.2	0.0	-0.2	-0.04	-0.2	-0.5	0.3	0.07	-0.1	1.0	-1.1	-0.22

Table B.17 *(continued)*

Outcome	Low Risks (0-2 Risks)				Medium Risks (3 Risks)				High Risks (4-5 Risks)			
	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
Support for Education, Internal to the Home	0.0	0.0	0.0	-0.02	0.1	-0.2	0.3	0.10	0.1	0.7	-0.6	-0.21
Support for Education, External to the Home	-0.1	0.0	-0.2	-0.05	-0.3	-0.3	0.1	0.02	-0.2	0.3	-0.5	-0.15
Family Well-Being and Mental Health												
Depressive Symptoms CES-D (count)	6.3	6.7	-0.5	-0.07	7.8	8.0	-0.2	-0.02	8.6	9.2	-0.7	-0.09
Parent Substance Use	8.2	4.8	3.4	0.12	7.9	11.6	-3.8	-0.14	11.6	11.3	0.3	0.01
Parent Alcohol Use	0.6	0.7	0.0	-0.03	0.7	0.8	-0.1	-0.18	0.8	0.9	-0.1	-0.18
Parenting Distress (PSI)+	8.0	8.1	-0.2	-0.04	7.8	8.9	-1.1*	-0.27	9.6	8.7	0.9	0.23
Number of Moves	2.1	2.2	-0.1	-0.06	2.4	2.6	-0.2	-0.11	2.5	2.8	-0.2	-0.15
Homelessness	4.5	4.3	0.3	0.01	5.2	10.6	-5.4	-0.23	2.5	8.2	-5.7	-0.24
Family Conflict (FES)	1.4	1.4	0.0	-0.05	1.4	1.5	-0.1	-0.19	1.4	1.5	-0.1	-0.17
Parent Child Dysfunctional Interaction (PSI)	9.1	9.6	-0.4	-0.09	10.4	10.4	0.0	0.01	10.6	10.1	0.5	0.11
Child Reported Relationship with Mother	3.6	3.6	-0.1	-0.13	3.6	3.5	0.1	0.18	3.6	3.6	-0.1	-0.23
Child Reported Relationship with Father	--	--	--	--	5.1	6.4	-1.3	-0.05	10.2	10.1	0.0	0.00
Child Exposure to Domestic Violence	4.5	5.8	-1.2	-0.05	7.8	8.0	-0.2	-0.02	8.6	9.2	-0.7	-0.09
Parent Self-Sufficiency												
Household Annual Income (continuous)	39808.8	41425.4	-1616.6	-0.05	33855.9	34782.2	-926.3	-0.03	24626.1	28771.2	-4145.1	-0.13
Income to Needs Ratio (continuous)	1.8	1.8	0.0	-0.03	1.5	1.5	0.0	-0.01	1.0	1.2	-0.2	-0.17
Mother's Highest Educational Level*	2.7	2.7	0.0	-0.04	2.5	2.3	0.2+	0.23	1.7	2.0	-0.3	-0.29
Mother's Employment Status	1.7	1.7	-0.1	-0.07	2.0	2.0	0.0	0.03	1.9	2.0	-0.1	-0.16
Current Welfare Participation	31.9	36.2	-4.2	-0.08	45.7	56.4	-10.6	-0.21	70.5	71.7	-1.2	-0.02
Sample Size	**289-334**	**310-359**			**131-169**	**136-192**			**62-102**	**78-125**		

Source: Parent interviews, interviewer observations, and child assessments conducted when children were in Grade 5. CBCL = Child Behavior Check List; ADD/ADHD = Attention Deficit Disorder/Attention Deficit Hyperactivity Disorder; ECLS-K = Early Childhood Longitudinal Study-Kindergarten Class of 1998-99; SDQ = Self Description Questionnaire; PPVT-III = Peabody Picture Vocabulary Test-Third Edition; HOME = Home Observation for Measurement of the Environment; FES = Shortened Family Environment Scale; PSI = Parenting Stress Index-Short Form.

Note: All impact estimates were calculated using regression models in which each site was weighted equally. Psychometric information on specific outcome measures, including descriptive statistics is available in Appendix A.

Table B.17 *(continued)*

[a]Program group includes all families assigned to Early Head Start who received more than one home visit, met with a case manager more than once, enrolled its child in center care for at least two weeks, or participated in a group activity during the 26 months after random assignment. Thus, impacts should be interpreted as the effect of receiving treatment.

[b]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had been assigned to the program group instead. This unobserved mean was estimated as the difference between the program group mean for participants and the impact per participant.

[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 all program and control group members.

[d]The effect size was calculated by dividing the estimated impact by the standard deviation of the outcome measure for the control group.

[e]This cumulative risk index is based on the sum of 16 outcomes from multiple domains including social-emotional (bullying by peers, self-reported delinquent behavior, internalizing behavior, externalizing behavior, peer relations, attention problems), academic (math, language/literacy, absences, retention), cognitive ability (PPVT-III, Matrix Reasoning), and health (general health, chronic illness, BMI, IEP).

[f]This cumulative success index is based on the sum of success indices from five domains including social-emotional, peer relations, academic, retention/absence, and cognitive ability. Each domain-specific index is equal to 1 if success is present and 0 if absent.

Asterisks next to variable names in the first column indicate significance levels for chi-square tests of differences in impacts across the subgroups.

$+p < .10$, $*p < .05$, $**p < .01$.

Table B.18 Weighted Impacts on Child Negative Social-Emotional Outcomes at Grade 5, by Risk Group

	Low Risks (0-2 Risks)				Medium Risks (3 Risks)				High Risks (4-5 Risks)			
Outcome	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
CBCL Aggressive Behavior	5.0	5.3	-0.3	-0.05	6.1	6.5	-0.4	-0.07	6.7	7.4	-0.7	-0.12
CBCL Rule-Breaking Behavior	2.0	2.1	-0.1	-0.04	2.3	2.8	-0.5	-0.19	3.0	3.2	-0.2	-0.08
CBCL Social Problems	2.5	2.5	0.0	-0.02	2.6	3.3	-0.7+	-0.24	2.8	2.8	0.0	0.01
CBCL Anxious/Depressed	2.9	3.2	-0.3	-0.09	2.8	3.7	-0.9*	-0.27	2.9	3.3	-0.4	-0.13
CBCL Withdrawn/Depressed	1.6	1.5	0.1	0.04	1.7	2.2	-0.5	-0.23	2.2	1.9	0.3	0.14
CBCL Somatic Complaints	1.0	1.0	0.0	0.00	1.1	1.4	-0.3	-0.16	1.2	1.3	0.0	-0.02
CBCL Thought Problems	2.0	2.1	-0.1	-0.04	2.1	2.6	-0.6	-0.21	2.4	2.5	-0.2	-0.06
Sample Size	**334**	**359**			**169**	**192**			**102**	**125**		

Source: Parent interviews, interviewer observations, and child assessments conducted when children were in Grade 5. CBCL = Child Behavior Check List.

Note: All impact estimates were calculated using regression models in which each site was weighted equally. Psychometric information on specific outcome measures, including descriptive statistics is available in Appendix A.

[a]Program group includes all families assigned to Early Head Start who received more than one home visit, met with a case manager more than once, enrolled its child in center care for at least two weeks, or participated in a group activity during the 26 months after random assignment. Thus, impacts should be interpreted as the effect of receiving treatment.

[b]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had been assigned to the program group instead. This unobserved mean was estimated as the difference between the program group mean for participants and the impact per participant.

[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 all program and control group members.

[d]The effect size was calculated by dividing the estimated impact by the standard deviation of the outcome measure for the control group.

Asterisks next to variable names in the first column indicate significance levels for chi-square tests of differences in impacts across the subgroups.

$+p < .10$, $*p < .05$, $**p < .01$.

Table B.19 Differences in Impacts When Not Adjusting Versus Adjusting for Child Age, Main Sample and Key Subgroups

	Without adjustment for age		With adjustment for age	
	Impact	Effect Size	Impact	Effect Size
Main Sample				
No differences				
White				
Externalizing Behavior	-1.3	-0.17	-1.4+	-0.17
Parenting Distress	-0.7*	-0.18	-0.7+	-0.18
Black				
No differences				
Hispanic				
Academic Success Index	-9.9+	-0.22	-10.1	-0.23
Center-Based				
Severity of Discipline Strategies	0.3+	0.25	0.3	0.25
Home-Based				
Income	3608.93	0.11	3900.65+	0.12
Mixed-Approach				
No differences				
Low-Risk				
ECLS-K Reading	3.6	0.13	3.7+	0.13
Moderate Risk				
No differences				
High Risk				
English Receptive Vocabulary (PPVT)	-3.3	-0.21	-3.5+	-0.21
ECLS-K Reading	-7.4+	-0.27	-7.3	-0.27
Retention	11.6+	0.34	11.5	0.34

Source: Parent interviews, interviewer observations, and child assessments conducted when children were in Grade 5. ADD/ADHD = Attention Deficit Disorder/Attention Deficit Hyperactivity Disorder; ECLS-K = Early Childhood Longitudinal Study-Kindergarten Class of 1998-99; PPVT-III = Peabody Picture Vocabulary Test-Third Edition.

Note: All impact estimates were calculated using regression models in which each site was weighted equally. Psychometric information on specific outcome measures, including descriptive statistics is available in Appendix A.

Note: Table only includes impacts that were significant using one approach and not significant using the other approach.

$+p < .10$, $*p < .05$, $**p < .01$.

Table B.20 Impacts on Child and Family Outcomes at Grade 5, by Pattern of Implementation

Outcome	Early Implementers				Later Implementers				Incomplete Implementers			
	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
Child Social-Emotional Outcomes												
CBCL Internalizing Behavior	6.0	6.4	-0.4	-0.06	5.3	5.4	-0.1	-0.02	4.8	6.0	-1.2+	-0.20
CBCL Externalizing Behavior	8.1	8.6	-0.5	-0.06	7.1	7.5	-0.4	-0.05	7.4	8.3	-0.9	-0.11
CBCL Attention Problems	4.1	4.3	-0.2	-0.05	3.6	4.1	-0.5	-0.13	3.8	4.0	-0.3	-0.07
Self-Reported Delinquent Behavior	1.4	1.4	0.0	0.00	1.3	1.4	-0.1	-0.05	1.7	1.7	0.0	0.03
ECLS-K SDQ Anger/Distractibility	2.1	2.1	-0.1	-0.07	2.1	2.2	-0.1	-0.09	2.2	2.1	0.1	0.19
ECLS-K SDQ Sad/Lonely/Anxious	2.2	2.2	0.0	0.02	2.4	2.4	0.0	-0.05	2.3	2.2	0.0	0.06
ECLS-K SDQ Peer Relations	3.1	3.1	0.0	-0.05	3.1	3.1	0.0	0.01	3.1	3.2	-0.1	-0.17
Self-Reported Bullying by Peers	6.7	6.7	0.0	0.01	6.7	6.8	0.0	-0.02	6.9	7.0	-0.1	-0.05
ADD/ADHD since First Grade (parent report)	16.7	16.3	0.5	0.01	10.0	11.9	-1.9	-0.05	17.6	17.6	0.0	0.00
Social-Emotional Risk Index	46.1	44.5	1.6	0.03	42.8	48.8	-6.0	-0.12	43.3	50.6	-7.3	-0.15
Social-Emotional Success Index	45.4	41.7	3.8	0.08	50.2	41.8	8.4+	0.17	46.2	42.0	4.2	0.08
Child Academic Outcomes												
English Receptive Vocabulary (PPVT-III)	98.6	97.9	0.8	0.05	89.7	88.0	1.7	0.11	94.0	95.0	-1.0	-0.06
PPVT-III Standard Score < 85	18.3	18.2	0.2	0.00	38.5	40.3	-1.8	-0.04	27.8	31.1	-3.2	-0.07
Matrix Reasoning (WISC)	9.0	8.8	0.2	0.06	7.7	7.6	0.1	0.03	9.0	9.0	0.0	-0.01
ECLS-K Reading	133.2	132.1	1.1	0.04	122.6	120.4	2.3	0.08	130.3	127.9	2.3	0.08
ECLS-K Mathematics	9.3	9.5	-0.2	-0.05	7.4	7.2	0.2	0.04	8.3	8.8	-0.5	-0.11
Retention (parent report)	10.5	10.2	0.3	0.01	19.3	18.0	1.3	0.04	10.0	13.0	-3.0	-0.09
Chronic Absenteeism (parent report)	14.4	11.0	3.5	0.12	9.9	6.6	3.3	0.11	10.4	11.7	-0.1	-0.04
Child Has IEP (parent Report)	17.5	20.7	-3.2	-0.09	11.4	14.0	-2.5	-0.07	15.6	19.4	-3.7	-0.10
Academic Success Index	34.6	35.4	-0.7	-0.02	21.1	16.4	4.7	0.11	24.2	29.0	-4.8	-0.11
Ability Success Index	26.5	26.5	0.1	0.00	15.6	10.5	5.1	0.12	18.5	30.1	-11.6*	-0.28
Child Outcomes: Multi-Domain Indices												
Cumulative Risk (number of outcomes of 16)[e]	3.2	3.0	0.1	0.06	3.6	3.6	-0.1	-0.03	3.4	3.5	-0.1	-0.04
Categorical Risk (low, medium, high)	1.3	1.2	0.1	0.10	1.4	1.4	0.0	0.01	1.3	1.3	0.0	-0.02
Cumulative Success (number of domains of 5)[f]	2.2	2.4	-0.2	-0.13	2.2	2.0	0.2	0.15	2.2	2.3	-0.2	-0.14
Parenting and the Home Environment												
Parent Supervision	3.3	3.2	0.1+	0.15	3.1	3.1	0.0	0.02	3.2	3.2	0.0	0.04
Severity of Discipline Strategies	3.8	3.8	0.0	-0.03	3.9	3.8	0.1	0.09	3.8	3.8	0.0	-0.02
Family Involvement in School	36.9	36.7	0.2	0.03	36.0	36.1	-0.2	-0.02	37.5	36.2	1.3	0.20
Children's Books (26 or more)	65.9	75.2	-9.3*	-0.19	50.3	52.5	-2.2	-0.04	55.5	51.5	4.0	0.08
Help with Homework	3.3	3.2	0.1	0.06	3.4	3.3	0.0	0.05	3.3	3.2	0.0	0.04
HOME Total Score	26.7	27.3	-0.6	-0.13	27.1	27.3	-0.1	-0.03	27.6	27.0	0.6	0.14

Table B.20 *(continued)*

Outcome	Early Implementers				Later Implementers				Incomplete Implementers			
	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
Total Support for Education	-0.1	0.0	-0.2	-0.04	-0.2	-0.1	-0.1	-0.02	0.3	-0.1	0.4	0.09
Support for Education, Internal to the Home	0.0	-0.1	0.1	0.03	0.0	0.0	0.0	0.01	0.2	0.0	0.1	0.05
Support for Education, External to the Home	-0.2	0.1	-0.2	-0.07	-0.2	-0.1	-0.1	-0.03	0.1	-0.2	0.3	0.08
Family Well-Being and Mental Health												
Depressive Symptoms CES-D (count)	7.2	7.3	-0.1	-0.02	6.8	7.7	-0.8	-0.12	6.6	7.2	-0.6	-0.09
Parent Substance Use	8.5	9.0	-0.6	-0.02	7.9	5.7	2.2	0.08	7.2	9.0	-1.7	-0.06
Parent Alcohol Use	0.7	0.7	0.0	0.04	0.6	0.6	-0.1	-0.07	0.8	0.7	0.0	0.03
Parenting Distress (PSI)	7.8	8.2	-0.3	-0.09	8.5	8.7	-0.2	-0.06	8.7	8.6	0.0	0.01
Number of Moves	2.4	2.6	-0.2	-0.11	2.2	2.2	-0.1	-0.05	2.2	2.3	-0.1	-0.05
Homelessness	6.5	7.6	-1.2	-0.05	2.6	4.4	-1.7	-0.07	8.2	6.1	2.1	0.09
Family Conflict (FES)	1.4	1.4	0.0	-0.03	1.4	1.5	-0.1	-0.13	1.4	1.4	-0.1	-0.14
Parent Child Dysfunctional Interaction (PSI)	9.3	9.6	-0.3	-0.07	9.5	9.7	-0.2	-0.03	10.4	10.1	0.4	0.08
Child Reported Relationship with Mother	3.6	3.6	0.0	-0.01	3.6	3.6	0.0	0.04	3.6	3.6	0.0	0.01
Child Reported Relationship with Father	3.5	3.5	0.0	0.06	3.5	3.5	0.0	0.01	3.5	3.4	0.1	0.17
Child Exposure to Domestic Violence	4.0	6.7	-2.7	-0.11	6.9	6.0	1.0	0.04	4.7	5.3	-0.6	-0.02
Parent Self-Sufficiency												
Household Annual Income (continuous)	40507.4	40827.8	-320.4	-0.01	29139.0	28533.8	605.3	0.02	40015.3	36484.2	3531.2	0.11
Income to Needs Ratio (continuous)	1.8	1.7	0.1	0.06	1.2	1.2	0.0	-0.01	1.8	1.7	0.1	0.10
Mother's Highest Educational Level	2.7	2.7	0.0	0.02	2.1	2.1	0.0	-0.04	2.7	2.6	0.1	0.07
Mother's Employment Status	1.8	1.9	0.0	-0.05	1.8	1.9	0.0	-0.05	1.7	1.8	-0.1	-0.11
Current Welfare Participation	38.5	47.1	-8.6*	-0.17	47.7	50.2	-2.5	-0.05	45.3	42.1	3.2	0.06
Sample Size	**192-300**	**186-311**			**142-251**	**177-312**			**103-214**	**105-234**		

Source: Parent interviews, interviewer observations, and child assessments conducted when children were in Grade 5. CBCL = Child Behavior Check List; ADD/ADHD = Attention Deficit Disorder/Attention Deficit Hyperactivity Disorder; ECLS-K = Early Childhood Longitudinal Study-Kindergarten Class of 1998-99; SDQ = Self Description Questionnaire; PPVT-III = Peabody Picture Vocabulary Test-Third Edition; HOME = Home Observation for Measurement of the Environment; FES = Shortened Family Environment Scale; PSI = Parenting Stress Index-Short Form.

Note: All impact estimates were calculated using regression models in which each site was weighted equally. Psychometric information on specific outcome measures, including descriptive statistics is available in Appendix A.

Table B.20 *(continued)*

[a]Program group includes all families assigned to Early Head Start who received more than one home visit, met with a case manager more than once, enrolled its child in center care for at least two weeks, or participated in a group activity during the 26 months after random assignment. Thus, impacts should be interpreted as the effect of receiving treatment.

[b]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had been assigned to the program group instead. This unobserved mean was estimated as the difference between the program group mean for participants and the impact per participant.

[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 all program and control group members.

[d]The effect size was calculated by dividing the estimated impact by the standard deviation of the outcome measure for the control group.

[e]This cumulative risk index is based on the sum of 16 outcomes from multiple domains including social-emotional (bullying by peers, self-reported delinquent behavior, internalizing behavior, externalizing behavior, peer relations, attention problems), academic (math, language/literacy, absences, retention), cognitive ability (PPVT-III, Matrix Reasoning), and health (general health, chronic illness, BMI, IEP).

[f]This cumulative success index is based on the sum of success indices from five domains including social-emotional, peer relations, academic, retention/absence, and cognitive ability. Each domain-specific index is equal to 1 if success is present and 0 if absent.

Asterisks next to variable names in the first column indicate significance levels for chi-square tests of differences in impacts across the subgroups.

$+p < .10$, $*p < .05$, $**p < .01$.

