National Impact Evaluation of the Comprehensive Child Development Program

Executive Summary

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PREFACE AND ACKNOWLEDGMENTS

This document is the executive summary of the final report from the National Impact Evaluation of the Comprehensive Child Development Program (CCDP). The "impact" evaluation was confined to an assessment of the effects of CCDP on participating parents, children, and families in 21 of the "Cohort 1" CCDP projects. A separate "process" evaluation provides an assessment of the implementation and costs of CCDP projects, and the services offered to and received by participants.

Two earlier reports about the first cohort of CCDP projects, *Comprehensive Child Development Program—A National Family Support Demonstration: First Annual Report* and *Comprehensive Child Development Program—A National Family Support Demonstration: Interim Report to Congress*, were released by the Administration on Children, Youth, and Families (ACYF) in December 1991 and in May 1994, respectively. The 1991 report was descriptive in nature, focusing on the characteristics of CCDP, of individual projects, and of program participants. The 1994 report to Congress described the implementation of CCDP and its short-term effects on participating families about two years after enrollment in the program.

The current evaluation has been completed, and the data base from the study has been documented and delivered to ACYF for use by the research community. The data base includes copies of all questionnaires and data collection measures used in the evaluation. In addition, Abt Associates Inc. is conducting an evaluation of the second cohort of CCDP grantees. This related study, for which Abt Associates is conducting both a process study and an impact evaluation, was funded in 1993 and is due to be completed in 1998.

The CCDP impact evaluation was a large, long-term study which required the ongoing assistance of CCDP projects across the country. We offer our thanks to all of the CCDP Project Directors and their staff who cooperated with the evaluation.

The impact evaluation benefitted from the input of many individuals. Technical Advisory Panel members and other key consultants included Lawrence Aber from the National Center for Children in Poverty, Kathryn Barnard from the University of Washington, Thomas Cook from Northwestern University, Nicholas Ialongo from the Johns Hopkins University, Anthony Mannarino from the Western Psychiatric Institute, Miriam Martinez from the Family Mosaic Project in San Francisco, Vonnie McLoyd from the University of Michigan, David Olds from the University of Rochester, Harold Richman from the University of Chicago, Aline Sayer from Pennsylvania State University, Neal Schmitt from Michigan State University, and Judith Singer from Harvard University. Two CCDP Project Directors served as representatives on the panel: Sebastian Striefel from the University of Utah, and Loretta Alexander of Project Family in College Station, Arkansas.

Staff of the Department of Health and Human Services were responsible for providing technical input and for oversight of the evaluation. As Project Officers for the National

Impact Evaluation being conducted by Abt Associates Inc., Michael Lopez (and earlier, Soledad Sambrano) oversaw all planning, implementation, and reporting activities for the evaluation. Trellis Waxler (and earlier, Mary Bogle and Allen Smith) was Project Officer for CCDP's Management Support Contract, which was conducted by CSR, Incorporated, and oversaw all activities related to the implementation and management of the CCDP projects.

Finally, several staff members at Abt Associates Inc. played important roles in the project. Key staff at Abt included Robert St.Pierre, Ian Beckford, Lawrence Bernstein, Maureen Cook, Gabriela Garcia, Lynne Geitz, Barbara Goodson, Maria Guevara, Mary Ann Hartnett, Jean Layzer, Marc Moss, Cristofer Price, Michael Puma, Anne Ricciuti, Christine Saia, Michael Vaden-Kiernan, and Kathryn Vargish. Abt Associates also employed staff members located in regional offices and in each CCDP site who were responsible for data collection from parents and children.

EXECUTIVE SUMMARY

The Comprehensive Child Development Program (CCDP) was an innovative attempt by the Administration on Children, Youth, and Families (ACYF) to ensure the delivery of early and comprehensive services with the aim of enhancing child development and helping low-income families to achieve economic self-sufficiency. This executive summary reports on the extent to which CCDP met these goals in 21 projects across the country.

THE CCDP MODEL

The CCDP demonstration was administered by ACYF within the U.S. Department of Health and Human Services. CCDP grantees included universities, hospitals, public and private non-profit organizations, and school districts. The original Comprehensive Child Development Act of 1988 authorized the establishment of a set of programs to operate for five years at an authorization level of $25 million per year. Twenty-two CCDP projects were funded in fiscal year 1989 and two additional projects were funded in fiscal year 1990. Of these 24 projects, 21 participated in the impact evaluation conducted by Abt Associates Inc.

A key assumption underlying the design of CCDP was that all low-income families have a complicated set of needs, and that CCDP ought to be designed to ensure that all of those needs are met. In particular, each local CCDP grantee was to:

- intervene as early as possible in children's lives;
- involve the entire family;
- ensure the delivery of comprehensive social services to address the intellectual, social-emotional, and physical needs of infants and young children in the household;
- ensure the delivery of services to enhance parents' ability to contribute to the overall development of their children and achieve economic and social self-sufficiency; and
- ensure continuous services until children enter elementary school at the kindergarten or first grade level.

> The design of CCDP relied heavily on an approach in which a case manager was responsible for coordinating the service needs of a group of families.

Since many services are available within local communities, CCDP projects were designed to build on these existing services instead of creating a wholly new set of services. However, CCDP projects were supposed to create new services when necessary to meet the needs of families or to ensure provision of high-quality services. To accomplish this goal, CCDP relied heavily on an approach in which a case manager was responsible for coordinating the service needs of a group of CCDP families. Case managers provided some services directly (e.g.,

counseling, life skills training) while, at the same time, organizing the provision of other services through individual referrals and brokered arrangements.

DESIGN OF THE CCDP DEMONSTRATION

The CCDP demonstration was designed to provide a fair and unbiased test of the effectiveness of the CCDP model. Grants were made through a competitive process which emphasized selection of the most qualified bidders, with the strongest staff, and the best track record of providing comprehensive services.

To the extent possible in a federal context, ACYF did its best to implement a centrally-run, closely monitored program where variation among projects was minimized to provide a strong test of a single, coherent model. Federal staff negotiated with prospective grantees at the proposal stage to ensure that each potential project's model met ACYF's standards and specifications.

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Once in operation, the activities of each CCDP project were governed by a clear set of federal compliance standards which were enforced through a series of monitoring mechanisms that were implemented by ACYF and its technical assistance contractor (CSR, Incorporated). Some of the monitoring mechanisms included analysis of data from a Management Information System (MIS), production of quarterly compliance reports which provided information on the degree to which each grantee met requirements in 15 compliance areas, monthly telephone contacts to provide technical assistance, three-day grantee meetings held three times a year in Washington, DC, and annual site visits by staff from ACYF and CSR, Incorporated. In this way, ACYF located control over program implementation at the federal level, and provided strong centralized management, a clear vision of the model desired by the government, and detailed programmatic regulations and guidance.

DESIGN OF THE IMPACT EVALUATION

The legislation which created CCDP called for an evaluation of the impact of the funded projects. Given this charge, ACYF devised a two-pronged evaluation strategy. Under one contract, CSR, Incorporated was given the responsibility of providing programmatic training and technical assistance in implementing projects to the CCDP grantees, designing and implementing an MIS, and designing and implementing a process evaluation—to help understand who participated in CCDP, what services were offered, how each project was implemented, and the costs of CCDP. Under a second contract, Abt Associates Inc. was given responsibility for designing and implementing an independent evaluation of the impacts

of the CCDP projects—to find out what difference participation in CCDP made in the lives of children and their parents.

Although the grantees were selected competitively, rather than randomly, the presumption is that the CCDP projects implemented by this group of grantees are reasonably representative of the kinds of projects that would be implemented under a broader program of CCDP grants. This is a reasonable assumption—the CCDP projects were implemented in urban and rural areas, in many different states, under many different auspices, and serving many different populations. Though the findings of the impact evaluation cannot be generalized to any larger population on a strict statistical basis, consumers of this research can feel safe in the knowledge that the demonstration projects provided a test of CCDP under a wide set of conditions that adequately reflect the types of settings in which CCDP projects might be implemented if the program were expanded.

The impact evaluation was conducted in 21 of the original 24 CCDP projects.[1] Grantees in urban areas were asked to recruit 360 eligible families at the start of the program (120 to participate in the program, 120 for the control group, and 120 for the replacement group), while grantees in rural areas were asked to recruit 180 families (60 for each of the three groups). Across the 21 projects, 4,410 families were included in the evaluation—2,213 families were assigned to CCDP and another 2,197 families were assigned to the control group. CCDP families could not be "forced" to take part in the program, and an analysis of participation patterns shows that there were some program families that participated for a very brief period (i.e., six months or less), others that participated for a moderate amount of time (i.e., two or three years), and still other families that participated in CCDP for five full years.

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To provide Congress and other policy makers with information in a timely fashion, the CCDP impact evaluation was put in place as early as possible in the life of the program. All of the 21 CCDP grantees included in the impact evaluation received funding for the first year of a five-year grant in the fall of 1989. The impact evaluation was funded in the spring of 1990, families were recruited by CCDP projects during 1990 and were randomly assigned to CCDP or to the control group, projects began to deliver services during 1990, and data collection for the impact evaluation started in the fall of 1991. An intensive data collection

Data were collected annually over a five-year period on more than 100 different outcome measures for participating mothers and children. High response rates were obtained by well-trained data collection staff, who lived in each of the 21 sites.

1 One project was not able to randomly assign families, a second project was not able to maintain appropriate records on recruited families, and a third project joined CCDP a year late and hence was not included in the impact evaluation.

took place annually over a five-year period on more than 100 different outcome measures for mothers and "focus" children, while lesser amounts of data were obtained from fathers, and about children born subsequent to the focus child. High response rates were obtained by well-trained data collection staff, who lived in each of the 21 sites. The study was well-designed and well-executed, and there is little doubt that the findings from the evaluation accurately reflect the true impacts of CCDP on families and children.

SUMMARY OF SAMPLE CHARACTERISTICS

The data presented below represent baseline measures on families as of 1990, the year during which most of the recruiting for the CCDP evaluation took place. The analyses are based on data from families that were part of the analytic sample in the CCDP impact evaluation.

- **Race/Ethnicity**: Forty-three percent of the children in the sample are African-American, 26 percent are Hispanic, 26 percent are white, 3 percent are American Indian, and 1 percent are Asian/Pacific Islander.
- **First Language**: Eighty-four percent of the children in the sample use English as their primary language, 14 percent use Spanish, and 2 percent use some other primary language.
- **Teenage Mothers**: More than one-third (35 percent) of the mothers in the sample were teenagers (under age 18) when they first gave birth.
- **Education Level**: More than half (51 percent) of the mothers in the sample had not graduated from high school when recruited into CCDP.
- **Household Income**: Forty-four percent of households in the sample had a total income under $5,000 and 85 percent had a total income under $10,000 at the time of recruitment.

PROGRAM IMPACTS AND COSTS

Changes Occurred in the Lives of Both CCDP Families and Control Group Families. We measured many changes over time in the lives of CCDP families. Examples of these changes were increases in children's vocabulary and achievement scores, in the percentage of mothers in the labor force, and in mother's average income. On the other hand, we saw decreases over time in the percentage of families relying on AFDC and Food Stamps, and in the percentage of mothers who were depressed. We saw similar patterns of positive change on many other variables. These patterns are consistent with the findings reported in local evaluations

conducted by many of the CCDP grantees, and if we analyzed data only on families who participated in CCDP we might have concluded that the program had worked quite well.

> Changes were observed in the lives of CCDP families (e.g., increases in children's achievement scores, in the percentage of mothers in the labor force, and in average household income). However, exactly the same changes observed in CCDP families occurred in control group families.

However, this would have been a mistaken conclusion, because analyses of data collected on control group families showed that ***exactly the same changes observed in CCDP families occurred in control group families***[2]. Vocabulary and achievement scores increased for children in the control group, just as they did for children in CCDP. Also, mothers in the control group found employment and earned more money, the percentage of control group families receiving AFDC and Food Stamps decreased, and fewer control group mothers were depressed. This pattern of findings tells us that in a five-year study, control group families cannot be assumed to be static or unchanging. Rather, children in the control group progress through developmental stages, and their mothers continue their education and find jobs. In general, these changes are not as large or as positive as the normal changes that occur for children and mothers from higher-income families (for example, CCDP and control group children do not gain as much on the PPVT or K-ABC as children in the norms groups for those measures), but still, the lives of low-income families do change over time, and generally in a positive direction.

These findings point out the need for a randomly assigned control group. Data collected only on CCDP families would have given the misleading impression that the observed improvements in the lives of low-income families were attributable to participation in the program. When we see that the same types of improvements happen for control group families, we realize that we are observing normal changes in the lives of families—changes that cannot be attributed to CCDP.

CCDP Did Not Produce Any Important Positive Effects on Participating Families. We compared outcomes for CCDP families with outcomes for control group families over a five-year period and reached the following conclusions:

2 CCDP's developers hoped that the time and energy devoted to coordinating existing services would eventually lead to community-level improvements in service delivery systems. If community-level changes did happen, the services received by control group families might have been improved, diminishing the observed effects of CCDP on families in the program. However, changing community service systems takes a substantial amount of time, so that even if long-term improvements in the community service mix did result from CCDP, these changes could not have had an effect on the services received by control group families within the time-frame of this evaluation.

- Five years after the program began, **CCDP had no statistically significant impacts on the economic self-sufficiency of participating mothers, nor on their parenting skills**. Mothers in the control group performed as well on these measures as CCDP mothers.

- Five years after the program began, **CCDP had no meaningful impacts on the cognitive or social-emotional development of participating children**. Children in the control group performed as well on these measures as children in CCDP. Nor did CCDP have any impacts on children's health or on birth outcomes for children born subsequent to the focus children.

- **CCDP had no important differential effects on subgroups of participants** (e.g., teenage mothers vs. older mothers, mothers who entered CCDP with a high school diploma vs. mothers who entered without a high school diploma, mothers living with a partner vs. mothers living without a partner, male vs. female children). There was a scattering of differential impacts for some subgroups on some outcomes, but there was no systematic pattern which would allow us to conclude that CCDP worked better for some subsets of participants than for others.

Thus, when the data were analyzed across all of the CCDP projects, we see a very convincing and consistent pattern—on average, CCDP did not make a measurable difference in the lives of program participants. Early data from the CCDP process study (ACYF, 1994) showed that two years into the program, there were high levels of service participation on the part of CCDP families. A complementary finding based on early data from the impact evaluation (ACYF, 1994) showed that CCDP families received significantly higher levels of some services than control group families, although many control group families found and participated in a wide range of services without the benefit of CCDP.[3] Subsequent data from the CCDP process study (CSR, Incorporated, 1997) showed that CCDP families continued to participate at high levels in many different types of services. Thus, CCDP clearly was successful at organizing and delivering services to families. However, the evidence presented in this evaluation shows that the services did not have the intended impacts on mothers and their children.

One CCDP Project Had Important Positive Effects. The main focus of the impact evaluation was to assess the overall effectiveness of CCDP, measured across multiple

3 For example, CCDP mothers were more likely than control group mothers to receive a range of services from a case manager, to participate in academic or vocational classes, and to participate in parenting education classes; and CCDP children were more likely than control group children to participate in child care programs.

projects. What is most desired in the assessment of social programs is the ability to demonstrate a model which is robust, which works in a variety of locations, under different circumstances, with different populations. It is of lesser interest to show that a program or model works only in a few special sites. Of course, there is an understandably keen interest in whether and how CCDP's effects vary on a project-by-project basis, especially in light of the fact that this evaluation has shown no significant overall program-level effects.

> One of the 21 sites in the study had statistically significant and moderately large positive effects in several different outcome domains: children's cognitive development; families' employment, income, and use of federal benefits; and parenting attitudes.

We examined the effectiveness of CCDP in each of the sites that participated in the evaluation. Because there were no overall effects of CCDP, it is no surprise that almost all of the CCDP projects had no positive effect on more than 30 different outcome variables. However, one site, identified in this report as Site #2, had statistically significant and moderately large positive effects in several different outcome domains: children's cognitive development; families' employment, income, and use of federal benefits; and parenting attitudes.

In terms of child cognitive development, Site #2's effect on the PPVT was 9.4 points, equal to an effect size of 0.63 standard deviation units (a moderately large effect), and Site #2's effect on the K-ABC was 3.9 points, an effect size of 0.26 standard deviation units (a small but non-trivial effect). With respect to income and employment, Site #2 increased by 22 percentage points the average amount of time that either the mother or partner in the household was employed (from 47 percent in the control group to 69 percent in CCDP), decreased by 20 percentage points the number of mothers who were on AFDC at the end of the study (from 65 percent in the control group to 46 percent in CCDP), and decreased by 19 percentage points the average amount of time that families received food stamps (from 74 percent in the control group to 55 percent in CCDP). Finally, Site #2 families had higher annual household incomes than control group families—$17,029 vs. $13,407, respectively. All of these differences represent moderately large effects.

With respect to parenting, CCDP in Site #2 had positive effects on two of four scales of the Adult-Adolescent Parenting Inventory (AAPI) that are indicative of abusive parental behaviors. CCDP parents scored higher on the scale measuring parents' empathetic awareness of their child's needs (raw score difference of 1.6 points, equal to 0.37 standard deviations), and higher on the scale measuring the appropriateness of parents' expectations for their child (raw score difference of 1.3 points, equal to 0.35 standard deviations). The AAPI defines cutoff scores for each of its four scales. Parents scoring below the cut off are deemed "at risk" for abusive behavior toward their children. In Site #2, 67 percent of the CCDP parents were not at risk of abusive behavior on any of the four AAPI subscales, compared with 46 percent of the control group parents. These are small to medium-sized effects, but given the difficulty that most interventions have in changing parent behaviors, the positive effects in Site #2 are worth noting.

It is one thing to identify an effective site. It is quite another to explain why this site was effective when other sites, sharing many of the same characteristics, were not effective. There are several possible explanations as to why CCDP in Site #2 was more effective than in other sites. The population served was somewhat less at risk than the population served in many (but not all) other sites; the site is located in a state that provides a relatively high level of support to low-income families, and benefits from the combination of being a small city in a rural area where program families were not seen as being "inferior" to or qualitatively "different" from program staff; with a school district as the grantee, the site had a clear focus on children and their education; the site had a particularly strong project director and senior staff, all of whom stayed with the project for many years; and finally, site staff appear to have done an especially good job of collaborating with local agencies, attributable in part to support for these activities at the state level and from the project's executive director. None of these factors can be singled out as "the reason" why CCDP was more effective in Site #2 than in other sites. The circumstances and context of Site #2 were probably unique, and certainly acted in concert to produce the positive effects documented in this report.

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Length of Enrollment in CCDP Did Not Make an Important Difference to Outcomes. One assumption made by CCDP's developers was that it would require multiple years (from birth until entry to school) to ensure that children would be ready for school and that parents would become economically self-sufficient. The length of time that a family was enrolled in CCDP is a crude but basic measure of a family's overall level of participation in the program.

Analyses were conducted to compare CCDP's impacts using the full sample of CCDP families, as well as the subset of CCDP families that participated for three or more years, and the subset that participated for four or more years. The results of these analyses lead us to conclude that the length of time that a family was enrolled in CCDP was sometimes associated with a statistically significant difference in the outcomes achieved by that family, but those differences were not educationally or substantively meaningful.

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Amount of Center-Based Care Made a Small Difference to Outcomes. A common research question for studies of programs which provide educational, social, and health services is "Did families that received more intensive services have better outcomes?" Hence, we examined the role played by center-based care in mediating child development outcomes.

First, we found that CCDP children received many different types of early childhood education and care. At the same time, families in the control group used many of the same set of care options for their children. While we know little about the quality of the care provided to children in this evaluation, we did find that CCDP children received more center-based care than did control group children--42.8 vs. 25.3 hours per month between birth and age 5.

As expected in light of the absence of an overall CCDP impact on children, there was no consistent relationship between CCDP's impact on amount of center-based care and CCDP's impact on several different child outcomes. We found that CCDP's impact on achievement test scores increased as CCDP's impact on number of hours per month of center-based care increased. While statistically significant, this relationship was not strong enough to be educationally important.

> The cost of CCDP services averaged $15,768 per family per year; a total of about $47,000 for each family in the evaluation given the average length of participation in CCDP of more than three years.

CCDP's is a Costly Intervention. By any yardstick, CCDP is an expensive program. Data from CCDP's process evaluation (CSR, Incorporated, 1997) show that the total cost of CCDP averaged $15,768 per family per year (excluding the costs of participating in mandated research and evaluation activities), or about $47,000 for each family in the evaluation, given an average length of participation of more than 3 years. CCDP projects spent an average of 43 percent of their personnel costs on "direct intervention services" (80 percent of direct intervention service monies were spent on case management) and 57 percent on "program support services".

As a way to judge the magnitude of these costs, consider the per family per year costs of a few related programs: Head Start ($4,500 per family per year; ACYF, 1995), the Infant Health and Development Program ($10,000 per family per year; Ramey, 1994), the Even Start Family Literacy Program ($2,700 per family per year; St.Pierre, et al., 1995), Avance Family Support and Education Program ($1,600 per family per year; Johnson & Walker, 1991), David Olds' Nurse Home Visiting Program in Elmira, NY ($2,300 per family per year; Olds, et al., 1993), Child Survival/Fair Start ($1,600 to $2,800 per family per year; Larner, et al., 1992), and New Chance ($8,300 per family per year; Quint, et al., 1994).

Cost comparisons are difficult to make because the dollars allocated to social programs are often used to buy very different sets of services, and these examples are not intended to provide an exhaustive comparison of the costs incurred by similar social and educational programs. Rather, the point of this brief comparison is to point out that the comprehensive nature of the services provided by CCDP make the annual cost per family relatively high when compared with other social programs that have similar aims.

Can We Expect to Find Future Positive Effects and Associated Cost Savings? An obvious question that arises is "Might we find positive effects on CCDP children or mothers at some future time?" This question arises because some evaluations have found that the most

important benefits of early childhood programs did not become apparent until many years after the program had been completed and children had been followed into the public schools and beyond (most notably, the Perry Preschool Study (Schweinhart, Barnes & Weikart, 1993). Several reviews supporting the contention that long-term effects of early childhood programs exist have appeared in the recent literature (e.g., Yoshikawa, 1995; Barnett, 1995). However, these studies were following children who had participated in intensive early childhood programs and ***who had first derived large short-term cognitive benefits*** from those programs. Further, Yoshikawa (1995) suggests that the most impressive long-term effects are associated with programs that demonstrated short-term effects both on childrens' cognitive development and on mothers' parenting skills and behaviors.

Neither of these short-term outcomes (improved short-term cognitive benefits for children or improved parenting behaviors for mothers) were found for CCDP children and their mothers. CCDP's early childhood experiences were not intensive, coming first in the form of weekly one-hour in-home parenting education programs when children were under 3 years of age, and moving to Head Start or other center-based or home-based child development programs for children 3 to 5 years of age. CCDP children received an average of 28 hours per month of center-based care from birth to age 3, and 45 hours per month from 3 to 5 years of age. This is substantially less than the 80 to 180 hours per month received by children in high-intensity programs such as the IHDP. Given the lack of an intensive early childhood program and the lack of short-term or medium-term effects in CCDP, there is no reason to hypothesize long-term positive effects for children who participated in CCDP.

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But what about the possibility of long-term effects on mothers? There is scant research in this area, and we know of no literature pointing to the existence of long-term effects of anti-poverty programs on mothers, similar to those found for children who participated in intensive early childhood programs.