Table B.21 Impacts on Child Negative Social-Emotional Outcomes at Grade 5, by Pattern of Implementation

	Early Implementers				Later Implementers				Incomplete Implementers			
Outcome	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
CBCL Aggressive Behavior	5.9	6.1	-0.2	-0.03	5.1	5.3	-0.2	-0.04	5.2	5.7	-0.5	-0.09
CBCL Rule-Breaking Behavior	2.2	2.5	-0.3	-0.10	2.0	2.2	-0.2	-0.06	2.3	2.5	-0.2	-0.07
CBCL Social Problems	2.7	2.7	0.1	0.03	2.6	2.6	0.0	0.00	2.3	2.8	-0.5	-0.18
CBCL Anxious/Depressed	3.1	3.6	-0.6+	-0.18	2.7	2.8	-0.1	-0.04	2.5	3.2	-0.7+	-0.21
CBCL Withdrawn/Depressed	1.7	1.6	0.1	0.06	1.6	1.7	-0.1	-0.06	1.5	1.7	-0.2	-0.09
CBCL Somatic Complaints	1.2	1.1	0.1	0.06	1.0	0.9	0.1	0.06	0.9	1.1	-0.2	-0.13
CBCL Thought Problems	2.4	2.6	-0.1	-0.05	1.8	1.9	-0.2	-0.07	1.8	2.1	-0.2	-0.08
Sample Size	**300**	**311**			**251**	**312**			**214**	**234**		

Source: Parent interviews, interviewer observations, and child assessments conducted when children were in Grade 5. CBCL = Child Behavior Check List.

Note: All impact estimates were calculated using regression models in which each site was weighted equally. Psychometric information on specific outcome measures, including descriptive statistics is available in Appendix A.

[a]Program group includes all families assigned to Early Head Start who received more than one home visit, met with a case manager more than once, enrolled its child in center care for at least two weeks, or participated in a group activity during the 26 months after random assignment. Thus, impacts should be interpreted as the effect of receiving treatment.

[b]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had been assigned to the program group instead. This unobserved mean was estimated as the difference between the program group mean for participants and the impact per participant.

[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 all program and control group members.

[d]The effect size was calculated by dividing the estimated impact by the standard deviation of the outcome measure for the control group.

Asterisks next to variable names in the first column indicate significance levels for chi-square tests of differences in impacts across the subgroups.

$+p < .10$, $*p < .05$, $**p < .01$.

Table B.22 Impacts on Child and Family Outcomes at Grade 5, by Implementation Status of Home-Based Programs

Outcome	Early or Later Implementers				Incomplete Implementers			
	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
Child Social-Emotional Outcomes								
CBCL Internalizing Behavior	6.6	6.8	-0.2	-0.04	5.8	6.7	-0.9	-0.16
CBCL Externalizing Behavior	7.9	8.3	-0.4	-0.05	8.6	10.1	-1.4	-0.17
CBCL Attention Problems	4.1	4.7	-0.6	-0.15	4.3	4.4	0.0	-0.01
Self-Reported Delinquent Behavior	1.3	1.3	0.0	0.02	1.9	2.0	-0.1	-0.04
ECLS-K SDQ Anger/Distractibility*	2.0	2.2	-0.1+	-0.19	2.3	2.1	0.2+	0.27
ECLS-K SDQ Sad/Lonely/Anxious	2.3	2.4	-0.1	-0.10	2.3	2.2	0.1	0.15
ECLS-K SDQ Peer Relations	3.1	3.1	0.0	-0.04	3.1	3.3	-0.1	-0.21
Self-Reported Bullying by Peers	6.7	6.8	-0.2	-0.06	7.0	7.2	-0.3	-0.10
ADD/ADHD since First Grade (parent report)	8.2	15.7	-7.6*	-0.21	17.7	21.2	-3.5	-0.10
Social-Emotional Risk Index	48.6	51.9	-3.4	-0.07	53.8	55.3	-1.4	-0.03
Social-Emotional Success Index	47.3	36.2	11.1*	0.22	35.6	37.3	-1.7	-0.03
Child Academic Outcomes								
English Receptive Vocabulary (PPVT-III)	93.5	92.6	0.8	0.05	94.9	96.4	-1.5	-0.09
PPVT-III Standard Score < 85	29.6	28.6	1.0	0.02	25.3	29.1	-3.8	-0.08
Matrix Reasoning (WISC)	8.0	7.7	0.3	0.10	8.6	8.7	-0.1	-0.03
ECLS-K Reading	127.9	126.2	1.7	0.06	131.1	129.7	1.4	0.05
ECLS-K Mathematics	8.5	8.3	0.2	0.04	8.0	8.6	-0.6	-0.13
Retention (parent report)	16.7	12.6	4.0	0.12	8.1	11.3	-3.2	-0.09
Chronic Absenteeism (parent report)	11.5	5.6	5.9+	0.19	11.4	12.2	-0.9	-0.02
Child Has IEP (parent Report)	14.0	13.4	0.6	0.02	19.7	16.7	3.0	0.08
Academic Success Index	29.5	24.1	5.4	0.12	27.2	26.7	0.5	0.01
Ability Success Index*	23.6	17.2	6.3	0.15	19.3	27.3	-8.0	-0.19
Child Outcomes: Multi-Domain Indices								
Cumulative Risk (number of outcomes of 16)[e]	3.3	3.3	0.0	-0.02	3.4	3.6	-0.2	-0.07
Categorical Risk (low, medium, high)	1.3	1.3	0.0	-0.07	1.4	1.4	0.0	0.04
Cumulative Success (number of domains of 5)[f]+	2.2	2.1	0.2	0.12	2.0	2.3	-0.3	-0.20
Parenting and the Home Environment								
Parent Supervision	3.2	3.2	0.0	-0.01	3.2	3.2	0.0	-0.02
Severity of Discipline Strategies	3.8	3.7	0.1	0.08	4.0	3.9	0.1	0.07
Family Involvement in School	35.0	35.7	-0.7	-0.10	37.5	36.4	1.1	0.17
Children's Books (26 or more)	60.5	63.8	-3.3	-0.07	58.3	57.0	1.3	0.03
Help with Homework	3.3	3.2	0.1	0.06	3.3	3.3	0.0	0.00
HOME Total Score	27.5	27.4	0.2	0.04	27.3	26.3	1.0	0.22
Total Support for Education	-1.1	-0.9	-0.2	-0.03	0.5	-0.1	0.6	0.12
Support for Education, Internal to the Home	-0.5	-0.5	0.0	-0.02	0.2	0.1	0.1	0.04
Support for Education, External to the Home	-0.6	-0.5	-0.1	-0.03	0.2	-0.3	0.5	0.15

Table B.22 *(continued)*

Outcome	Early or Later Implementers				Incomplete Implementers			
	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
Family Well-Being and Mental Health								
Depressive Symptoms CES-D (count)	6.9	7.4	-0.5	-0.07	6.8	8.3	-1.5+	-0.21
Parent Substance Use	7.9	8.1	-0.2	-0.01	8.6	12.8	-4.2	-0.15
Parent Alcohol Use	0.5	0.6	-0.1	-0.10	0.9	0.9	0.0	0.00
Parenting Distress (PSI)	8.4	8.7	-0.3	-0.09	8.3	8.9	-0.6	-0.15
Number of Moves	2.2	2.4	-0.2	-0.13	2.3	2.5	-0.2	-0.13
Homelessness	2.6	6.8	-4.2+	-0.18	4.1	4.3	-0.2	-0.01
Family Conflict (FES)	1.5	1.5	0.0	-0.08	1.4	1.5	-0.1*	-0.28
Parent Child Dysfunctional Interaction (PSI)	9.4	10.0	-0.6	-0.12	10.3	10.6	-0.3	-0.07
Child Reported Relationship with Mother	3.5	3.6	0.0	-0.09	3.6	3.6	-0.1	-0.19
Child Reported Relationship with Father	3.5	3.5	0.0	0.02	3.4	3.4	0.0	0.01
Child Exposure to Domestic Violence	8.7	6.8	1.9	0.08	7.8	6.8	1.0	0.04
Parent Self-Sufficiency								
Household Annual Income (continuous)	37392.0	31865.8	5526.2+	0.17	34665.1	32994.3	1670.9	0.05
Income to Needs Ratio (continuous)	1.5	1.3	0.2+	0.16	1.6	1.5	0.0	0.04
Mother's Highest Educational Level	2.1	2.1	0.1	0.07	2.7	2.7	0.0	0.03
Mother's Employment Status	1.9	1.9	0.0	0.00	1.8	1.8	0.0	0.02
Current Welfare Participation	41.3	42.1	-0.8	-0.02	52.6	50.5	2.1	0.04
Sample Size	**146-211**	**158-219**			**77-159**	**80-158**		

Source: Parent interviews, interviewer observations, and child assessments conducted when children were in Grade 5. CBCL = Child Behavior Check List; ADD/ADHD = Attention Deficit Disorder/Attention Deficit Hyperactivity Disorder; ECLS-K = Early Childhood Longitudinal Study-Kindergarten Class of 1998-99; SDQ = Self Description Questionnaire; PPVT-III = Peabody Picture Vocabulary Test-Third Edition; HOME = Home Observation for Measurement of the Environment; FES = Shortened Family Environment Scale; PSI = Parenting Stress Index-Short Form.

Note: All impact estimates were calculated using regression models in which each site was weighted equally. Psychometric information on specific outcome measures, including descriptive statistics is available in Appendix A.

[a]Program group includes all families assigned to Early Head Start who received more than one home visit, met with a case manager more than once, enrolled its child in center care for at least two weeks, or participated in a group activity during the 26 months after random assignment. Thus, impacts should be interpreted as the effect of receiving treatment.

[b]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had been assigned to the program group instead. This unobserved mean was estimated as the difference between the program group mean for participants and the impact per participant.

[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 all program and control group members.

[d]The effect size was calculated by dividing the estimated impact by the standard deviation of the outcome measure for the control group.

Table B.22 *(continued)*

[e]This cumulative risk index is based on the sum of 16 outcomes from multiple domains including social-emotional (bullying by peers, self-reported delinquent behavior, internalizing behavior, externalizing behavior, peer relations, attention problems), academic (math, language/literacy, absences, retention), cognitive ability (PPVT-III, Matrix Reasoning), and health (general health, chronic illness, BMI, IEP).

[f]This cumulative success index is based on the sum of success indices from five domains including social-emotional, peer relations, academic, retention/absence, and cognitive ability. Each domain-specific index is equal to 1 if success is present and 0 if absent.

Asterisks next to variable names in the first column indicate significance levels for chi-square tests of differences in impacts across the subgroups.

$+p < .10$, $*p < .05$, $**p < .01$.

Table B.23 Impacts on Child Negative Social-Emotional Outcomes at Grade 5, by Implementation Status of Home Based Programs

	Early or Later Implementers				Incomplete Implementers			
Outcome	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
CBCL Aggressive Behavior	5.8	6.1	-0.4	-0.06	6.0	7.0	-1.0	-0.17
CBCL Rule-Breaking Behavior	2.1	2.2	-0.1	-0.02	2.6	3.0	-0.4	-0.15
CBCL Social Problems	3.1	3.1	0.0	0.00	2.5	3.2	-0.7+	-0.24
CBCL Anxious/Depressed	3.4	3.7	-0.3	-0.09	3.0	3.6	-0.6	-0.19
CBCL Withdrawn/Depressed	2.0	1.9	0.1	0.05	1.8	1.8	0.0	-0.02
CBCL Somatic Complaints	1.1	1.2	0.0	-0.03	1.1	1.3	-0.3	-0.15
CBCL Thought Problems	2.3	2.3	-0.1	-0.02	2.2	2.5	-0.3	-0.11
Sample Size	**211**	**219**			**159**	**158**		

Source: Parent interviews, interviewer observations, and child assessments conducted when children were in Grade 5. CBCL = Child Behavior Check List; ADD/ADHD = Attention Deficit Disorder/Attention Deficit Hyperactivity Disorder; ECLS-K = Early Childhood Longitudinal Study-Kindergarten Class of 1998-99; SDQ = Self Description Questionnaire; PPVT-III = Peabody Picture Vocabulary Test-Third Edition; HOME = Home Observation for Measurement of the Environment; FES = Shortened Family Environment Scale; PSI = Parenting Stress Index-Short Form.

Note: All impact estimates were calculated using regression models in which each site was weighted equally. Psychometric information on specific outcome measures, including descriptive statistics is available in Appendix A.

[a]Program group includes all families assigned to Early Head Start who received more than one home visit, met with a case manager more than once, enrolled its child in center care for at least two weeks, or participated in a group activity during the 26 months after random assignment. Thus, impacts should be interpreted as the effect of receiving treatment.

[b]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had been assigned to the program group instead. This unobserved mean was estimated as the difference between the program group mean for participants and the impact per participant.

[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 all program and control group members.

[d]The effect size was calculated by dividing the estimated impact by the standard deviation of the outcome measure for the control group.

Asterisks next to variable names in the first column indicate significance levels for chi-square tests of differences in impacts across the subgroups.

$+p < .10$, $*p < .05$, $**p < .01$.

Table B.24 Impacts on Child and Family Outcomes at Grade 5, by Implementation Status of Mixed Approach Programs

Outcome	Early Implementers				Later or Incomplete Implementers			
	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
Child Social-Emotional Outcomes								
CBCL Internalizing Behavior	5.9	6.3	-0.4	-0.07	4.1	4.6	-0.5	-0.08
CBCL Externalizing Behavior	8.2	8.6	-0.5	-0.06	5.5	7.0	-1.4	-0.18
CBCL Attention Problems	4.1	4.4	-0.3	-0.07	3.1	3.5	-0.5	-0.12
Self-Reported Delinquent Behavior	1.4	1.6	-0.2	-0.12	1.2	1.4	-0.1	-0.08
ECLS-K SDQ Anger/Distractibility	2.1	2.2	-0.1	-0.18	2.1	2.1	0.0	0.01
ECLS-K SDQ Sad/Lonely/Anxious*	2.1	2.3	-0.2+	-0.26	2.4	2.3	0.1	0.16
ECLS-K SDQ Peer Relations	3.1	3.1	0.0	-0.08	3.1	3.1	0.0	-0.05
Self-Reported Bullying by Peers	6.7	6.8	0.0	0.00	6.7	6.8	-0.1	-0.02
ADD/ADHD since First Grade (parent report)	22.4	17.0	5.4	0.15	13.5	10.7	2.9	0.08
Social-Emotional Risk Index*	51.4	43.4	8.1	0.16	32.9	46.4	-13.5+	-0.27
Social-Emotional Success Index	40.9	41.9	-1.0	-0.02	52.4	50.1	2.2	0.05
Child Academic Outcomes								
English Receptive Vocabulary (PPVT-III)	97.9	97.6	0.2	0.01	92.0	91.9	0.0	0.00
PPVT-III Standard Score < 85	23.7	17.3	6.4	0.14	30.5	32.6	-2.1	-0.05
Matrix Reasoning (WISC)	8.6	8.7	-0.1	-0.03	9.0	8.6	0.3	0.10
ECLS-K Reading	128.0	130.0	-2.0	-0.07	127.5	123.4	4.1	0.15
ECLS-K Mathematics	8.5	9.5	-1.0	-0.21	7.9	8.4	-0.4	-0.09
Retention (parent report)	13.4	8.4	5.0	0.15	18.5	18.3	0.2	0.01
Chronic Absenteeism (parent report)	14.1	9.9	4.3	0.14	5.9	7.3	-1.4	-0.05
Child Has IEP (parent Report)+	24.1	24.5	-0.4	-0.01	5.4	19.4	-14.0**	-0.37
Academic Success Index	29.6	34.2	-4.7	-0.10	20.6	29.1	-8.5	-0.19
Ability Success Index	24.9	26.2	-1.3	-0.03	21.4	22.1	-0.8	-0.02
Child Outcomes: Multi-Domain Indices								
Cumulative Risk (number of outcomes of 16)[e] +	3.5	3.1	0.4	0.17	3.0	3.6	-0.6	-0.25
Categorical Risk (low, medium, high)+	1.5	1.2	0.2*	0.31	1.3	1.3	-0.1	-0.09
Cumulative Success (number of domains of 5)[f]	2.1	2.4	-0.3+	-0.27	2.2	2.4	-0.1	-0.12
Parenting and the Home Environment								
Parent Supervision	3.3	3.2	0.0	0.06	3.2	3.1	0.0	0.04
Severity of Discipline Strategies	3.6	3.9	-0.3+	-0.25	3.8	3.8	0.0	0.00
Family Involvement in School	37.5	36.2	1.3	0.19	38.7	36.4	2.3*	0.35
Children's Books (26 or more)	72.7	68.9	3.7	0.08	55.8	54.4	1.4	0.03
Help with Homework	3.3	3.2	0.2	0.18	3.5	3.5	0.0	-0.02
HOME Total Score*	25.7	27.3	-1.5*	-0.35	27.9	27.5	0.4	0.08
Total Support for Education	0.4	-0.2	0.5	0.11	1.5	1.2	0.3	0.06
Support for Education, Internal to the Home	0.2	-0.2	0.4	0.15	0.8	0.7	0.1	0.05
Support for Education, External to the Home	0.1	0.0	0.1	0.03	0.7	0.6	0.1	0.04
Family Well-Being and Mental Health								
Depressive Symptoms CES-D (count)	7.3	7.4	-0.1	-0.01	5.9	8.0	-2.1*	-0.30
Parent Substance Use	11.1	10.5	0.6	0.02	5.9	5.2	0.8	0.03

Table B.24 *(continued)*

Outcome	Early Implementers				Later or Incomplete Implementers			
	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
Parent Alcohol Use	0.8	0.8	0.0	0.02	0.5	0.6	-0.2	-0.20
Parenting Distress (PSI)	7.5	8.6	-1.1*	-0.28	7.9	8.6	-0.7	-0.18
Number of Moves	2.3	2.4	0.0	0.00	2.2	2.5	-0.3	-0.21
Homelessness	6.3	7.6	-1.3	-0.05	3.9	7.3	-3.4	-0.14
Family Conflict (FES)	1.4	1.4	0.0	-0.01	1.3	1.4	-0.1	-0.23
Parent Child Dysfunctional Interaction (PSI)	9.0	9.9	-0.9	-0.19	9.1	9.7	-0.5	-0.11
Child Reported Relationship with Mother	3.6	3.6	0.0	0.07	3.6	3.6	0.0	-0.03
Child Reported Relationship with Father	3.5	3.5	0.0	0.03	3.4	3.4	0.0	-0.04
Child Exposure to Domestic Violence*	0.3	9.2	-9.0**	-0.37	3.5	3.1	0.4	0.02
Parent Self-Sufficiency								
Household Annual Income (continuous)	38784.4	38910.3	-125.9	0.00	35215.8	40549.5	-5333.7	-0.17
Income to Needs Ratio (continuous)	1.7	1.7	-0.1	-0.05	1.5	1.8	-0.3	-0.21
Mother's Highest Educational Level	2.7	2.6	0.1	0.09	2.3	2.5	-0.1	-0.12
Mother's Employment Status	1.8	1.9	-0.1	-0.10	1.8	1.7	0.1	0.13
Current Welfare Participation	47.6	55.7	-8.1	-0.16	39.0	44.2	-5.2	-0.10
Sample Size	**84-136**	**90-160**			**61-103**	**70-134**		

Source: Parent interviews, interviewer observations, and child assessments conducted when children were in Grade 5. CBCL = Child Behavior Check List; ADD/ADHD = Attention Deficit Disorder/Attention Deficit Hyperactivity Disorder; ECLS-K = Early Childhood Longitudinal Study-Kindergarten Class of 1998-99; SDQ = Self Description Questionnaire; PPVT-III = Peabody Picture Vocabulary Test-Third Edition; HOME = Home Observation for Measurement of the Environment; FES = Shortened Family Environment Scale; PSI = Parenting Stress Index-Short Form.

Note: All impact estimates were calculated using regression models in which each site was weighted equally. Psychometric information on specific outcome measures, including descriptive statistics is available in Appendix A.

[a]Program group includes all families assigned to Early Head Start who received more than one home visit, met with a case manager more than once, enrolled its child in center care for at least two weeks, or participated in a group activity during the 26 months after random assignment. Thus, impacts should be interpreted as the effect of receiving treatment.

[b]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had been assigned to the program group instead. This unobserved mean was estimated as the difference between the program group mean for participants and the impact per participant.

[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 all program and control group members.

[d]The effect size was calculated by dividing the estimated impact by the standard deviation of the outcome measure for the control group.

[e]This cumulative risk index is based on the sum of 16 outcomes from multiple domains including social-emotional (bullying by peers, self-reported delinquent behavior, internalizing behavior, externalizing behavior, peer relations, attention problems), academic (math, language/literacy, absences, retention), cognitive ability (PPVT-III, Matrix Reasoning), and health (general health, chronic illness, BMI, IEP).

Table B.24 *(continued)*

[r]This cumulative success index is based on the sum of success indices from five domains including social-emotional, peer relations, academic, retention/absence, and cognitive ability. Each domain-specific index is equal to 1 if success is present and 0 if absent.

Asterisks next to variable names in the first column indicate significance levels for chi-square tests of differences in impacts across the subgroups.

+p < .10, *p < .05, **p < .01.

Table B.25 Impacts on Child Negative Social-Emotional Outcomes at Grade 5, by Implementation Status of Mixed Approach Programs

	Early or Later Implementers				Incomplete Implementers			
Outcome	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
CBCL Aggressive Behavior	5.8	5.9	-0.1	-0.02	4.0	4.8	-0.8	-0.14
CBCL Rule-Breaking Behavior	2.3	2.7	-0.3	-0.13	1.5	2.1	-0.6	-0.22
CBCL Social Problems	2.4	2.7	-0.3	-0.10	1.9	2.5	-0.6	-0.22
CBCL Anxious/Depressed	2.8	3.7	-0.9+	-0.27	2.2	2.4	-0.2	-0.08
CBCL Withdrawn/Depressed	1.7	1.6	0.0	0.02	1.1	1.3	-0.2	-0.07
CBCL Somatic Complaints	1.4	1.0	0.4	0.22	0.8	0.9	-0.1	-0.05
CBCL Thought Problems	2.4	2.4	0.0	0.01	1.3	1.6	-0.2	-0.09
Sample Size	**136**	**160**			**103**	**134**		

Source: Parent interviews, interviewer observations, and child assessments conducted when children were in Grade 5. CBCL = Child Behavior Check List; ADD/ADHD = Attention Deficit Disorder/Attention Deficit Hyperactivity Disorder; ECLS-K = Early Childhood Longitudinal Study-Kindergarten Class of 1998-99; SDQ = Self Description Questionnaire; PPVT-III = Peabody Picture Vocabulary Test-Third Edition; HOME = Home Observation for Measurement of the Environment; FES = Shortened Family Environment Scale; PSI = Parenting Stress Index-Short Form.

Note: All impact estimates were calculated using regression models in which each site was weighted equally. Psychometric information on specific outcome measures, including descriptive statistics is available in Appendix A.

[a]Program group includes all families assigned to Early Head Start who received more than one home visit, met with a case manager more than once, enrolled its child in center care for at least two weeks, or participated in a group activity during the 26 months after random assignment. Thus, impacts should be interpreted as the effect of receiving treatment.

[b]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had been assigned to the program group instead. This unobserved mean was estimated as the difference between the program group mean for participants and the impact per participant.

[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 all program and control group members.

[d]The effect size was calculated by dividing the estimated impact by the standard deviation of the outcome measure for the control group.

Asterisks next to variable names in the first column indicate significance levels for chi-square tests of differences in impacts across the subgroups.

$+p < .10$, $*p < .05$, $**p < .01$.

Table B.26 Impacts on Child and Family Outcomes at Grade 5, by Urban Status of Site

Outcome	Urban				Not Urban			
	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
Child Social-Emotional Outcomes								
CBCL Internalizing Behavior	5.3	5.7	-0.4	-0.06	5.8	5.9	-0.1	-0.02
CBCL Externalizing Behavior	7.5	7.8	-0.3	-0.04	7.8	8.2	-0.3	-0.04
CBCL Attention Problems	3.9	3.9	0.0	-0.01	3.8	4.4	-0.5+	-0.14
Self-Reported Delinquent Behavior	1.5	1.6	-0.1	-0.05	1.5	1.3	0.2	0.10
ECLS-K SDQ Anger/Distractibility	2.1	2.1	0.0	-0.03	2.1	2.1	0.0	0.06
ECLS-K SDQ Sad/Lonely/Anxious*	2.3	2.3	-0.1	-0.10	2.4	2.3	0.1+	0.15
ECLS-K SDQ Peer Relations	3.1	3.1	0.0	0.02	3.1	3.1	-0.1	-0.09
Self-Reported Bullying by Peers	6.6	6.9	-0.2	-0.09	6.8	6.7	0.1	0.05
ADD/ADHD since First Grade (parent report)	14.2	12.9	1.3	0.04	15.0	18.4	-3.5	-0.10
Social-Emotional Risk Index	43.4	47.8	-4.4	-0.09	45.5	47.2	-1.7	-0.03
Social-Emotional Success Index	47.2	43.1	4.1	0.08	47.2	40.7	6.5	0.13
Child Academic Outcomes								
English Receptive Vocabulary (PPVT-III)	93.8	93.3	0.6	0.04	94.7	93.9	0.8	0.05
PPVT-III Standard Score < 85	28.9	29.0	-0.1	0.00	27.2	30.6	-3.5	-0.08
Matrix Reasoning (WISC)	8.6	8.7	0.0	-0.01	8.3	8.0	0.3	0.09
ECLS-K Reading	127.5	126.6	0.9	0.03	130.1	127.0	3.1	0.11
ECLS-K Mathematics	8.3	8.7	-0.4	-0.09	8.2	8.1	0.1	0.02
Retention (parent report)	11.6	11.5	0.1	0.00	14.7	18.3	-3.7	-0.11
Chronic Absenteeism (parent report)	12.0	10.0	2.0	0.07	11.0	9.3	1.7	0.06
Child Has IEP (parent Report)	14.9	15.8	-0.8	-0.02	15.4	19.9	-4.5	-0.12
Academic Success Index	24.1	26.4	-2.3	-0.05	31.1	27.6	3.5	0.08
Ability Success Index	20.1	21.4	-1.4	-0.03	23.7	20.3	3.4	0.08
Child Outcomes: Multi-Domain Indices								
Cumulative Risk (number of outcomes of 16)[e]	3.3	3.3	0.0	0.01	3.5	3.5	0.0	0.00
Categorical Risk (low, medium, high)	1.3	1.3	0.0	-0.01	1.4	1.3	0.1	0.08
Cumulative Success (number of domains of 5)[f]	2.2	2.3	-0.1	-0.05	2.2	2.2	0.1	0.04
Parenting and the Home Environment								
Parent Supervision	3.2	3.2	0.0	0.01	3.2	3.2	0.0	0.03
Severity of Discipline Strategies	3.8	3.8	0.0	0.02	3.8	3.8	0.0	0.00
Family Involvement in School	36.7	36.4	0.3	0.04	36.5	36.6	0.0	-0.01
Children's Books (26 or more)	58.5	62.2	-3.7	-0.08	55.8	57.3	-1.5	-0.03
Help with Homework	3.3	3.3	0.0	0.05	3.2	3.2	0.0	0.04
HOME Total Score	27.4	27.3	0.0	0.00	26.8	27.0	-0.2	-0.04
Total Support for Education	0.1	0.3	-0.2	-0.04	-0.2	-0.4	0.2	0.03
Support for Education, Internal to the Home	0.1	0.2	-0.1	-0.03	-0.1	-0.2	0.2	0.06
Support for Education, External to the Home	-0.1	0.1	-0.1	-0.04	-0.2	-0.2	0.0	0.00
Family Well-Being and Mental Health								
Depressive Symptoms CES-D (count) +	7.2	7.1	0.1	0.02	6.6	7.7	-1.1*	-0.16
Parent Substance Use	10.8	9.0	1.9	0.07	3.6	6.3	-2.7	-0.10

Table B.26 *(continued)*

Outcome	Urban				Not Urban			
	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
Parent Alcohol Use	0.7	0.7	0.0	-0.03	0.6	0.6	0.0	0.03
Parenting Distress (PSI)	8.6	8.7	-0.1	-0.02	8.1	8.1	0.0	0.01
Number of Moves	2.3	2.4	0.0	-0.03	2.2	2.4	-0.2+	-0.15
Homelessness	7.0	6.6	0.4	0.02	3.8	5.1	-1.3	-0.06
Family Conflict (FES)	1.4	1.4	0.0	-0.04	1.4	1.5	-0.1	-0.12
Parent Child Dysfunctional Interaction (PSI)	9.8	10.1	-0.3	-0.06	9.6	9.3	0.3	0.07
Child Reported Relationship with Mother	3.6	3.6	0.0	0.06	3.5	3.6	-0.1	-0.15
Child Reported Relationship with Father	3.5	3.4	0.1	0.17	3.4	3.5	0.0	-0.06
Child Exposure to Domestic Violence	4.8	5.0	-0.2	-0.01	6.4	6.9	-0.4	-0.02
Parent Self-Sufficiency								
Household Annual Income (continuous)	34770.6	35994.7	-1224.2	-0.04	37809.9	34856.0	2953.9	0.09
Income to Needs Ratio (continuous)	1.5	1.6	0.0	-0.03	1.6	1.5	0.1	0.10
Mother's Highest Educational Level	2.5	2.4	0.0	0.03	2.5	2.6	-0.1	-0.05
Mother's Employment Status	1.8	1.9	-0.1	-0.13	1.8	1.8	0.0	0.01
Current Welfare Participation	44.6	45.6	-0.9	-0.02	42.2	48.6	-6.4	-0.13
Sample Size	**217-423**	**236-463**			**220-342**	**232-394**		

Source: Parent interviews, interviewer observations, and child assessments conducted when children were in Grade 5. CBCL = Child Behavior Check List; ADD/ADHD = Attention Deficit Disorder/Attention Deficit Hyperactivity Disorder; ECLS-K = Early Childhood Longitudinal Study-Kindergarten Class of 1998-99; SDQ = Self Description Questionnaire; PPVT-III = Peabody Picture Vocabulary Test-Third Edition; HOME = Home Observation for Measurement of the Environment; FES = Shortened Family Environment Scale; PSI = Parenting Stress Index-Short Form.

Note: All impact estimates were calculated using regression models in which each site was weighted equally. Psychometric information on specific outcome measures, including descriptive statistics is available in Appendix A.

[a]Program group includes all families assigned to Early Head Start who received more than one home visit, met with a case manager more than once, enrolled its child in center care for at least two weeks, or participated in a group activity during the 26 months after random assignment. Thus, impacts should be interpreted as the effect of receiving treatment.

[b]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had been assigned to the program group instead. This unobserved mean was estimated as the difference between the program group mean for participants and the impact per participant.

[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 all program and control group members.

[d]The effect size was calculated by dividing the estimated impact by the standard deviation of the outcome measure for the control group.

[e]This cumulative risk index is based on the sum of 16 outcomes from multiple domains including social-emotional (bullying by peers, self-reported delinquent behavior, internalizing behavior, externalizing behavior, peer relations, attention problems), academic (math, language/literacy, absences, retention), cognitive ability (PPVT-III, Matrix Reasoning), and health (general health, chronic illness, BMI, IEP).

Table B.26 *(continued)*

[r]This cumulative success index is based on the sum of success indices from five domains including social-emotional, peer relations, academic, retention/absence, and cognitive ability. Each domain-specific index is equal to 1 if success is present and 0 if absent.

Asterisks next to variable names in the first column indicate significance levels for chi-square tests of differences in impacts across the subgroups.

+p < .10, *p < .05, **p < .01.

Table B.27 Impacts on Child Negative Social-Emotional Outcomes at Grade 5, by Urban Status of Site

	Urban				Not Urban			
Outcome	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
CBCL Aggressive Behavior	5.3	5.5	-0.2	-0.03	5.7	5.8	-0.1	-0.02
CBCL Rule-Breaking Behavior	2.2	2.3	-0.1	-0.04	2.1	2.3	-0.2	-0.08
CBCL Social Problems	2.5	2.6	-0.1	-0.03	2.7	2.7	0.1	0.03
CBCL Anxious/Depressed	2.7	3.1	-0.4+	-0.13	3.1	3.2	-0.1	-0.04
CBCL Withdrawn/Depressed	1.6	1.6	0.0	-0.01	1.7	1.6	0.1	0.03
CBCL Somatic Complaints	1.1	1.0	0.1	0.04	1.0	1.1	-0.1	-0.04
CBCL Thought Problems	2.0	2.0	0.0	0.01	2.2	2.3	-0.2	-0.07
Sample Size	**423**	**463**			**342**	**394**		

Source: Parent interviews, interviewer observations, and child assessments conducted when children were in Grade 5. CBCL = Child Behavior Check List; ADD/ADHD = Attention Deficit Disorder/Attention Deficit Hyperactivity Disorder; ECLS-K = Early Childhood Longitudinal Study-Kindergarten Class of 1998-99; SDQ = Self Description Questionnaire; PPVT-III = Peabody Picture Vocabulary Test-Third Edition; HOME = Home Observation for Measurement of the Environment; FES = Shortened Family Environment Scale; PSI = Parenting Stress Index-Short Form.

Note: All impact estimates were calculated using regression models in which each site was weighted equally. Psychometric information on specific outcome measures, including descriptive statistics is available in Appendix A.

[a]Program group includes all families assigned to Early Head Start who received more than one home visit, met with a case manager more than once, enrolled its child in center care for at least two weeks, or participated in a group activity during the 26 months after random assignment. Thus, impacts should be interpreted as the effect of receiving treatment.

[b]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had been assigned to the program group instead. This unobserved mean was estimated as the difference between the program group mean for participants and the impact per participant.

[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 all program and control group members.

[d]The effect size was calculated by dividing the estimated impact by the standard deviation of the outcome measure for the control group.

Asterisks next to variable names in the first column indicate significance levels for chi-square tests of differences in impacts across the subgroups.

$+p < .10$, $*p < .05$, $**p < .01$.

Table B.28 Impacts on Child and Family Outcomes at Grade 5, by Risk for Depression

Outcome	Not at Risk for Depression				At Risk for Depression			
	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
Child Social-Emotional Outcomes								
CBCL Internalizing Behavior	4.9	5.5	-0.6	-0.10	6.4	8.0	-1.6+	-0.27
CBCL Externalizing Behavior	6.9	6.9	0.0	0.00	9.2	11.1	-1.9+	-0.23
CBCL Attention Problems	3.7	3.5	0.2	0.06	4.6	5.1	-0.5	-0.14
Self-Reported Delinquent Behavior	1.4	1.4	0.0	-0.01	1.5	1.4	0.0	0.00
ECLS-K SDQ Anger/Distractibility	2.1	2.1	0.0	-0.02	2.1	2.1	0.0	0.04
ECLS-K SDQ Sad/Lonely/Anxious	2.2	2.2	0.0	0.06	2.2	2.2	0.0	-0.02
ECLS-K SDQ Peer Relations	3.1	3.1	0.0	-0.01	3.1	3.1	0.0	0.01
Self-Reported Bullying by Peers	6.7	7.0	-0.3	-0.11	7.0	6.5	0.4	0.15
ADD/ADHD since First Grade (parent report)	15.1	14.1	1.0	0.03	18.6	19.1	-0.6	-0.02
Social-Emotional Risk Index	43.1	42.9	0.2	0.00	48.7	49.9	-1.2	-0.02
Social-Emotional Success Index	45.6	44.9	0.7	0.01	42.2	38.0	4.2	0.08
Child Academic Outcomes								
English Receptive Vocabulary (PPVT-III)	98.3	98.4	-0.1	-0.01	97.9	97.8	0.1	0.01
PPVT-III Standard Score < 85	18.0	19.0	-1.0	-0.02	22.1	15.3	6.8	0.15
Matrix Reasoning (WISC)	8.9	9.1	-0.2	-0.06	9.1	8.8	0.3	0.08
ECLS-K Reading	131.5	133.5	-2.0	-0.07	131.7	130.4	1.4	0.05
ECLS-K Mathematics	8.9	10.0	-1.2*	-0.25	9.1	9.0	0.2	0.04
Retention (parent report)*	12.5	5.5	7.0*	0.21	8.1	12.5	-4.4	-0.13
Chronic Absenteeism (parent report)	6.8	8.5	-1.7	-0.05	16.0	12.2	3.8	0.12
Child Has IEP (parent Report)	16.5	13.2	3.3	0.09	21.3	24.9	-3.6	-0.10
Academic Success Index*	27.5	38.7	-11.2+	-0.25	33.6	27.2	6.3	0.14
Ability Success Index	28.7	31.2	-2.6	-0.06	28.6	23.0	5.6	0.14
Child Outcomes: Multi-Domain Indices								
Cumulative Risk (number of outcomes of 16)[e]	2.9	2.6	0.3	0.10	3.2	3.3	-0.1	-0.04
Categorical Risk (low, medium, high)	1.2	1.1	0.1	0.14	1.3	1.2	0.1	0.12
Cumulative Success (number of domains of 5)[f]	2.2	2.4	-0.2	-0.17	2.2	2.2	0.0	0.02
Parenting and the Home Environment								
Parent Supervision	3.3	3.2	0.1	0.17	3.3	3.2	0.1	0.12
Severity of Discipline Strategies	3.8	3.7	0.1	0.07	3.6	3.8	-0.2	-0.13
Family Involvement in School	36.7	37.6	-0.9	-0.13	36.8	36.0	0.8	0.13
Children's Books (26 or more)	72.1	74.9	-2.8	-0.06	61.5	71.5	-10.0+	-0.20
Help with Homework	3.3	3.2	0.1	0.08	3.2	3.2	0.0	-0.06
HOME Total Score	27.6	28.1	-0.5	-0.10	27.3	27.5	-0.2	-0.04
Total Support for Education	-0.2	-0.1	-0.1	-0.02	0.0	-0.2	0.2	0.03
Support for Education, Internal to the Home	0.0	0.2	-0.2	-0.07	-0.3	-0.1	-0.2	-0.07
Support for Education, External to the Home	-0.2	-0.3	0.1	0.02	0.3	-0.1	0.4	0.11
Family Well-Being and Mental Health								
Depressive Symptoms CES-D (count)	5.9	6.0	-0.1	-0.01	8.0	9.1	-1.0	-0.15
Parent Substance Use	7.8	7.1	0.6	0.02	12.2	9.6	2.6	0.09

Table B.28 *(continued)*

Outcome	Not at Risk for Depression				At Risk for Depression			
	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
Parent Alcohol Use	0.8	0.7	0.0	0.02	0.7	0.8	-0.1	-0.10
Parenting Distress (PSI)	7.6	7.8	-0.2	-0.05	8.5	8.5	0.0	-0.01
Number of Moves	2.1	2.4	-0.3+	-0.20	2.3	2.6	-0.3	-0.19
Homelessness	5.6	5.4	0.2	0.01	6.1	5.0	1.2	0.05
Family Conflict (FES)	1.4	1.4	0.0	-0.10	1.4	1.5	-0.1	-0.13
Parent Child Dysfunctional Interaction (PSI)	8.7	9.1	-0.4	-0.09	10.1	10.3	-0.2	-0.05
Child Reported Relationship with Mother	3.6	3.6	0.0	0.03	3.6	3.6	0.0	-0.11
Child Reported Relationship with Father+	3.4	3.5	-0.2	-0.29	3.6	3.4	0.2	0.29
Child Exposure to Domestic Violence	2.4	7.2	-4.8+	-0.19	5.7	7.1	-1.5	-0.06
Parent Self-Sufficiency								
Household Annual Income (continuous)	39041.0	44241.8	-5200.8	-0.16	36247.6	35292.5	955.1	0.03
Income to Needs Ratio (continuous)	1.7	1.9	-0.2	-0.15	1.6	1.6	0.1	0.04
Mother's Highest Educational Level	2.7	2.7	0.0	0.03	2.7	2.6	0.1	0.12
Mother's Employment Status	1.8	1.9	-0.2	-0.18	1.9	1.8	0.0	0.05
Current Welfare Participation	33.3	43.1	-9.8+	-0.20	44.7	50.1	-5.4	-0.11
Sample Size	**69-186**	**69-182**			**56-171**	**53-168**		

Source: Parent interviews, interviewer observations, and child assessments conducted when children were in Grade 5. CBCL = Child Behavior Check List; ADD/ADHD = Attention Deficit Disorder/Attention Deficit Hyperactivity Disorder; ECLS-K = Early Childhood Longitudinal Study-Kindergarten Class of 1998-99; SDQ = Self Description Questionnaire; PPVT-III = Peabody Picture Vocabulary Test-Third Edition; HOME = Home Observation for Measurement of the Environment; FES = Shortened Family Environment Scale; PSI = Parenting Stress Index-Short Form.