If long-term effects of CCDP exist at all, there is reason to think that they would become evident for children born subsequent to the focus child. CCDP's approach of providing child development through parenting training was unlikely to have a major impact on focus children since most of them were born prior to the beginning of parenting training, and focus children had to pass through many important developmental stages before parenting skills had a chance of improving. Children born after the parenting training was provided had a better chance of benefitting from any improved parenting skills. Unfortunately for this line of reasoning, this evaluation showed no improvements in the parenting skills of CCDP mothers.

WHY WERE THERE NO PROGRAM IMPACTS?

This is a disappointing set of findings—a consistent pattern which calls for an explanation. In this section we hope to provide a better understanding as to why CCDP had no effects.

> Relative to other demonstration projects and other federal programs, there is little question that the CCDP model was well-defined at the federal level, clearly communicated to local grantees in a variety of settings, and closely monitored. This is the first step in constructing a strong demonstration program.

Perhaps the Program Was Poorly-Defined. Past studies of social programs have found that sometimes a program was so ill-defined that staff at the local level had no idea of what to implement or how to implement it. This was not the case for CCDP. Rather, ***the CCDP program was clearly and carefully defined by ACYF*** so that it could be understood and implemented locally. ACYF provided a detailed definition of the program, strong centralized management and oversight, and associated programmatic regulations and guidance. Program details were fully spelled out in written compliance standards that were clearly communicated to all local grantees. A management information system was put in place by CSR, Incorporated to help monitor service provision and to identify technical assistance needs. Monthly telephone calls were made to local projects and ongoing oversight and technical assistance were provided by CSR, Incorporated, grantee meetings were held three times a year to facilitate the exchange of information and to discuss compliance issues, quarterly progress reports were prepared by each local project, and annual site visits to each project were conducted by ACYF and CSR, Incorporated to assess compliance and provide technical assistance.

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> There is compelling evidence that CCDP projects were well-implemented by local grantees.

Perhaps the Program Was Poorly-Implemented. Given a well-defined program, it still is possible that local grantees were unable or unwilling to do a high-quality job of implementing the program. Past evaluations have shown that some programs failed due to poor implementation. Could this have been the reason for CCDP's lack of effects? Not at all. Instead, there is compelling evidence that ***CCDP projects were well-implemented by local grantees***. As reported by ACYF (1994) and CSR, Incorporated (1997), CCDP served the families that it was intended to serve, coordinated the efforts of thousands of service agencies nationwide, and delivered a wide range of services to a high proportion of participating families. CCDP intended to provide up to five years of

continuous service to low-income families, and families recruited for the CCDP demonstration and evaluation participated for an average of more than three years. Compared with other demonstration programs, which often have annual dropout rates of 50 percent or more, CCDP was relatively successful in retaining substantial numbers of families from a traditionally difficult-to-serve section of the population.

> The CCDP grantees showed that it was possible for a wide variety of local agencies to work with the federal government to put a complicated program in place in many locations around the country.

The CCDP local grantees deserve credit for successfully implementing a very difficult demonstration project. The grantees showed that it was possible for a wide variety of local agencies to work with the federal government to put a complicated program in place in many locations around the country. Of course, the implementation of CCDP was not perfect, and there were initial start-up difficulties as well as site-to-site variation in the timing and quality of program implementation. But given the high degree of technical assistance and monitoring that was provided to local CCDP grantees by the federal government, CCDP's implementation in this demonstration was far better and more standardized than would be expected if the CCDP model were to be implemented widely, without any special mechanisms for ensuring the fidelity of each project to the model defined by ACYF. Put another way, the implementation of CCDP in this demonstration project is as good as can be expected in any large-scale demonstration of a comprehensive intervention program.

Perhaps the Theory and Assumptions Underlying CCDP Were Faulty. The above findings—good program definition at the federal level, and strong implementation by local grantees, followed by the finding that, on average, the program has made very little difference in the lives of participating families—call into question the theory and assumptions underlying the program. We cannot account for the lack of program impacts by pointing to faulty program definition—the federal government provided clear and careful specifications for how to implement the CCDP model. We cannot say that the program was poorly implemented—the process study (CSR, Incorporated, 1997) shows that local grantees did a good job of adhering to the government's compliance standards and of delivering the planned services to participating families. We cannot say that families did not participate long enough for effects to become evident or that all of the "success story families" left early—the average family participated for more than three years which is much longer than families participate in almost any other social intervention (even though program services were available for up to five years). We cannot account for the lack of impacts by saying that the evaluation was poorly designed or poorly implemented. The research design was strong, the measurement battery was broad, and response rates were high.

Having ruled out these hypotheses for a lack of effects, we must rethink the basics of the program design—the theory and assumptions underlying the CCDP model. Let us address some of the questions raised by this disappointing pattern of findings.

> CCDP built on services that already existed in each community. It is possible that these local services were of poor quality, so that CCDP arranged for the delivery of services that were ineffective.

Were Services of Sufficiently High Quality? CCDP was developed under the assumptions that most of the services needed by low-income families already existed in most communities and that these services were of sufficiently high quality to address the needs of low-income families. It is possible that these assumptions are incorrect and that the problem lies with the services provided through CCDP—perhaps local services were of poor quality, or maybe they were not the services needed by participating families, or maybe they were not sufficiently intensive. If this was the case, then CCDP may have been very good at delivering services that were nonetheless ineffective. While the process study (CSR, Incorporated, 1997) does not include information about the quality of services provided through CCDP, it does present data on the extent to which parents reported that services allowed them to meet the goals that they and CCDP staff set for themselves. Although many different goals were set by CCDP families, only a small percentage of parents reported that they actually attained those goals (e.g., 37 percent reported that they obtained adequate housing, 11 percent reported that they increased their parenting skills, 24 percent reported that they obtained health care, 13 percent reported that they obtained social support, 17 percent reported that they furthered their education, 14 percent reported that their children had enhanced cognitive and social development, and so on; CSR, Incorporated, 1997, Exhibits 3-28, 3-29). This suggests that the great majority of participating parents did not think that CCDP helped them achieve the goals they set at the beginning of the program.

> None of the services may have been provided on a sufficiently intensive basis to be effective.

Were Services Too Diluted to be Effective? One of the findings that is emerging from studies of child development and family literacy programs with some degree of consistency is that the best way to achieve positive effects is to provide intensive services directly to the individuals that you hope to affect (Yoshikawa, 1995; Ramey & Ramey, 1992). CCDP did not take this approach. Rather, CCDP funds were used to provide a wide variety of services to all family members, and the approach was broad-brush rather than intensive in nature. The idea of "comprehensive services" as implemented in CCDP meant that a great number of services were provided, but none of the services may have been provided with sufficient intensity to be effective.

> There is little research evidence that CCDP's focus on parenting education (instead of direct service to children) was the best way to improve child outcomes.

Did CCDP Rely Too Heavily on Indirect Effects? One of CCDP's key assumptions is that the best way to improve child outcomes is to focus on improving parents' ability to parent their children, rather than providing an educational intervention directed at the child. Our findings raise the possibility that CCDP relied too heavily on the "indirect effects" method of

producing impacts on children. During the first three years of the program, until children reached Head Start age, CCDP's main child development efforts were focused on teaching parents to understand child development and interact appropriately with their children, in the hope that parenting skills would be improved with a resulting enhancement in child development.

Recent literature on the ability of parenting education to affect child development (Ramey & Ramey, 1992; Barnett, 1995; Wasik, et al., 1990) casts doubt on the efficacy of this approach. At the same time, there is substantial research evidence that the best way to achieve large effects on children is to provide intensive services directly to children over an extended period of time (Ramey & Ramey, 1992). This research does not dismiss the importance of the parent's role in child development. In fact, there is widespread agreement that competent parenting is related to positive child development. However, research provides few answers to several key questions related to the potential effectiveness of parenting education: Which aspects of parenting are both (1) important to child development and (2) amenable to timely change? At what point in the parent's life is a parenting intervention most likely to be effective? What parenting education strategies are likely to be most effective?

Could Families Obtain Services Without CCDP? CCDP's developers assumed that low-income families were unable to access existing services efficiently without assistance—perhaps because the service delivery systems in most communities are too complicated, or perhaps because mothers simply do not understand that they are entitled to certain services. CCDP also assumed that once services were identified, they needed to be coordinated. That is, it is not sufficient to inform low-income families about the existence of services. Rather, it was assumed that a case manager was needed to coordinate and ensure service delivery.

> While CCDP was successful at increasing the use of some services by participating families, many control group families were able to obtain services on their own.

Evidence from this evaluation partly refutes this assumption. The evaluation's interim report (ACYF, 1994) showed that during the first two years of the program, control group families were able to access many of the same basic services as CCDP families. Typically, a larger percentage of CCDP families than control group families reported that they received any given service, but in many cases the differences were not large, certainly not as large as we might expect for a program that spent more than $15,000 per family per year to ensure that services were delivered. For example, equal percentages of CCDP and control group families visited a doctor for checkups, received acute medical care, and received dental services.

Early in this evaluation (i.e., about two years into the program) , more CCDP mothers than control group mothers participated in parenting classes (34 percent vs. 11 percent), academic classes (38 percent vs. 26 percent), and vocational classes (18 percent vs. 13 percent), and more worked toward a GED (12 percent vs. 8 percent), an associate's degree (7 percent vs. 3 percent), or a bachelor's degree (6 percent vs. 3 percent). CCDP children were more likely than control group children to participate in work-related child care (66 percent vs. 53

percent), to use formal child care (36 percent vs. 16 percent), and to use nonwork-related child care (25 percent vs. 13 percent). The point is that while these differences were statistically significant, indicating that CCDP was successful at increasing the use of some services by participating families, many control group families were able to obtain services on their own. The resulting impact on the amount of services received by CCDP families may not have been large enough to result in important differences on outcome measures.

These data raise questions about the necessity of the case management structure that was provided through CCDP. If the same percentage of control group families as CCDP families received health services, and roughly half as many control group families as CCDP families received educational services (across all of the educational variables listed above), then either the case management model was not particularly effective at ensuring that services were delivered, or the assumption that low-income families have difficulties accessing services may be ill-founded.

Perhaps the Case Management Model is an Ineffective Approach. The CCDP demonstration and associated evaluation provided a fair test of an important model for combating the deleterious effects of poverty on families with young children. It is the largest test of the currently popular model of case management combined with integrated service provision. A few other examples of this approach are described below, along with associated evaluation findings.

> This evaluation, as well as other high-quality studies, provides no evidence that the case management approach is effective in enhancing outcomes for parents or children.

At the federal level, the Even Start Family Literacy Program provides three main programmatic components: early childhood programs for children, and parenting training and adult education for parents. Although it offers fewer services over a shorter period of time and is substantially less intensive and expensive than CCDP, Even Start projects do have staff acting in the role of case manager (family worker, family advocate, etc.) and are mandated to use local existing services to avoid duplication of effort. A national evaluation (St.Pierre, et al., 1995) found that program participants changed over time (children's test scores increased, mothers became less depressed, etc.) but there were few positive program effects when program participants were compared with children and mothers in a randomly assigned control group (the major positive effect was that Even Start adults were more likely than control group adults to obtain a GED).

The case management model has been tried in other fields. For example, the Fort Bragg Child and Adolescent Mental Health Demonstration, funded by the U.S. Army, was an $80 million program which delivered mental health and substance abuse services using a coordinated case management approach to involve various service agencies. An evaluation of this program (Bickman, 1996) reached many of the same conclusions as the current study—the demonstration had a systematic and comprehensive approach to planning treatments, more parental involvement, strong case management, more individualized services, fewer treatment

dropouts, a greater range of service, enhanced continuity of care, more services in less restrictive environments, and a better match between services and needs. In the face of these positive implementation findings, no positive effects were found on a wide range of child-level outcome measures. Comparison group children who participated in a less expensive, fragmented system of care, without case management, did as well clinically as children in the demonstration. This pattern of findings—good implementation of an integrated case management service delivery system, followed by no effects on program participants—has been seen in other recent studies of child and adolescent mental health services (e.g., Burns, et al., in press; Cauce, et al., 1995; Huz, et al., 1995).

CONCLUSIONS

The CCDP demonstration was a success. At the start, nobody knew whether providing intensive case management was the best way to help low-income families. The demonstration and evaluation were developed to answer this question. Everyone involved in the demonstration and evaluation should be regarded as having an investment in helping low-income families, but not as people who are tied to any particular solution (this was one of Donald Campbell's (1971) most important messages in his seminal article on the "experimenting society"). Instead of being advocates for a particular program, we need to be advocates for solving the problem. Instead of advocating in the absence of research evidence, we need to be intellectually curious about finding the best approaches.

There is no question that this six-year effort provided a fair test of this key policy alternative. It has produced important findings—findings showing that the case management approach does not lead to improved outcomes for parents or children. This is an important piece of information in the fight against poverty.

So was CCDP a waste of money? Of course not. As a demonstration program, CCDP was a respectable and respectful use of public funds, and it accomplished exactly what it was designed to do—find out whether an important approach to serving low-income families works. The fact that the answer is "no" does not diminish the utility of the demonstration or the fine efforts of everyone involved.

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Final Report

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CHAPTER 1

LEGISLATIVE MANDATE, PROGRAMMATIC THEORY, AND APPROACH TO THE EVALUATION

The Comprehensive Child Development Program (CCDP) was an innovative attempt by the Administration on Children, Youth and Families (ACYF) to ensure the delivery of early and comprehensive services with the aim of enhancing child development and supporting families in attaining economic self-sufficiency. This chapter describes the legislative mandate for CCDP, lists and discusses the assumptions underlying the program's design, and describes the way in which we approached the evaluation of CCDP.

CCDP'S LEGISLATIVE MANDATE

CCDP was conceived as a way to address the increasingly long list of difficult problems that threaten the long-term welfare and life success of children in low-income families. The program was designed to "target services on infants and young children from families who have incomes below the poverty line and who, because of environmental, health, or other factors, need intensive and comprehensive supportive services to enhance their development" (Public Law 100-297, Part E, Sec. 2502). Consequently, the goals of CCDP were to enhance the physical, social, emotional, and intellectual development of children in low-income families; provide support to their parents and other family members; and assist families in becoming economically self-sufficient.

Rather than duplicating locally-available services, CCDP projects were designed to build upon existing service delivery networks. CCDP relied heavily on an approach in which case managers provided some services directly (e.g., counseling, life skills training) while, at the same time, organizing the provision of other services through individual referrals and/or brokered arrangements with local provider agencies. For young children, the core services that were to be provided included early childhood education; health screening, treatment and referral; immunizations; early intervention services for children with, or at-risk for, developmental delay; nutritional services; and child care services that were required to meet state licensing requirements. For parents and other household members, services were to include prenatal care; education in infant and child development, health care, nutrition and parenting education; referral to education, employment counseling, and vocational training as appropriate; and assistance in securing adequate income support, health care, nutritional assistance, and housing.

CCDP was administered by the Administration on Children, Youth and Families within the U.S. Department of Health and Human Services (DHHS). CCDP grantees include universities, hospitals, public and private non-profit organizations, and school districts. The original Comprehensive Child Development Act of 1988 authorized the establishment of a set of comprehensive service delivery programs to operate for five years (fiscal years 1989-93) at an authorization level of $25 million per year. Twenty-two CCDP projects were funded in fiscal year 1989 and two additional projects were funded in fiscal year 1990. The Human Services

Reauthorization Act of 1990 (the Augustus Hawkins Act) authorized the CCDP for an additional year, through fiscal year 1994, and raised the level of annual funding to $50 million to provide for quality improvements in the existing projects and to allow for the funding of a new set of projects. A second set of 10 CCDP projects were funded by ACYF in fiscal year 1992 (eight projects) and fiscal year 1993 (two projects).

CCDP'S THEORETICAL BASIS

The design of CCDP rests on a series of theoretical assumptions about human development, about the possibility of intervening in development, and about the most effective strategies for intervention. While CCDP projects provided services to the entire family, the ultimate focus of the program was to improve the development of children. Hence, the following discussion is framed in terms of assumptions about CCDP and its effects on children.

ASSUMPTIONS ABOUT EARLY CHILDHOOD DEVELOPMENT

CCDP shares with other early childhood intervention programs assumptions about child and family development and the ways in which poverty can compromise or threaten optimal development. These assumptions are based largely on research in psychology and sociology that has been conducted over the past 25 years.

ASSUMPTION: Child development is a complex, dynamic process, influenced by multiple factors that interact as parts of a larger ecosystem. Focusing on the child as part of a larger unit has increasingly been recognized in the theoretical approaches proposed by psychologists and sociologists in their efforts to understand human development. Bronfenbrenner (1979) argues for consideration of the "context" or "ecology" of human development. He proposes four influences on an individual's development: the immediate setting (e.g., home, school, job), the interrelations among major settings containing the individual, formal and informal social structures (e.g., media, neighborhoods), and the ideological patterns of the culture and subcultures of the setting in which the individual functions. Efforts to understand or to intervene in the course of child development must address the larger context of this development if they are to succeed.

Ramey & Ramey (1990) developed a multi-level model of early childhood development that shows how the cognitive and social development of children are influenced by: (1) contextual variables, including the biological, social, cultural, and economic contexts of the child and caregivers; (2) the current biological, social, cultural, and economic status of the child and caregivers; and (3) transactions between the child and caregivers and among family members. The model indicates that the process of development is iterative in that the experiences that all of these factors produce for the child have implications for subsequent development.

There are many other such models, all pointing out the dynamic nature of child development. The important point for CCDP is that there is widespread agreement in the research community about the importance of viewing child development as part of a larger system.

ASSUMPTION: A child's early experiences are critically important for healthy development. This is one of the most basic assumptions underlying CCDP. However, the appropriate nature of those early experiences has been debated for almost 200 years. In the 1820s, American reformers organized infant schools modeled on the experiences of British educators which suggested that a child's early experiences were important determinants of later development (Brown, 1828). However, Brigham (1833) prepared an influential publication in which he warned that "...in attempting to call forth and cultivate the intellectual faculties of children before they are six or seven years of age, serious and lasting injury has been done to both the body and the mind." Brigham's work led to the eventual demise of the American infant school movement and by the end of the 19th century, few young children were enrolled in school (Winterer, 1992).

In the more recent past, psychologists have promoted the idea of that "critical periods" exist in the development of each child (Bowlby, 1973). These are periods, for example, in which the child makes or fails to make an attachment bond with the mother, or during which the foundations for language development are laid. Recent research on brain development provides detailed evidence about the critical importance of the first years of life. First, brain development before age one is rapid and extensive (Johnson, 1994; Chugani, 1993). While brain cell formation is complete before birth, the months immediately after birth and up to the age of two are a period of fine-tuning, and sensory inputs during this period are critical to the formation of the child's perceptual-cognitive patterns. Individual areas of the brain have their own pattern of and timetable for development. The critical period for the development of vision, for example, is from birth to eight months; for language, from birth to 10 years; for math and logic, birth to four years.

There is increasing evidence that brain development is vulnerable to environmental influence after birth, as well as in utero. A good deal of research has focused on the effects of deficiencies in, or inappropriate additions to the fetal environment. Inadequate nutrition before birth and the lack of some specific nutrients can interfere with brain development; foreign substances or organisms introduced into the system can have devastating developmental effects. The debilitating effects of thalidomide or of rubella contracted by the mother in the first trimester of pregnancy, have long been understood. In utero exposure to alcohol also has serious and lasting effects on development (Connor, 1994). However, only recently have we begun to understand the physiological mechanisms through which these deficiencies or additions cause serious damage.

Other research has shown that the child's early experience has a direct effect on brain development. Early studies of children raised in institutions in which their mobility was restricted and which provided little stimulation showed serious delays in psychomotor growth. (Shatz, 1992). Animal studies have provided a clearer picture of how growth is delayed or negatively affected. Animals raised in conditions of deprivation show differences in brain structure and function compared with animals raised in more complex environments (National Health/Education Consortium, 1991).

Some more recent research has examined the effects of social experience on brain development, suggesting that early stress has a negative and lasting impact. In addition to affecting subsequent language development, the state of hyperarousal produced by traumatic experiences can, in time, become a maladaptive trait (Perry, et al., 1995).

While there is some evidence that the brain is able to compensate somewhat for delays in its development, the external environment is influential in determining the extent of this plasticity. In a study of preterm infants at risk for cognitive delays, those with responsive caregivers had nearly normal IQ scores at seven years of age; those without such a supportive environment had lower scores (Zuckerman, 1991). Similarly, infants who experienced perinatal stress had better outcomes when they lived in stable families; poor outcomes were related to the combination of perinatal stress and family instability.

ASSUMPTION: Poverty adversely affects children's early childhood development through multiple mechanisms and threatens their chances for success in life. A substantial body of research supports the position that poverty is detrimental to early childhood development. Poverty influences children's development directly, through the deprivation of necessary resources (e.g., prenatal and perinatal nutrition, well-baby care, or shelter) or the addition of harmful substances, such as the lead in peeling paint in deteriorating housing (Environmental Defense Fund, 1990). In addition, the stresses that poverty places on families and the effects of poverty on homes and communities are indirect threats to the child's development.

The effects of poverty often are observed early in life. Children in low-income families are at higher risk for late, inadequate prenatal care and low birth weight, and are more likely to die at birth or in infancy (OTA, 1988). Those who survive infancy are more likely to become ill, to be sicker, and to die at higher rates than children from higher-income families (Starfield, 1991). Children in poverty have higher rates of asthma and dental disease, and are more vulnerable to measles and other preventable illnesses; they are less likely to see a pediatrician on a regular basis, to receive dental care and immunizations, and to live in a safe home environment that optimally nurtures their development (Garbarino, 1990; Rosenbaum, 1992; Gelles, 1992). They tend to exhibit more behavioral and developmental problems and are more likely to perform poorly once in school (Dryfoos, 1987). In the later school years, children in poverty are disproportionately likely to repeat grades, have frequent absences (Ravitch & Finn, 1987), fail to complete high school, and lack basic literacy and numeracy skills (Gardner, 1990; Puma, et al., 1993).

These and other effects of poverty often reflect combinations of biological risk factors, environmental conditions, and social conditions. For example, the explosion in asthma rates among children from low-income families may be attributable to environmental factors, such as the use of pesticide sprays in public housing, but the acute episodes of asthma that bring children to hospital emergency rooms are more probably attributable to social factors such as the absence of regular medical attention for the condition. While children born in poverty are at greater risk for biological risks that threaten damage to the central nervous system and consequent behavioral and emotional disorders, Sameroff & Chandler (1975) argue that these biological factors pale in comparison to the negative effects of the sub-optimal "caretaking environment," defined in terms

of both physical and psychological resources. The Kaui longitudinal studies of child development support this argument, indicating that perinatal complications alone are not consistently related to later developmental problems, but in interaction with adverse social conditions are ten times more likely to produce poor outcomes in children (Werner, 1989).

ASSUMPTIONS ABOUT INTERVENING IN CHILDREN'S DEVELOPMENT

The three basic assumptions about child development (that child development is dynamic and occurs in a multilayered context, that early experience is important, and that poverty hinders early experience) are widely accepted, supported by research evidence, and troubling in their implications. Taken together, they define the political and social challenge that has been addressed by early intervention efforts in the United States on the basis of the next assumption.

ASSUMPTION: It is possible to design an intervention program that will accomplish the long-term goal of lifting significant numbers of children out of poverty. This is hardly a new assumption. According to Vinovskis (1996), the desire to help the poor and disadvantaged urban children and their parents was a key factor in the creation of America's early 19th century infant school programs. In the 1960s, the Johnson administration's War on Poverty provided the impetus for decades of programmatic attempts to improve the lives of low-income families.

Some of the social programs currently existing in the United States choose to focus on children, providing early childhood experiences designed to improve the chances for success in later schooling (e.g., the Head Start program or the Infant Health and Development Program). Other programs work with pregnant women to improve birth outcomes, and with mothers and their newborn children, assuming that physically healthy children have a better chance of success in all aspects of life (e.g., the WIC program). Still other programs indirectly attack the problem by providing job training and education to adults (e.g., the JOBS program) in an attempt to change the economic circumstances of the child's upbringing. Whether the focus of the program is on education, vocational training, or job skills, and whether the participants are infants, young children, teenagers, or adults, the basic intention and the logical end point of the theoretical models underlying most of the social programming undertaken in the United States over the past 30 to 40 years is to improve children's life chances and help break the cycle of poverty.

Findings from studies of these intervention approaches do not support the proposition that a programmatic solution to the problems faced by children in poverty has been identified. One of the most recent and most comprehensive reviews of the effects of early childhood programs is from the Center for the Future of Children (1995). Conclusions from that volume are that child-focused programs can result in relatively large IQ gains which diminish over time (Barnett, 1995). Also, non-cognitive benefits such as reductions in the likelihood of being placed in special education or retained in grade result from many child-focused early childhood programs (Boocock, 1995). In spite of these positive short- and medium-term effects, and the longer-term benefits documented by the few studies that have measured children into their 20s (e.g., Schweinhart, et al., 1993; Boocock, 1995), there is no evidence that early childhood programs are

able to systematically move children out of poverty. Even the children who participated in the widely-hailed Perry Preschool project continued to be in poverty when they were last interviewed (Schweinhart, et al., 1993).

Welfare-to-work and manpower development programs also have been widely studied. According to Burtless (1984), "manpower programs...have not eliminated, or even substantially reduced, poverty among the working age population, but they have made a modest difference in the lives of many who have participated in them." In a recent comprehensive review, Fischer & Cordray (1995) concluded that the average effects of employment interventions for welfare participants are real but small, amounting to a three to five percentage point difference in employment and AFDC receipt. They conclude that "If the policy goal is to end poverty or welfare receipt, then the interventions...have clearly failed. If, however, the goal is to increase earnings and decrease welfare receipt, then these programs have generally succeeded."

Many possible reasons for the limited impacts of these interventions can be adduced--that the intervention came too late in the child's life, that the duration of the intervention was too short, that the focus of the intervention was too narrow, or that the services provided were only a subset of those that were needed. Ramey & Ramey (1992) derived a similar set of principles for designing effective programs for children. They propose that the most effective interventions are the ones that (1) begin earlier and last longer, (2) are more intensive and have active participants, (3) deliver services directly to children instead of hoping to achieve effects on children through parents, and (4) provide comprehensive rather than narrowly-focused services. They also posit that programs need to respond to differences among children in learning styles, and that there must be ongoing support if early effects are to be maintained.

CCDP represents the conjecture that all of these explanations may have played a part in keeping social and educational programs from being as effective as they might otherwise have been.

ASSUMPTIONS ABOUT EFFECTIVE INTERVENTION STRATEGIES

Cognizant of the successes and failures of past programmatic efforts, CCDP's designers built the program on several additional premises.

ASSUMPTION: Services will be more effective if they are broadly focused on the family as a whole, rather than just on mothers or just on children. This is, in part, a reaction to the often disappointing outcomes of programs which focus only on children or only on adults. In particular, past research has shown that high-quality early childhood programs can lead to improved cognitive development in the short-term, but that those effects diminish over time (IHDP, 1990; Consortium for Longitudinal Studies, 1983; Campbell & Ramey, 1993). Some follow-up studies have shown that there are longer-term effects of early childhood programs on children's school functioning and socialization as well as adult social functioning (Schweinhart, et al., 1993; Barnett, 1995).

In spite of these positive findings, there is no research which has indicated that an early childhood program, by itself, can make the kinds of changes necessary to move children out of poverty—to put them on an altered life trajectory. There is even more compelling research indicating that services delivered directly to parents, such as job training and educational services, are not able to lift those adults out of poverty (e.g., Fischer & Cordray, 1995). Given that services provided individually to children and to parents do not appear adequate to break the cycle of poverty, CCDP's developers made the assumption that broadening the scope of service provision to include the entire family would be a better way of accomplishing this aim.

Equally important in framing this assumption is the work of Bronfenbrenner (1979) and others, which emphasized the importance of the family as the context in which the child develops. The family systems perspective, which complements the ecological approach, views the family as an organized system composed of several interdependent relationships or subsystems (Chase-Lansdale, et al., 1992). Membership of, and roles in these subsystems (e.g., parental, sibling, spousal, extrafamilial) change over time and with different circumstances. Within a family systems perspective, individual problems or dysfunctions are seen as symptomatic of family dysfunction. Alleviating family dysfunction involves taking into account each family member as well as the behavior of the family as a unit, acknowledging the multiple causes and the dynamic nature of behavior within the family (Krauss and Jacobs, 1990). According to Vincent, et al. (1990) adoption of the basic tenets of the ecological/family systems perspectives is critical to an understanding of how best to intervene to promote optimal development.

Clinicians, too, have expanded their view of child development to include families and cultural and social factors. For example, Greenspan (1990) expands the traditional psychodynamic perspective of development to include multiple lines of development (physical, cognitive, social-emotional, and familial) in a context of family and other social factors. His comprehensive approach to clinical intervention would consider and work with parents' attitudes and feelings, family relationships, the system of available health and mental services, support services available to the family, and the home environment.

A number of recent early intervention programs share this assumption about the critical role of the family in enhancing children's growth and development, and consequently provide services to both parents and children. These interventions include the Beethoven Project, the Head Start Family Service Centers, the Even Start Family Literacy Program, and New Chance. Some are called "two-generation" programs, while others are called family support programs. These initiatives vary in terms of their comprehensiveness, structure, and the length of participation expected (Smith, 1991).

Any effort to positively affect children's development needs to recognize the extent to which the family context shapes, and is critical to, that development. Given the assumption that it is necessary to provide services to the family as a whole, the next steps to consider have to do with which services to provide, where to obtain them, and how best to deliver them. This prompts a series of related assumptions, linked by the unifying assumption that the current service delivery system in most localities is inefficient and/or ineffective.

ASSUMPTION: Low-income families have multiple needs for services. Families living in poverty face problems such as inadequate housing, lack of jobs at their skill level, unfinished education, lack of transportation, safe, reliable, and high-quality child care, and access to health care. Recent research on the backgrounds of participants in federally-funded social programs shows high correlations among these variables; although not all low-income families experience all these problems, most are struggling with several of them (Tao, et al., 1996).

ASSUMPTION: Most or all of the resources and services needed by low-income families already exist in most communities and are adequate to address the needs of low-income families. Almost every community contains a variety of health, educational and social service programs. However, the second part of the assumption—that the services are adequate to pull families out of poverty—is not supported by evidence. This part of the assumption implies that there are high-quality educational and training programs that will prepare families adequately for employment; that there are jobs available nearby, and that these will pay an adequate wage; that adequate housing is available; that there exists a supply of high-quality child care; that health care and mechanisms for paying for it exist; and that treatment facilities exist for families struggling with mental health or addiction problems.

The effectiveness of a strategy of taking advantage of locally-available resources hinges on the availability, accessability, and quality of local services—a program which is able to access high-quality local services may be more likely to have positive effects than a program which has to build on low-quality services. As one example, take the issue of intensity of services. There is a substantial literature attesting to the importance of providing intensive as opposed to low-level service amounts. Ramey & Ramey (1992) note that early childhood "programs that are more intensive, as indexed by the number of hours per day, days per week, and weeks per year, produce larger positive effects than do interventions that are less intensive." Yoshikawa (1995) reviewed the outcomes of early childhood programs on social outcomes and delinquency and concluded that effective programs had intensive individual components. Further, he suggested that the best programs were of high quality in that they had strong theoretical bases, good staff-child ratios, extensive staff training, and strong supervision. These research-based findings make it clear that a program's success is likely to be highly related to its ability to deliver intensive, high-quality services. Unless those services are available locally, the strategy of building an existing services is not likely to lead to large positive effects.

ASSUMPTION: Low-income families are unable to access many existing services without assistance because of lack of knowledge or problems in the service delivery system. CCDP did not assume the need to create new or improved social or educational services. Rather, the assumption was that the primary need was for a system which would improve access to existing services. There is broad support for the belief that the service delivery systems in most communities are fragmented and difficult for families to access, with different eligibility criteria for different programs. This is the logic underlying current sentiments to disband categorical programs in favor of more integrated and seamless approaches to social service provision. The assumption made by CCDP's designers was that the same aims can be accomplished by working

within the existing service delivery system—coordinating and streamlining existing resources and referring families to locally-available services.

ASSUMPTION: To be effective for low-income families, existing services need to be coordinated. Program developers have hypothesized that the problems of low-income families cannot be alleviated without integrated and sustained interventions (National Commission on Children, 1991). CCDP operationalized its service delivery approach by providing each family with a "case manager" (along with support from a multidisciplinary staff) who was to assess family needs, provide some direct services, and ensure that the family receives a broad and coordinated set of existing social, educational, and health services. Case management was seen as one of the keys to CCDP's success, and was one of the services which local projects were to provide directly to all CCDP families.

ASSUMPTION: The best way to improve child outcomes is to focus on improving parents' ability to parent their children, rather than providing an educational intervention directed at the child. Parenting education is an integral part of most family intervention programs, under the quite reasonable assumption that low-income parents often may be lacking in the skills needed to be a good teacher of their children. On the other hand, some early childhood program developers have extended this assumption and are operating under the expectation that parenting education is an effective method of delivering early childhood education services, at least as effective as a child-focused intervention, particularly with children in the first three years of life (e.g., the Parents as Teachers program).

Unfortunately, there is limited research to support the belief that parenting education, by itself, will produce improved child outcomes. There is evidence that parenting education can produce positive changes in parental attitudes and behaviors (Johnson & Walker, 1991; Travers, et al., 1982; St.Pierre, et al., 1995), however, there is little evidence of the hoped-for link between changes in parental attitudes and the actual development of their children. A review of 13 randomized trials of home visiting programs for low-income families with infants, which included parenting education as a major component, found mixed impacts on parental attitudes and behaviors (Olds & Kitzman, 1993). Barnett (1995) used data from 33 early childhood intervention programs to demonstrate that persistent effects on children's school performance are not attributable to program effects on parents, but rather to early, direct effects on children themselves. These studies suggest that while it is possible to use parenting education to increase maternal knowledge, to change attitudes, and possibly to change their behavior with children, parenting education will not, by itself, result in improved child outcomes. Most reviewers of the literature conclude that positive effects on children are best achieved by programs that focus directly on children, instead of trying to achieve those effects by delivering parenting education to parents (Campbell & Ramey, 1993; Yoshikawa, 1995).

The final assumption underlying the CCDP program recognizes the difficulty and complexity of effecting major and lasting change in the lives of low-income children and their families.

ASSUMPTION: Services for families will be effective if they begin as early as possible in the life of the child; it may take up to five years to achieve the program's goals. Some possible explanations for the modest effects of most social and educational programs are the general brevity of the interventions, the fact that services for children often are not provided until the child is four years of age, and the fact that families bring different levels of service need to any given intervention. Thus, we do not expect that an intervention will be able to have the same effect on all families in a given time period. Many programs operate on a school year basis (e.g., Head Start), or a semester basis (e.g., many adult education programs). Others provide treatment for a short period, knowing that the effects will be limited. Although we know of no studies which have systematically varied the length of exposure to an early childhood intervention over a multiple year period, there is some research evidence that early childhood programs which start early and which deliver services over a three-year period (e.g., the IHDP and Abecedarian projects) have been more effective in producing short-term cognitive effects than most other early childhood programs.

CCDP was designed to achieve its goals for families over the five-year period between the birth of a child and the child's entry to school. This period of treatment spans a longer period of time than almost any other social program, and certainly allows sufficient time to ensure the child's readiness for school, as well as time for parents to develop the capacity, not just to be employed, but to have jobs that pay adequate wages and provide benefits.

APPROACH TO THE EVALUATION

The CCDP impact evaluation was designed to draw conclusions about CCDP's effects on children and mothers and to make more general observations about the utility of the CCDP approach for breaking the cycle of poverty. While we address these issues in the conclusions chapter of this report, we now set forth the line of reasoning that underlies the CCDP approach—a four-step chain of events that must happen in order for policy makers to conclude that CCDP has accomplished its goals. These steps are: (1) good theory—to be successful CCDP ought to have solid theoretical underpinnings, (2) good definition—to be successful CCDP's theoretical underpinnings ought to be translated at the federal level into clear program specifications that can be implemented locally, (3) good implementation—local grantees must properly implement the program as it was designed, and (4) good impacts—the theory, design, and implementation must lead to positive program impacts.

Good Theory: The theory and assumptions underlying the program must be correct. It is difficult for programs to have positive effects if they are based on weak theory or incorrect assumptions. In the previous parts of Chapter 1 of this report we identified and discussed the assumptions underlying the CCDP program. Most social and educational programs are based on a long chain of assumptions that are rarely recognized and considered. One important function of an evaluation is to illuminate, as much as possible, the assumptions made by program designers and to assist in the systematic consideration of the extent to which each assumption is consistent with or inconsistent with the evaluation findings.

Good Definition: The program must be adequately defined at the federal level. An adequate test of a program cannot be undertaken unless the program is appropriately specified in advance. In this case, ACYF wanted to implement a demonstration program to test the ability of local grantees to implement CCDP projects and to determine the effects of those projects on participating families. To meet these objectives, those in charge of implementing the program at the local level required adequate guidance from federal officials about how to properly put the program in place. In Chapter 2 of this report we describe the CCDP services offered to participating families, a model of the way that these services were hypothesized to lead to changes in the lives of children and their mothers, and a discussion of the way the CCDP intervention was defined by ACYF so that it could be implemented by local grantees.

Good Implementation: The program must be adequately implemented at the local level. Given a strong theoretical base and a clear definition at the federal level of what programmatic activities are intended, grantees must do their part by fully implementing a local version of the program. Thus, the third step is to understand how local grantees implemented the vision of CCDP that was defined by ACYF. CSR, Incorporated, the contractor in charge of the CCDP "process study," was charged with understanding and documenting CCDP's implementation, and in Chapter 2 of this report we summarize findings about program implementation (CSR, Incorporated, 1997).

Good Impacts: The program must produce measurable positive effects. To understand how the program as implemented affects children and mothers, we must design and implement a strong impact evaluation. This final step has been undertaken by Abt Associates Inc. and is described in this report. The design of the CCDP impact evaluation is presented in Chapter 3 of this report. Basic findings from the evaluation are presented in Chapter 4 (for parents) and Chapter 5 (for children). Additional chapters present discussions of variation in CCDP's effects in different sites and for various subgroups of participants (Chapter 6), the relationship between service receipt and program impacts (Chapter 7), and conclusions about the effectiveness of CCDP (Chapter 8).

We present this four-step line of reasoning to help us assess the impacts of CCDP and draw conclusions about the utility of the CCDP model for alleviating the problems faced by families in poverty. It is important to recognize that CCDP was more than just another federally funded demonstration program. There are several broad programmatic movements in the early childhood community, and CCDP was sufficiently comprehensive that it sometimes is classified as belonging to each of three program groups: It was the largest "family support" program in the country, it was one of the largest and most visible "two-generation" programs in the nation, and it also was an important representative of what are sometimes called "service integration" programs. Programs that fall under these three headings have received a great deal of attention and a substantial amount of federal, state, local, and private funding in the past five years. For this reason, the CCDP evaluation ought to be useful far beyond its applicability to the CCDP program —it provides information to researchers and program developers concerned with each of the three general types of programs listed above.

CHAPTER 2

SPECIFICATION AND IMPLEMENTATION OF THE CCDP PROGRAM MODEL

Based on the legislative mandate and the theoretical rationale offered in Chapter 1, ACYF's goal was to specify a program which could be implemented by local CCDP grantees and which would assure the delivery of a comprehensive array of social, educational, and health services to low-income families over a long period of time.

This chapter provides: (1) an overview of the services that were to be offered to CCDP families, (2) a model of the way in which these services were hoped to lead to changes in the lives of participating children and mothers, (3) a discussion of the way in which the CCDP intervention was specified by ACYF so that it could be implemented by local CCDP grantees, and (4) a summary of the adequacy of CCDP's implementation at the local level. All of this paves the way for the next chapter, which describes the way in which we evaluated the impacts of CCDP on mothers and children.

DESCRIPTION OF CCDP SERVICES

A key assumption underlying the design of CCDP (discussed in Chapter 1) was that all low-income families have a complicated set of needs, and that CCDP ought to be designed to ensure that all of those needs are met. In particular, each local CCDP grantee was to:

- intervene as early as possible in children's lives;
- involve the entire family;
- ensure the delivery of comprehensive social services to address the intellectual, social-emotional, and physical needs of infants and young children in the household;
- ensure the delivery of services to enhance parents' ability to contribute to the overall development of their children and achieve economic and social self-sufficiency; and
- ensure continuous services until children enter elementary school at the kindergarten or first grade level.

Since many services are available within local communities, CCDP projects were designed to build on these existing services instead of creating a wholly new set of services. However, CCDP projects were supposed to create new services when necessary to meet the needs of families or to ensure provision of high-quality services. To accomplish this goal, CCDP projects relied heavily on a case management approach, in which a single person (the case manager) was responsible for coordinating the service needs of a group of CCDP families. Case managers provided some

services directly (e.g., counseling, life skills training) while, at the same time, organizing the provision of other services through individual referrals and brokered arrangements.[1]

Given this overview of the broad array of services that CCDP was to make available to families, we now provide additional information on a subset of CCDP services—those which were specifically intended to lead to key program impacts. In particular, we describe:

- CCDP case management activities.
- CCDP services that were intended to produce positive effects on mothers such as enhanced parenting skills, life skills, and economic self-sufficiency.
- CCDP services that were intended to produce positive effects on children including child cognitive, socio-emotional, and behavioral functioning, as well as improved birth outcomes for newborn children.

The extent to which program families actually received the intended services is a topic that is summarized at the end of this chapter and is discussed at length in the CCDP process evaluation report (CSR, Incorporated, 1997).[2]

The key element in specifying the CCDP program was a "monitoring manual" which was prepared by ACYF and its implementation contractor (CSR, Incorporated) to document the specific services that each CCDP grantee was required to provide for participating families. The manual (CSR, Incorporated, 1994) provided local grantees with a detailed set of expectations about which services were required under the terms of their grant ("core" services) and which were optional ("non-core" services). It also described the way in which compliance with ACYF's requirements would be assessed. While ACYF provided projects with a set of compliance standards, those standards developed and changed over time, and were augmented by more than 100 official Program Instructions, Program Notices, and other memoranda regarding program implementation and compliance standards. This information was part of a strong technical assistance process that lasted throughout the demonstration.

PLANNED CASE MANAGEMENT ACTIVITIES

CCDP service delivery relied on a model in which each family had a case manager who delivered some services directly, while referring the family to other services and brokering yet others.

[1] A "referral" occurred when a case manager identified a need and provided the mother with contact information for a program to address that need. "Brokering" occurred when the case manager intervened with a non-CCDP program on the behalf of a CCDP family and followed up to ensure that the family received the needed service.

[2] The process evaluation report focuses on services received by CCDP families as documented by data collected on CCDP families through the CCDP Management Information System. No data on service receipt were collected through the MIS for control group families. A comparison of self-reported service data collected by Abt Associates from both CCDP and control group families was presented in ACYF's interim report to Congress (ACYF, 1994). This analysis showed that while control group families did indeed receive many of the same services that CCDP families received, CCDP families generally received more of those services and generally received a broader array of services.

Without the unifying character of case management, families in CCDP would have been no different than other low-income families in their community who had access to the existing array of available services. That is, if not for the existence of the CCDP case managers, few, if any, of the CCDP services for children and parents described here would have been different from what families could have obtained on their own. Although case managers were typically the main point of contact with families, they were supported by a multi-disciplinary staff of coordinators and other staff (e.g., health and mental health coordinators, male involvement specialists, and employment and adult educational coordinators) who themselves interacted with families on an as-needed basis.

CCDP case managers conducted **home visits** to each family every one or two weeks. Visits typically lasted between 30 and 90 minutes, depending on the family, the case manager, and the particular CCDP project. The types of activities conducted during the home visit included assessing family needs, preparing a family service plan, counseling parents, providing parenting education/early childhood education, making referrals for services, and taking a record of the services that the family received since the previous home visit.

A **family needs assessment** was conducted within three months of the family's enrollment in CCDP, and every 6 months thereafter. The needs assessment formed the basis for preparation of a **family service plan**, which was jointly developed by the case manager and the family, and which specified goals, needed resources, actions to be taken, roles family members will play, time frames, and a self-evaluation of the extent to which goals were achieved. The family service plan was to be updated every three months.

CCDP case managers provided participating families with **crisis intervention** services. Lack of adequate housing, lack of food, substance abuse problems, and the like meant that in the early months of CCDP, case mangers spent a large amount of time trying to move families out of crisis situations and into settings where adults could take more control of their lives.

Finally, in many CCDP projects, case managers provided **home-based** early childhood education services and/or training to adults in areas such as parenting skills, health and nutrition, and other educational interventions.

PLANNED SERVICES FOR MOTHERS

CCDP provided a range of services which were intended to improve the economic self-sufficiency of participating families. In addition, CCDP provided services (e.g., parenting education, health education) to mothers and other family members for the indirect benefit of children in the family.

Services Provided to Mothers to Improve Economic Self-Sufficiency. Adult literacy education, vocational training, employment counseling, and job training and placement were to be made available to CCDP families requesting these services. **Adult education** services included adult basic education, adult secondary education, GED classes, and English as a Second Language

classes. CCDP projects were to build on the services already available in the community, and it was expected that program families would be referred to existing adult education projects in local community colleges and other local educational institutions. **Vocational training** typically was provided through referrals to vocational centers, high schools, community colleges, JTPA grantees, and state-level employment and training facilities. **Job training** services were to be provided, including topics such as resume writing, interview skills, and behavior in the workplace. CCDP projects also focused on **job development and placement** by working with local public and private employers, arranging job placements, and providing follow-up employment services.

CCDP projects also made **child care** available to CCDP mothers on an as-needed basis, to remove a barrier to participation in school or work; provided information about **life skills** which could contribute to positive impacts on economic self-sufficiency; helped families procure **adequate housing** by establishing linkages with housing authorities and other local agencies; and facilitated the acquisition of **income support** for families who were eligible for federal or local programs such as AFDC, food stamps, and Medicaid.

Services Provided to Mothers to Improve Child Development. CCDP projects had the option to provide early childhood education services through a home-based model in which case managers or early childhood specialists provided **parenting education** services to mothers. This service, typically provided to mothers of infants, was intended to facilitate children's cognitive and social-emotional development.

Most CCDP projects used a home visit model to deliver early childhood education to children between birth and age three. These services were most often delivered by the case manager, during a biweekly home visit, or in some cases by a separate early childhood specialist. The early childhood portion of the home visits typically focused on training parents in infant and child development, and parenting skills, rather than providing direct services to children. The typical format for the parenting education component of the home visit involved the home visitor suggesting on an approach for the parent, the parent conducting the activity with her child, and the home visitor reinforcing the parent's efforts and suggesting alternative approaches. At times, home visitors modeled ways to conduct activities or interact with children.

Thus, for children from birth through three years of age, CCDP most often provided an early childhood program which relied on the direct delivery of services to parents (parenting education), in the hope that parents would be able to be more effective educators of their children. After age three, children often were enrolled in Head Start or some other center-based program.