Note: All impact estimates were calculated using regression models in which each site was weighted equally. Psychometric information on specific outcome measures, including descriptive statistics is available in Appendix A.

[a]Program group includes all families assigned to Early Head Start who received more than one home visit, met with a case manager more than once, enrolled its child in center care for at least two weeks, or participated in a group activity during the 26 months after random assignment. Thus, impacts should be interpreted as the effect of receiving treatment.

[b]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had been assigned to the program group instead. This unobserved mean was estimated as the difference between the program group mean for participants and the impact per participant.

[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 all program and control group members.

[d]The effect size was calculated by dividing the estimated impact by the standard deviation of the outcome measure for the control group.

[e]This cumulative risk index is based on the sum of 16 outcomes from multiple domains including social-emotional (bullying by peers, self-reported delinquent behavior, internalizing behavior, externalizing behavior, peer relations, attention problems), academic (math, language/literacy, absences, retention), cognitive ability (PPVT-III, Matrix Reasoning), and health (general health, chronic illness, BMI, IEP).

Table B.28 *(continued)*

[r]This cumulative success index is based on the sum of success indices from five domains including social-emotional, peer relations, academic, retention/absence, and cognitive ability. Each domain-specific index is equal to 1 if success is present and 0 if absent.

Asterisks next to variable names in the first column indicate significance levels for chi-square tests of differences in impacts across the subgroups.

+p < .10, *p < .05, **p < .01.

Table B.29 Impacts on Child Negative Social-Emotional Outcomes at Grade 5, by Risk for Depression

	Not at Risk for Depression				At Risk for Depression			
Outcome	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
CBCL Aggressive Behavior	5.1	4.9	0.2	0.03	6.5	7.9	-1.4+	-0.24
CBCL Rule-Breaking Behavior	1.8	2.0	-0.2	-0.06	2.7	3.2	-0.5	-0.18
CBCL Social Problems	2.3	2.4	-0.1	-0.04	2.9	3.6	-0.7+	-0.24
CBCL Anxious/Depressed+	2.6	3.1	-0.5	-0.15	3.1	4.6	-1.5**	-0.48
CBCL Withdrawn/Depressed	1.4	1.4	0.0	0.01	2.1	2.1	0.0	0.01
CBCL Somatic Complaints	0.8	0.9	-0.1	-0.07	1.3	1.4	-0.1	-0.06
CBCL Thought Problems	2.1	1.9	0.2	0.06	2.6	3.1	-0.5	-0.17
Sample Size	**186**	**182**			**171**	**168**		

Source: Parent interviews, interviewer observations, and child assessments conducted when children were in Grade 5. CBCL = Child Behavior Check List; ADD/ADHD = Attention Deficit Disorder/Attention Deficit Hyperactivity Disorder; ECLS-K = Early Childhood Longitudinal Study-Kindergarten Class of 1998-99; SDQ = Self Description Questionnaire; PPVT-III = Peabody Picture Vocabulary Test-Third Edition; HOME = Home Observation for Measurement of the Environment; FES = Shortened Family Environment Scale; PSI = Parenting Stress Index-Short Form.

Note: All impact estimates were calculated using regression models in which each site was weighted equally. Psychometric information on specific outcome measures, including descriptive statistics is available in Appendix A.

[a]Program group includes all families assigned to Early Head Start who received more than one home visit, met with a case manager more than once, enrolled its child in center care for at least two weeks, or participated in a group activity during the 26 months after random assignment. Thus, impacts should be interpreted as the effect of receiving treatment.

[b]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had been assigned to the program group instead. This unobserved mean was estimated as the difference between the program group mean for participants and the impact per participant.

[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 all program and control group members.

[d]The effect size was calculated by dividing the estimated impact by the standard deviation of the outcome measure for the control group.

Asterisks next to variable names in the first column indicate significance levels for chi-square tests of differences in impacts across the subgroups.

+p < .10, *p < .05, **p < .01.

Table B.30 Impacts on Child and Family Outcomes at Grade 5, by Education Level of Mother

Outcome	Mother has not Completed 12th Grade				Mother has Completed 12th Grade or Greater, or has GED			
	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
Child Social-Emotional Outcomes								
CBCL Internalizing Behavior	5.0	5.9	-0.8	-0.14	6.0	5.8	0.2	0.03
CBCL Externalizing Behavior	7.6	8.2	-0.6	-0.08	8.0	8.0	-0.1	-0.01
CBCL Attention Problems	4.0	4.0	0.0	0.00	4.1	4.2	-0.1	-0.02
Self-Reported Delinquent Behavior+	1.6	1.4	0.2	0.13	1.4	1.6	-0.2	-0.09
ECLS-K SDQ Anger/Distractibility	2.2	2.1	0.1	0.13	2.1	2.1	0.0	0.03
ECLS-K SDQ Sad/Lonely/Anxious	2.4	2.4	0.0	-0.01	2.2	2.1	0.1	0.13
ECLS-K SDQ Peer Relations	3.0	3.1	-0.1	-0.15	3.1	3.1	0.0	0.05
Self-Reported Bullying by Peers	6.8	6.9	-0.1	-0.03	6.6	6.8	-0.1	-0.05
ADD/ADHD since First Grade (parent report)+	18.7	13.2	5.6+	0.15	14.8	17.0	-2.2	-0.06
Social-Emotional Risk Index	44.8	52.1	-7.3	-0.15	45.0	43.8	1.2	0.02
Social-Emotional Success Index+	48.4	37.7	10.6*	0.22	45.4	46.6	-1.2	-0.02
Child Academic Outcomes								
English Receptive Vocabulary (PPVT-III)	91.8	91.1	0.8	0.05	97.6	97.6	-0.1	0.00
PPVT-III Standard Score < 85	34.4	35.0	-0.7	-0.01	20.2	19.9	0.3	0.01
Matrix Reasoning (WISC)**	7.9	8.6	-0.7*	-0.22	9.1	8.6	0.5+	0.15
ECLS-K Reading	123.6	124.6	-1.0	-0.04	133.1	130.5	2.6	0.09
ECLS-K Mathematics	7.6	8.2	-0.6	-0.12	8.9	9.1	-0.2	-0.05
Retention (parent report)	15.9	16.6	-0.8	-0.02	7.7	9.7	-2.0	-0.06
Chronic Absenteeism (parent report)	12.6	11.6	1.0	0.03	9.1	10.5	-1.4	-0.05
Child Has IEP (parent Report)	19.2	19.2	0.0	0.00	12.8	15.8	-3.0	-0.08
Academic Success Index	23.1	22.4	0.6	0.01	31.8	33.5	-1.7	-0.04
Ability Success Index	15.8	17.2	-1.4	-0.03	28.6	28.5	0.0	0.00
Child Outcomes: Multi-Domain Indices								
Cumulative Risk (number of outcomes of 16) e	3.8	3.5	0.2	0.10	3.1	3.1	0.0	0.01
Categorical Risk (low, medium, high)	1.4	1.3	0.1	0.12	1.3	1.3	0.0	0.03
Cumulative Success (number of domains of 5)[f]	2.0	2.1	0.0	-0.02	2.3	2.4	-0.1	-0.10
Parenting and the Home Environment								
Parent Supervision	3.2	3.1	0.0	0.03	3.3	3.3	0.0	0.06
Severity of Discipline Strategies	3.8	3.7	0.0	0.02	3.9	4.0	-0.1	-0.06
Family Involvement in School	36.2	36.3	-0.1	-0.02	37.3	36.9	0.3	0.05
Children's Books (26 or more)	53.5	55.5	-2.0	-0.04	61.7	66.5	-4.7	-0.10

Table B.30 *(continued)*

Outcome	Mother has not Completed 12th Grade				Mother has Completed 12th Grade or Greater, or has GED			
	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
Help with Homework	3.3	3.2	0.1	0.09	3.3	3.3	0.0	0.06
HOME Total Score*	27.1	26.3	0.8+	0.18	27.3	27.9	-0.6+	-0.13
Total Support for Education	-0.6	-0.4	-0.2	-0.05	0.7	0.3	0.5	0.09
Support for Education, Internal to the Home	0.0	-0.2	0.2	0.08	0.2	0.2	0.1	0.03
Support for Education, External to the Home	-0.6	-0.2	-0.4	-0.14	0.5	0.1	0.4	0.11
Family Well-Being and Mental Health								
Depressive Symptoms CES-D (count)	7.1	7.6	-0.5	-0.08	7.1	7.5	-0.3	-0.05
Parent Substance Use	8.2	7.9	0.2	0.01	8.5	8.9	-0.4	-0.01
Parent Alcohol Use	0.7	0.7	0.0	0.06	0.7	0.8	0.0	-0.06
Parenting Distress (PSI)	8.7	8.6	0.1	0.01	8.0	8.2	-0.2	-0.06
Number of Moves	2.3	2.5	-0.2	-0.10	2.4	2.4	-0.1	-0.06
Homelessness	7.7	5.8	1.9	0.08	4.5	6.9	-2.3	-0.10
Family Conflict (FES)	1.4	1.4	-0.1+	-0.18	1.4	1.4	0.0	-0.05
Parent Child Dysfunctional Interaction (PSI)	9.8	9.7	0.0	0.00	9.6	9.8	-0.1	-0.03
Child Reported Relationship with Mother	3.6	3.6	0.0	0.06	3.6	3.6	0.0	-0.07
Child Reported Relationship with Father	3.5	3.5	0.1	0.10	3.5	3.4	0.1	0.11
Child Exposure to Domestic Violence	4.7	7.1	-2.4	-0.10	5.9	6.1	-0.3	-0.01
Parent Self-Sufficiency								
Household Annual Income (continuous)	29635.3	29895.6	-260.4	-0.01	39965.6	41387.9	-1422.3	-0.04
Income to Needs Ratio (continuous)	1.2	1.3	0.0	-0.01	1.8	1.8	-0.1	-0.06
Mother's Highest Educational Level	1.8	1.9	-0.1	-0.10	2.9	3.0	0.0	-0.01
Mother's Employment Status	1.9	1.9	0.0	-0.04	1.8	1.8	0.0	-0.01
Current Welfare Participation	52.4	53.5	-1.1	-0.02	34.2	44.1	-10.0*	-0.20
Sample Size	**111-307**	**110-377**			**193-400**	**206-423**		

Source: Parent interviews, interviewer observations, and child assessments conducted when children were in Grade 5. CBCL = Child Behavior Check List; ADD/ADHD = Attention Deficit Disorder/Attention Deficit Hyperactivity Disorder; ECLS-K = Early Childhood Longitudinal Study-Kindergarten Class of 1998-99; SDQ = Self Description Questionnaire; PPVT-III = Peabody Picture Vocabulary Test-Third Edition; HOME = Home Observation for Measurement of the Environment; FES = Shortened Family Environment Scale; PSI = Parenting Stress Index-Short Form.

Note: All impact estimates were calculated using regression models in which each site was weighted equally. Psychometric information on specific outcome measures, including descriptive statistics is available in Appendix A.

[a]Program group includes all families assigned to Early Head Start who received more than one home visit, met with a case manager more than once, enrolled its child in center care for at least two weeks, or participated in a group activity during the 26 months after random assignment. Thus, impacts should be interpreted as the effect of receiving treatment.

Table B.30 *(continued)*

[b]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had been assigned to the program group instead. This unobserved mean was estimated as the difference between the program group mean for participants and the impact per participant.

[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 all program and control group members.

[d]The effect size was calculated by dividing the estimated impact by the standard deviation of the outcome measure for the control group.

[e]This cumulative risk index is based on the sum of 16 outcomes from multiple domains including social-emotional (bullying by peers, self-reported delinquent behavior, internalizing behavior, externalizing behavior, peer relations, attention problems), academic (math, language/literacy, absences, retention), cognitive ability (PPVT-III, Matrix Reasoning), and health (general health, chronic illness, BMI, IEP).

[f]This cumulative success index is based on the sum of success indices from five domains including social-emotional, peer relations, academic, retention/absence, and cognitive ability. Each domain-specific index is equal to 1 if success is present and 0 if absent.

Asterisks next to variable names in the first column indicate significance levels for chi-square tests of differences in impacts across the subgroups.

$+p < .10$, $*p < .05$, $**p < .01$.

Table B.31 Impacts on Child Negative Social-Emotional Outcomes at Grade 5, by Education Level of Mother

	Mother has not Completed 12th Grade				Mother has Completed 12th Grade or Greater, or has GED			
Outcome	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
CBCL Aggressive Behavior	5.4	5.7	-0.4	-0.06	5.7	5.7	0.1	0.01
CBCL Rule-Breaking Behavior	2.2	2.5	-0.3	-0.10	2.2	2.4	-0.2	-0.06
CBCL Social Problems	2.6	2.8	-0.3	-0.09	2.6	2.6	0.0	0.00
CBCL Anxious/Depressed	2.6	3.1	-0.6+	-0.18	3.1	3.2	-0.1	-0.05
CBCL Withdrawn/Depressed	1.5	1.7	-0.2	-0.10	1.7	1.5	0.2	0.08
CBCL Somatic Complaints	1.0	1.0	-0.1	-0.04	1.2	1.0	0.2	0.10
CBCL Thought Problems	2.0	2.1	-0.1	-0.05	2.3	2.2	0.0	0.01
Sample Size	**307**	**377**			**400**	**423**		

Source: Parent interviews, interviewer observations, and child assessments conducted when children were in Grade 5. CBCL = Child Behavior Check List; ADD/ADHD = Attention Deficit Disorder/Attention Deficit Hyperactivity Disorder; ECLS-K = Early Childhood Longitudinal Study-Kindergarten Class of 1998-99; SDQ = Self Description Questionnaire; PPVT-III = Peabody Picture Vocabulary Test-Third Edition; HOME = Home Observation for Measurement of the Environment; FES = Shortened Family Environment Scale; PSI = Parenting Stress Index-Short Form.

Note: All impact estimates were calculated using regression models in which each site was weighted equally. Psychometric information on specific outcome measures, including descriptive statistics is available in Appendix A.

[a]Program group includes all families assigned to Early Head Start who received more than one home visit, met with a case manager more than once, enrolled its child in center care for at least two weeks, or participated in a group activity during the 26 months after random assignment. Thus, impacts should be interpreted as the effect of receiving treatment.

[b]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had been assigned to the program group instead. This unobserved mean was estimated as the difference between the program group mean for participants and the impact per participant.

[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 all program and control group members.

[d]The effect size was calculated by dividing the estimated impact by the standard deviation of the outcome measure for the control group.

Asterisks next to variable names in the first column indicate significance levels for chi-square tests of differences in impacts across the subgroups.

+p < .10, *p < .05, **p < .01.

Table B.32 Impacts on Child and Family Outcomes at Grade 5, by Primary Language of Primary Caregiver

Outcome	Primary Language is English				Primary Language is not English			
	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
Child Social-Emotional Outcomes								
CBCL Internalizing Behavior	5.5	5.7	-0.2	-0.04	4.6	5.6	-1.1	-0.18
CBCL Externalizing Behavior	8.1	8.4	-0.4	-0.04	5.4	5.0	0.4	0.05
CBCL Attention Problems	4.1	4.3	-0.3	-0.07	3.1	2.5	0.5	0.14
Self-Reported Delinquent Behavior	1.6	1.6	0.0	0.03	1.0	0.9	0.1	0.06
ECLS-K SDQ Anger/Distractibility	2.2	2.1	0.1	0.08	2.0	2.1	-0.1	-0.13
ECLS-K SDQ Sad/Lonely/Anxious	2.3	2.2	0.1	0.10	2.3	2.5	-0.1	-0.16
ECLS-K SDQ Peer Relations	3.1	3.1	0.0	-0.03	3.1	3.1	-0.1	-0.11
Self-Reported Bullying by Peers	6.8	6.9	-0.1	-0.03	6.6	6.5	0.1	0.02
ADD/ADHD since First Grade (parent report)	18.6	15.9	2.7	0.08	4.7	7.6	-2.9	-0.08
Social-Emotional Risk Index	46.8	48.2	-1.4	-0.03	28.0	37.2	-9.2	-0.18
Social-Emotional Success Index	43.0	42.8	0.3	0.01	66.4	50.4	16.0+	0.32
Child Academic Outcomes								
English Receptive Vocabulary (PPVT-III)	95.6	95.0	0.6	0.04	88.7	88.6	0.1	0.01
PPVT-III Standard Score < 85	25.2	26.5	-1.2	-0.03	39.8	37.6	2.2	0.05
Matrix Reasoning (WISC)	8.7	8.6	0.1	0.02	8.2	8.8	-0.5	-0.16
ECLS-K Reading	129.5	127.9	1.5	0.06	125.3	122.3	3.0	0.11
ECLS-K Mathematics	8.3	8.5	-0.2	-0.04	8.3	9.1	-0.7	-0.16
Retention (parent report)	11.2	13.7	-2.5	-0.07	16.4	14.8	1.6	0.05
Chronic Absenteeism (parent report)	13.0	11.4	1.6	0.06	5.1	3.0	2.2	0.07
Child Has IEP (parent Report)	16.7	19.1	-2.3	-0.06	7.3	11.7	-4.4	-0.12
Academic Success Index	28.2	28.1	0.1	0.00	23.1	23.7	-0.6	-0.01
Ability Success Index	25.0	23.6	1.4	0.03	10.4	16.4	-6.0	-0.15
Child Outcomes: Multi-Domain Indices								
Cumulative Risk (number of outcomes of 16)[e]	3.4	3.4	0.0	0.02	3.0	3.2	-0.1	-0.06
Categorical Risk (low, medium, high)	1.3	1.3	0.0	0.04	1.2	1.4	-0.2	-0.23
Cumulative Success (number of domains of 5)[f]	2.2	2.2	0.0	-0.02	2.3	2.3	0.0	0.02
Parenting and the Home Environment								
Parent Supervision+	3.3	3.2	0.1	0.11	3.0	3.2	-0.2	-0.28
Severity of Discipline Strategies	3.9	3.9	-0.1	-0.05	3.3	3.2	0.1	0.05
Family Involvement in School	37.4	36.8	0.7	0.10	34.7	36.2	-1.5	-0.22
Children's Books (26 or more)+	60.4	64.3	-3.9	-0.08	48.6	34.5	14.2	0.29
Help with Homework	3.3	3.3	0.0	0.04	3.1	3.3	-0.1	-0.15
HOME Total Score+	26.9	27.2	-0.3	-0.07	28.7	27.7	1.0	0.23
Total Support for Education	0.4	0.4	0.0	0.00	-1.8	-1.0	-0.8	-0.16
Support for Education, Internal to the Home	0.2	0.2	0.0	0.01	-0.6	-0.4	-0.2	-0.07
Support for Education, External to the Home	0.2	0.2	0.0	0.00	-1.2	-0.6	-0.6	-0.18
Family Well-Being and Mental Health								
Depressive Symptoms CES-D (count)	7.3	7.5	-0.3	-0.04	6.2	5.8	0.4	0.05
Parent Substance Use	9.6	9.3	0.3	0.01	0.2	1.2	-1.1	-0.04

Table B.32 *(continued)*

Outcome	Primary Language is English				Primary Language is not English			
	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
Parent Alcohol Use	0.7	0.8	0.0	-0.03	0.4	0.3	0.1	0.08
Parenting Distress (PSI)	8.3	8.2	0.1	0.04	8.5	9.5	-1.0	-0.25
Number of Moves	2.4	2.5	-0.1	-0.08	1.8	2.0	-0.2	-0.11
Homelessness	6.2	6.7	-0.4	-0.02	3.4	4.8	-1.4	-0.06
Family Conflict (FES)	1.4	1.4	0.0	-0.07	1.4	1.4	0.0	-0.09
Parent Child Dysfunctional Interaction (PSI)	9.9	9.5	0.3	0.07	9.2	9.6	-0.4	-0.08
Child Reported Relationship with Mother	3.6	3.6	0.0	-0.06	3.6	3.6	0.0	-0.05
Child Reported Relationship with Father	3.4	3.4	0.0	0.00	3.5	3.5	0.0	0.01
Child Exposure to Domestic Violence	4.7	5.0	-0.3	-0.01	5.7	4.7	1.0	0.04
Parent Self-Sufficiency								
Household Annual Income (continuous)	38196.5	37322.0	874.5	0.03	32020.6	29644.5	2376.1	0.08
Income to Needs Ratio (continuous)	1.7	1.6	0.0	0.04	1.3	1.2	0.1	0.07
Mother's Highest Educational Level+	2.6	2.7	0.0	-0.03	1.9	1.6	0.2+	0.23
Mother's Employment Status	1.8	1.8	0.0	-0.02	1.8	1.9	-0.1	-0.12
Current Welfare Participation	45.3	51.1	-5.8+	-0.12	28.9	30.4	-1.5	-0.03
Sample Size	**319-609**	**337-675**			**62-114**	**74-120**		

Source: Parent interviews, interviewer observations, and child assessments conducted when children were in Grade 5. CBCL = Child Behavior Check List; ADD/ADHD = Attention Deficit Disorder/Attention Deficit Hyperactivity Disorder; ECLS-K = Early Childhood Longitudinal Study-Kindergarten Class of 1998-99; SDQ = Self Description Questionnaire; PPVT-III = Peabody Picture Vocabulary Test-Third Edition; HOME = Home Observation for Measurement of the Environment; FES = Shortened Family Environment Scale; PSI = Parenting Stress Index-Short Form.