In addition to receiving parenting education during regularly scheduled home visits, families received parenting education in a variety of other venues including supplemental home visits, classes and workshops, support groups, and information dissemination. All CCDP projects conducted group parenting education classes and workshops at times convenient for parents, offering child care and transportation assistance as needed. Parenting education classes were conducted by CCDP staff, by specialists from other agencies, and by independent consultants under contract to CCDP. Projects also offered support groups for parents, or referred parents to

existing groups in the community. These typically were established to met the needs of particular CCDP family members such as fathers or single parents. As was the case with parenting education classes, support groups were facilitated by CCDP staff, staff from other agencies, or by independent consultants. Furthermore, CCDP projects developed or purchased newsletters and other written resources containing parenting education information, and disseminated this material to parents and other participating adults. Some of these resources were distributed to all families, while other more specialized resources were targeted to subgroups of families according to interests and goals.

Services Provided to Mothers to Improve Birth Outcomes. CCDP projects typically coordinated the efforts of local health care providers to supply several types of services designed to improve the birth outcomes of children born to participating mothers. **Prenatal care** was to be made available to all pregnant women in CCDP families through brokering services with existing health care providers. **Substance abuse services** were also to be made available to all CCDP participants and were of particular importance to pregnant women. Regularly scheduled **health care** for CCDP participants was mandated, and could influence birth outcomes to the extent that it improved the general health of women prior to becoming pregnant. Finally, **life skills education** (typically provided by case managers) covered topics of relevance to birth outcomes including birth control and birth spacing.

PLANNED DEVELOPMENTAL SERVICES FOR CHILDREN

CCDP projects were required to arrange for the delivery of a legislatively-mandated set of core services to participating children (infants, toddlers, preschoolers). All CCDP children under school age were to have a **developmental screening**. A more complete **diagnostic evaluation** was to be completed for children who exhibited a developmental delay on the screening. In addition, all children were required to have a developmentally appropriate **early childhood experience**, whether delivered through home visits or through a center-based program. All child care was to be of the highest possible quality. For example, child care centers administered by the CCDP projects were required to meet Head Start Performance Standards for education and the NAEYC developmentally appropriate practice guidelines.

CCDP'S HYPOTHESIZED EFFECTS

CCDP was an ambitious and complex program which was designed to work with two or more generations of a family (e.g., children, parents, grandparents); it involved all family members on a broad range of issues over a relatively long period of time. Exhibit 2.1 presents a simple model of the hypothesized short- and long-term effects of CCDP. In this model we pay special attention to the fact that some hypothesized effects were expected to result ***directly*** from the delivery of services intended to deal with a specific issue or problem, for example, providing mental health counseling with the intent of decreasing maternal depression. Other effects were expected to

occur ***indirectly***, for example, providing parenting education to mothers in the hope of achieving positive effects on children's cognitive development.

EFFECTS ON SERVICE UTILIZATION

As described earlier, CCDP relied on existing services that were available from local service providers. Thus, for CCDP to be effective in a given community, a wide range of services must exist and be available for low-income families. These include physical health services (e.g., general health, dental, alcohol/substance abuse, prenatal care, well-baby care, health and developmental screening); mental health services; early childhood education services, services designed to enhance economic self-sufficiency (e.g., academic classes and vocational/job training); and services in support of parent training and employment (e.g., transportation, child care).

Changes in service utilization could be expected to occur in the early stages of program implementation and thus should be measurable within the first year of project start-up. Given the assumed difficulties faced by poor families in accessing health and mental health services, it was hypothesized that CCDP families would evidence increased receipt of many different types of services and that early increases in service use should be seen as a positive occurrence.

The hypothesized pattern of service usage and changes in service usage over time is quite complicated. Because of case management and improved access to existing services, we would expect to see early increases in the use of some services. We would expect service usage to persist at an increased level for some services, but to decrease over time for other services. Some examples are:

- CCDP children ought to have more regular visits to a dentist and a doctor for **preventive health care**. These increased service levels ought to persist throughout the life of CCDP. As a result, CCDP children ought to use fewer hospital services because their health should be better attended to during regular doctor's visits, and because they are expected to experience fewer injuries as a consequence of improved parenting.
- Early on, CCDP mothers ought to be more likely to use **physical health, mental health, and substance abuse services** due to the program's ability to increase or ease access to what are often scarce services. Subsequently, as their physical and mental health improve, CCDP mothers might be expected to use less of these services.
- CCDP children should be more likely to participate in a **child development program.** This increased service level for early education services should persist until children enter school.
- A higher percentage of CCDP mothers are expected to participate in **parenting education and academic programs**. Maternal participation in educational programs may diminish over time, as degrees or certificates are attained. Similarly, we would expect to see a higher proportion of program

parents involved in employment and training activities, and in vocational classes; this participation also might be expected to diminish over the five-year period, as parents moved into the workforce.

Early analyses of data from this evaluation (ACYF, 1994) confirmed that CCDP families did indeed receive greater levels of certain services than control group families. In particular, CCDP mothers were more likely than control group mothers to enroll in academic classes (38 percent vs. 26 percent) and vocational or job training programs (18 percent vs. 13 percent), and were more likely to work towards a trade certificate (7 percent vs. 4 percent), a GED (12 percent vs. 8 percent), or a Bachelor's degree (6 percent vs. 3 percent).

SHORT-TERM EFFECTS ON PARENTS

Mothers living in poverty may experience high rates of a variety of psychological problems including low self-esteem, depression, lack of hope for the future, lack of personal empowerment, low aspirations, and social isolation. They have higher than normal rates of health problems, such as untreated chronic illnesses and anemia stemming from poor nutrition, and are increasingly at risk for substance abuse. The combination of unfinished education, possible lack of parental role models, and absence of extensive social support networks often leaves low-income mothers with inadequate life management skills, including difficulty in making decisions, inability to manage limited budgets, and limited understanding of what it takes to be a good parent. Facing difficulties, both practical and motivational, in completing their education or acquiring job skills, they may be unable to achieve economic self-sufficiency.

CCDP worked to alleviate these problems through provision or coordination of the services described earlier. Anticipated short-term outcomes for parents include:

- Positive changes in **physical health** (e.g., improved health status and health habits and an increase in appropriate behaviors with respect to subsequent pregnancies).
- Improvements in **mental health** (e.g., lessened depression, an improved sense of control over their lives, better decision-making abilities, and a more positive outlook on life).
- Enhanced **parenting skills** (e.g., reductions in attitudes linked to abusive or neglectful behaviors, increased expectations for children, improved parent/child relationships, and enhanced parent/child interactions).
- Progress towards **economic self-sufficiency** (e.g., increased social connectedness; improved problem-solving strategies and life skills; better work-related attitudes; and an increase in attainment of education certificates, diplomas, or degrees).
- Better **employment and income** (e.g., reduced dependency on public assistance; increased personal income, hourly wages, months employed).
- An improved ability to **nurture the development of their children**

The timing of CCDP's expected short-term outcomes for parents was difficult to predict. A reasonable, though untested, expectation is that CCDP should be able to produce some of its anticipated short-term effects within a one- to two-year time period. (These are research-based expectations, not promises on the part of CCDP grantees.) These relatively early outcomes might include short-term effects on parenting skills, such as improved mother/child relationships and interactions, increased expectations for the child, and a decrease in abusive and neglectful behaviors on the part of mothers. Short-term effects intended to enhance the economic self-sufficiency of families could include improved work-related attitudes, better life skills, and better problem-solving strategies; and perhaps short-term effects on the home as an environment that fosters children's development. All of these effects should persist throughout CCDP.

LONG-TERM EFFECTS ON PARENTS

The intent of CCDP was to achieve short-term effects so as to produce long term, fundamental economic and social alterations in the lives of participating parents. In particular, long-term effects on parents were hypothesized to include a continuation of positive short-term effects (e.g., improved physical and mental health) as well as the ultimate achievement of economic self-sufficiency.

SHORT-TERM EFFECTS ON CHILDREN

For infants and young children, the immediate consequences of poverty can be severe. Poverty is associated with high levels of infant mortality and morbidity, prematurity, and impaired health status. Adverse birth outcomes often result in developmental delay, behavior problems, and inadequate preparation for school. Young children living in poverty are less likely to see a pediatrician, to receive immunizations, or to receive dental care—all important steps towards health and development. As children enter adolescence, they enter the cycle of poverty-related consequences already experienced by their parents, such as lower school achievement and unfinished education, early sexual activity leading to teen pregnancy, substance abuse, delinquency, and a high incidence of death from accidents or homicide.

CCDP was designed to change this pattern by providing a comprehensive range of services for children and their parents. Anticipated short-term outcomes for children include improved physical health (e.g., better health status and reduced health problems, appropriate immunizations, reduced injuries and accidents, increased dental care, and increased use of seat belts) and improved developmental progress (e.g., positive cognitive development, reduced behavior problems, and appropriate adaptive behavior).

These effects were expected to occur directly, through the provision of health and developmental services to children, and indirectly, through the provision of parenting education which is intended to improve the abilities of parents to enhance the development of their children.

LONG-TERM EFFECTS ON CHILDREN

Long-term effects on children, primarily related to improved success in school, were hypothesized to result from the achievement of CCDP's short-term outcomes for children, as well as from the achievement of CCDP's short-term and long-term effects for parents.

Many studies have shown that early childhood education programs can produce short-term effects on children's school readiness (Layzer, et al., 1990). Studies also have shown that these effects may "fade out" over time, so that differences are not observed past the early elementary grades (Consortium for Longitudinal Studies, 1983), although recent research has disputed the reasons for the observed fade-out of effects (Barnett, 1993a). Finally, some studies have found evidence of long-term effects on school and young adult behaviors (Schweinhart, et al., 1993). CCDP was intended to change this pattern of fade-out of cognitive effects and to continue the promising pattern of long-term effects in non-cognitive areas. However, examination of such long-term effects was not part of the current study.

SPECIFYING THE INTERVENTION

Based on the theoretical underpinnings of CCDP and the model of anticipated effects just described, ACYF was faced with the difficult task of specifying the CCDP intervention. Decisions had to be made about (1) the intended length of time that families would participate in the program, (2) the extent to which the program would be defined by federal requirements, and (3) methods of ensuring the integrity of program implementation over time and at multiple sites.

INTENDED LENGTH OF PARTICIPATION

CCDP was developed with the intent that services ought to be made available to participating families from the birth of a child (or enrollment of a pregnant woman) to the time that the child entered the public school system. The rationale for this decision (as discussed in Chapter 1) was that short-term services have not proven to be particularly effective in ameliorating the effects of poverty. Hence, the program was based on the hypothesis that the long-term provision of services could lead to enhanced outcomes for children by the time they entered public school.

Although all CCDP families agreed, at the time of enrollment, to participate for the full five-year service period, there was no way that CCDP projects could enforce the length or intensity of a family's participation. Therefore, there was wide variation in the length of the CCDP "treatment" received by participating families. Part of this variation was intentional in that the particular services received by a family were based on a family needs assessment and subsequent service plan. Under the assumption that different families have different needs which may be met over different time frames, it is possible to see how some families might require CCDP-type services for only one or two years while other families would require a longer service period. On the other

hand, some of the variation was not intentional since many families dropped out from the program (see CSR, Incorporated, 1997 for a description of the reasons for dropping out) despite the intention that all families participate for the full five years and receive a core set of services during that time.

DEGREE OF LOCAL FLEXIBILITY

To the extent possible in a federal context, ACYF did its best to implement a centrally-run, closely monitored program where variation among projects was minimized to provide a strong test of a single, coherent model. Federal staff negotiated with prospective grantees at the proposal stage to ensure that each potential project's model met ACYF's standards and specifications.

Under this approach, ACYF ***located control over program implementation at the federal level***, provided strong centralized management, a clear vision of the model desired by the government, and detailed programmatic regulations and guidance. Variation across projects was minimized under this approach, so that the government was provided with the strongest possible test of a particular model. Under this implementation model, the government closely monitored projects to ensure fidelity to the prescribed model and was primarily interested in learning about the effectiveness of the program across all projects. The federal government does not often get involved in such tightly-run programs, but certainly there are university-based models such as Olds' nurse home visiting program (Olds, 1992), the Englemann-Becker DISTAR program (Rhine, 1981), and the Infant Health and Development Program (IHDP, 1990) which expected program implementers to follow a carefully prepared script in order to carefully test a well-specified program model.

An alternative approach to implementing demonstration programs would be to ***allow local programs flexibility*** in deciding which services to provide and how to provide them. Variation between grantees is maximized under this approach, as services are tailored to the needs of families and to the local context and are implemented in locally unique ways by grantee agencies. Under this approach, ACYF could have encouraged and rewarded grantees for diversity in programmatic approach and could have been interested in searching for differences in the effectiveness of different approaches to designing and implementing a CCDP project. This approach is often taken by federal agencies, since the federal government usually provides broad guidelines for the use of federal funds but delegates implementation decisions to the local level. Examples where control over program design resides mainly at the local level include the U.S. Department of Education's Title 1 and Even Start programs.

ENSURING THE INTEGRITY OF PROGRAM IMPLEMENTATION

Once in operation, the activities of each CCDP project were governed by a clear set of federal compliance standards which were enforced through a series of monitoring mechanisms described

in a manual prepared by the CCDP technical assistance contractor (CSR, Incorporated, 1994). They included:

- **Written program regulations and compliance standards** These standards were outlined at the start of the demonstration, were developed over time, and were codified in a 50-page monitoring manual to reflect lessons learned by CCDP projects. The compliance standards were written to ensure that, to the extent possible, all CCDP projects conformed to ACYF's program model and that variation between projects is minimized.
- **Quarterly compliance reports** were produced for each project and provided information on the degree to which grantees met requirements in 15 compliance areas; 85 additional compliance requirements were assessed using other methods (e.g., qualitative observations during site visits and reviews of other documents).
- **A Management Information System**, maintained by CSR, Incorporated was designed to monitor service provision, identify technical assistance needs, collect information for the process evaluation, and generate reports used by projects for internal management and oversight.
- **Monthly telephone contacts** and ongoing oversight and technical assistance, provided by staff from CSR, Incorporated.
- **Grantee meetings** held for 2-3 days in Washington, DC. three times a year, organized by CSR, Incorporated. In addition to facilitating the exchange of ideas among staff from all grantees, these meetings provide a vehicle for providing technical assistance and discussing common compliance issues. Staff and parents from all projects participated in plenary sessions and workshops facilitated by national experts in the areas of early childhood education, health, nutrition, parent empowerment, program administration, mental health, and other areas.
- **Quarterly progress reports** submitted by the CCDP grantee to CSR, Incorporated.
- **Annual site visits** by staff from ACYF and CSR, Incorporated to assess compliance and provide technical assistance. Follow-up visits were conducted if necessary.

The process study (CSR, Incorporated, 1997) provides evidence that ACYF successfully implemented a common set of key structural components across each of the CCDP projects including: case management, early childhood education, and the provision of additional core services. However, the local projects had discretion about how to provide these services (i.e., the content and format of the services). ACYF set minimal levels of service intensity, which projects were free to exceed.

As long as a CCDP project met ACYF's compliance standards, it was free to provide services in whatever ways were most effective, given the local population and existing local services. For example, significant variation existed in the delivery of two key programmatic components delivered directly by CCDP projects: case management and early childhood services (most other

services were provided by referrals and brokering). During the early years of a CCDP project early childhood education typically was delivered using a home-based model that made possible two major approaches to the delivery of case management and early childhood education:

- **Generalist Model:** Most grantees used this approach, in which the case manager assumed all case management functions, and also was responsible for providing parenting education/early childhood education and family development during home visits. The assumption underlying this approach was that it was best to centralize delivery of services in a single contact person. The drawback was finding staff proficient at both functions.
- **Team Approach**: A few projects used this approach in which case management and early childhood services were delivered by different staff members. This approach allowed the project to employ experts for each function, but was a less efficient mode of service delivery.

The fact that most CCDP services were provided by referrals to, and brokering with, local service agencies rather than directly by CCDP staff meant that there was sure to be substantial variation among sites in service quality and delivery. The type of services available through local service providers were bound to depend on local community needs, leading to the following variation in service structure: (1) some communities had a great variety of local service agencies while other communities had quite limited options, and (2) the quality of services available locally depended on variables such as the background of available staff, the strength of program implementers, and the amount of available resources. In response to this wide variation, CCDP projects worked to create new services and/or strengthen existing services. A few examples follow:

- Parent support groups were created as a component of an agency's preventive mental health approach.
- Infant/toddler and preschool center-based care were created to supplement existing care.
- Existing adult education programs were expanded using CCDP funds.
- Career counseling/job readiness programs were created to supplement JTPA, JOBS, and other employment programs.
- Group socialization programs were created for children and their parents.
- CCDP projects included outreach so that fathers and other males would participate in "regular" program activities, as well as programs specific to men's needs.

ADEQUACY OF PROGRAM IMPLEMENTATION

The next step in our approach to understanding the effectiveness of the CCDP program was to make judgments about the extent to which local CCDP projects implemented the CCDP model defined by ACYF. To do so we present an analysis of the length of time that families participated

in CCDP. We then draw on some of the conclusions reached in the report from the CCDP process evaluation (CSR, Incorporated, 1997).

Although the theory underlying CCDP and the rules for its implementation were developed at the federal level, the implementation of CCDP including the delivery of services to participating families was delegated to a set of 24 local "grantees" which were funded in 1988 and 1989, through a competitive grant process administered by ACYF. Grantees were expected to develop a project, recruit a set of families from a defined catchment area, provide those families with CCDP services for a five-year period, and participate in a process and impact evaluation.

OBSERVED LENGTH OF ENROLLMENT IN CCDP

In Chapter 1 of this report we set forth the assumption made by CCDP's developers--that families will require up to five years of participation in the program in order to achieve economic self-sufficiency and enhanced child development. Thus, each family was encouraged to participate in CCDP for five years, and many families met this goal. Other families left the program because of a lack of interest, because they moved, because they believed that their needs had been met, or for other reasons (CSR, Incorporated, 1997). In still other cases, families were enrolled but simply did not participate very much from the beginning. Thus, the "length of enrollment" in CCDP is a crude measure of participation and is quite different from the "amount of treatment" received.

Faced with a family that was only marginally involved in the program, project staff had to decide whether to continue to invest resources to more fully involve the family, to let the family remain enrolled but not participate very much, or to formally terminate the family. Early in the life of CCDP, ACYF required that non-participating families be retained in the program for at least 6 months, at which time the grantee was allowed to terminate the family and replace it with another family. CCDP project staff were reluctant to drop families, since a low level of motivation is a symptom of the problems faced by many of the families that CCDP is trying to serve and terminating families was seen as reinforcing the pattern of failure to which they are accustomed. As a result, some low-participation families were kept in the program for up to six months, with only minimal effort expended to involve them, hoping that they would soon participate more fully.

There was no way to force families to remain enrolled in CCDP, so each family took part in as little or as much of CCDP for as short or as long a time as desired. Exhibit 2.2 shows the length of time that families originally enrolled in CCDP remained in the program. Time in program was measured as the number of calendar days between enrollment and termination from the program or September 30, 1995 (the last date of program services for the demonstration), whichever was earliest. There was a constant (1 percent per month) rate of dropout from the program except for the last year, when all of the remaining families were terminated at the end of September 1995:

- 82 percent of the families were enrolled for one or more years
- 69 percent of the families were enrolled for two or more years
- 58 percent of the families were enrolled for three or more years

- 48 percent of the families were enrolled for four or more years.
- 33 percent of the families were enrolled for five or more years[3]

On average, families were enrolled for 1,210 days, or 3.3 years (Exhibit 2.3). Families in Site #8 were enrolled for the longest period of time, on an average of 1,603 days (4.4 years), while families in Site #3 were enrolled for the shortest period of time, on an average of 855 days (2.3 years). In three sites the average family was enrolled for four or more years (1,460 days or more) while in five sites the average family was enrolled for less than three years (less than 1,095 days).

We emphasize that these numbers simply report the length of enrollment in CCDP; they are based both on families that were active participants as well as on families that were not actively engaged in the program. The process evaluation (CSR, Incorporated, 1997) provides information on the extent to which program families participated fully in CCDP.

Compared with other social programs, CCDP has been quite successful at retaining a substantial number of families from a traditionally difficult-to-serve section of the population. Comparing program participation/dropout rates is difficult due to variation in the definition of a dropout and in the planned length of service for families in different programs, but dropout rates for some relevant demonstration programs are summarized below.

- **National Even Start Evaluation**(St.Pierre, et al., 1995):
  No planned length of intervention; 50 percent dropout within first year.
- **New Chance Welfare Demonstration** (Quint, et al., 1994):
  18 month planned intervention; 88 percent did not complete the full intervention.
- Percent of AFDC eligibles who dropped out within first year in seven **welfare-to-work programs** (Gueron & Pauly, 1991):

Arkansas: job search, work experience	62 percent
Baltimore: multi-component	55 percent
Cook County: job search, work experience	61 percent
San Diego: job search, work experience	54 percent
San Diego: job search, education, training	36 percent
Virginia: job search, work experience	42 percent
West VA: work experience	76 percent

- **Kenan Family Literacy Program** (National Center on Family Literacy, 1994):
  2-year planned intervention; 25 percent dropout within first year.
- **Avance Family Support and Education Program**(Johnson & Walker, 1991):
  1-year parenting program with follow-up educational and job training services; 47 percent dropout within first year.

[3]It was possible to be enrolled for more than five years because families that were recruited on the basis of having a pregnant woman in the household (child less than age 0) were allowed to be in CCDP until that child reached age 5 (more than five years of elapsed time).

Social programs involving early intervention (e.g., Even Start, CCDP, Avance, Kenan) as well as education and job training (e.g., New Chance, welfare-to-work) impose substantial demands on families and enrollment entails a serious commitment. The studies cited above show that it is common for 50 percent or more of the families to drop out before completing a year. Families that are reasonably functional and hence able to benefit from the program are likely to participate fully and take what they want from a program (and either stay for the full program or drop out early, having achieved their goals), while less functional families do not attend, or attend sporadically, and hence have little chance of achieving program benefits. Placed in this light, CCDP was able to retain families for a relatively long period of time, even though for some families some of that time may not have involved particularly active participation.

The fact that families enrolled in CCDP for different periods of time has implications for the CCDP impact evaluation. Most important, it tells us that the evaluation provides a test of the effectiveness of CCDP as implemented in more than 20 real-world projects, serving a large number of real-world families. While the hope was that families would remain enrolled and be active participants for the full five years, it appears that all families do not need or want five full years of CCDP services. All families, regardless of length of enrollment were included in the analyses presented in this report, and so the evaluation reflects the impacts of CCDP as implemented with a set of families who were enrolled for on an average of about three years. It is impossible to provide definitive answers to the question of whether longer periods of enrollment would lead to better results—we can only speculate in this area (see Chapter 7 of this report).

SUMMARY OF IMPLEMENTATION FINDINGS

The process study report prepared by CSR, Incorporated draws many important conclusions about the implementation of local projects participating in the CCDP demonstration. Some of these conclusions based on early implementation of CCDP projects are quoted here (ACYF, 1994, xxx - xxxiii):

- **CCDP served the families it was intended to serve**. The act mandated that CCDP address the needs and goals of multi-risk, low-income families throughout the United States. The program clearly achieved this mandate.
- **CCDP was implemented successfully but not easily**. By 1992 all but one of the original CCDP projects were well-established in their diverse communities and were delivering services on a regular basis. On average, it took projects one year or more to achieve this degree of stabilization.
- **CCDP coordinated the efforts** of thousands of service agencies nationwide and strengthened community services to low-income families. CCDP succeeded in meeting its congressional mandate to avoid duplication of services and enlist existing agencies and providers whenever possible.
- **CCDP delivered a wide range of services** to a high percentage of families. Virtually all families listed by projects as “active” received weekly or biweekly case management services.

Additional conclusions were reached in the final report from the CCDP process evaluation. These are summarized below (CSR, Incorporated, 1997, xv - xviii):

- CCDP projects met the legislative goal of serving low-income families with young children in a variety of geographical areas.
- A majority of families left CCDP before the end of the demonstration. One-third of the families participated for approximately 5 years, but wide variation existed in the length of participation among the remaining families.
- CCDP can be characterized as a unitary service delivery model that was adapted over time by grantees.
- CCDP projects were successful in helping families set and, to a lesser degree, attain a wide variety of goals.
- CCDP projects were able to convince community service providers that CCDP is a positive, cost-effective addition to the local social service delivery system.
- The average total cost per year of CCDP was $14,984 per family.
- CCDP was successfully implemented in accordance with legislation that authorized the demonstration, and ACYF was successful in facilitating local projects' efforts to adapt the national model of CCDP to local circumstances.
- Although CCDP is not a panacea for all the problems low-income families face, CCDP projects empower families to become actively engaged in CCDP and to make progress toward attaining their goals.

As these conclusions make clear, CCDP appears to have been well-implemented at the local level. Low-income families were recruited, service delivery systems were put in place, and services were delivered to families. These findings lend support to the overall conclusion that the CCDP demonstration was well-specified by ACYF, and that local projects were well-implemented by local grantees. Further, it speaks to the fact that a very complex intervention can indeed be implemented with reasonable fidelity to a program model in many sites across the country.

Exhibit 2.1

Model of CCDP Effects on Participants

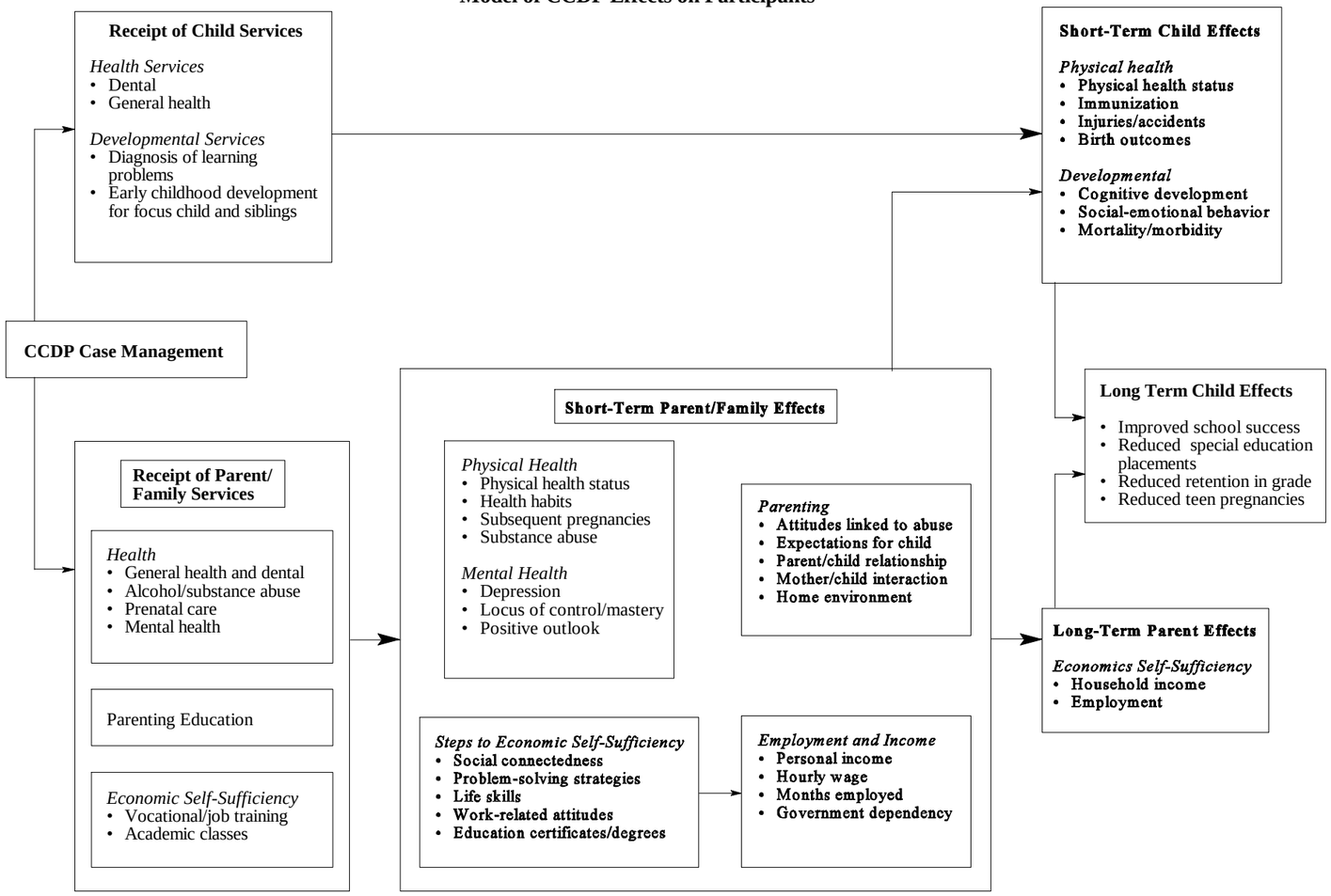


Exhibit 2.2: Amount of Time That Families in the Impact Evaluation were Enrolled in CCDP

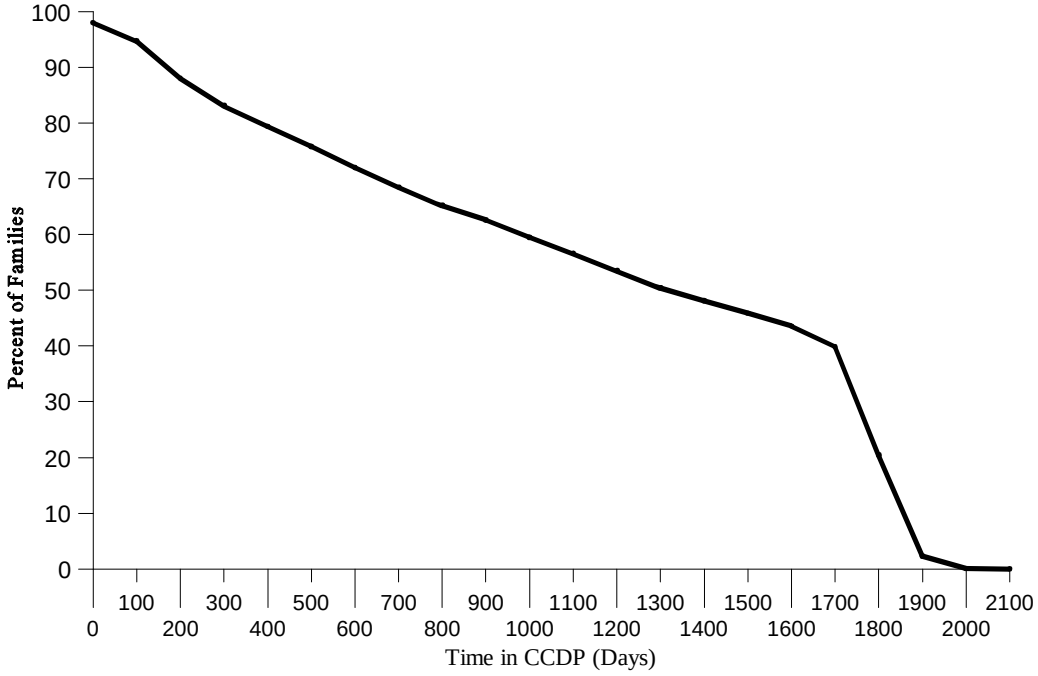


EXHIBIT 2.3

NUMBER OF DAYS ENROLLED BY AVERAGE CCDP FAMILY, BY SITE

SITE ID	MEAN	STANDARD DEVIATION
01	946	623
02	1,390	598
03	855	639
05	1,236	547
06	1,183	651
07	1,161	726
08	1,603	504
09	1,078	692
10	1,273	579
11	1,483	534
12	1,335	662
13	1,496	574
14	1,313	617
15	1,208	682
16	1,001	712
17	1,263	632
18	917	728
19	1,105	781
20	1,191	637
21	1,375	650
22	1,239	595
TOTAL	1,210	664

CHAPTER 3

STUDY METHODS

The legislation which created CCDP called for ACYF to conduct an evaluation of the impact of the funded projects:

> *The Secretary shall provide . . . for the continuing evaluation of projects under this subchapter in order to determine their effectiveness in achieving stated goals, their impact on related programs, and their structure and mechanisms for delivery of services. Such evaluation shall include—*
>
> *(1) evaluations that measure the impact of such projects; and*
>
> *(2) where appropriate, comparisons of individuals who participate in such projects with appropriate control groups composed of individuals who do not participate in such projects.*
>
> *Each evaluation ... shall be conducted by persons who are not directly involved in the administration of such project (Public Law 100-297, Sec. 670Q. , p. 329).*

Given this charge, ACYF devised a two-pronged evaluation strategy. Under one contract, CSR, Incorporated was given the responsibility of providing programmatic training and technical assistance in implementing projects to the CCDP grantees, designing and implementing a Management Information System, and designing and implementing a process evaluation of the CCDP projects--to help understand who participated in CCDP, what types of services were offered, how each project was implemented, and the costs of CCDP. Under a second contract, Abt Associates Inc. was given responsibility for designing and implementing an independent evaluation of the impacts of the CCDP projects--to find out what difference participation in CCDP made in the lives of children and their parents.

This chapter describes the methods used to conduct the CCDP impact evaluation. It includes discussions of research questions, the evaluation design and procedures for random assignment, measurement and data collection, and analysis methods.

RESEARCH QUESTIONS

The impact evaluation was designed to address questions about the effects of CCDP. To focus the evaluation, we prioritized the key research questions for the study. One set of questions dealt with the overall impacts of the program on children and their mothers:

- ***Effects on children:*** What were CCDP's effects on the cognitive, social-emotional, and behavioral development of children? What were CCDP's effects on birth outcomes for children born subsequent to the focus child (the child that qualified the family for the evaluation) including birth weight and health indicators? What were CCDP's effects on children's health?

- ***Effects on mothers:*** What were CCDP's effects on maternal economic self-sufficiency including income, receipt of federal benefits, and employment status? What were CCDP's effects on maternal education and training? On maternal reproductive behaviors? What were CCDP's effects on mothers' parenting skills?

Additional research questions addressed possible variation in effects:

- ***Variation across sites:*** How much variation existed in CCDP's effects across the 21 evaluation sites? Were some sites particularly effective?
- ***Variation across subgroups:*** How did CCDP's effects vary for subgroups of participants? For example, did CCDP work better for teenage mothers or for older mothers? For mothers entering with a high school diploma or without a high school diploma? For male or female children?
- ***Relationship of amount of service to outcomes:*** Was CCDP more effective with families who remained in the program for long periods of time as opposed to short periods of time? What was the relationship between amount of early childhood education received by children and child outcomes?

The final question called for comparing CCDP's costs with the benefits that the program provides to families. More specifically:

- ***Cost-Benefit:*** Did the monetary value of CCDP's benefits (measured about five years after enrollment in the program) outweigh the costs of program services? How large would CCDP's benefits have to be to outweigh the costs?

STUDY DESIGN

The impact evaluation included randomly assigned CCDP and control groups so as to allow experimental comparisons of child, parent, and family outcomes as measured over a five-year period. The evaluation was implemented in 21 CCDP projects, each of which recruited a pool of eligible low-income families and randomly assigned these families either to participate in the CCDP program or to receive the services which were normally available to all families in the community. The experimental nature of the research design allows the evaluation to provide strong evidence about overall program impacts.

RANDOM ASSIGNMENT PROCEDURES

The CCDP eligibility guidelines specified that a family must meet the following enrollment criteria: (1) have income below the Federal Poverty guidelines, (2) include a pregnant woman or

include a child under age one (referred to in this study as the "focus child"), and (3) agree to participate in CCDP activities for five years. The CCDP program announcement (Federal Register, 1988) stated that applying projects would have to be willing to recruit more families than could be served and then to randomly assign those eligible families to one of three groups:

- ***Program group***: families which were expected to participate in CCDP for a five-year period.
- ***Control group***: families which could not receive CCDP services but which could avail themselves of any other locally available service.
- ***Replacement group***: the replacement group provided a pool of families that was used by CCDP projects to replace program dropouts. These families were important in that they allowed each project to maintain service levels and to keep per-family costs under control. Replacement families were *not* included in the impact evaluation

Each prospective grantee was told that the group of recruited families had to be proportionately representative of the low-income population of the grantee's recruitment area in terms of ethnicity and age of the mother.

The impact evaluation was conducted in 21 of the original 24 CCDP projects.[1] Grantees in urban areas were asked to recruit 360 eligible families at the start of the program (120 to participate in the program, 120 for the control group, and 120 for the replacement group), while grantees in rural areas were asked to recruit 180 families (60 for each of the three groups). Across the 21 projects, 4,410 families were included in the evaluation—2,213 families were assigned to CCDP and another 2,197 families were assigned to the control group (see Exhibit 3.1). CCDP families could not be "forced" to take part in the program, and an analysis of participation patterns shows that there were some program families that participated for a very brief period (i.e., six months or less), others that participated for a moderate amount of time (i.e., two or three years), and still other families that participated in CCDP for five full years. All CCDP families, regardless of the extent to which they took part in the program, were included in the main impact analyses. This is the standard approach taken in all studies in which families are randomly assigned to alternative treatment groups--once the family is assigned to participate in the study, they are retained in the study and included in the analysis. This approach preserves the integrity of the study design; eliminating any families from the analysis (due to a lack of participation) would leave the findings open to many different interpretations.

To determine which families would be enrolled as program families and which as control group families, ACYF indicated its preference that grantees use a random assignment procedure. Grantees were allowed to propose alternative assignment procedures if they could ensure that the two groups would be equivalent. The contractor responsible for the process evaluation and

[1]One project was not able to randomly assign families, a second project was not able to maintain appropriate records about families which were recruited and assigned, and a third project joined CCDP a year late and hence was not included in the impact evaluation.

CCDP's management information system (CSR, Incorporated) also was responsible for monitoring the recruitment and random assignment of families across the sites.

All 21 of the grantees included in the impact evaluation chose to use a random assignment procedure to assign families. However, projects differed on the random assignment procedure used, on whether the project or CSR, Incorporated did the random assignment, and on whether the random assignment was to the three groups (program, control, and replacement) or to two groups only (program and control). A detailed account of recruitment procedures, the random assignment process, and the results can be found in Appendix A.

TIMING OF THE EVALUATION AND RECRUITMENT OF FAMILIES

Timing of the Evaluation. To provide Congress and other policy makers with information in a timely fashion, the CCDP impact evaluation was put in place as early as possible in the life of the program. All of the 21 CCDP grantees included in the impact evaluation received funding for the first year of a five-year grant in the fall of 1989. The impact evaluation was funded in the spring of 1990, families were recruited by CCDP projects during 1990 and were randomly assigned to CCDP or to the control group, projects began to delivery services during 1990, and data collection for the impact evaluation started in the fall of 1991.

Most program implementers would say that the start-up phase of any program is a difficult period, a time in which to try out ideas and strategies. If we believe that a program's effectiveness depends on its ability to work through such start-up problems prior to beginning a formal impact evaluation, then the strategy of beginning the impact evaluation during the start-up period means that estimates of program effects may be attenuated.

Two important facts argue that the CCDP evaluation did not suffer from this "early start-up" problem. First, all of the CCDP grantees included in the impact evaluation were selected through a competitive grant process which was designed to ensure that the best groups in the nation were selected to run CCDP projects. Proposed project directors and their staff had to have substantial experience in relevant areas, and proposals had to show evidence (such as prior experience with similar projects) of the ability to run a complicated program such as CCDP, as well as evidence that the service linkages envisioned by ACYF could be put in place. All of the CCDP grantees were able to meet ACYF's stringent selection criteria, and in fact, many of the CCDP grantees used CCDP funds to continue a line of programmatic development activities that they had begun several years earlier. Thus, while the CCDP grantees were new to CCDP, most of them were well-versed in areas such as providing comprehensive services and working with low-income families.

Second, many of the 21 CCDP grantees included in the impact evaluation were given funds for a "start-up" year (1988) in which they organized and planned their projects. Not all grantees had the advantage of this planning period, but this part of the process shows that ACYF not only

selected well-qualified grantees, but provided many of them with exactly the kind of start-up period that program operators typically desire.

Even so, an improved approach would have been to allow all projects one or two years of start-up operations--time in which to test approaches and develop a smoothly-running project based on delivering services to a small number of families. The impact evaluation could have begun after CCDP projects had reached a specific state of maturity. At that time, only the smoothly-running projects would be asked to recruit a fresh set of families and to work with those families for the next five years. This approach would have allowed a more refined estimate of the effects of "mature" CCDP projects.

Recruitment of Families. Families to participate in CCDP were recruited over several months. Some readers of early drafts of this report questioned whether there were differences between families recruited early vs. late in the process. Exhibit 3.2 shows the pattern of recruitment, by site, for program families in the impact evaluation. Several conclusions can be drawn from this exhibit. First, all families participating in the impact evaluation were recruited during calendar year 1990 (additional CCDP families were recruited later on, to replace program drop outs). Second, for most sites, most of the recruitment occurred in a relatively short time frame: 4 sites recruited all of their families in a 2-3 month time period, 7 sites recruited all of their families in 4-5 months, 5 sites recruited their families in 6-7 months, and the remaining 5 sites recruited their families in 8-12 months.

To see whether there were any differences between the families that were recruited early vs. late, we split the sample in each site in half based on date of recruitment and compared baseline characteristics of the first 50 percent of the recruited sample to the last 50 percent of the sample. As can be seen in Exhibit 3.3, the baseline differences between the two groups are small, as would be expected given the relatively short window in which recruitment occurred in most sites. The "early" recruits appear to be somewhat advantaged on some variables (mothers were more likely to have a high school diploma, more likely to have a resident partner in the home, less likely to be a teenager at the birth of her first child), but the "late" recruits seem to be somewhat advantaged on other variables (mothers were more likely to be employed, less likely to be on AFDC, higher per person income). On the whole, there do not seem to be any large systematic differences between the two groups.

SUMMARY OF SAMPLE CHARACTERISTICS

Here we describe some of the baseline characteristics of the sample of families participating in the CCDP national impact evaluation. The data represent measures on families as of 1990, the year during which most of the recruiting for the CCDP evaluation took place. Data presented in this section were taken from the recruitment and family profile forms maintained by CSR, Incorporated as part of their responsibilities as CCDP's technical support contractor, and from recall data supplied by evaluation participants during their initial interview. The analyses for this section are based on data from families that were part of the analytic sample in the CCDP impact

evaluation. Some key characteristics of the sample are listed below (see Appendix B for additional information):

- **Race/Ethnicity**: Forty-three percent of the children in the sample are African-American, 26 percent are Hispanic, 26 percent are white, 3 percent are American Indian, and 1 percent are Asian/Pacific Islander.
- **First Language**: Eighty-four percent of the children in the sample use English as their primary language, 14 percent use Spanish, and 2 percent use some other primary language.
- **Teenage Mothers**: More than one-third (35 percent) of the mothers in the sample were teenagers (under age 18) when they first gave birth.
- **Education Level**: More than half (51 percent) of the mothers in the sample had not graduated from high school when recruited into CCDP.
- **Household Income**: Forty-four percent of households in the sample had a total income under $5,000 and 85 percent had a total income under $10,000 at the time of recruitment.

COMPARABILITY OF PROGRAM AND CONTROL ANALYTIC SAMPLES

The randomization procedures implemented as part of the CCDP experimental design resulted in statistically comparable program and control groups at the outset of the evaluation (St.Pierre, et al., 1994). Given this strong research design, it was important to preserve the internal validity of the study by avoiding differential attrition from the data collection so that the final analytic sample maintained the initial comparability of the program and control groups.

The initial evaluation sample consisted of 4,410 families in 21 projects. The analytic sample consisted of 3,961 families who were interviewed/tested at least once as part of the impact evaluation. Thus, 90 percent of the originally-assigned families were included in the analytic sample. This is a very high response rate for a longitudinal study of a low-income population. However, it is still possible that attrition occurred differentially across the program and control groups. To test for this possibility we compared the analytic sample of program and control families in each of the 21 sites on a set of 7 baseline characteristics.

- **Ethnicity:** African-American, Hispanic, White, or Other.
- **Partner in home:** Family has a partner in the home.
- **Employment:** Mother employed.
- **Mother's education:** Mother has a high school degree.
- **Teen mother:** Mother was teenager at the birth of her first child.
- **Low birth weight:** Focus child weighed less than 2,500 grams at birth.
- **Per person income:** Annual household per-person income.

Exhibit 3.4 shows the results of a total of 7 * 21 = 147 statistical tests between program and control groups.[2] Examination of the exhibit shows a scattering of significant differences although there are more than we would expect to see on the basis of chance alone. Of all the tests performed, 11 were statistically significant at the $p<0.05$ level, compared with 0.05 * 147 = 7 expected by chance.

Based on this analysis we can, with a good deal of confidence, conclude that the program and control samples available for use in the impact analysis (the 3,961 families which were measured at least once in this evaluation) are likely to be statistically comparable. However, we did find some significant baseline differences for some sites on some variables. We guarded against any potential bias introduced in certain sites by these small program/control differences by including the baseline characteristics listed above (as well as some others, i.e., primary language spoken at home, birth risk factors) in our analytic model. To sum up, the analyses conducted here give us a good deal of confidence in attributing observed differences between program and control groups to CCDP rather than to the baseline family characteristics in our model.

MEASUREMENT[3]

Who Was Measured? It was intended that CCDP projects provide services to all members of each enrolled family. Resources were not available to measure all family members, and so the evaluation made the most intensive measurements for two individuals in each family: the ***focus child*** who qualified the family for inclusion in the study, and the ***focus child's mother***. Less intensive measures were obtained from the ***father/resident partner*** (when available in the household), and from the mother about ***children born subsequent to the focus child***. Finally, data on mothers and fathers were used to create selected ***family-level*** variables.

The approach of targeting the majority of the evaluation's measurement resources on selected family members (focus child, mother), coupled with lesser amounts of resources devoted to measuring a second set of individuals (father/resident partner, subsequent births) means that the evaluation provides evidence about the impacts of CCDP on many different variables for some individuals, on a smaller number of variables for other individuals, and no evidence is provided about a third set of family members (e.g., older children, grandparents). In selecting the focus child and the focus child's mother as the targets of the most intensive measurement, we spent the largest amount of evaluation resources on those family members who also were likely to be the focus of the most intensive CCDP services for the longest period of time and thus, where we ought to be the most likely to find positive program effects. If no effects were found on these family members (where CCDP targeted the most effort) then it is unlikely that any effects would have been found for family members who received less intensive CCDP services.

When Were Measurements Made? One measurement approach for this study would have been to measure CCDP's outcomes only once, at the end of the five-year intervention period. In fact,

[2]Chi-squares for categorical measures and t-tests for continuous variables were conducted, and p-values were computed for these baseline comparisons for each of the 21 CCDP project in the impact evaluation.

[3]Copies of all measures used in this evaluation are contained in the data documentation available from ACYF..

this option received considerable attention during the design phase of the study. However, the final evaluation design called for annual repeated measures of outcomes between the time that the family was assigned to the program or the control group and the focus child's fifth birthday.

Repeated assessments were undertaken for the following reasons. Most important, we wanted to understand the timing of CCDP's effects. Although the program was designed to provide services to the same families over a five-year period, there is little prior research to indicate exactly when the different types of effects hypothesized to occur would actually become evident. Frequent measurement was therefore included to allow the evaluation to track the timing of program effects. Measuring only at the end of the evaluation would have told us what effects existed at that end point, but would have told us nothing about when, during the five year period, the effects emerged (or possibly, faded out).