Note: All impact estimates were calculated using regression models in which each site was weighted equally. Psychometric information on specific outcome measures, including descriptive statistics is available in Appendix A.

[a]Program group includes all families assigned to Early Head Start who received more than one home visit, met with a case manager more than once, enrolled its child in center care for at least two weeks, or participated in a group activity during the 26 months after random assignment. Thus, impacts should be interpreted as the effect of receiving treatment.

[b]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had been assigned to the program group instead. This unobserved mean was estimated as the difference between the program group mean for participants and the impact per participant.

[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 all program and control group members.

[d]The effect size was calculated by dividing the estimated impact by the standard deviation of the outcome measure for the control group.

[e]This cumulative risk index is based on the sum of 16 outcomes from multiple domains including social-emotional (bullying by peers, self-reported delinquent behavior, internalizing behavior, externalizing behavior, peer relations, attention problems), academic (math, language/literacy, absences, retention), cognitive ability (PPVT-III, Matrix Reasoning), and health (general health, chronic illness, BMI, IEP).

Table B.32 *(continued)*

[r]This cumulative success index is based on the sum of success indices from five domains including social-emotional, peer relations, academic, retention/absence, and cognitive ability. Each domain-specific index is equal to 1 if success is present and 0 if absent.

Asterisks next to variable names in the first column indicate significance levels for chi-square tests of differences in impacts across the subgroups.

+p < .10, *p < .05, **p < .01.

Table B.33 Impacts on Child Negative Social-Emotional Outcomes at Grade 5, by Primary Language of Primary Caregiver

	Primary Language is English				Primary Language is Not English			
Outcome	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
CBCL Aggressive Behavior	5.7	5.9	-0.2	-0.04	4.0	3.6	0.4	0.07
CBCL Rule-Breaking Behavior	2.4	2.5	-0.1	-0.04	1.4	1.4	0.0	-0.01
CBCL Social Problems	2.6	2.7	-0.1	-0.02	2.3	2.4	-0.1	-0.04
CBCL Anxious/Depressed	2.8	3.1	-0.3	-0.09	2.2	3.0	-0.8	-0.25
CBCL Withdrawn/Depressed	1.6	1.6	0.0	0.02	1.6	1.8	-0.2	-0.09
CBCL Somatic Complaints	1.1	1.0	0.0	0.01	0.8	0.8	-0.1	-0.05
CBCL Thought Problems	2.2	2.3	0.0	-0.01	1.2	1.2	0.0	0.01
Sample Size	**609**	**675**			**114**	**120**		

Source: Parent interviews, interviewer observations, and child assessments conducted when children were in Grade 5. CBCL = Child Behavior Check List; ADD/ADHD = Attention Deficit Disorder/Attention Deficit Hyperactivity Disorder; ECLS-K = Early Childhood Longitudinal Study-Kindergarten Class of 1998-99; SDQ = Self Description Questionnaire; PPVT-III = Peabody Picture Vocabulary Test-Third Edition; HOME = Home Observation for Measurement of the Environment; FES = Shortened Family Environment Scale; PSI = Parenting Stress Index-Short Form.

Note: All impact estimates were calculated using regression models in which each site was weighted equally. Psychometric information on specific outcome measures, including descriptive statistics is available in Appendix A.

[a]Program group includes all families assigned to Early Head Start who received more than one home visit, met with a case manager more than once, enrolled its child in center care for at least two weeks, or participated in a group activity during the 26 months after random assignment. Thus, impacts should be interpreted as the effect of receiving treatment.

[b]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had been assigned to the program group instead. This unobserved mean was estimated as the difference between the program group mean for participants and the impact per participant.

[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 all program and control group members.

[d]The effect size was calculated by dividing the estimated impact by the standard deviation of the outcome measure for the control group.

Asterisks next to variable names in the first column indicate significance levels for chi-square tests of differences in impacts across the subgroups.

$+p < .10$, $*p < .05$, $**p < .01$.

Table B.34 Impacts on Child and Family Outcomes at Grade 5, by Age of Mother

Outcome	Mother is a Teenager				Mother is Older than a Teenager			
	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
Child Social-Emotional Outcomes								
CBCL Internalizing Behavior	5.3	5.6	-0.3	-0.05	5.6	6.1	-0.5	-0.08
CBCL Externalizing Behavior	7.5	8.8	-1.4	-0.17	7.9	7.8	0.1	0.01
CBCL Attention Problems	4.1	4.3	-0.2	-0.04	3.9	4.1	-0.2	-0.06
Self-Reported Delinquent Behavior	1.6	1.6	0.0	0.03	1.4	1.5	0.0	-0.01
ECLS-K SDQ Anger/Distractibility	2.2	2.2	0.0	0.05	2.1	2.1	0.0	-0.03
ECLS-K SDQ Sad/Lonely/Anxious	2.3	2.3	0.0	0.05	2.3	2.3	0.0	-0.04
ECLS-K SDQ Peer Relations+	3.1	3.2	-0.1	-0.15	3.2	3.1	0.1	0.11
Self-Reported Bullying by Peers	6.8	7.0	-0.2	-0.08	6.6	6.8	-0.2	-0.07
ADD/ADHD since First Grade (parent report)	16.3	14.5	1.9	0.05	14.2	16.2	-2.0	-0.05
Social-Emotional Risk Index	45.5	48.2	-2.6	-0.05	42.1	48.3	-6.2	-0.12
Social-Emotional Success Index	48.6	41.3	7.4	0.15	47.4	41.7	5.8	0.12
Child Academic Outcomes								
English Receptive Vocabulary (PPVT-III)	93.1	93.8	-0.7	-0.04	94.6	94.0	0.6	0.04
PPVT-III Standard Score < 85	30.6	28.1	2.5	0.05	27.7	27.4	0.3	0.01
Matrix Reasoning (WISC)*	8.3	8.7	-0.4	-0.13	8.7	8.3	0.4+	0.13
ECLS-K Reading	126.7	128.0	-1.3	-0.05	129.5	126.6	2.9	0.11
ECLS-K Mathematics	7.9	8.6	-0.7	-0.15	8.7	8.5	0.2	0.04
Retention (parent report)	11.3	13.1	-1.8	-0.05	12.8	12.6	0.2	0.01
Chronic Absenteeism (parent report)	10.6	8.6	2.0	0.07	12.3	10.7	1.6	0.05
Child Has IEP (parent Report)	14.3	17.1	-2.8	-0.07	15.5	17.8	-2.3	-0.06
Academic Success Index*	22.5	30.7	-8.2+	-0.18	30.2	24.6	5.6+	0.13
Ability Success Index*	14.2	22.1	-7.9+	-0.19	24.7	21.7	3.0	0.07
Child Outcomes: Multi-Domain Indices								
Cumulative Risk (number of outcomes of 16)[e]	3.5	3.3	0.2	0.09	3.2	3.4	-0.2	-0.07
Categorical Risk (low, medium, high)	1.4	1.3	0.1	0.09	1.3	1.3	0.0	0.00
Cumulative Success (number of domains of 5)[f]*	2.1	2.2	-0.2	-0.14	2.3	2.2	0.1	0.11
Parenting and the Home Environment								
Parent Supervision	3.2	3.1	0.1	0.08	3.2	3.2	0.0	0.06
Severity of Discipline Strategies	4.0	4.0	0.0	-0.01	3.8	3.7	0.1	0.10
Family Involvement in School	37.1	36.6	0.4	0.07	36.3	36.1	0.2	0.03
Children's Books (26 or more)	61.0	62.4	-1.4	-0.03	57.2	60.7	-3.5	-0.07
Help with Homework	3.4	3.3	0.0	0.05	3.2	3.2	0.0	0.05
HOME Total Score	27.0	26.8	0.2	0.04	27.2	27.5	-0.3	-0.07
Total Support for Education	0.2	0.2	0.0	-0.01	-0.3	-0.3	0.0	0.00
Support for Education, Internal to the Home	0.3	0.2	0.1	0.04	-0.2	-0.2	0.0	0.01
Support for Education, External to the Home	-0.2	0.0	-0.1	-0.05	-0.1	-0.1	0.0	-0.01
Family Well-Being and Mental Health								
Depressive Symptoms CES-D (count)	6.9	7.8	-0.9	-0.13	6.9	7.3	-0.3	-0.05
Parent Substance Use*	6.8	12.2	-5.4+	-0.20	8.3	6.5	1.9	0.07

Table B.34 *(continued)*

Outcome	Mother is a Teenager				Mother is Older than a Teenager			
	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
Parent Alcohol Use	0.8	0.8	0.0	0.00	0.6	0.7	0.0	-0.03
Parenting Distress (PSI)	8.3	8.5	-0.2	-0.06	8.3	8.4	-0.1	-0.03
Number of Moves	2.5	2.7	-0.2	-0.13	2.1	2.3	-0.1	-0.07
Homelessness	6.7	5.3	1.4	0.06	5.0	5.9	-1.0	-0.04
Family Conflict (FES)*	1.3	1.5	-0.1**	-0.29	1.4	1.4	0.0	0.00
Parent Child Dysfunctional Interaction (PSI)	10.1	9.7	0.4	0.08	9.5	9.8	-0.3	-0.07
Child Reported Relationship with Mother	3.6	3.6	0.0	-0.05	3.6	3.6	0.0	-0.06
Child Reported Relationship with Father	3.4	3.4	0.0	-0.07	3.5	3.5	0.0	0.02
Child Exposure to Domestic Violence	7.2	8.5	-1.3	-0.05	4.5	4.6	-0.1	0.00
Parent Self-Sufficiency								
Household Annual Income (continuous)	36918.6	34978.3	1940.3	0.06	37032.4	35625.4	1407.0	0.04
Income to Needs Ratio (continuous)	1.5	1.5	0.0	0.01	1.6	1.6	0.0	-0.02
Mother's Highest Educational Level	2.4	2.4	0.0	0.01	2.6	2.5	0.0	0.03
Mother's Employment Status	1.7	1.7	0.0	-0.01	1.8	1.9	-0.1	-0.07
Current Welfare Participation	45.5	51.4	-5.8	-0.12	41.7	46.4	-4.7	-0.09
Sample Size	**118-263**	**133-324**			**239-459**	**257-499**		

Source: Parent interviews, interviewer observations, and child assessments conducted when children were in Grade 5. CBCL = Child Behavior Check List; ADD/ADHD = Attention Deficit Disorder/Attention Deficit Hyperactivity Disorder; ECLS-K = Early Childhood Longitudinal Study-Kindergarten Class of 1998-99; SDQ = Self Description Questionnaire; PPVT-III = Peabody Picture Vocabulary Test-Third Edition; HOME = Home Observation for Measurement of the Environment; FES = Shortened Family Environment Scale; PSI = Parenting Stress Index-Short Form.

Note: All impact estimates were calculated using regression models in which each site was weighted equally. Psychometric information on specific outcome measures, including descriptive statistics is available in Appendix A.

[a]Program group includes all families assigned to Early Head Start who received more than one home visit, met with a case manager more than once, enrolled its child in center care for at least two weeks, or participated in a group activity during the 26 months after random assignment. Thus, impacts should be interpreted as the effect of receiving treatment.

[b]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had been assigned to the program group instead. This unobserved mean was estimated as the difference between the program group mean for participants and the impact per participant.

[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 all program and control group members.

[d]The effect size was calculated by dividing the estimated impact by the standard deviation of the outcome measure for the control group.

[e]This cumulative risk index is based on the sum of 16 outcomes from multiple domains including social-emotional (bullying by peers, self-reported delinquent behavior, internalizing behavior, externalizing behavior, peer relations, attention problems), academic (math, language/literacy, absences, retention), cognitive ability (PPVT-III, Matrix Reasoning), and health (general health, chronic illness, BMI, IEP).

Table B.34 *(continued)*

[r]This cumulative success index is based on the sum of success indices from five domains including social-emotional, peer relations, academic, retention/absence, and cognitive ability. Each domain-specific index is equal to 1 if success is present and 0 if absent.

Asterisks next to variable names in the first column indicate significance levels for chi-square tests of differences in impacts across the subgroups.

+p < .10, *p < .05, **p < .01.

Table B.35 Impacts on Child Negative Social-Emotional Outcomes at Grade 5, by Age of Mother

	Mother is a Teenager				Mother is Older than a Teenager			
Outcome	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
CBCL Aggressive Behavior	5.3	6.1	-0.7	-0.13	5.7	5.6	0.0	0.01
CBCL Rule-Breaking Behavior *	2.1	2.8	-0.6*	-0.23	2.2	2.2	0.1	0.02
CBCL Social Problems	2.5	2.7	-0.2	-0.07	2.7	2.7	0.0	0.00
CBCL Anxious/Depressed	2.7	3.0	-0.2	-0.07	2.9	3.3	-0.4+	-0.13
CBCL Withdrawn/Depressed	1.7	1.7	-0.1	-0.03	1.6	1.7	-0.1	-0.03
CBCL Somatic Complaints	0.9	0.9	0.0	-0.01	1.1	1.1	0.0	0.00
CBCL Thought Problems	2.2	2.3	-0.1	-0.04	2.1	2.2	-0.1	-0.04
Sample Size	**263**	**324**			**459**	**499**		

Source: Parent interviews, interviewer observations, and child assessments conducted when children were in Grade 5. CBCL = Child Behavior Check List; ADD/ADHD = Attention Deficit Disorder/Attention Deficit Hyperactivity Disorder; ECLS-K = Early Childhood Longitudinal Study-Kindergarten Class of 1998-99; SDQ = Self Description Questionnaire; PPVT-III = Peabody Picture Vocabulary Test-Third Edition; HOME = Home Observation for Measurement of the Environment; FES = Shortened Family Environment Scale; PSI = Parenting Stress Index-Short Form.

Note: All impact estimates were calculated using regression models in which each site was weighted equally. Psychometric information on specific outcome measures, including descriptive statistics is available in Appendix A.

[a]Program group includes all families assigned to Early Head Start who received more than one home visit, met with a case manager more than once, enrolled its child in center care for at least two weeks, or participated in a group activity during the 26 months after random assignment. Thus, impacts should be interpreted as the effect of receiving treatment.

[b]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had been assigned to the program group instead. This unobserved mean was estimated as the difference between the program group mean for participants and the impact per participant.

[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 all program and control group members.

[d]The effect size was calculated by dividing the estimated impact by the standard deviation of the outcome measure for the control group.

Asterisks next to variable names in the first column indicate significance levels for chi-square tests of differences in impacts across the subgroups.

$+p < .10$, $*p < .05$, $**p < .01$.

Table B.36 Impacts on Child and Family Outcomes at Grade 5, by Pregnancy Status of Primary Caregiver

Outcome	Primary Caregiver is Pregnant with Focus Child				Primary Caregiver is not Pregnant with Focus Child			
	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
Child Social-Emotional Outcomes								
CBCL Internalizing Behavior	5.8	5.6	0.2	0.03	5.3	5.9	-0.6	-0.10
CBCL Externalizing Behavior	8.4	8.9	-0.5	-0.06	7.2	8.0	-0.8	-0.10
CBCL Attention Problems	4.1	4.2	-0.1	-0.03	3.6	4.1	-0.5+	-0.12
Self-Reported Delinquent Behavior	1.4	1.8	-0.4	-0.20	1.4	1.5	-0.1	-0.04
ECLS-K SDQ Anger/Distractibility	2.1	2.1	0.0	-0.01	2.1	2.1	0.0	0.00
ECLS-K SDQ Sad/Lonely/Anxious	2.2	2.3	-0.1	-0.11	2.3	2.3	0.0	0.05
ECLS-K SDQ Peer Relations+	3.2	3.1	0.1	0.21	3.1	3.2	-0.1	-0.09
Self-Reported Bullying by Peers	6.9	7.2	-0.2	-0.08	6.7	6.8	-0.1	-0.04
ADD/ADHD since First Grade (parent report)	14.9	14.1	0.8	0.02	13.6	15.3	-1.8	-0.05
Social-Emotional Risk Index	46.7	53.4	-6.7	-0.13	43.1	47.2	-4.1	-0.08
Social-Emotional Success Index	46.1	39.2	6.8	0.14	47.9	41.7	6.2+	0.12
Child Academic Outcomes								
English Receptive Vocabulary (PPVT-III)	95.0	94.5	0.5	0.03	93.8	93.4	0.4	0.02
PPVT-III Standard Score < 85	27.4	28.8	-1.4	-0.03	28.8	29.6	-0.8	-0.02
Matrix Reasoning (WISC)	8.9	8.7	0.2	0.07	8.3	8.3	0.0	-0.01
ECLS-K Reading	129.3	127.0	2.3	0.08	127.8	127.1	0.6	0.02
ECLS-K Mathematics	8.2	8.4	-0.1	-0.03	8.2	8.5	-0.3	-0.07
Retention (parent report)*	16.1	9.2	7.0+	0.20	12.5	14.0	-1.5	-0.04
Chronic Absenteeism (parent report)	14.7	7.9	6.7+	0.23	11.1	9.8	1.3	0.04
Child Has IEP (parent Report)	17.0	13.3	3.7	0.10	15.7	16.9	-1.2	-0.03
Academic Success Index	29.0	26.6	2.5	0.06	25.6	28.2	-2.6	-0.06
Ability Success Index	23.9	21.0	3.0	0.07	19.8	20.5	-0.7	-0.02
Child Outcomes: Multi-Domain Indices								
Cumulative Risk (number of outcomes of 16)[e]	3.4	3.4	0.0	-0.02	3.3	3.3	0.0	-0.01
Categorical Risk (low, medium, high)	1.4	1.4	0.0	-0.02	1.3	1.3	0.0	-0.01
Cumulative Success (number of domains of 5)[f]	2.2	2.1	0.1	0.04	2.2	2.3	-0.1	-0.05
Parenting and the Home Environment								
Parent Supervision	3.2	3.1	0.1	0.08	3.2	3.2	0.0	0.00
Severity of Discipline Strategies	4.0	3.9	0.2	0.14	3.8	3.8	-0.1	-0.04
Family Involvement in School	37.7	37.0	0.7	0.11	36.7	36.4	0.3	0.04
Children's Books (26 or more)	61.8	61.1	0.8	0.02	56.9	61.0	-4.1	-0.08
Help with Homework	3.4	3.4	0.0	-0.01	3.3	3.2	0.1	0.11
HOME Total Score	26.6	27.1	-0.5	-0.11	27.2	27.2	0.0	0.00