Second, we assumed that families would participate in CCDP, and in the evaluation, for varying amounts of time. Therefore, frequent measurement maximized the likelihood that the evaluation would have at least one (or more) data point on each family enrolled in the study. Measuring only at the end of the program would have reduced the number of families measured in the study.

The data collection plan called for major assessments of children and families to be conducted on or about each focus child's 2nd, 3rd, 4th, and 5th birthdate (more limited assessments were conducted with mothers as their child reached 18 and 30 months of age). Thus, disregarding missing data because of item-level nonresponse, families in the Cohort 1 impact evaluation had between one and six assessments. Exhibit 3.5 shows the initial program and control group sample sizes, as well as the response rates achieved at the child's 2nd, 3rd, 4th, and 5th birthdates. Exhibit 3.6 provides a longitudinal summary of the same data, and shows the number and percentage of families who were measured at multiple time points in the evaluation. These are high response rates in a longitudinal study of a difficult population.

MEASUREMENT OF BASELINE INFORMATION

Most baseline data for this evaluation were collected on program and control families by CCDP project staff as part of the recruitment and enrollment process. However, these data did not include information about the pregnancy and birth of the focus children. Therefore, in the initial interview administered as part of the impact evaluation, mothers were asked to recall the following information about the focus child's birth and her behavior during the prenatal period:

- Use of prenatal care.
- Prematurity and birthweight.
- Problems/complications during pregnancy, use of special hospital care.
- Mother's use of cigarettes, alcohol, drugs during pregnancy.

MEASUREMENT OF CHILD OUTCOMES

CCDP projects intended to produce important effects on child development, school readiness, child health, and birth outcomes for children born subsequent to the focus child. This evaluation collected data in all of these areas, in line with previous research that conceives of school readiness as comprising physical, cognitive, social, and emotional development. Measurements of child development and health were made through direct assessment of the focus child by an independent tester and through parent reports, while data on birth outcomes were collected through parent reports on children born subsequent to the focus child. The major child outcomes assessed are listed below:

Cognitive Development (focus child)

- The Bayley Scales of Infant Development
- The Kaufman Assessment Battery for Children
- The Peabody Picture Vocabulary Test

Social and Emotional Development (focus child)

- The Scott and Hogan Adaptive Behavior Scale
- The Achenbach Child Behavior Checklist
- The Meisels Kindergarten Developmental Checklist

Physical Health/Growth (focus child)

- Child health index (derived from parent report)

Birth Outcomes (children born subsequent to the focus child)

- Prematurity and birthweight
- Use of special hospital care

Specific variables created for analysis are described later in this report, when we discuss the impacts of CCDP on children.

MEASUREMENT OF MATERNAL AND PATERNAL OUTCOMES

CCDP projects also hoped to produce important effects on participating mothers and fathers. On a repeated basis, data were collected on the economic status of the family, on the mother's and father's progress toward economic self-sufficiency, and on birth antecedents/risk factors associated with the birth of children born subsequent to the focus child. All of these data were collected only through maternal report. The major outcomes are listed below:

Economic Self-Sufficiency (mother, father)

- Household income (family)
- Mother's weekly wages (mother)
- Reliance on federal benefits (mother)
- Employment status (mother, father)
- Education level and participation (mother, father)

Birth Antecedents/Risk Factors (mother)

- Number of subsequent births
- Use of prenatal care
- Problems with pregnancy
- Pregnancy risks

Specific variables created for analysis are described later in this report, when we discuss the impacts of CCDP on mothers.

MEASUREMENT OF MEDIATING VARIABLES

Based on program materials and discussions with program staff, we developed a model of the ways in which CCDP was hypothesized to influence each of the key outcome areas for children and mothers. The model, discussed in Chapter 2, indicates that CCDP's hypothesized effects on child development are likely to be mediated by a variety of mechanisms including parents' mental and physical health, the family and home environment, and the child's early educational experiences. In terms of maternal economic self-sufficiency, potential mediating factors include parent's mental and physical health, and access and use of social supports. Subsequent birth outcomes could be improved through changes in maternal behaviors (smoking, drinking etc.), prenatal care and/or diet, as well as the home environment. Thus, the model led us to measure a number of time-varying characteristics of the family and home:

Maternal Physical Health (mother)

- Overall health rating
- Health habits

Maternal Mental Health (mother)

- Center for Epidemiological Studies Depression Scale
- Pearlin and Schooler Mastery Scale
- Carver and Schrier Ways of Coping Inventory
- NCAST Difficult Life Circumstances Scale
- Life skills
- Social connectedness
- Positive life outlook
- Work-related attitudes

Parenting (mother)

- Bavolek Adolescent-Adult Parenting Inventory
- Nursing Child Assessment Teaching Scale

MEASUREMENT OF SERVICES

The evaluation design called for measurement of the social, educational, and health services received by program and control families. The CCDP management information system provided detailed information on services received, but only for program families, as it was designed to monitor the nature and amount of services received by families participating in each of the CCDP projects. Hence, in spite of the richness of these data, the MIS could not be used to examine differences in services received by CCDP and control families. As a result, the impact evaluation collected a limited amount of information on service receipt for both program and control families through maternal self-reports.

Focus Child

- Health and dental services
- Child care
- Early childhood education

Mother

- Case management
- Academic education
- Parenting education
- Vocational training
- Substance abuse treatment
- Health, mental health, and dental services

The interim report from this evaluation (ACYF, 1994) considered service variables to be important short-term outcomes. That report compared services received by program and control group families and showed that CCDP families received substantially greater levels of service than control group families during the first two years of the program. A comparison of the services received by CCDP and control families is much less important for this final report—after five years of program operations it is important to focus instead on outcomes beyond service receipt. Thus, data on services received were not the major focus of this report.

COMPARABILITY OF TWO SOURCES OF SERVICE DATA

Over the past five years some grantee staff and researchers raised issues about the comparability of (1) data on receipt of services collected on CCDP families through CCDP's management information system and (2) data on the receipt of services collected on CCDP and control group families through parental self-report as part of the impact evaluation. Two presumptions underlie this question. The first is that the MIS data are perceived as being more accurate than parent self-report. The second presumption is that parent self-report is perceived as underestimating the amount of services actually received by families. Both presumptions lead to the worry that using parent self-report data either understates the effect of CCDP on these measures, or even worse, could lead to incorrect conclusions if the data are too unreliable.

There are some problems with these presumptions. First, there is a is a history of research on the corruption of record keeping systems--research which suggests that management information systems used for evaluative purposes are prone to falsification and unreliability (Cochran, 1978; Roos, et al., 1979). This suggests that we ought to be careful in deciding which of the two data sources is the "best." Second, much of the MIS data on services received was actually collected by parent self-report to case managers. This suggests that the two data sources may have more in common than appears at first glance. And third, parent self-report is widely accepted as a reasonable method of data collection for many of the most important data sets maintained in this country. It is the most commonly used method of data collection by many U.S. Government agencies including the decennial U.S. Census, much of the income tax data collected by the Internal Revenue Service, and most large surveys used for making national social policy.

Nonetheless, it is instructive to present a short analysis comparing data obtained through the two methods of collecting CCDP service data since a reasonable level of correspondence between the two measurement methods would provide evidence that the two sources of data were equally reliable as measures of obtaining consistent data. We conducted two sets of analyses comparing MIS and parent self-report data. In the first, we compared the amount of early childhood education received by the focus child over the life of the evaluation and found a correlation of .71 between the two measures. This is quite high considering that the two methods used different definitions of early childhood education and that the MIS data were missing or incomplete for the first two years of CCDP.

In the second analysis, we compared the percentage of families receiving several different types of services during fiscal year 1992 (see Exhibit 3.7). Contrary to some expectations, parents generally reported higher levels of service receipt through their interviews for the impact evaluation than were recorded on the MIS. This may show that the MIS undercounts services or that parents over-report service receipt. More likely, it shows that parent self-report reflects all services received by the family, including services received outside of CCDP, while the MIS recorded only services received through CCDP (if the latter is the case, then this analysis shows that CCDP families received substantial amounts of service outside of CCDP). In any case, there is no evidence from these analyses to support the contention that parents under-report service receipt or that the parent self-report data are less reliable than the MIS data.

DATA COLLECTION

Collection of data for this evaluation proved to be an extraordinarily complex and difficult task, involving the training and monitoring of 40 to 50 staff members in 21 sites who were responsible for interviewing thousands of mothers and testing thousands of children each year for several years. When possible, the three-hour parent interviews and hour-long child tests were conducted in respondent's homes. When in-home conditions made the collection of data impossible, arrangements were made to collect the data outside the home.

On-site teams consisting of an On-Site Researcher (OSR) and a Child Tester (CT) were hired and trained to collect data in each of the 21 sites. All evaluation data were collected by this team. The CT was blind to the assignment of families to program and control groups, although ongoing

contact with families eroded this desirable condition. Data collection for the impact evaluation began late in November 1991 and was concluded at the end of January 1996. All data on children and families were collected through tests of children and in-person interviews with mothers.

Most data collection took place in the family's home. Annual visits to administer tests and interviews lasted one and one-half to three hours, depending on the language used (Spanish language interviews and tests took considerably longer) and the age of the child. The OSRs and CTs typically operated out of a home office or a small rental office and visited each family's home twice a year during the first two years of the focus child's life and annually thereafter.

Because children were tested close to their 2nd, 3rd, 4th, and 5th birthdates, assessments and interviews were conducted throughout the year, rather than clustered at any particular annual time point. Testing was scheduled within a window of one month (i.e., two weeks before and after the birthday) when the child was younger than 36 months; at 36 months and thereafter, the window was widened to two months.

The data collection process involved a variety of disparate elements. A core evaluation team selected, modified, and designed data collection instruments and developed training materials and procedures. This team also recruited, hired, trained, and monitored on-site data collection staff; provided information on the families and the testing schedule; planned and coordinated the flow of information to and from the sites; and prepared periodic progress reports. OSRs maintained the site office (either in the OSR's home or in a field office), contacted mothers to schedule interviews and tests, arranged transportation when necessary, conducted in-person interviews with mothers, supervised the work of CTs, maintained ongoing contact with mothers, coordinated with CCDP projects, established and maintained a record system to document data collection, reviewed and cleaned data as well as transmitted data to be key-entered, and prepared regular progress reports. Finally, CTs administered standardized tests to focus children, interviewed mothers about their children's status, and reviewed and cleaned data.

The OSRs and CTs were recruited in spring 1991 and were trained to administer the maternal interview, the child status interview, and the Bayley Scales of Infant Development. Training also included an overview of the entire project, administrative procedures for organizing and maintaining site offices, as well as many other topics. In spring 1992 the field staff participated in a refresher training session, which included two new child assessment measures—the Kaufman-ABC (K-ABC) and the Peabody Picture Vocabulary Test (PPVT).

Training procedures were similar for the Bayley and the K-ABC. The field staff participated in a two-day training session conducted by professional trainers and were required to conduct at least four practice administrations at their sites. To assess the reliability of their scoring, field staff were required to view and score two videotaped administrations of the test, compute basal and ceiling scores for each, and submit the protocols for review. Central office staff then computed the extent of each tester's agreement with the criterion scoring. To assess the uniformity and accuracy of test administration, field staff also were asked to provide videotapes of themselves administering the test. These tapes were reviewed by an experienced tester. Field staff were then judged as passing or failing on three indicators: (1) scoring the reliability tapes, (2) computing basal and ceiling scores for each child, and (3) test administration. Only a small number of staff

required some retraining on correct administration. After the retraining, the field staff were required to make another videotape of their administration of the test. For the PPVT, which is a much more straightforward measure, reliability was assessed at the end of the training session.

ANALYTIC APPROACH

The strong evaluation design and comprehensive data collection provided a rich data set for addressing the key research questions about CCDP's effects on children and their mothers. ***Primary impact analyses*** were conducted to examine questions about the overall impacts of CCDP, and ***secondary impact analyses*** were conducted to address questions about the differential effects of CCDP for subgroups of families and for individual CCDP sites.

Primary Impact Analyses. These analyses examined the overall effect of CCDP on the cognitive and social-emotional development of children as well as on the social and economic well-being of their mothers. First, the primary impact analyses assessed program effects on the ***level*** of child and maternal performance. An example of a question addressed by analyses of the level of performance is:

> ***At the end of the program, when the focus children were five years of age, did CCDP children score higher than children in the control group on measures of development such as the K-ABC or PPVT?***

Second, the primary impact analyses assessed program effects on the ***slope*** or the ***pattern of growth over time*** on selected child or maternal outcomes. These analyses were conducted on measures for which there were repeated assessments of the same individuals using the same instrument over the 60 months of data collection. An example of the type of question addressed by analyses of slope or pattern of growth is:

> ***Did the cognitive abilities of CCDP children as measured by the K-ABC or PPVT develop or grow at a different rate than those of control group children?***

Independent of questions about program impact, data from the CCDP evaluation provide a picture of the developmental progress of a large sample of at-risk families and can be used to answer questions such as: "Does the development of CCDP children look similar to the picture of development derived from more heterogeneous, nationally-representative standardization samples?" Two advantages of the CCDP data base are (1) the size of the control group, which represents a larger sample of at-risk families than is included in the standardization samples for various developmental measures; and (2) longitudinal data collected by the evaluation on various aspects of family and child development, which gives a clearer picture of development than the more typical cross-sectional samples from standardization studies of other surveys or evaluations.

Secondary Impact Analyses. One set of secondary impact analyses examined variation in the effects of CCDP for selected subgroups of children and parents. These subgroups were selected based on prior research showing (1) a relationship between the grouping variable and child outcomes, and (2) differential effects of interventions on children from the different subgroups.

For parent outcomes, subgroup analyses examined whether CCDP had differential impacts on mothers who had a high school diploma at entry to the study vs. mothers without a diploma, mothers who were in their teens at the birth of their first child vs. older mothers, and several other groupings as described in Chapter 6. For child outcomes, subgroup analyses were done on variables such as male vs. female children, low birth weight vs. normal birth weight children, and other groupings as shown in Chapter 6.

Another set of secondary impact analyses examined differential treatment effects by site. These analyses tested whether the effect of CCDP varied as a function of the site in which the program was implemented. In this evaluation, site-to-site differences may reflect the demographic characteristics of the selected families, community differences in resource availability and the like, as well as programmatic differences in how CCDP was implemented.

The analytic approaches described above were conducted using both cross-sectional and longitudinal methods:

- **Cross-sectional analyses** were conducted to assess differences between program and comparison families at the end of the program.
- **Longitudinal analyses** were conducted to assess differences between program and control families in the patterns of change over time on selected variables, from enrollment to the end of the program period.

We analyzed the effects of CCDP on many different outcome variables, and for each outcome we used the maximum amount of data available so that analyses of different outcomes are based on slightly different numbers of cases, due to missing data for individual data elements. Exhibits in Chapter 4 and Chapter 5 show the number of cases that were used in the analysis of each outcome variable. An alternative strategy would have been to base all analyses on the subset of cases that had a full data set, with a resulting loss in sample size. We chose the strategy of preserving sample size and accepted the drawback of potentially different samples across variables.

The remainder of this chapter describes the types of cross-sectional and longitudinal analyses we conducted in this evaluation.

CROSS-SECTIONAL ANALYSES

Cross-sectional analyses were used to estimate the impact of CCDP on a range of "single time point" indicators, such as family income at the end of the study or a child's cognitive achievement at the end of the study, as well as "summed" indicators that aggregate information across the five years of the study, such as the number of months a mother was employed over the last five years.

Regression Model. We conducted a separate regression analysis for each outcome variable with site-by treatment interaction terms using a set of covariates (many of these are the baseline maternal and family characteristics discussed earlier) to increase the precision of the analytic estimates and to help control for any differential attrition between the CCDP and control groups.

For continuous variables, we used an ordinary least squares model (OLS), while dichotomous outcomes were modeled within a logistic regression framework.[4]

Relying on the experimental design, valid impact estimates could be obtained based on simple comparisons of means and proportions between the treatment and control groups. The precision of these estimates depends on (1) the natural variation among individuals in the particular outcome, and (2) the sample size available for the impact analysis. If, for example, there is a relatively large amount of variability among families on a given outcome measure, the magnitude of the standard error associated with the impact estimate will increase accordingly. Conversely, small sample sizes within sites raise the level of error in our impact models.[5]

Even assuming initial statistical comparability of the program and control groups, estimates of program impact can be improved by controlling for differences in the baseline characteristics of sample members that may be related to outcomes. Estimates are improved in that they are more precise, i.e., they allow us to achieve higher levels of statistical power by removing controlled sources of variation from the error term in our impact model.

Data collected at baseline were used to create a set of covariates which then were used in the regression models to estimate cross-sectional impacts.[6] Missing data for the covariates were imputed via a mean substitution method.[7] No attempt was made to interpret the coefficients of the covariates used in the analyses.

In estimating program impacts in a cross-sectional analysis, we wanted to take advantage of all the available data at a given time point, i.e., by using information from all of the study participants from whom data were collected. Because the random assignment of families to program and control groups took place at the individual site level, we estimated the overall program impact by **averaging the separately derived site-level impacts**; that is, we estimated an impact in each site

[4]In estimating impacts for dichotomous outcomes, there are tradeoffs between employing OLS vs. logistic regression procedures. The advantage of a multivariate OLS model is that we can control for heteroscedasticity of variance among sites by using a weighted least squares (WLS) approach, thus yielding more accurate standard errors. On the other hand, using this approach with dichotomous outcomes can produce some anomalous results. For example, under the WLS approach, fitted values which represent probabilities of the outcome can be produced which lie outside the range of theoretical possibility (0,1). The advantage of a logistic model is that predicted values will all lie between zero and one, and the standard errors will be estimated more accurately. This is especially true for rare events where the average predicted value lies close to zero. For these latter reasons, we chose to employ the logistic model.

[5]Because we pooled all of our data into one regression model, the sample size for estimating overall impacts was quite large (@3500 df for most analyses). We had less precision, however, to estimate site-level impacts since the individual site sample sizes were considerably smaller.

[6]The covariates were: family ethnicity (black vs. other), family ethnicity (Hispanic vs. other), home language (English vs. other), partner in the home (yes/no), mother's education level (number of years), mother working (yes/no), per person income in household, mother enrolled before first child's birth (yes/no), mother at first child's birth < 18 years old (yes/no), focus child is firstborn (yes/no), gender of focus child (male/female), birth weight of focus child (normal/low/very low), and number of birth risk indicators for focus child (0-7).

[7]The site-level mean covariate value was substituted for any family in the site which had missing data for that variable. Mean substitution is a conservative method of data imputation because it reduces the variation in the covariate value. For the purposes of this evaluation, however, it was an acceptable means of including all cases with outcome data in our regression analyses.

and derived an average impact across the selected sample of sites. To increase the precision of our analyses, we weighted the site-level estimates inversely proportional to their variances (i.e., giving more weight to the more precise impact estimates).

The number of birth risk indicators variable was created from seven baseline covariates measuring birth outcomes associated with the focus child including whether the mother experienced any problems during the pregnancy; whether the mother used alcohol or drugs, or smoked during pregnancy; whether the child was born prematurely; whether the child spent any nights in a special care unit; and whether the mother received late prenatal care.

Ordinary Least Squares Model. For continuous outcome measures, the overall impact of CCDP was estimated using an ordinary least squares (OLS) multivariate regression model controlling for family baseline characteristics. The OLS models are of the following form:

$$Y_{ij} = \beta_0 + \sum \beta_{1j} P_{ij} + \sum \beta_{2j-1} S_{ij} + \sum \beta_{3k} X_{ki} + \varepsilon_{ij} \qquad \textbf{(1)}$$

where,

Y_{ij} is an outcome Y for child or family i in site j,

P_{ij} represents the program indicator for child or family i in site j (1 = program participant in site j, 0 = all others),

S_{ij} is the indicator for child or family i in site j (j = 1...J-1),

X_{ki} are baseline characteristics of family i (i.e., those measured prior to participation in CCDP, such as ethnicity) for k = 1...K covariates,

β's are parameters to be estimated, and

ε_{ij} represents a random error term for child or family i in site j.

The statistical model was based on a two-stage estimation strategy. In the first stage, each outcome variable was modeled using OLS regression based on all families across all sites with the following parameters: an intercept, K baseline covariates, J-1 site-level variables and J site-by-treatment interaction variables[8]. The residuals from this analysis were then squared and averaged by site to produce a mean squared error for each of the J sites. These mean-squared residual terms formed the basis of weights used in the second stage of the analysis. In the second stage, a correction was made for heteroscedasticity of variance among sites by weighting each observation by an inverse of the adjusted mean-square error. The adjustment consists of multiplying the mean square error for a site by (n/(n-1)), where n is the sample size for that site. This procedure produced more accurate estimates of the standard errors than simple OLS regression.

[8]The intercept represents the control group mean in the excluded site. The site-level dummy coefficients represent the differences between the control group means for each site and the intercept.

To provide an overall estimate of impact on a given outcome variable, the J site-level effect estimates were averaged, weighted inversely proportional to the variance of these estimates. The estimated average effect was then divided by the square root of the pooled effect variance term across the J sites, to produce a t-statistic which was then used in a two-tailed statistical test with N-P degrees of freedom, where N = total sample size and P = the number of parameters to be estimated in the model. Statistically significant results were reported for p-values of less than .05.[9] For significant impacts we report standardized effect size indices, calculated by dividing the overall impact by the average pooled standard deviation between the two groups. This allowed us to compare effects on outcomes with different scales of measurement.

Logistic Regression Model. The logistic regression model representing the conditional response probability p_i is a means of estimating $\Pr(Y_i = 1 * X, Z_1, \ldots Z_k)$, where Y_i represents a dichotomous outcome measure (such as whether a mother has smoked during pregnancy), X represents the CCDP treatment status (1 = Program, 0 = Control) and $Z_1, \ldots Z_k$ represent the value of *k* covariates. The functional form of the model can be expressed as follows:

$$p_i = \frac{\exp(\beta_0 + \sum \beta_{1j} P_{ij} + \sum \beta_{2j-1} S_{ij} + \sum \beta_{3k} X_{ki})}{1 + \exp(\beta_0 + \sum \beta_{1j} P_{ij} + \sum \beta_{2j-1} S_{ij} + \sum \beta_{3k} X_{ki})} \qquad \textbf{(2)}$$

The terms in this model are equivalent to the ones represented by the OLS regression model. This expression is mathematically equivalent to a linear logit model, whereby the logit or log-odds of $p_i = \log(p_i / 1 - p_i)$. In our model, the β_j coefficients represent the difference between the site-level log-odds for the program group vs. the log-odds for the control group, adjusting for the effects of the *j* site-level indicators and the *k* covariates. In other words, the β_j's are logarithms of the adjusted odds-ratios for each site, and the antilogs, exp(β_j's) are the odds-ratios expressing the relationship between program status and the outcome for each site. These site-level logit coefficients are weighted inversely proportional to their variances to yield an overall average logit.[10] The exponent or antilog of this term is thus equal to the average odds-ratio expressing the ratio of the probability or odds, $(p_i / 1 - p_i)$, of an event occurring in the program group to the odds of it occurring in the control group. The odds-ratio is thus equal to:

$$\frac{(p_{ip}/1-p_{ip})}{(p_{ic}/1-p_{ic})} \qquad \textbf{(3)}$$

where,

p_{ip} is the odds of an event occurring in the program group, and

p_{ic} is the odds of an event occurring in the control group.

[9]Although the expectation is that CCDP should produce positive effects favoring the program group, we employed a more conservative two-tailed hypothesis test to also allow for outcomes favoring the control group. In fact, earlier analyses had revealed several small site-level impacts favoring the control group.

[10]For some extremely rare events, where the outcome is not observed in a site, we used a pooled model where the site-by-treatment terms were dropped from the analytic model.

The odds-ratio ranges in value from 0 to infinity. An odds ratio of 1 indicates that the probabilities are equal in the two groups. Odds-ratios between 0 and 1 indicate outcomes favoring the control group, while odds-ratios greater than 1 indicate outcomes favoring the program group; e.g., an odds-ratio equal to 2 indicates that the odds of the event occuring in the program group is twice as great as the odds of the event occuring in the control group.

LONGITUDINAL ANALYSES

A second analytic approach was used with a subset of outcomes to examine differences between program and control families in patterns of change over time, from enrollment to the end of the program period. These longitudinal analyses took advantage of the fact that we had repeated measures on developmental outcomes for children and families. The analytic techniques are described below, preceded by discussion of how the relevant longitudinal file was constructed.

Longitudinal Analysis File. We obtained at least one interview on 90 percent of the 4,410 families originally assigned to the study. The majority of families were contacted multiple times, as was shown earlier, in Exhibit 3.6. The longitudinal analysis sample (n=3,961) included all of these families, even those for which we had only a single data point. For each outcome variable, the number of possible data points depended on the data collection schedule. Child assessments were done annually starting at age 24 months; therefore, child development variables had up to four data points (24, 36, 48, and 60 months of age). Parent interviews were conducted semi-annually up to age 36 months and annually thereafter. Outcomes based on these interviews had up to six data points (18, 24, 30, 36, 48, and 60 months).

Longitudinal Growth Curve Analysis. Growth curve analysis is appropriate for asking whether an intervention affects the way in which individuals change over time. Therefore, this methodology was clearly appropriate for analyzing child development outcomes, such as cognitive development, on which children are expected to change over time due to maturation alone. While it is not clear that longitudinal analyses produce importantly different impact estimates than cross-sectional analyses (i.e., small or large effects seen through a cross-sectional analysis are likely to be small or large effects when seen through a longitudinal analysis), the longitudinal analyses conducted for this evaluation provided important information about growth over time as well as more reliable impact estimates, since each impact estimate was based on the information from several, instead of only one, data point.

Several child development outcomes were described earlier (e.g., the PPVT, the K-ABC). For each of these outcomes we modeled individual growth curves within the framework of a hierarchical linear model. The model was hierarchical in the sense that multiple observations on each individual were nested within individual children or families. The first level of the hierarchical model of change (within person) addressed the question "How do individuals change over time?" The second level (between person) built upon the first level by dealing with the question "Do the individual effects for each person differ systematically among different children?"

Below we discuss how we applied a two-level hierarchical linear growth model, where multiple observations were nested within individual families.[11] Formally, the first level of the model represents each person's development in the form of an individual growth curve trajectory, which then becomes the outcome variable in the between-person level of our model. This parameter varied among individuals as a function of person-level or programmatic-level variables. We formally postulate a linear growth curve model at two levels, using the PPVT as an example. The within-person (level 1) or repeated observations model is denoted as follows:

$$Y_{ij} = B_{0j} + B_{1j}(t_{ij} - C) + R_{ij} \qquad \textbf{(4)}$$

where,

Y_{ij} is an observed outcome measure (score on the PPVT) for child *j* at time *i*,

t_{ij} is the age for child *j* at time *i*,

C is the centering parameter set to a particular time (e.g., 12, 24 months),

B_{0j} is the status (intercept) for child *j*, defined at time C,

B_{1j} is the growth rate parameter (average rate of change) for child *j*, and

R_{ij} represents a random error term for child *j* at time *i*.

According to standard OLS regression practice, the interpretation of B_{0j} depends on how the age or time metric is scaled. The centering parameter, C, was chosen to be a meaningful point in time so that B_0 is made interpretable. When C = 0, then B_0 = 0, or time of birth of child. In other words, "initial status" is dependent on the chosen time of C. The intercept parameter, B_{0j}, represents the true ability of person *j* when t_{ij} = C. For example, if we are interested in measuring language ability, then the centering parameter, C, could be set at 12 months because this is approximately the time when most children begin to actively use language. In this case initial status, B_{0j}, would represent the child's language ability at 12 months. For the purposes of the impact analyses, C was set to 60, so that the intercept represented level of ability or performance at 60 months, or the end of the study, when children typically would be ready to enter school.

In the between-person (level 2) model, variation in the growth parameters, B_{kj}, was modeled as a function of child background characteristics (e.g., sex, ethnicity, age of mother at birth), and program status (CCDP or control). In the between-person model, the B_{kj} are random outcome variables. A between-person model estimated within each site (assuming no site-level effects) was formulated for both the intercept, B_{0j}, and growth rate parameter, B_{1j}, as follows:

[11]The number and spacing of measurements varied for each child. Some children's growth curve parameters were based on three or four observations, and some on as few as one, depending on patterns of missing data. The analysis included cases having only one time point, although the parameters for these observations were estimated with less reliability. These cases could be used to estimate an intercept, while slopes for these cases were derived from the overall mean slope.

$$B_{0j} = \$_{00} + \$_{01}TX_j + \sum \$_{0k}X_{kj} + U_{0j} \qquad \textbf{(5)}$$

$$B_{1j} = \$_{10} + \$_{11}TX_j + \sum \$_{1k}X_{kj} + U_{1j} \qquad \textbf{(6)}$$

where,

B_{0j} represents the intercept parameter (from level 1 model) for child *j*,

B_{1j} represents the growth rate parameter (from level 1 model) for child *j*,

TX_j represents the program indicator for child *j* (1 = CCDP program group member, 0 = control group member),

X_{kj} are the measured background and programmatic characteristics for child *j* for $k = 2...K$ additional predictor variables,

U_{0j} and U_{1j} are random error terms for child *j* measuring the extent to which the intercept and rate of growth are not fully explained by the vector of child-level characteristics and treatment status,

$\$_{00}$ is the intercept for the control group,

$\$_{01}$ is the effect of CCDP on the intercept at time C,

$\$_{10}$ is the growth rate for the control group,

$\$_{11}$ is the effect of CCDP on growth, and

$\$_{0k}$ and $\$_{1k}$ are vectors of *q* regression coefficients which capture the effects of X_j predictor variables on the intercept and growth rate parameters, respectively.

The results of these analyses allowed us to determine:

- The average status of all children at 60 months (the within-person model).
- The average rate at which all children in the evaluation grew over time (the within-person model).
- Whether CCDP children had a different level of performance at 60 months (the between-person model).
- Whether CCDP children grew at a different rate than control group children (the between-person model).

SUBGROUP ANALYSES

In addition to analyses estimating overall impacts, we examined the variation in outcomes associated with family characteristics. Within each site, families were randomly assigned to participate in CCDP or in a control group. This design feature ensured us that, with large enough samples, there would be comparable distributions of families in CCDP and in the control group on all family characteristics. Thus, unbiased estimates of the effectiveness of CCDP could be obtained for answering research questions concerning variations in impacts for different types of families. These questions could be answered from the perspective of a cross-sectional analysis as well as within a longitudinal framework. Because of the reduced size of the subgroup samples, however, there was a subsequent cost of reduced statistical power.

Two distinct approaches were available to measure variation in impacts for different groups of families. First, interaction terms between the treatment indicator and each subgroup characteristic could be included in the analytic model testing the overall impact of CCDP. Suppose, for example, that we were analyzing the effects of CCDP on teenage mothers vs. older mothers. The coefficient for the teenage mother interaction term would indicate how, holding all other characteristics constant, the effect of CCDP varied as a result of being a teenage mother. This model would allow us to answer the question of whether there is a differential impact of CCDP on families which differ only in whether the mother was a teenager at birth of the first child. The interaction model would be useful for identifying variables which may be causally linked to program impacts. However, this approach would not answer what is probably the more interesting policy question, which is how the effect of CCDP varies between teenage and older mothers, given that these groups of families differ on many other characteristics as well (such as race, education of the parents, and so on). To address that question, we needed to allow all covariates to interact with teenage mother status. But this was infeasible because it required the analytical model to include a myriad of interaction terms.

As a practical alternative, we chose to separate the sample into teenage and older mother subgroups, and replicate the full-sample analysis on each subgroup. In this “separate groups” model, the sample was stratified by the particular subgroup variable and impacts were estimated separately for the two subgroups.[12]

To estimate impacts for each subgroup, we used an analytic model similar to the one we used to estimate overall impacts across sites in equation (1)[13]. In this model a specific program outcome is expressed as a function of the CCDP treatment indicator, site membership, and baseline covariates. The only difference is that in the "separate groups" model the baseline covariate used to define the subgroup variable drops out of the equation. In addition, for each of the subgroups,

[12]The method for formally conducting this comparison involved computing a large-sample *Z* test for parallelism of two slopes. This test statistic computed the difference between the two $\$_1$ estimates for the two groups representing the impact of CCDP on teenage and older mothers, divided by an estimate of the pooled standard error of the estimated slopes for the two groups. Statistical significance was determined by comparing the value of the test statistic to values from a standard normal probability table.

[13]For categorical outcomes we used a logistic regression model.

the average impact of CCDP is measured **only** on families in that subgroup, who may differ from families in the other subgroup on any of the other covariates in the model.

The "separate groups" model is formulated as follows:

$$Y_{ij} = \beta_0 + \beta_{1j} P_{ij} + \beta_{2j-1} S_{ij} + \beta_{3k} X_{ki} + \varepsilon_{ij} \qquad \textbf{(7)}$$

where,

Y_{ij} = outcome *Y* for person *i* (e.g., level of income) in site *j*,

P_{ij} = the program indicator for site *j* (1=Program participant in site *j*, 0=all others),

S_{ij} = the indicator for site *j* (*j* = 1...J-1),

X_{ki} = baseline characteristics of person *i* (other than the subgroup indicator) for *k* = 1...K covariates and

ε_{ij} = a random error term for person *i* in site *j*.

The question answered by this analytic model is whether CCDP had differential impacts on different groups of participants. In this formulation the difference in impacts between the teenage and older mother groups, for example, may be due to differences between these two groups other than age at childbirth. For example, teenage mothers may have had fewer children than older mothers, may have had less education, and may have been more likely to drink alcohol during pregnancy. Our approach takes into account the full extent of variation between the two contrasted subgroups and is therefore potentially useful for targeting program services appropriately.

Exhibit 3.1

CCDP Evaluation Design

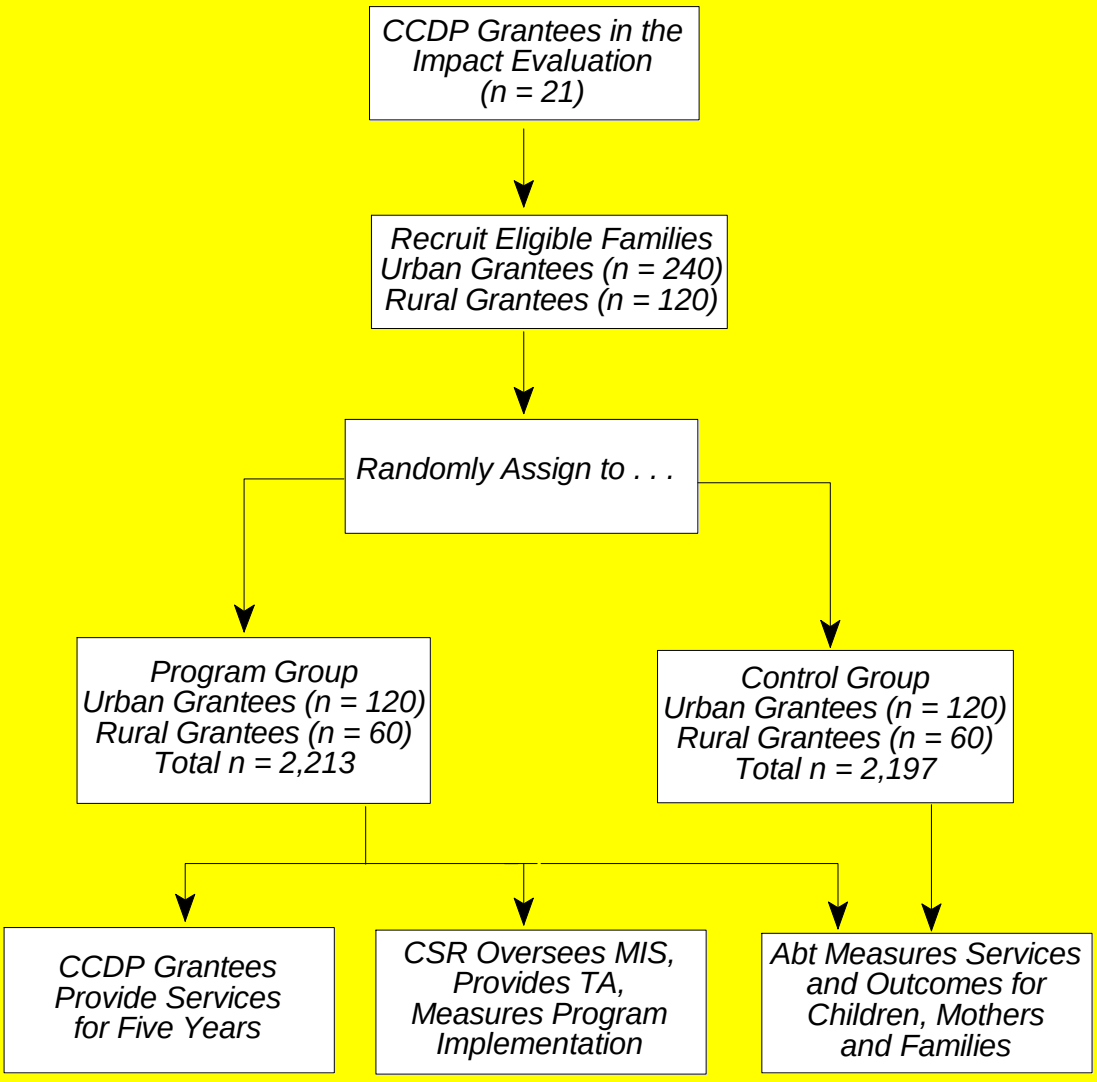


EXHIBIT 3.2

NUMBER OF PROGRAM FAMILIES RECRUITED, BY SITE AND MONTH

SITE ID	MONTH (1990)											
	J	F	M	A	M	J	J	A	S	O	N	D
01							23	85	14			
02	1	3	13	15	13	8	3	4				1
03				38	37	16	6		6	1	1	
05						50	33	31	1			
06				49	47	15	9	1				
07				8	25	36	23	22	6			
08							33	3	5			
09				19	29	29	18	18	7			
10				12	13	8	14	9	2	1		
11		10	10	5	14	13	9	18	25	6	10	
12			8	22	50	31	6	2				
13			12	53	47	8						
14			16	31	57	11	5					
15				45	69							
16					1	34	50	8	2			
17						5	48	21	40			
18				19	14	11	33	24	19			
19	1	9	19	12	8	1	3	8				
20							101	12				
21			3	24	18	4	1	13	48	3		
22				8	27	19	29	37				

EXHIBIT 3.3

BASELINE CHARACTERISTICS OF PROGRAM FAMILIES, FIRST 50 PERCENT RECRUITED VS. LAST 50 PERCENT RECRUITED[A]

BASELINE CHARACTERISTIC	FIRST 50% RECRUITED (N=1,044)	LAST 50% RECRUITED (N=1,048)
Mothers Has High School Diploma	47.2%	45.1%
Family Has Resident Partner in Home	42.5%	37.1%
Mother is Employed	14.4%	17.7%
Family Receives AFDC	70.5%	66.2%
Mother a Teenager at Birth of First Child	36.0%	37.5%
Low Birth Weight Focus Child	10.6%	10.0%
Total Annual Per Person Income	$1,640	$1,829

[a] Families recruited at the site median point were eliminated from these analyses.

EXHIBIT 3.4

P-VALUES FOR DIFFERENCES ON SELECTED BASELINE VARIABLES BETWEEN ANALYTIC SAMPLE PROGRAM AND CONTROL GROUP FAMILIES, BY PROJECT

SITE ID	ETHNICITY	% PARTNER IN HOME	% MOTHERS WORKING	% MOTHERS WITH H.S. DEGREE	% TEENS AT BIRTH OF FIRST CHILD	% LOW BIRTH WEIGHT	PP INCOME	TOTAL # P<.05	TOTAL # P<.007
01			*					1	0
02					**		*	2	1
03		**						1	1
05			*					1	0
06								0	0
07								0	0
08								0	0
09	**	*						2	1
10			*					1	0
11				*				1	0
12								0	0
13								0	0
14								0	0
15			**					1	1
16								0	0
17								0	0
18								0	0
19								0	0
20								0	0
21						*		1	0
22								0	0
Total	1	2	4	1	1	1	1	11	4

*p<.05
**p<.007

EXHIBIT 3.5

PERCENTAGE OF COMPLETED INTERVIEWS, BY FOCUS CHILD AGE

FOCUS CHILD AGE	PROGRAM (N=2,213)	CONTROL (N=2,197)
Age 2[a]	59%	65%
Age 3	80%	84%
Age 4	77%	81%
Age 5	74%	78%

[a] Response rate is low at age 2 because data collection could not begin until a large fraction of children had already passed their second birthdate.

EXHIBIT 3.6

PERCENTAGE OF FAMILIES WITH DIFFERING NUMBER OF INTERVIEWS IN THE CCDP IMPACT EVALUATION

NUMBER OF INTERVIEWS	PROGRAM FAMILIES (N=2,213)	CONTROL FAMILIES (N=2,197)	TOTAL SAMPLE (N=4,410)
0	10%	10%	10%
1	3%	2%	3%
2	5%	4%	4%
3	14%	8%	11%
4	27%	20%	24%
5	32%	40%	36%
6	9%	16%	12%

EXHIBIT 3.7

PERCENTAGE OF FAMILIES RECEIVING SERVICES: COMPARISON OF MIS DATA WITH PARENT SELF-REPORT (FISCAL YEAR 1992)

TYPE OF SERVICE	MIS DATA[A]	PARENT SELF-REPORT DATA	
	CCDP	CCDP	CONTROL
Adult education courses	30%	38%	26%
Working on a GED	8%	12%	8%
College courses	4%	13%	6%
Vocational training	7%	18%	13%
Dental care (mother)	9%	48%	48%
Mental health counseling (mother)	9%	16%	9%
Preventive health care (mother)	41%	66%	66%
Chronic care (mother)	3%	10%	6%
Acute care (mother)	28%	40%	40%
Well baby care (child)	32%	87%	84%
Chronic care (child)	4%	7%	7%
Acute care (child)	42%	66%	66%

[a] These data were taken from the final report from the CCDP process evaluation, Chapter 3, Exhibits 3-52, 3-55, and 3-59 (CSR, Incorporated, 1997).

CHAPTER 4

EFFECTS ON PARENTS ACROSS ALL PROJECTS

CCDP was designed and implemented to improve the ability of parents to be (1) economically self-sufficient members of society, and (2) effective parents to their children. Underlying this strategy was the assumption that the effects of poverty on young children are mediated by parents, and that changing the lives and behaviors of parents will have significant and positive effects on children's development.

This chapter presents findings about the impacts of CCDP on the economic self-sufficiency of CCDP mothers, fathers, and families, and on the parenting behaviors of CCDP mothers. The analysis pools data across all 21 projects in the evaluation. Analyses of the effects of individual projects are presented in Chapter 6.

ECONOMIC SELF-SUFFICIENCY

All of the families that were recruited for the CCDP evaluation were living at or below the 1989 poverty level, and the majority (58 percent) were headed by a single female parent. More than half of the mothers (51 percent) had not finished high school, and two-thirds were receiving AFDC. The long-term economic prospects for such families are generally bleak. The GAO's 1991 analyses of the National Longitudinal Survey of Youth (NLSY) show that many single mothers remain near or below the poverty line, even if they work full-time. In addition to having less education, low-income women tend to have less work experience than their non-low-income counterparts (an average of two years vs. an average of five years, respectively), and are likely to end up in lower paying jobs. When they do find work, they are poorly paid and vulnerable to layoffs and other work interruptions, and their jobs usually lack fringe benefits such as paid sick leave and health insurance. Without better job skills, the GAO analysts conclude, most will continue to need income support in the form of AFDC and food stamps (GAO, 1991).

Most often, these women cannot find full-time work and must settle for a part-time job or try to coordinate two part-time jobs. A 1995 analysis of three Survey of Program Participation and Income (SIPP) panels, spanning the period 1985 to 1990, found that about one-third of the women who left AFDC for work held two jobs simultaneously. Mothers in this sample worked an average of only 20 hours a week, and monthly incomes ranged from $1,060 to $1,260 (Brandon, 1995). It is hardly surprising that more than one-fifth of these women returned to AFDC less than six months after leaving it.

RATIONALE FOR EXPECTED EFFECTS

The challenge for CCDP was to improve employment prospects so that, over a period of five years, families would move off welfare and achieve economic self-sufficiency. While there exists no research evidence about the period of time necessary to achieve these goals, CCDP's designers clearly believed that the five-year program period would be sufficient to allow parents to complete or add to their educational qualifications and to acquire the kinds of skills that would lead to an adequately paying job. The program facilitated this process in a number of ways. Grantees:

- provided training in life skills during home visits,
- worked with parents to identify their educational and occupational goals and the steps that needed to be taken to attain them,
- referred parents to educational and job training programs,
- helped parents find appropriate and reliable child care,
- assisted with transportation, and
- provided ongoing support through home visits by the case manager.

No previous intervention program has provided such a comprehensive array of services and supports over a comparably long period of time, so there exists little prior evidence on the likely effectiveness of the strategy used by CCDP. However, some research studies do provide support for a long-term approach. Consider the research surrounding the utility of the GED credential. There is substantial evidence that social programs can help low-income adults obtain a GED (Pauly & DiMeo, 1995; St.Pierre, et al., 1995); there is some uncertainty about the impact of GED attainment on employment and earnings (Murnane, Willett & Parker-Boudett, 1995); and there is little evidence that having a GED increases the basic educational skills that are related to more employment and higher earnings (Quinn, 1993; Martinson & Freedlander, 1994; St.Pierre, et al., 1995; Pauly & DiMeo, 1995). To meet the goal of helping parents become economically self-sufficient, a program needs sufficient time to move participants beyond the GED to further education, which has been shown to confer an economic advantage (BLS, 1993). The advantage is similar for education at a community college and at a four-year college, and even students who do not complete degrees achieve some income advantage (Kane & Rouse, 1993).

Programs that emphasize the acquisition of short-term basic skills and job training over a longer-term educational strategy also seem to take several years to manifest positive effects. An evaluation of New York State's Comprehensive Employment Opportunity Support Centers Program, a project designed to move low-income mothers with young children toward self-sufficiency, did not find significant positive effects on employment and earnings and a significant reduction in dependence on public assistance and food stamps until the end of the third program year (Werner, et al., 1994). This initiative provided a comprehensive array of services including case management, assistance with child care and transportation, pre-employment and educational skills training, intensive employment training, and job search services. One explanation for the delayed employment effect was that, though mothers eagerly took part in training programs, they delayed entry to the labor market until their child entered preschool or kindergarten. Thus,

findings from both educational and job training research streams support the CCDP strategy of providing support for parents' efforts over a period of several years.