Table B.36 (*continued*)

Outcome	Primary Caregiver is Pregnant with Focus Child				Primary Caregiver is not Pregnant with Focus Child			
	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
Total Support for Education	0.9	0.2	0.7	0.15	-0.1	0.0	-0.2	-0.03
Support for Education, Internal to the Home*	0.2	0.5	-0.2	-0.09	0.2	-0.1	0.3	0.09
Support for Education, External to the Home	0.7	-0.3	1.0*	0.30	-0.3	0.1	-0.4+	-0.13
Family Well-Being and Mental Health								
Depressive Symptoms CES-D (count)	7.7	8.1	-0.4	-0.05	6.8	7.4	-0.7	-0.10
Parent Substance Use	9.1	12.6	-3.5	-0.13	8.3	7.8	0.5	0.02
Parent Alcohol Use	0.8	0.9	-0.1	-0.11	0.7	0.7	0.0	-0.03
Parenting Distress (PSI)	8.7	8.3	0.4	0.10	8.2	8.6	-0.4	-0.09
Number of Moves	2.6	2.7	-0.1	-0.05	2.2	2.4	-0.1	-0.09
Homelessness	6.5	7.3	-0.9	-0.04	4.7	5.4	-0.7	-0.03
Family Conflict (FES)	1.4	1.4	0.0	0.00	1.4	1.4	-0.1*	-0.13
Parent Child Dysfunctional Interaction (PSI)	9.7	10.3	-0.5	-0.11	9.5	9.8	-0.3	-0.06
Child Reported Relationship with Mother	3.6	3.6	0.0	0.00	3.6	3.6	0.0	-0.06
Child Reported Relationship with Father	3.4	3.6	-0.2	-0.39	3.5	3.5	0.0	0.03
Child Exposure to Domestic Violence	5.0	8.4	-3.4	-0.14	5.9	5.1	0.9	0.03
Parent Self-Sufficiency								
Household Annual Income (continuous)	35078.6	37513.5	-2435.0	-0.08	36242.4	35309.2	933.2	0.03
Income to Needs Ratio (continuous)	1.5	1.6	0.0	-0.01	1.6	1.6	0.0	0.02
Mother's Highest Educational Level	2.6	2.7	-0.1	-0.07	2.5	2.4	0.0	0.03
Mother's Employment Status	1.9	1.9	0.0	0.00	1.8	1.9	-0.1	-0.10
Current Welfare Participation	50.5	54.7	-4.2	-0.08	42.9	45.6	-2.7	-0.05
Sample Size	**47-151**	**48-158**			**302-562**	**322-633**		

Source: Parent interviews, interviewer observations, and child assessments conducted when children were in Grade 5. CBCL = Child Behavior Check List; ADD/ADHD = Attention Deficit Disorder/Attention Deficit Hyperactivity Disorder; ECLS-K = Early Childhood Longitudinal Study-Kindergarten Class of 1998-99; SDQ = Self Description Questionnaire; PPVT-III = Peabody Picture Vocabulary Test-Third Edition; HOME = Home Observation for Measurement of the Environment; FES = Shortened Family Environment Scale; PSI = Parenting Stress Index-Short Form.

Note: All impact estimates were calculated using regression models in which each site was weighted equally. Psychometric information on specific outcome measures, including descriptive statistics is available in Appendix A.

[a]Program group includes all families assigned to Early Head Start who received more than one home visit, met with a case manager more than once, enrolled its child in center care for at least two weeks, or participated in a group activity during the 26 months after random assignment. Thus, impacts should be interpreted as the effect of receiving treatment.

[b]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had been assigned to the program group instead. This unobserved mean was estimated as the difference between the program group mean for participants and the impact per participant.

Table B.36 (*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 all program and control group members.

[d]The effect size was calculated by dividing the estimated impact by the standard deviation of the outcome measure for the control group.

[e]This cumulative risk index is based on the sum of 16 outcomes from multiple domains including social-emotional (bullying by peers, self-reported delinquent behavior, internalizing behavior, externalizing behavior, peer relations, attention problems), academic (math, language/literacy, absences, retention), cognitive ability (PPVT-III, Matrix Reasoning), and health (general health, chronic illness, BMI, IEP).

[f]This cumulative success index is based on the sum of success indices from five domains including social-emotional, peer relations, academic, retention/absence, and cognitive ability. Each domain-specific index is equal to 1 if success is present and 0 if absent.

Asterisks next to variable names in the first column indicate significance levels for chi-square tests of differences in impacts across the subgroups.

+p < .10, *p < .05, **p < .01.

Table B.37 Impacts on Child Negative Social-Emotional Outcomes at Grade 5, by Pregnancy Status of Primary Caregiver

	Primary Caregiver is Pregnant with First Child				Primary Caregiver is not Pregnant with First Child			
Outcome	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
CBCL Aggressive Behavior	6.0	6.1	0.0	-0.01	5.1	5.6	-0.5	-0.09
CBCL Rule-Breaking Behavior	2.3	2.8	-0.5	-0.18	2.1	2.3	-0.3	-0.09
CBCL Social Problems	2.6	2.4	0.2	0.08	2.5	2.7	-0.2	-0.06
CBCL Anxious/Depressed	2.9	3.1	-0.2	-0.07	2.7	3.2	-0.4*	-0.13
CBCL Withdrawn/Depressed	1.7	1.5	0.2	0.11	1.6	1.7	-0.1	-0.04
CBCL Somatic Complaints	1.2	1.0	0.2	0.09	1.0	1.1	-0.1	-0.04
CBCL Thought Problems	2.2	2.4	-0.2	-0.09	2.0	2.1	-0.1	-0.05
Sample Size	**151**	**158**			**562**	**633**		

Source: Parent interviews, interviewer observations, and child assessments conducted when children were in Grade 5. CBCL = Child Behavior Check List; ADD/ADHD = Attention Deficit Disorder/Attention Deficit Hyperactivity Disorder; ECLS-K = Early Childhood Longitudinal Study-Kindergarten Class of 1998-99; SDQ = Self Description Questionnaire; PPVT-III = Peabody Picture Vocabulary Test-Third Edition; HOME = Home Observation for Measurement of the Environment; FES = Shortened Family Environment Scale; PSI = Parenting Stress Index-Short Form.

Note: All impact estimates were calculated using regression models in which each site was weighted equally. Psychometric information on specific outcome measures, including descriptive statistics is available in Appendix A.

[a]Program group includes all families assigned to Early Head Start who received more than one home visit, met with a case manager more than once, enrolled its child in center care for at least two weeks, or participated in a group activity during the 26 months after random assignment. Thus, impacts should be interpreted as the effect of receiving treatment.

[b]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had been assigned to the program group instead. This unobserved mean was estimated as the difference between the program group mean for participants and the impact per participant.

[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 all program and control group members.

[d]The effect size was calculated by dividing the estimated impact by the standard deviation of the outcome measure for the control group.

Asterisks next to variable names in the first column indicate significance levels for chi-square tests of differences in impacts across the subgroups.

$+p < .10$, $*p < .05$, $**p < .01$.

Table B.38 Impacts on Child and Family Outcomes at Grade 5, by Birth Order of Child

Outcome	Child is First-Born				Child is Later-Born			
	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
Child Social-Emotional Outcomes								
CBCL Internalizing Behavior	5.8	5.8	0.0	-0.01	5.5	5.9	-0.4	-0.07
CBCL Externalizing Behavior	7.6	7.9	-0.3	-0.04	8.3	8.3	0.0	0.01
CBCL Attention Problems	4.0	4.1	-0.1	-0.03	4.0	4.3	-0.3	-0.08
Self-Reported Delinquent Behavior**	1.4	1.6	-0.1	-0.08	1.8	1.3	0.6**	0.32
ECLS-K SDQ Anger/Distractibility	2.1	2.1	0.0	0.01	2.3	2.1	0.1	0.17
ECLS-K SDQ Sad/Lonely/Anxious	2.3	2.2	0.1	0.08	2.3	2.3	0.0	0.07
ECLS-K SDQ Peer Relations	3.1	3.1	0.0	-0.06	3.1	3.1	0.0	0.02
Self-Reported Bullying by Peers	6.8	6.9	-0.2	-0.06	6.7	6.6	0.1	0.05
ADD/ADHD since First Grade (parent report)	15.9	14.5	1.4	0.04	14.2	16.2	-2.0	-0.06
Social-Emotional Risk Index	43.1	46.8	-3.7	-0.07	49.6	45.7	3.9	0.08
Social-Emotional Success Index	48.5	43.3	5.3	0.11	41.5	42.5	-1.0	-0.02
Child Academic Outcomes								
English Receptive Vocabulary (PPVT-III)	95.1	95.3	-0.2	-0.01	92.8	92.7	0.1	0.01
PPVT-III Standard Score < 85	26.6	26.5	0.1	0.00	30.1	31.7	-1.6	-0.03
Matrix Reasoning (WISC)	8.5	8.6	-0.1	-0.02	8.3	8.3	0.0	-0.01
ECLS-K Reading	129.0	129.1	0.0	0.00	126.0	125.1	1.0	0.04
ECLS-K Mathematics	8.3	8.8	-0.5	-0.10	8.5	8.7	-0.2	-0.04
Retention (parent report)	12.5	12.9	-0.4	-0.01	15.2	14.5	0.7	0.02
Chronic Absenteeism (parent report)	12.3	9.7	2.6	0.09	12.7	9.4	3.3	0.11
Child Has IEP (parent Report)	15.9	18.3	-2.4	-0.06	17.6	17.0	0.6	0.02
Academic Success Index+	26.7	31.2	-4.5	-0.10	29.5	24.2	5.3	0.12
Ability Success Index+	20.3	24.6	-4.3	-0.10	23.1	17.4	5.8	0.14
Child Outcomes: Multi-Domain Indices								
Cumulative Risk (number of outcomes of 16)[e]	3.4	3.3	0.2	0.07	3.4	3.4	0.0	-0.01
Categorical Risk (low, medium, high)*	1.4	1.3	0.1	0.12	1.3	1.4	-0.1	-0.13
Cumulative Success (number of domains of 5)[f]+	2.1	2.3	-0.2	-0.13	2.2	2.1	0.1	0.09
Parenting and the Home Environment								
Parent Supervision	3.2	3.2	0.0	0.05	3.2	3.2	0.0	-0.01
Severity of Discipline Strategies	3.9	3.9	0.0	-0.02	3.8	3.7	0.1	0.08
Family Involvement in School	36.7	36.8	0.0	0.00	36.2	35.3	0.9	0.14
Children's Books (26 or more) +	58.7	66.1	-7.4*	-0.15	56.1	53.0	3.0	0.06
Help with Homework	3.3	3.3	0.0	0.03	3.2	3.1	0.0	0.05
HOME Total Score	27.2	27.3	-0.1	-0.03	27.0	27.1	-0.1	-0.03

Table B.38 (*continued*)

Outcome	Child is First-Born				Child is Later-Born			
	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
Total Support for Education	0.1	0.3	-0.3	-0.05	-0.8	-1.1	0.3	0.06
Support for Education, Internal to the Home	0.2	0.3	-0.1	-0.04	-0.5	-0.6	0.1	0.04
Support for Education, External to the Home	-0.1	0.1	-0.2	-0.05	-0.3	-0.5	0.2	0.06
Family Well-Being and Mental Health								
Depressive Symptoms CES-D (count)	7.0	7.3	-0.3	-0.04	7.5	7.4	0.1	0.02
Parent Substance Use	8.5	9.8	-1.3	-0.05	9.8	5.8	4.1	0.15
Parent Alcohol Use	0.7	0.7	0.0	0.02	0.6	0.7	-0.1	-0.07
Parenting Distress (PSI)	8.4	8.6	-0.2	-0.05	8.3	7.7	0.5	0.13
Number of Moves	2.3	2.5	-0.1	-0.09	2.2	2.4	-0.2	-0.11
Homelessness	5.9	5.8	0.1	0.01	5.1	7.6	-2.5	-0.10
Family Conflict (FES)	1.4	1.4	0.0	-0.09	1.5	1.5	0.0	0.03
Parent Child Dysfunctional Interaction (PSI)	9.8	9.9	-0.1	-0.02	9.2	9.5	-0.3	-0.06
Child Reported Relationship with Mother	3.6	3.6	0.0	-0.11	3.6	3.6	0.0	0.02
Child Reported Relationship with Father	3.4	3.5	-0.1	-0.09	3.5	3.5	0.0	0.05
Child Exposure to Domestic Violence	7.1	5.7	1.4	0.06	4.3	6.5	-2.2	-0.09
Parent Self-Sufficiency								
Household Annual Income (continuous)	38299.3	36397.2	1902.1	0.06	34710.9	37009.1	-2298.2	-0.07
Income to Needs Ratio (continuous)	1.7	1.6	0.1	0.06	1.4	1.6	-0.1	-0.09
Mother's Highest Educational Level	2.5	2.5	0.0	0.01	2.5	2.5	0.0	-0.03
Mother's Employment Status	1.8	1.9	-0.1	-0.08	1.9	1.8	0.1	0.06
Current Welfare Participation	42.8	48.2	-5.4	-0.11	45.8	46.9	-1.1	-0.02
Sample Size	**237-449**	**266-542**			**136-264**	**151-287**		

Source: Parent interviews, interviewer observations, and child assessments conducted when children were in Grade 5. CBCL = Child Behavior Check List; ADD/ADHD = Attention Deficit Disorder/Attention Deficit Hyperactivity Disorder; ECLS-K = Early Childhood Longitudinal Study-Kindergarten Class of 1998-99; SDQ = Self Description Questionnaire; PPVT-III = Peabody Picture Vocabulary Test-Third Edition; HOME = Home Observation for Measurement of the Environment; FES = Shortened Family Environment Scale; PSI = Parenting Stress Index-Short Form.

Note: All impact estimates were calculated using regression models in which each site was weighted equally. Psychometric information on specific outcome measures, including descriptive statistics is available in Appendix A.

[a]Program group includes all families assigned to Early Head Start who received more than one home visit, met with a case manager more than once, enrolled its child in center care for at least two weeks, or participated in a group activity during the 26 months after random assignment. Thus, impacts should be interpreted as the effect of receiving treatment.

[b]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had been assigned to the program group instead. This unobserved mean was estimated as the difference between the program group mean for participants and the impact per participant.

Table B.38 (*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 all program and control group members.

[d]The effect size was calculated by dividing the estimated impact by the standard deviation of the outcome measure for the control group.

[e]This cumulative risk index is based on the sum of 16 outcomes from multiple domains including social-emotional (bullying by peers, self-reported delinquent behavior, internalizing behavior, externalizing behavior, peer relations, attention problems), academic (math, language/literacy, absences, retention), cognitive ability (PPVT-III, Matrix Reasoning), and health (general health, chronic illness, BMI, IEP).

[f]This cumulative success index is based on the sum of success indices from five domains including social-emotional, peer relations, academic, retention/absence, and cognitive ability. Each domain-specific index is equal to 1 if success is present and 0 if absent.

Asterisks next to variable names in the first column indicate significance levels for chi-square tests of differences in impacts across the subgroups.

$+p < .10$, $*p < .05$, $**p < .01$.

Table B.39 Impacts on Child Negative Social-Emotional Outcomes at Grade 5, by Birth Order of Child

	Child is First-Born				Child is Later-Born			
Outcome	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
CBCL Aggressive Behavior	5.4	5.5	-0.1	-0.02	6.0	5.9	0.1	0.02
CBCL Rule-Breaking Behavior	2.2	2.3	-0.2	-0.06	2.3	2.4	-0.1	-0.03
CBCL Social Problems	2.7	2.6	0.1	0.03	2.8	2.7	0.0	0.02
CBCL Anxious/Depressed	3.0	3.0	0.0	-0.01	2.8	3.3	-0.5	-0.15
CBCL Withdrawn/Depressed	1.7	1.7	0.0	0.02	1.6	1.6	0.0	0.00
CBCL Somatic Complaints	1.0	1.1	0.0	-0.02	1.1	1.0	0.1	0.06
CBCL Thought Problems	2.2	2.2	0.0	0.01	2.2	2.2	0.1	0.02
Sample Size	**449**	**542**			**264**	**287**		

Source: Parent interviews, interviewer observations, and child assessments conducted when children were in Grade 5. CBCL = Child Behavior Check List; ADD/ADHD = Attention Deficit Disorder/Attention Deficit Hyperactivity Disorder; ECLS-K = Early Childhood Longitudinal Study-Kindergarten Class of 1998-99; SDQ = Self Description Questionnaire; PPVT-III = Peabody Picture Vocabulary Test-Third Edition; HOME = Home Observation for Measurement of the Environment; FES = Shortened Family Environment Scale; PSI = Parenting Stress Index-Short Form.

Note: All impact estimates were calculated using regression models in which each site was weighted equally. Psychometric information on specific outcome measures, including descriptive statistics is available in Appendix A.

[a]Program group includes all families assigned to Early Head Start who received more than one home visit, met with a case manager more than once, enrolled its child in center care for at least two weeks, or participated in a group activity during the 26 months after random assignment. Thus, impacts should be interpreted as the effect of receiving treatment.

[b]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had been assigned to the program group instead. This unobserved mean was estimated as the difference between the program group mean for participants and the impact per participant.

[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 all program and control group members.

[d]The effect size was calculated by dividing the estimated impact by the standard deviation of the outcome measure for the control group.

Asterisks next to variable names in the first column indicate significance levels for chi-square tests of differences in impacts across the subgroups.

$+p < .10$, $*p < .05$, $**p < .01$.

Table B.40 Impacts on Child and Family Outcomes at Grade 5, by Gender of Child

Outcome	Female Child				Male Child			
	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
Child Social-Emotional Outcomes								
CBCL Internalizing Behavior	5.2	5.7	-0.5	-0.08	5.8	5.8	0.0	0.00
CBCL Externalizing Behavior +	6.3	7.2	-0.9	-0.11	9.1	8.5	0.7	0.08
CBCL Attention Problems	3.1	3.6	-0.5	-0.13	4.7	4.5	0.1	0.04
Self-Reported Delinquent Behavior+	1.0	1.2	-0.2	-0.09	2.0	1.7	0.2	0.13
ECLS-K SDQ Anger/Distractibility	2.0	2.0	0.0	-0.05	2.2	2.2	0.1	0.12
ECLS-K SDQ Sad/Lonely/Anxious+	2.4	2.3	0.1	0.14	2.2	2.3	0.0	-0.07
ECLS-K SDQ Peer Relations+	3.2	3.1	0.1	0.11	3.1	3.1	-0.1	-0.11
Self-Reported Bullying by Peers	6.7	6.8	-0.1	-0.04	6.8	6.7	0.1	0.04
ADD/ADHD since First Grade (parent report)	8.7	8.5	0.2	0.00	20.5	21.3	-0.7	-0.02
Social-Emotional Risk Index	39.0	45.5	-6.6	-0.13	49.5	49.4	0.1	0.00
Social-Emotional Success Index*	56.3	44.7	11.5*	0.23	38.6	39.5	-0.9	-0.02
Child Academic Outcomes								
English Receptive Vocabulary (PPVT-III)	93.7	92.3	1.4	0.09	94.9	94.7	0.2	0.01
PPVT-III Standard Score < 85	29.1	31.7	-2.6	-0.06	27.5	27.1	0.4	0.01
Matrix Reasoning (WISC)	8.7	8.4	0.3	0.09	8.3	8.4	-0.2	-0.05
ECLS-K Reading	131.1	129.2	1.9	0.07	126.1	124.6	1.5	0.05
ECLS-K Mathematics	8.1	8.1	0.0	0.01	8.5	8.9	-0.5	-0.10
Retention (parent report)	10.3	13.3	-3.0	-0.09	15.4	15.0	0.4	0.01
Chronic Absenteeism (parent report)	9.9	8.5	1.4	0.05	12.5	11.6	0.01	0.03
Child Has IEP (parent Report)	10.2	14.9	-4.7	-0.13	20.6	19.0	1.6	0.04
Academic Success Index	27.3	27.0	0.3	0.01	27.6	26.9	0.7	0.02
Ability Success Index	20.3	19.2	1.1	0.03	22.4	23.7	-1.3	-0.03
Child Outcomes: Multi-Domain Indices								
Cumulative Risk (number of outcomes of 16)[e] *	2.9	3.2	-0.3	-0.14	3.8	3.5	0.3	0.12
Categorical Risk (low, medium, high) *	1.2	1.3	-0.1	-0.10	1.5	1.4	0.1+	0.13
Cumulative Success (number of domains of 5)[f]*	2.4	2.2	0.2	0.13	2.1	2.2	-0.1	-0.11
Parenting and the Home Environment								
Parent Supervision	3.3	3.2	0.0	0.07	3.1	3.1	0.0	-0.04
Severity of Discipline Strategies	3.7	3.7	0.0	-0.01	4.0	3.8	0.1	0.09
Family Involvement in School	37.1	36.4	0.7	0.10	36.3	36.5	-0.2	-0.03
Children's Books (26 or more)	61.1	62.2	-1.1	-0.02	53.4	58.6	-5.3	-0.11
Help with Homework	3.4	3.3	0.1	0.13	3.2	3.3	0.0	-0.03
HOME Total Score	27.3	27.4	0.0	0.00	26.9	27.1	-0.1	-0.03
Total Support for Education	0.2	-0.3	0.5	0.10	-0.2	0.2	-0.4	-0.08
Support for Education, Internal to the Home	0.3	0.0	0.3	0.11	-0.2	0.0	-0.2	-0.07
Support for Education, External to the Home	-0.2	-0.3	0.2	0.05	0.0	0.2	-0.2	-0.07
Family Well-Being and Mental Health								
Depressive Symptoms CES-D (count)	6.5	7.2	-0.6	-0.09	7.5	7.3	0.2	0.03
Parent Substance Use	8.0	7.4	0.7	0.03	6.8	9.0	-2.2	-0.08

Table B.40 (*continued*)

Outcome	Female Child				Male Child			
	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
Parent Alcohol Use	0.7	0.7	0.0	0.05	0.6	0.7	-0.1	-0.07
Parenting Distress (PSI)	8.1	8.1	0.0	-0.01	8.6	8.7	-0.1	-0.02
Number of Moves	2.2	2.4	-0.1	-0.09	2.3	2.4	-0.1	-0.05
Homelessness	4.7	6.3	-1.7	-0.07	6.9	5.5	1.4	0.06
Family Conflict (FES)*	1.4	1.4	-0.1*	-0.19	1.4	1.4	0.0	0.05
Parent Child Dysfunctional Interaction (PSI)	9.7	9.3	0.4	0.09	9.9	10.1	-0.2	-0.04
Child Reported Relationship with Mother	3.6	3.6	0.0	0.08	3.5	3.6	0.0	-0.08
Child Reported Relationship with Father	3.4	3.5	-0.1	-0.13	3.5	3.5	0.0	-0.03
Child Exposure to Domestic Violence	4.4	5.2	-0.9	-0.04	6.6	6.5	0.1	0.00
Parent Self-Sufficiency								
Household Annual Income (continuous)	37038.2	36611.9	426.3	0.01	34675.1	35462.2	-787.1	-0.02
Income to Needs Ratio (continuous)	1.6	1.6	0.0	0.01	1.5	1.5	0.0	-0.01
Mother's Highest Educational Level	2.4	2.5	-0.1	-0.06	2.5	2.4	0.1	0.06
Mother's Employment Status	1.8	1.9	-0.1	-0.06	1.8	1.8	0.0	-0.01
Current Welfare Participation	42.1	45.7	-3.5	-0.07	45.7	46.9	-1.2	-0.02
Sample Size	**148-372**	**182-422**			**164-393**	**169-435**		

Source: Parent interviews, interviewer observations, and child assessments conducted when children were in Grade 5. CBCL = Child Behavior Check List; ADD/ADHD = Attention Deficit Disorder/Attention Deficit Hyperactivity Disorder; ECLS-K = Early Childhood Longitudinal Study-Kindergarten Class of 1998-99; SDQ = Self Description Questionnaire; PPVT-III = Peabody Picture Vocabulary Test-Third Edition; HOME = Home Observation for Measurement of the Environment; FES = Shortened Family Environment Scale; PSI = Parenting Stress Index-Short Form.

Note: All impact estimates were calculated using regression models in which each site was weighted equally. Psychometric information on specific outcome measures, including descriptive statistics is available in Appendix A.

[a]Program group includes all families assigned to Early Head Start who received more than one home visit, met with a case manager more than once, enrolled its child in center care for at least two weeks, or participated in a group activity during the 26 months after random assignment. Thus, impacts should be interpreted as the effect of receiving treatment.

[b]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had been assigned to the program group instead. This unobserved mean was estimated as the difference between the program group mean for participants and the impact per participant.

[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 all program and control group members.

[d]The effect size was calculated by dividing the estimated impact by the standard deviation of the outcome measure for the control group.

[e]This cumulative risk index is based on the sum of 16 outcomes from multiple domains including social-emotional (bullying by peers, self-reported delinquent behavior, internalizing behavior, externalizing behavior, peer relations, attention problems), academic (math, language/literacy, absences, retention), cognitive ability (PPVT-III, Matrix Reasoning), and health (general health, chronic illness, BMI, IEP).

Table B.40 (*continued)*

[r]This cumulative success index is based on the sum of success indices from five domains including social-emotional, peer relations, academic, retention/absence, and cognitive ability. Each domain-specific index is equal to 1 if success is present and 0 if absent.

Asterisks next to variable names in the first column indicate significance levels for chi-square tests of differences in impacts across the subgroups.

+p < .10, *p < .05, **p < .01.

Table B.41 Impacts on Child Negative Social-Emotional Outcomes at Grade 5, by Gender of Child

	Female Child				Male Child			
Outcome	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]	Program Group Participants[a]	Control Group[b]	Estimated Impact per Participant[c]	Effect Size[d]
CBCL Aggressive Behavior +	4.6	5.2	-0.6	-0.10	6.4	5.9	0.5	0.09
CBCL Rule-Breaking Behavior	1.7	2.0	-0.3	-0.12	2.7	2.6	0.1	0.04
CBCL Social Problems	2.6	2.6	0.0	0.00	2.6	2.6	0.0	0.01
CBCL Anxious/Depressed	2.7	3.2	-0.5+	-0.14	3.0	3.0	0.0	0.00
CBCL Withdrawn/Depressed	1.5	1.5	0.0	0.01	1.8	1.8	0.0	0.01
CBCL Somatic Complaints	1.0	1.0	0.0	-0.02	1.0	1.0	0.0	0.00
CBCL Thought Problems	1.7	2.0	-0.2	-0.08	2.4	2.3	0.1	0.05
Sample Size	**372**	**422**			**393**	**435**		

Source: Parent interviews, interviewer observations, and child assessments conducted when children were in Grade 5. CBCL = Child Behavior Check List; ADD/ADHD = Attention Deficit Disorder/Attention Deficit Hyperactivity Disorder; ECLS-K = Early Childhood Longitudinal Study-Kindergarten Class of 1998-99; SDQ = Self Description Questionnaire; PPVT-III = Peabody Picture Vocabulary Test-Third Edition; HOME = Home Observation for Measurement of the Environment; FES = Shortened Family Environment Scale; PSI = Parenting Stress Index-Short Form.

Note: All impact estimates were calculated using regression models in which each site was weighted equally. Psychometric information on specific outcome measures, including descriptive statistics is available in Appendix A.

[a]Program group includes all families assigned to Early Head Start who received more than one home visit, met with a case manager more than once, enrolled its child in center care for at least two weeks, or participated in a group activity during the 26 months after random assignment. Thus, impacts should be interpreted as the effect of receiving treatment.

[b]The control group mean is the mean for the control group members who would have participated in Early Head Start if they had been assigned to the program group instead. This unobserved mean was estimated as the difference between the program group mean for participants and the impact per participant.

[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 all program and control group members.

[d]The effect size was calculated by dividing the estimated impact by the standard deviation of the outcome measure for the control group.

Asterisks next to variable names in the first column indicate significance levels for chi-square tests of differences in impacts across the subgroups.

+p < .10, *p < .05, **p < .01.

APPENDIX C

TABLES

C.1 Unstandardized Regression Coefficientsa from Regression Models Examining Associations Between Child Educational Experiences and PPVT Scores

C.2 Unstandardized Regression Coefficientsa from Regression Models Examining Associations Between Child Educational Experiences and ECLS-K Reading Scores

C.3 Unstandardized Regression Coefficientsa from Regression Models Examining Associations Between Child Educational Experiences and ECLS-K Math Scores

C.4 Unstandardized Regression Coefficientsa from Regression Models Examining Associations Between Child Educational Experiences and Matrix Reasoning Scores

C.5 Unstandardized Regression Coefficientsa from Regression Models Examining Associations Between Child Educational Experiences and Externalizing Behavior Problems

C.6 Unstandardized Regression Coefficientsa from Regression Models Examining Associations Between Child Educational Experiences and Internalizing Behavior Problems

C.7 Unstandardized Regression Coefficientsa from Regression Models Examining Associations Between Child Educational Experiences and Attention Problems

C.8 Unstandardized Regression Coefficientsa from Regression Models Examining Associations Between Child Educational Experiences and Cumulative Success

C.9 Unstandardized Regression Coefficientsa from Regression Models Examining Associations Between Child Educational Experiences and Family Involvement in School

C.10 Unstandardized Regression Coefficientsa from Subgroup Regression Models Examining Associations Between Child Educational Experiences and PPVT Scores

C.11 Unstandardized Regression Coefficientsa from Subgroup Regression Models Examining Associations Between Child Educational Experiences and ECLS-K Reading Scores

C.12 Unstandardized Regression Coefficientsa from Subgroup Regression Models Examining Associations Between Child Educational Experiences and ECLS-K Math Scores

C.13 Unstandardized Regression Coefficientsa from Subgroup Regression Models Examining Associations Between Child Educational Experiences and Matrix Reasoning Scores

C.14 Unstandardized Regression Coefficientsa from Subgroup Regression Models Examining Associations Between Child Educational Experiences and CBCL Externalizing Behavior Problems

C.15 Unstandardized Regression Coefficientsa from Subgroup Regression Models Examining Associations Between Child Educational Experiences and ECLS-K Reading Scores

C.16 Unstandardized Regression Coefficientsa from Subgroup Regression Models Examining Associations Between Child Educational Experiences and ECLS-K Reading Scores

C.17 Unstandardized Regression Coefficientsa from Subgroup Regression Models Examining Associations Between Child Educational Experiences and ECLS-K Reading Scores

C.18 Unstandardized Regression Coefficientsa from Subgroup Regression Models Examining Associations Between Child Educational Experiences and ECLS-K Reading Scores

Table C.1 Unstandardized Regression Coefficients[a] from Regression Models Examining Associations Between Child Educational Experiences and PPVT Scores

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Early Head Start	.166	.147	.217	.211	.262	.248
	(.680)	(.681)	(.683)	(.678)	(.677)	(.678)
Formal program age 3 and 4		.352	.579	.484	.503	.486
		(.766)	(.783)	(.777)	(.775)	(.776)
Ever Head Start			-.976	-.782	-.855	-.849
			(.771)	(.767)	(.764)	(.764)
Characteristics of Grade 5 School						
Percentage free/reduced-price lunch				-.074***	-.049**	-.049**
				(.016)	(.019)	(.019)
Percentage minority						
25-75 (reference)						
< 25					2.205*	2.135+
					(1.094)	(1.111)
>75					-2.014+	-2.023+
					(1.106)	(1.106)
School size						-.001
						(.002)

Source: Parent interview at ages 3 and 5, CCD, and PSS.

[a]Standard errors in parentheses.

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

Table C.2 Unstandardized Regression Coefficients[a] from Regression Models Examining Associations Between Child Educational Experiences and ECLS-K Reading Scores

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Early Head Start	1.145	1.114	1.116	1.100	1.158	1.264
	(1.282)	(1.284)	(1.288)	(1.283)	(1.282)	(1.283)
Formal program age 3 and 4		.619	.674	.524	.546	.701
		(1.441)	(1.474)	(1.466)	(1.464)	(1.466)
Ever Head Start			-.056	.223	.132	.074
			(1.450)	(1.445)	(1.443)	(1.441)
Characteristics of Grade 5 School						
Percentage free/reduced-price lunch				-.112***	-.089*	-.083*
				(.030)	(.036)	(.036)
Percentage minority						
25-75 (reference)						
< 25					2.406	2.951
					(2.074)	(2.105)
>75					-2.297	-2.223
					(2.107)	(2.105)
School size						.005
						(.004)

Source: Parent interview at ages 3 and 5, CCD, and PSS.

[a]Standard errors in parentheses.

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

Table C.3 Unstandardized Regression Coefficients[a] from Regression Models Examining Associations Between Child Educational Experiences and ECLS-K Math Scores

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Early Head Start	-.277	-.288	-.283	-.283	-.287	-.278
	(.215)	(.216)	(.217)	(.216)	(.217)	(.217)
Formal program age 3 and 4		.207	.222	.205	.207	.223
		(.242)	(.248)	(.247)	(.247)	(.248)
Ever Head Start			-.063	-.031	-.032	-.039
			(.244)	(.244)	(.244)	(.244)
Characteristics of Grade 5 School						
Percentage free/reduced-price lunch				-.013**	-.017**	-.016**
				(.005)	(.006)	(.006)
Percentage minority						
25-75 (reference)						
< 25					-.225	-.174
					(.351)	(.357)
>75					.276	.286
					(.355)	(.355)
School size						.001
						(.001)

Source: Parent interview at ages 3 and 5, CCD, and PSS.

[a]Standard errors in parentheses.

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

Table C.4 Unstandardized Regression Coefficients[a] from Regression Models Examining Associations Between Child Educational Experiences and Matrix Reasoning Scores

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Early Head Start	.080	.075	.086	.084	.074	.077
	(.158)	(.159)	(.159)	(.158)	(.158)	(.159)
Formal program age 3 and 4		.097	.134	.113	.115	.125
		(.179)	(.184)	(.183)	(.182)	(.183)
Ever Head Start			-.160	-.120	-.119	-.123
			(.181)	(.180)	(.180)	(.180)
Characteristics of Grade 5 School						
Percentage free/reduced-price lunch				-.015***	-.017***	-.017***
				(.004)	(.004)	(.004)
Percentage minority						
25-75 (reference)						
< 25					-.333	-.322
					(.255)	(.259)
>75					-.025	-.017
					(.259)	(.258)
School size						.000
						(.000)

Source: Parent interview at ages 3 and 5, CCD, and PSS.

[a]Standard errors in parentheses.

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

Table C.5 Unstandardized Regression Coefficients[a] from Regression Models Examining Associations Between Child Educational Experiences and Externalizing Behavior Problems

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Early Head Start	-.382	-.435	-.467	-.471	-.483	-.500
	(.372)	(.372)	(.373)	(.373)	(.372)	(.373)
Formal program age 3 and 4		.922*	.828+	.847*	.852*	.837*
		(.417)	(.426)	(.426)	(.425)	(.426)
Ever Head Start			.485	.444	.481	.486
			(.422)	(.421)	(.421)	(.421)
Characteristics of Grade 5 School						
Percentage free/reduced-price lunch				.020*	.005	.005
				(.009)	(.010)	(.010)
Percentage minority						
25-75 (reference)						
< 25					-.607	-.691
					(.585)	(.595)
>75					1.386*	1.375*
					(.611)	(.610)
School size						-.001
						(.001)

Source: Parent interview at ages 3 and 5, CCD, and PSS.

[a]Standard errors in parentheses.

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

Table C.6 Unstandardized Regression Coefficients[a] from Regression Models Examining Associations Between Child Educational Experiences and Internalizing Behavior Problems

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Early Head Start	-.233	-.272	-.307	-.307	-.290	-.295
	(.278)	(.278)	(.279)	(.279)	(.279)	(.279)
Formal program age 3 and 4		.684*	.574+	.571+	.575+	.571+
		(.315)	(.321)	(.322)	(.321)	(.322)
Ever Head Start			.539+	.550+	.537+	.538+
			(.317)	(.318)	(.317)	(.318)
Characteristics of Grade 5 School						
Percentage free/reduced-price lunch				-.004	-.006	-.006
				(.006)	(.008)	(.008)
Percentage minority						
25-75 (reference)						
< 25					.462	.436
					(.437)	(.444)
>75					.644	.638
					(.455)	(.455)
School size						.000
						(.001)

Source: Parent interview at ages 3 and 5, CCD, and PSS.

[a]Standard errors in parentheses.

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

Table C.7 Unstandardized Regression Coefficients[a] from Regression Models Examining Associations Between Child Educational Experiences and Attention Problems

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Early Head Start	-.243	-.270	-.285	- .286	-.275	- .271
	(.179)	(.179)	(.179)	(.179)	(.179)	(.180)
Formal program age 3 and 4		.482*	.437*	.439*	.439*	.439*
		(.200)	(.205)	(.205)	(.204)	(.205)
Ever Head Start			.219	.217	.211	.211
			(.202)	(.202)	(.202)	(.202)
Characteristics of Grade 5 School						
Percentage free/reduced-price lunch				.002	.002	.002
				(.004)	(.005)	(.005)
Percentage minority						
25-75 (reference)						
< 25					.297	.318
					(.283)	(.287)
>75					.225	.232
					(.295)	(.294)
School size						.000
						(.000)

Source: Parent interview at ages 3 and 5, CCD, and PSS.

[a]Standard errors in parentheses.

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

Table C.8 Unstandardized Regression Coefficients[a] from Regression Models Examining Associations Between Child Educational Experiences and Cumulative Success

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Early Head Start	-.040	-.041	-.032	-.033	-.036	-.036
	(.061)	(.061)	(.061)	(.061)	(.061)	(.061)
Formal program age 3 and 4		.033	.059	.051	.052	.053
		(.068)	(.070)	(.070)	(.070)	(.070)
Ever Head Start			-.123+	-.109	-.112	-.113
			(.069)	(.069)	(.069)	(.069)
Characteristics of Grade 5 School						
Percentage free/reduced-price lunch				-.005***	-.004*	-.004*
				(.001)	(.002)	(.002)
Percentage minority						
25-75 (reference)						
< 25					-.070	-.071
					(.098)	(.100)
>75					-.121	-.120
					(.099)	(.099)
School size						.000
						(.000)

Source: Parent interview at ages 3 and 5, CCD, and PSS.

[a]Standard errors in parentheses.

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

Table C.9 Unstandardized Regression Coefficients[a] from Regression Models Examining Associations Between Child Educational Experiences and Family Involvement in School

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Early Head Start	.142	.129	.111	.110	.133	.146
	(.322)	(.322)	(.323)	(.323)	(.323)	(.324)
Formal program age 3 and 4		.235	.186	.193	.188	.205
		(.360)	(.368)	(.367)	(.367)	(.368)
Ever Head Start			.262	.244	.219	.212
			(.362)	(.362)	(.363)	(.363)
Characteristics of Grade 5 School						
Percentage free/reduced-price lunch				.008	.011	.011
				(.007)	(.009)	(.009)
Percentage minority						
25-75 (reference)						
< 25					.708	.775
					(.509)	(.518)
>75					-.082	-.070
					(.526)	(.526)
School size						.001
						(.001)

Source: Parent interview at ages 3 and 5, CCD, and PSS.

[a]Standard errors in parentheses.

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

Table C.10 Unstandardized Regression Coefficients[a] from Subgroup Regression Models Examining Associations Between Child Educational Experiences and PPVT Scores

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
White						
Early Head Start	.585	.574	.632	.593	.684	.727
	(1.120)	(1.121)	(1.126)	(1.124)	(1.131)	(1.129)
Formal program		.345	.508	.487	.478	.535
		(1.223)	(1.2520)	(1.250)	(1.254)	(1.251)
Ever Head Start			-.639	-.550	-.543	-.546
			(1.230)	(1.228)	(1.236)	(1.232)
Percentage free/reduced-price lunch				-.039	-.033	-.028
				(.024)	(.026)	(.026)
Percentage white						
25-75 (reference)						
< 25					-.920	-1.056
					(2.965)	(2.960)
>75					.831	1.519
					(1.401)	(1.459)
School size						.005+
						(.003)
African American						
Early Head Start	-.230	-.229	-.325	-.170	-.186	-.215
	(1.093)	(1.094)	(1.101)	(1.090)	(1.086)	(1.089)
Formal program		-.204	-.148	-.431	-.375	-.431
		(1.265)	(1.283)	(1.270)	(1.265)	(1.274)
Ever Head Start			.944	.983	1.019	1.015
			(1.238)	(1.222)	(1.222)	(1.222)
Percentage free/reduced-price lunch				-.092***	-.076*	-.077*
				(.028)	(.033)	(.033)
Percentage African American						
25-75 (reference)						
< 25					1.365	1.347
					(1.626)	(1.628)
>75					-1.557	-1.655
					(1.521)	(1.540)
School size						-.001
						(.003)
Hispanic						
Early Head Start	.699	.574	.641	.638	.508	.305
	(1.552)	(1.564)	(1.565)	(1.545)	(1.530)	(1.550)
Formal program		1.198	1.401	1.116	.826	.813
		(1.885)	(1.907)	(1.887)	(1.863)	(1.860)
Ever Head Start			-1.274	-.598	-.730	-.785
			(1.772)	(1.766)	(1.743)	(1.744)
Percentage free/reduced-price lunch				-.110**	-.114*	-.121*
				(.037)	(.049)	(.049)
Percentage Hispanic						
25-75 (reference)						
< 25					-5.301+	-5.347+
					(2.879)	(2.866)
>75					-4.821*	-4.335+
					(2.222)	(2.287)
School size						-.004
						(.005)

[a]Standard errors in parentheses.

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

Table C.11 Unstandardized Regression Coefficients[a] from Subgroup Regression Models Examining Associations Between Child Educational Experiences and ECLS-K Reading Scores

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
White						
Early Head Start	2.064	2.073	2.124	1.966	2.200	2.310
	(2.151)	(2.152)	(2.163)	(2.153)	(2.164)	(2.154)
Formal program		-.286	-.064	-.103	-.279	.026
		(2.392)	(2.453)	(2.441)	(2.448)	(2.444)
Ever Head Start			-.594	-.365	-.162	-.245
			(2.394)	(2.385)	(2.396)	(2.390)
Percentage free/reduced-price lunch				-.114*	-.087+	-.070
				(.046)	(.050)	(.050)
Percentage White						
25-75 (reference)						
< 25					-7.575	-8.016
					(5.706)	(5.682)
>75					.801	2.734
					(2.764)	(2.776)
School size						.014
						(.006)*
African American						
Early Head Start	.880	.891	.580	.843	.800	.961
	(2.175)	(2.176)	(2.183)	(2.170)	(2.158)	(2.162)
Formal program		-.396	-.961	-1.407	-1.336	-1.039
		(2.445)	(2.476)	(2.360)	(2.441)	(2.457)
Ever Head Start			3.464	3.544	3.445	3.434
			(2.384)	(2.360)	(2.349)	(2.345)
Percentage free/reduced-price lunch				-.151**	-.138*	-.133*
				(.056)	(.066)	(.066)
Percentage African American						
25-75 (reference)						
< 25					-1.259	-1.203
					(3.255)	(3.255)
>75					-6.023*	-5.526+
					(3.023)	(3.058)
School size						.006
						(.006)
Hispanic						
Early Head Start	-1.341	-1.475	-1.283	-1.283	-1.345	-1.676
	(2.687)	(2.702)	(2.705)	(2.704)	(2.687)	(2.714)
Formal program		1.471	1.978	1.849	1.137	1.036
		(3.248)	(3.282)	(3.287)	(3.267)	(3.266)
Ever Head Start			-3.108	-2.846	-2.991	-3.146
			(3.067)	(3.092)	(3.073)	(3.073)
Percentage free/reduced-price lunch				-.038	-.048	-.055
				(.066)	(.088)	(.089)
Percentage Hispanic						
25-75 (reference)						
< 25					-6.795	-6.746
					(5.161)	(5.138)
>75					-7.955*	-7.175+
					(3.983)	(4.104)
School size						-.007
						(.008)

[a]Standard errors in parentheses.

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

Table C.12 Unstandardized Regression Coefficients[a] from Subgroup Regression Models Examining Associations Between Child Educational Experiences and ECLS-K Math Scores

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
White						
Early Head Start	.234	.229	.278	.268	.220	.230
	(.365)	(.365)	(.367)	(.366)	(.368)	(.367)
Formal program		.200	.313	.312	.279	.321
		(.401)	(.411)	(.411)	(.411)	(.411)
Ever Head Start			-.532	-.510	-.490	-.500
			(.405)	(.405)	(.407)	(.407)
Percentage free/reduced-price lunch				-.011	-.014	-.012
				(.008)	(.009)	(.009)
Percentage White						
25-75 (reference)						
< 25					.010	-.028
					(.969)	(.968)
>75					-.618	-.419
					(.456)	(.476)
School size						.001
						(.001)
African American						
Early Head Start	-.349	-.364	-.410	-.388	-.394	-.418
	(.364)	(.364)	(.365)	(.365)	(.364)	(.364)
Formal program		.392	.314	.301	.311	.275
		(.414)	(.419)	(.419)	(.416)	(.418)
Ever Head Start			.520	.523	.494	.494
			(.402)	(.401)	(.400)	(.400)
Percentage free/reduced-price lunch				-.012	-.011	-.012
				(.009)	(.011)	(.011)
Percentage African American						
25-75 (reference)						
< 25					-.514	-.525
					(.546)	(.546)
>75					-.910+	-.981+
					(.508)	(.514)
School size						-.001
						(.001)
Hispanic						
Early Head Start	-1.137**	-1.152**	-1.139**	-1.139**	-1.154**	-1.143**
	(.402)	(.435)	(.436)	(.435)	(.435)	(.440)
Formal program		.165	.193	.166	.126	.129
		(.525)	(.531)	(.531)	(.531)	(.531)
Ever Head Start			-.201	-.147	-.150	-.151
			(.494)	(.498)	(.497)	(.498)
Percentage free/reduced-price lunch				-.010	-.013	-.012
				(.010)	(.014)	(.014)
Percentage Hispanic						
25-75 (reference)						
< 25					-.725	-.717
					(.829)	(.826)
>75					-.554	-.576
					(.640)	(.660)
School size						.000
						(.001)

[a]Standard errors in parentheses.

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

Table C.13 Unstandardized Regression Coefficients[a] from Subgroup Regression Models Examining Associations Between Child Educational Experiences and Matrix Reasoning Scores

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
White						
Early Head Start	.504+	.509+	.533*	.532*	.470+	.478+
	(.265)	(.265)	(.266)	(.266)	(.267)	(.266)
Formal program		-.164	-.072	-.083	-.104	-.074
		(.293)	(.299)	(.299)	(.299)	(.299)
Ever Head Start			-.366	-.348	-.346	-.353
			(.295)	(.295)	(.295)	(.295)
Percentage free/reduced-price lunch				-.009	-.014*	-.013*
				(.006)	(.006)	(.006)
Percentage White						
25-75 (reference)						
< 25					.523	.508
					(.698)	(.697)
>75					-.594+	-.436
					(.327)	(.341)
School size						.001+
						(.001)
African American						
Early Head Start	-.187	-.194	-.205	-.161	-.169	-.174
	(.268)	(.268)	(.270)	(.267)	(.266)	(.267)
Formal program		.192	.175	.092	.108	.097
		(.309)	(.314)	(.311)	(.310)	(.312)
Ever Head Start			.114	.127	.137	.137
			(.304)	(.300)	(.300)	(.300)
Percentage free/reduced-price lunch				-.024***	-.018*	-.018*
				(.007)	(.008)	(.008)
Percentage African American						
25-75 (reference)						
< 25					.401	.399
					(.396)	(.397)
>75					-.485	-.501
					(.370)	(.374)
School size						.000
						(.001)
Hispanic						
Early Head Start	-.381	-.417	-.406	-.407	-.439	-.504
	(.343)	(.345)	(.346)	(.345)	(.344)	(.348)
Formal program		.372	.413	.383	.340	.329
		(.418)	(.423)	(.422)	(.422)	(.420)
Ever Head Start			-.212	-.143	-.158	-.165
			(.395)	(.396)	(.396)	(.395)
Percentage free/reduced-price lunch				-.013	-.018	-.021+
				(.008)	(.011)	(.012)
Percentage Hispanic						
25-75 (reference)						
< 25					-1.032	-1.072
					(.656)	(.652)
>75					-.345	-.176
					(.505)	(.520)
School size						-.001
						(.001)

[a]Standard errors in parentheses.

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

Table C.14 Unstandardized Regression Coefficients[a] from Subgroup Regression Models Examining Associations Between Child Educational Experiences and CBCL Externalizing Behavior Problems

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
White						
Early Head Start	-1.090	-1.123+	-1.116	-1.091	-1.252+	-1.269+
	(.678)	(.678)	(.681)	(.681)	(.681)	(.680)
Formal program		.989	.986	.972	.997	.940
		(.729)	(.749)	(.748)	(.747)	(.748)
Ever Head Start			-.061	-.099	-.085	-.066
			(.745)	(.745)	(.746)	(.746)
Percentage free/reduced-price lunch				.020	.003	.002
				(.015)	(.016)	(.016)
Percentage White						
25-75 (reference)						
< 25					3.598*	3.622*
					(1.779)	(1.779)
>75					-1.206	-1.447+
					(.818)	(.857)
School size						-.002
						(.002)
African American						
Early Head Start	-1.079+	-1.073+	-1.039+	-1.087+	-1.102+	-1.126+
	(.621)	(.622)	(.624)	(.623)	(.621)	(.623)
Formal program		-.142	-.043	.040	.055	.075
		(.719)	(.726)	(.726)	(.724)	(.730)
Ever Head Start			-.457	-.459	-.345	-.345
			(.705)	(.702)	(.703)	(.702)
Percentage free/reduced-price lunch				.029+	.038*	.038*
				(.016)	(.019)	(.019)
Percentage African American						
25-75 (reference)						
< 25					1.648+	1.648+
					(.908)	(.909)
>75					.656	.597
					(.849)	(.858)
School size						-.001
						(.002)
Hispanic						
Early Head Start	.075	-.056	-.183	-.192	-.160	-.225
	(.675)	(.674)	(.668)	(.667)	(.668)	(.673)
Formal program		1.592*	1.257	1.298	1.276	1.264
		(.796)	(.796)	(.795)	(.797)	(.797)
Ever Head Start			2.124**	2.037**	2.015**	1.995**
			(.742)	(.744)	(.745)	(.746)
Percentage free/reduced-price lunch				.019	.028	.025
				(.016)	(.021)	(.021)
Percentage Hispanic						
25-75 (reference)						
< 25					.561	.506
					(1.258)	(1.254)
>75					-.264	-.108
					(.971)	(1.003)
School size						-.001
						(.002)

[a]Standard errors in parentheses.

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

Table C.15 Unstandardized Regression Coefficients[a] from Subgroup Regression Models Examining Associations Between Child Educational Experiences and Internalizing Behavior Problems

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
White						
Early Head Start	-.497	-.519	-.519	-.523	-.511	-.520
	(.507)	(.507)	(.510)	(.510)	(.513)	(.513)
Formal program		.679	.662	.664	.645	.608
		(.556)	(.571)	(.571)	(.573)	(.574)
Ever Head Start			.010	.017	.032	.044
			(.564)	(.565)	(.569)	(.569)
Percentage free/reduced-price lunch				-.002	.000	-.001
				(.011)	(.012)	(.012)
Percentage White						
25-75 (reference)						
< 25					-.064	-.051
					(1.331)	(1.332)
>75					.144	.011
					(.612)	(.641)
School size						-.001
						(.001)
African American						
Early Head Start	-.269	-.298	-.337	-.343	-.340	-.372
	(.425)	(.425)	(.426)	(.427)	(.427)	(.428)
Formal program		.619	.555	.580	.595	.523
		(.498)	(.503)	(.505)	(.504)	(.509)
Ever Head Start			.489	.486	.526	.537
			(.489)	(.489)	(.490)	(.490)
Percentage free/reduced-price lunch				.004	.004	.004
				(.011)	(.013)	(.013)
Percentage African American						
25-75 (reference)						
< 25					.280	.279
					(.625)	(.625)
>75					.546	.459
					(.585)	(.591)
School size						-.001
						(.001)
Hispanic						
Early Head Start	-.163	-.213	-.240	-.239	-.264	-.305
	(.575)	(.577)	(.578)	(.578)	(.580)	(.584)
Formal program		.603	.548	.533	.559	.562
		(.688)	(.695)	(.696)	(.699)	(.698)
Ever Head Start			.442	.471	.501	.506
			(.647)	(.651)	(.652)	(.653)
Percentage free/reduced-price lunch				-.002	-.010	-.013
				(.014)	(.018)	(.018)
Percentage Hispanic						
25-75 (reference)						
< 25					-.375	-.440
					(1.090)	(1.086)
>75					.437	.576
					(.841)	(.869)
School size						-.001
						(.002)

[a]Standard errors in parentheses.

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

Table C.16 Unstandardized Regression Coefficients[a] from Subgroup Regression Models Examining Associations Between Child Educational Experiences and Attention Problems

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
White						
Early Head Start	-.290	-.307	-.333	-.335	-.334	-.316
	(.326)	(.325)	(.327)	(.327)	(.329)	(.328)
Formal program		.516	.441	.442	.430	.448
		(.352)	(.361)	(.361)	(.362)	(.361)
Ever Head Start			.278	.281	.294	.284
			(.358)	(.358)	(.360)	(.359)
Percentage free/reduced-price lunch				-.002	-.002	.000
				(.007)	(.007)	(.008)
Percentage White						
25-75 (reference)						
< 25					.014	-.028
					(.861)	(.859)
>75					.047	.272
					(.395)	(.414)
School size						.002+
						(.001)
African American						
Early Head Start	-.389	-.395	-.390	-.401	-.408	-.412
	(.278)	(.279)	(.280)	(.280)	(.279)	(.280)
Formal program		.116	.135	.142	.148	.136
		(.317)	(.320)	(.321)	(.320)	(.323)
Ever Head Start			-.063	-.063	-.028	-.026
			(.311)	(.311)	(.310)	(.310)
Percentage free/reduced-price lunch				.006	.012	.011
				(.007)	(.008)	(.008)
Percentage African American						
25-75 (reference)						
< 25					.741+	.741+
					(.409)	(.410)
>75					.205	.196
					(.383)	(.387)
School size						.000
						(.001)
Hispanic						
Early Head Start	-.101	-.185	.220	-.221	-.199	-.207
	(.354)	(.352)	(.352)	(.352)	(.352)	(.355)
Formal program		1.064*	.972*	.973*	.925*	.924*
		(.421)	(.425)	(.425)	(.426)	(.426)
Ever Head Start			.598	.595	.546	.568
			(.396)	(.399)	(.398)	(.399)
Percentage free/reduced-price lunch				.002	.010	.009
				(.008)	(.011)	(.011)
Percentage Hispanic						
25-75 (reference)						
< 25					.007	-.017
					(.666)	(.664)
>75					-.663	-.619
					(.514)	(.531)
School size						.000
						(.001)

[a]Standard errors in parentheses.

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

Table C.17 Unstandardized Regression Coefficients[a] from Subgroup Regression Models Examining Associations Between Child Educational Experiences and Cumulative Success

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
White						
Early Head Start	.003	.009	.022	.015	.008	.012
	(.113)	(.113)	(.113)	(.113)	(.113)	(.113)
Formal program		-.194	-.165	-.168	-.163	-.151
		(.123)	(.126)	(.125)	(.126)	(.126)
Ever Head Start			-.132	-.124	-.137	-.141
			(.125)	(.124)	(.125)	(.124)
Percentage free/reduced-price lunch				-.006*	-.006*	-.006*
				(.002)	(.003)	(.003)
Percentage White						
25-75 (reference)						
< 25					.279	.261
					(.295)	(.295)
>75					-.019	.055
					(.138)	(.145)
School size						.000
						(.000)
African American						
Early Head Start	-.072	-.075	-.075	-.065	-.069	-.075
	(.097)	(.097)	(.098)	(.097)	(.097)	(.097)
Formal program		.126	.128	.107	.114	.096
		(.109)	(.111)	(.111)	(.110)	(.111)
Ever Head Start			-.007	-.003	-.012	-.010
			(.108)	(.107)	(.107)	(.107)
Percentage free/reduced-price lunch				-.005*	-.004	-.004
				(.002)	(.003)	(.003)
Percentage African American						
25-75 (reference)						
< 25					-.112	-.115
					(.145)	(.145)
>75					-.293*	-.309*
					(.135)	(.137)
School size						.000
						(.000)
Hispanic						
Early Head Start	.014	-.007	-.005	-.006	-.025	-.049
	(.111)	(.112)	(.112)	(.112)	(.111)	(.112)
Formal program		.220+	.226+	.218	.197	.192
		(.134)	(.135)	(.135)	(.134)	(.134)
Ever Head Start			-.036	-.019	-.026	-.031
			(.127)	(.128)	(.127)	(.126)
Percentage free/reduced-price lunch				-.003	-.005	-.006+
				(.003)	(.004)	(.004)
Percentage Hispanic						
25-75 (reference)						
< 25					-.458*	-.457*
					(.208)	(.207)
>75					-.179	-.123
					(.161)	(.165)
School size						.000
						(.000)

[a]Standard errors in parentheses.

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

Table C.18 Unstandardized Regression Coefficients[a] from Subgroup Regression Models Examining Associations Between Child Educational Experiences and Family Involvement in School

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
White						
Early Head Start	-.247	-.215	-.242	-.223	-.133	-.117
	(.534)	(.533)	(.536)	(.536)	(.537)	(.537)
Formal program		-.958+	-1.014+	-1.020+	-.947	-.912
		(.579)	(.595)	(.594)	(.595)	(.596)
Ever Head Start			.269	.247	.117	.104
			(.593)	(.593)	(.596)	(.596)
Percentage free/reduced-price lunch				.012	.018	.019
				(.011)	(.012)	(.012)
Percentage White						
25-75 (reference)						
< 25					.616	.594
					(1.380)	(1.380)
>75					1.183+	1.391*
					(.645)	(.680)
School size						.001
						(.001)
African American						
Early Head Start	1.216*	1.146*	1.068+	1.066+	1.069+	1.036+
	(.548)	(.546)	(.546)	(.547)	(.547)	(.548)
Formal program		1.473*	1.337*	1.303*	1.291*	1.235*
		(.609)	(.614)	(.617)	(.615)	(.621)
Ever Head Start			.955	.960	.951	.959
			(.591)	(.592)	(.592)	(.592)
Percentage free/reduced-price lunch				.002	-.003	-.004
				(.014)	(.016)	(.016)
Percentage African American						
25-75 (reference)						
< 25					-.611	-.620
					(.793)	(.794)
>75					-.550	-.626
					(.742)	(.750)
School size						-.001
						(.001)
Hispanic						
Early Head Start	-1.141	-1.117	-1.103	-1.107	-1.115	-.970
	(.716)	(.719)	(.721)	(.721)	(.723)	(.726)
Formal program		-.292	-.240	-.221	-.267	-.244
		(.854)	(.864)	(.865)	(.868)	(.866)
Ever Head Start			-.247	-.285	-.264	-.181
			(.805)	(.810)	(.811)	(.811)
Percentage free/reduced-price lunch				.007	.000	.007
				(.017)	(.023)	(.023)
Percentage Hispanic						
25-75 (reference)						
< 25					-.395	-.256
					(1.371)	(1.362)
>75					-.086	-.556
					(1.059)	(1.091)
School size						.003
						(.002)

[a]Standard errors in parentheses.

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

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