About two years into the evaluation, we concluded that CCDP was moving parents to enroll in more academic and vocational classes than control group parents (ACYF, 1994). More CCDP mothers were working toward a qualification of some sort, including a GED or Associate degree, a trade licence or certificate, or a Bachelor's degree. However, it is important to note that while the differences were statistically significant, the percentages of CCDP mothers who were working toward a credential of some kind or taking classes were relatively small (from seven percent working toward a degree or certificate to over one-third taking academic classes), and that about half as many control group mothers participated in similar classes. While important, these differences do not seem to be of sufficient magnitude to lead to the changes that the research cited above has shown are necessary to affect employment and earnings.

We tracked participation in educational and vocational classes and educational achievement throughout the life of the evaluation; however, we regard such activities as precursors to the hoped-for outcomes for parents at the end of the five-year period. Thus, the analyses of program impacts on economic self-sufficiency presented in this report focus primarily on employment, income from earnings, and welfare dependency, and only secondarily on changes in educational status. For the majority of families headed by a single mother, the analyses focused on changes in the status of the mother. In families where a husband or resident partner was present, some analyses included changes in the status of both adults.

MEASURES AND ANALYTIC VARIABLES

All of the measures of economic self-sufficiency used in this evaluation were derived from individual survey items or from combined sets of survey items which were collected through a Parent Interview. The interview was administered in person at six-month intervals early in the evaluation and annually after the focus child reached three years of age. Exhibit 4.1 summarizes the measures and the analytic variables created.

Employment. Both the **employment status** and the **level of employment** of the mother and her husband or partner (if present) were measured. Three variables were created to capture employment status: whether the mother was employed at the time of each interview, whether the husband or partner was employed at the time of each interview, and whether either the mother or her partner was employed at each interview. The following variables were created to capture the level of employment of adults in the family: (1) the percentage of months in the preceding quarter worked by the mother at each interview, (2) the nature of the jobs that the mother held at each interview (measured as 0 = not employed, 1 = single part-time job, 2 = multiple part-time job, 3 = multiple part-time jobs, 4 = full-time job), (3) the number of hours per week worked by the mother at the time of each interview, (4) the percentage of time that the mother and/or resident male partner were employed over the life of the study, and (5) the percentage of mothers who were continuously employed throughout the life of the study.

Income. Three measures of income were used: **(1) total household income, (2) hourly wage**, and **(3) mother's income from earnings**. Total household income was measured through an interview item that recorded total household income from all sources for the calendar year preceding each interview. The data were collected using ten income categories, and the mid-point of the category was used to represent the family's annual income. Mothers' income from earnings was measured in terms of both hourly and weekly wages (computed by multiplying the hourly wage by the number of hours per week worked).

Dependence on Public Assistance. Five measures of dependence on public assistance were used: **(1) receipt of AFDC at the end of the study**, **(2) reliance on AFDC as a source of support**, **(3) remaining on AFDC throughout the study**, **(4) receipt of food stamps at the end of the study**, and **(5) proportion of time families received food stamps**. Whether the mother was currently receiving AFDC was measured at each interview point. A four-category variable was created to measure reliance on AFDC: 0 = no income, 1 = income from AFDC only, 2 = income from AFDC and wages combined, and 3 = income from earnings only. To measure persistence of stay on AFDC, we calculated the percentage of families that remained on AFDC for the life of the study. Receipt of food stamps was measured at each interview, and the proportion of time that each family received food stamps throughout the study was also calculated.

Steps to Employment. Because many parents entered the study without having completed a high school education and with little or no work experience, it seemed plausible that some might still be in educational or training programs at the end of the study. Two measures of parents' pre-employment status were considered: **(1) participation in academic or vocational training**, and **(2) acquisition of an educational credential**. Participation in academic or vocational training was measured as the percentage of mothers enrolled in academic, vocational, or job training programs at each interview. Three variables were created to measure progress toward acquisition of a credential: (1) the percentage of mothers who held a high school diploma, GED, or vocational certificate or diploma by the end of the study; (2) the percentage of mothers who had some college credits by the end of the study; and (3) the percentage of mothers who, by the end of the study, had received a degree from a two- or four-year institution.

EFFECTS ON ECONOMIC SELF-SUFFICIENCY ACROSS ALL PROJECTS

While CCDP was not designed as a job-training program, a major goal was to assist families in becoming economically self-sufficient. In the majority of families, which were headed by single mothers, CCDP focused on helping mothers acquire the skills they needed to enter the job market or, in some cases, helping them find child care and moving directly into a job. If a husband or resident partner was present, CCDP addressed his needs for training or employment as well. Given the employment prospects and experience of low-income, ill-educated adults, CCDP also tried to help parents achieve more adequate levels of employment, i.e., to move beyond part-time, seasonal or intermittent work, to full-time, more stable employment.

The program was hypothesized to have a variety of impacts on parental employment. We anticipated that more program mothers (and their partners, when present) would be employed, that the number of hours worked per week would increase, that the stability and continuity of employment would increase, and that mothers might, over time, move into full-time jobs. Because CCDP linked parents to child care and, in some instances, provided it, as well as helping with transportation problems, it also seemed possible that the program would affect the total percentage of time mothers and their male partners were employed over the life of the study by lessening the likelihood that work would be interrupted by a breakdown in child care or transportation arrangements.

Employment Status. CCDP had no significant effect on the employment status of mothers at the end of the study or on the rate of change over time in the percentage of employed mothers. Nor was there an effect on the percentage of families in which the mother's partner was employed, or the percentage of families in which either the mother or her partner was employed (Exhibit 4.2).

The percentage of mothers in the CCDP and control groups who were employed rose steadily and at the same rate over time. At the beginning of the study, about 15 percent of CCDP and control group mothers were employed; by the end of the study, about 40 percent of the mothers in each group were working (Exhibits 4.3 and 4.4).[1] The percentage of families with resident male partners who were employed rose over time, but more slowly, from 16 percent to over 30 percent (Exhibits 4.3 and 4.5). At the beginning of the study, about 30 percent of families contained at least one employed parent; over time, the percentage doubled (Exhibits 4.3 and 4.6).

Level of Employment. CCDP had no significant effect on the level of mothers' employment, as measured by the percentage of months worked in the quarter prior to the interview, the number of hours per week worked, or the nature of the jobs worked at any one time. There were no effects on any of these variables at the end of the study or on the rate of change in these variables over time. Nor did CCDP significantly affect the total percentage of time that mothers or male partners were employed over the life of the study, or the number of mothers who were continuously employed throughout the study (Exhibit 4.2).

The percentage of months that mothers in CCDP and in the control group worked in each quarter rose over time[2] from 29 percent to over 40 percent (Exhibits 4.3 and 4.7). Averaged across all mothers in the study, the number of hours worked per week increased over time, from 8 to 14 hours (Exhibits 4.3 and 4.8). If we consider only working mothers, the average number of hours worked per week was greater and rose from 30 hours a week in the fifth quarter to 35 hours a week, close to full-time, by the end of the study (Exhibits 4.3 and 4.9). Another measure of the adequacy of employment is the nature of the jobs worked at a single time-point. We assumed that

[1]Measurements were not done each quarter. Rather, Exhibits 4.4 through 4.20 were constructed by extrapolating data collected in annual interviews to the preceding four quarters, and then averaging all data available for each quarter.

[2]There were no baseline data for these variables; hence, the first data point is at the end of the fifth quarter. This means that the first measurement point typically reflects some exposure to CCDP. For the purposes of assessing program impacts, we focused on the status of each measure at the end of the program.

a full-time job, carrying with it the possibility of benefits, was the long-term goal for most mothers. As Exhibits 4.3 and 4.10 show, this goal was not achieved by most mothers. After more than four years, most mothers held a single part-time job.

Although mothers and resident male partners each were employed about 30 percent of the time over the life of the study, and one or the other was employed about half of the time, there were no significant differences between the CCDP and control groups. Only 6 percent of mothers were continuously employed throughout the study, with no difference between the CCDP and control groups (Exhibits 4.2 and 4.3).

Income. CCDP had no significant effect on total household income at the end of the study. However, there was a statistically significant but small impact on the rate of increase in household income over time (Exhibits 4.2, 4.3, and 4.11). Whereas control group incomes increased by an average of $52 per month over the life of the study, the income of CCDP families increased by an average of $72 per month. This differential rate of increase amounts to an annual difference of about $240 between the average CCDP and control group family. This difference in the rate of income change over time is not attributable to a difference in earned income, because CCDP had no impact either on the level of mothers' earned income at the end of the study or on the rate of change in earned income over time (Exhibit 4.2). Since there was no difference between the CCDP and control groups in the rate at which earned income increased, the difference in the rate of increase of total household income might be due to CCDP families receiving greater AFDC benefits at some point in the study, or to small differences in family composition (e.g., CCDP families might have had slightly more wage earners on average). In any case, there was no significant difference between the CCDP and control groups in total household income at the end of the study.

Total household income rose over time for both the CCDP and control groups, from a mean of about $10,000 in 1990 to $12,000 for CCDP families and $11,600 for control group families in 1995, an increase of about $1,500 to $2,000 (Exhibits 4.3 and 4.11). Adjusted for inflation, the increase over the five-year period amounted to approximately $460, or five percent of families' 1990 income. Throughout this period, most families in the CCDP and control groups continued to live in poverty. The average hourly wage for working mothers changed little over time, rising from about $6 to about $7 an hour over more than four years (Exhibit 4.12). This is about a four percent annual increase, roughly equal to the increased cost of living during this period. Averaged across all mothers in the study, weekly income from earnings doubled over time, rising from about $50 to about $93 a week (Exhibits 4.3 and 4.13). This increase is attributable to the increase in the number of hours per week worked. When weekly wages are averaged across working mothers only, weekly wage income increased from $191 to $245 over more than four years, only a slight change if adjusted for inflation (Exhibits 4.3 and 4.14).

Dependence on Public Assistance. CCDP had no significant effect on receipt of AFDC or food stamps, on the extent of family reliance on AFDC as their only source of income, or on the percentage of families that stayed on AFDC throughout the life of the study (Exhibit 4.2). While

there were no differences between the CCDP and control groups in terms of their dependence on AFDC, several interesting trends can be noted:

- One-quarter of the families in each group remained on AFDC throughout the study (Exhibit 4.3).
- During the period of the study, the percentage of CCDP and control group families on AFDC declined from about two-thirds to about half (Exhibits 4.3 and 4.15).
- The percentage of CCDP and control group families dependent on AFDC for all of their income declined from 55 percent to 31 percent over the period of the study (Exhibit 4.16).
- There was a corresponding increase, from 20 percent to 44 percent, in the percentage of CCDP and control group families whose entire income came from earnings (Exhibit 4.17).
- There was an increase, from about 10 percent to 13 percent, in the percentage of CCDP and control group families who decreased their dependence on AFDC, combining it with income from a job (Exhibit 4.18).

Finally, the data in Exhibit 4.3 and the graph in Exhibit 4.19 show that the percentage of CCDP and control group families receiving food stamps declined over time, from almost 80 percent in both groups at the start of the study to 68 percent in both groups at the end of the study. While CCDP had no impact on the level of food stamp usage at the end of the program (Exhibit 4.2), there was a small but statistically significant difference in the pattern of food stamp usage over time (Exhibit 4.2) such that CCDP families were more likely to receive food stamps during the period of the study (Exhibit 4.19).

Steps to Employment. One explanation for the absence of effects on mothers' employment is that, instead of working, CCDP mothers continued to upgrade their academic and job-related skills and qualifications at a higher rate than control group mothers. This explanation held for the first two years of the study, when CCDP mothers were more likely than their control group counterparts to participate in academic or vocational classes. However, the participation of CCDP mothers in academic or vocational classes decreased significantly over time (Exhibit 4.2) from over 50 percent to 26 percent (Exhibits 4.3 and 4.20) so that, at the end of the study, there was no significant difference between CCDP and control group mothers. Further, at the end of the study there was no effect on educational status variables such as the percentage of mothers who completed high school, received a GED, or received a vocational certificate (Exhibit 4.3). Nor did the program have an impact on the percentage of mothers who continued their education beyond high school, who had some college credits, or who had a degree from a two- or four-year college (Exhibit 4.3).

The above findings provide a key explanation of why CCDP did not have positive effects on household income or on the employment status of mothers on their partners—CCDP was not able to make changes in the educational or credentialing status of CCDP mothers, over and above the changes seen for control group mothers. At the end of the study, about 70 percent of the mothers

in each group held a high school diploma or equivalent, about 20 percent had some college experience, and about 6 percent held a degree from a two- or four-year college. Thus, CCDP was not able to make significant impacts on the educational credentials that research has shown are necessary to alter welfare participation. Taken together, these findings raise several concerns. They tell us that, without CCDP, many low-income families with children moved off welfare and into the job market as their children grew older, achieving some of the goals that society has for them. However, these changes in the lives of families did not move them out of poverty or provide the security of full-time employment with associated benefits. The services provided by CCDP did not appear to improve these prospects.

PARENTING

Parenting education as a means of effecting social change and, in particular, of improving low-income children's chances for success in school, has been regarded as a key aspect of family intervention programs since the late 1960s. Before that time, parent education was primarily a middle-class movement, fueled by a belief in the importance of mothers' role in communicating moral values to their children and supporting their physical and emotional health (Haskins, 1983).

RATIONALE FOR EXPECTED EFFECTS

In a comprehensive review of the literature on parent education, Clarke-Stewart (1988) examined some of the reasons for the widespread adoption of parenting education as an intervention strategy directed at low-income families. A spate of studies in the 1960s and 1970s examined group differences in children's achievement and parenting behavior. Other researchers observed parent behavior and correlated it with children's development. From these and other streams of research, the conclusions were drawn that (1) differences in parenting behavior were related to differences in child performance and, therefore, that (2) changing parenting would affect child outcomes (Clarke-Stewart, 1988; Barnard, 1989). Although there is little argument about a link between parenting behaviors and child outcomes, the latter (largely unproven) hypothesis, underlies a proliferation of programs designed to change the behavior of low-income parents and, as a consequence, outcomes for their children.

Parenting programs varied widely in terms of their location (in homes, schools, hospitals, community centers), duration, intensity, instructional methods and characteristics of the target population. Most were not systematically evaluated, so they did not improve our understanding of which approaches work and for which populations or, indeed, whether any parent education program, implemented on a large scale, can produce the desired child outcomes. Clarke-Stewart (1983) concluded that the suggestion that parenting education programs are more effective than programs focused exclusively on the child is not supported by the evidence. A more recent meta-analysis (White, Taylor & Moss, 1992) confirmed the earlier conclusion that "there is no convincing evidence that the ways in which parents have been involved in previous early intervention studies result in more effective outcomes" (p.91).

Nevertheless, parenting education continues to be viewed favorably as an intervention strategy, in part because of the work of Bronfenbrenner (1979) and others that emphasized the importance of the environmental contribution to the child's development and identified stronger causal connections between parental behavior and children's development. Programs developed at federal, state, and local levels have routinely included parenting education as a central element.

Working with parents to improve their parenting skills in ways that foster children's development is a major emphasis of CCDP. Until they reached three years of age and were eligible to enter a preschool program, for most of the focus children in CCDP, the "early childhood education" experience called for by the CCDP compliance standards was delivered once a week in the home, and targeted the mother's interaction with the child. If the parents were to be effective in the role of early childhood educator, and to produce the hoped-for child outcomes, the program would need to ensure appropriate child rearing attitudes (e.g., the absence of attitudes associated with abusive and neglectful behaviors) and the kinds of parent behaviors (e.g., reading to one's child) that are believed to be linked to positive cognitive and social-emotional development.

CCDP projects also coordinated the efforts of local health care providers to supply services in order to improve the birth outcomes of children born to participating mothers. These services included, for example, regularly scheduled health care for CCDP participants, prenatal care for all pregnant women, and substance abuse services for those with drug and/or alcohol dependencies. All of these services could influence birth outcomes to the extent that they improved the general health of women prior to becoming pregnant and during pregnancy. Finally, life skills education covered topics of relevance to birth outcomes including birth control and birth spacing.

MEASURES AND ANALYTIC VARIABLES

This evaluation examined parenting from several perspectives across the life of the study including: **parent attitudes towards child rearing the child's home environment**, **parent-child interaction**, and **mothers' risk behaviors during a subsequent pregnancy**. Each of these measures is discussed below. Exhibit 4.21 summarizes the measures used and the variables created for the impact analyses.

Parents' Attitudes Toward Child Rearing. Attitudes toward child rearing and beliefs about parenting were measured by the Adult-Adolescent Parenting Inventory (AAPI; Bavolek, 1989), which was administered annually as part of the Parent Interview, from the focus child's first birthday until the last interview when the focus child reached five years of age. The AAPI is a 32-item self-report inventory designed to be used with adults and adolescents.

The AAPI is based upon four parenting patterns that are considered to be maladaptive and associated with abusive parental behavior (Bavolek, 1989). Scores from the AAPI show the degree of agreement or disagreement with statements about parent beliefs about four constructs: (1) inappropriate expectations of the child, (2) parents' inability to be empathetically aware of the child's needs, (3) belief in the value of physical punishment, and (4) role reversal. The impact

analyses used raw scores for the four subscales. The AAPI is scored so that higher scores indicate less abusive attitudes.

The Home Environment. The Home Observation for Measurement of the Environment Inventory (HOME; Caldwell & Bradley, 1984) was used to assess aspects of the child's home environment when the child was 18, 36, and 48 months of age. The items on the HOME represent the following areas: (1) frequency and stability of adult contact, (2) amount of developmental and vocal stimulation, (3) need gratification, (4) emotional climate, (5) avoidance of restriction on motor and exploratory behavior, (6) available play materials, and (7) characteristics of the home that indicate parents' concern with achievement. The HOME is based on in-home observation, supplemented by parental report for about one-third of the items. Two versions of the HOME were used in the CCDP evaluation when we were able to collect data through in-home interviews: a 45-item version for infants (0-3) and a 55-item version for preschoolers. The HOME has been widely used in large-scale studies and has been shown to be related to children's concurrent and later performance on standardized cognitive measures.

Parent-Child Interaction. Interactions between the mother and the focus child were assessed directly through a brief structured observation in the home. For this purpose, a standardized rating system, the Nursing Child Assessment Teaching Scale (NCATS; Barnard, 1989) was used when the child was three years of age. The scale is designed to describe the repertoire of behaviors demonstrated in a teaching interaction by both members of the parent-child dyad, and the contingency of their responses to one another. Mothers were asked to choose a task appropriate to the child's development and teach it to the child. The observer rated the interaction on 73 binary items grouped into six subscales. Based on research that links care giver-infant interaction to child competence, the scale has been used widely in clinical and research practice (Barnard, 1989). The measure has been shown to be related to children's performance on language and IQ tests (Barnard & Eyres, 1979) and is moderately correlated with the HOME. The impact analyses used raw scores for the four adult subscales, the combined score for the parent, and the combined raw score for the two child subscales.

Mother's Risk Behaviors During a Subsequent Pregnancy. Four measures of behavior that could pose risks to a newborn were used: (1) the ***timeliness of prenatal care***, (2 and 3) the ***mother's use of alcohol or illegal drugs during pregnancy***, and (4) whether the ***mother smoked during the pregnancy.*** To assess the timeliness of prenatal care, mothers were asked at what point in the pregnancy they first saw a physician. The proportion of mothers that had their first prenatal visit in the second trimester or later was calculated. The frequency of use of harmful substances was queried, and three variables were created to reflect the proportion of mothers who reported **any** use of alcohol, cigarettes, or illegal drugs during pregnancy.

EFFECTS ON PARENTING ACROSS ALL PROJECTS

Attitudes Toward Child Rearing. Certain parental attitudes have been linked to abusive or neglectful behavior (Bavolek, 1989). Research has shown that abusing parents: (1) have

inappropriate expectations of their infants and children and show little understanding of children's developmental stages; (2) are unaware of and therefore unresponsive to their children's needs; (3) have strong beliefs about the value of physical punishment; and (4) reverse parent-child roles, expecting children to act as caretakers for their parents, rather than vice-versa.

The AAPI's four scales measure these parental attitudes. There were no substantial program effects on any of the four scales that measure the above dimensions of parenting attitudes (Exhibit 4.22). However, there was a significant but small positive effect on parental belief in the value of corporal punishment, indicating that CCDP parents believed slightly less than control group parents in the value of corporal punishment. At the end of the study, when children were five years of age, CCDP parents scored 34.88 vs. 34.23 for the control group parents, a difference of about one-tenth of a standard deviation (Exhibit 4.23).[3] Across all sites, parents' attitudes changed little over the course of the study, and were about the same as those of parents in the appropriate norming sample (Exhibit 4.25).

Quality of the Home Environment. The HOME provides a measure of the quality of the cognitive stimulation and emotional support provided by the family to the child. Analysis of the ratings of the HOME when the child was 4 years of age confirmed the finding from earlier analyses (ACYF, 1994) showing that CCDP had no overall measurable effect on the home environment (Exhibit 4.22).

Parent-Child Interaction. CCDP had no end-of-program effects on the types of interaction between mothers and their child as measured by the NCATS teaching scales. CCDP and control group mothers were equally responsive to children's cues and signs of distress, and provided the same level of support for children's social-emotional and cognitive development. There were no program effects on children's ability to give and respond to cues (Exhibit 4.22). Exhibit 4.26 shows scores for two norm samples—a sample of mothers with less than 12 years of education, and a sample of mothers with 12 or more years of education. Scores for mothers in CCDP and in the control group (see Exhibit 4.23) more closely match scores for the high-education norm sample than the low-education norm sample (see Exhibit 4.26). Average total scores for CCDP and control group mothers were 40.20 and 40.30, respectively, out of a possible 50; child scores were 14.66 and 14.65 out of a possible 23.

Mothers' Pregnancy Behaviors. CCDP had no effect on the health behaviors of mothers during a subsequent pregnancy (Exhibit 4.22). One-quarter of the mothers in both groups had their first prenatal visit to a doctor in the second trimester or later. In both the CCDP and control groups, more than a quarter of the mothers reported smoking during the pregnancy; about 14 percent reported that they used alcohol during the pregnancy, and 3 percent reported using illegal drugs (Exhibit 4.24).

[3]The educational meaning of most of the differences noted in this report is subjective and open to interpretation. For the purposes of this presentation we applied the definitions suggested by Cohen (1977), who proposed that a difference of .20 standard deviations corresponds to a "small" effect, a difference of .50 standard deviations corresponds to a "medium" effect, and a difference of .80 standard deviations corresponds to a "large" effect.

Given the conclusions reached in the last few years by researchers about the relative ineffectiveness of parenting education for low-income parents (see earlier discussion), these findings are not completely surprising. They do, however, lay to rest questions about whether earlier efforts at parenting education were ineffective because they were not of sufficient duration. In the present case, a strategy implemented weekly over several years did not lead to positive impacts on parent attitudes or behaviors.

SUMMARY OF FINDINGS

ECONOMIC SELF-SUFFICIENCY

- **CCDP had no effect on the employment rate of mothers or their husbands/resident partners.** During the study, employment rates more than doubled for mothers in the CCDP and control groups; employment rates for male heads of household also increased, but in neither case were there significant differences between CCDP and control families.

- **CCDP had no effect on the level of employment of mothers.** There were no differences between CCDP and control group mothers in terms of the stability and continuity of their employment, the number of hours per week worked, or the extent to which they held a full-time job rather than one or more part-time jobs.

- **CCDP had no effect on total household income or on income from earnings.** Although annual household income increased slightly over time (five percent in constant dollars), most families continued to live below the poverty level and there was no difference in the income of CCDP and control families at the end of the study. Mothers' average weekly income from earnings rose slightly over time for both groups, reflecting a slight increase in the average number of hours per week worked rather than an increase in the hourly rate, which rose a little more than one dollar, to close to $7 an hour, over a period of more than four years (an increase of about four percent per year). There was no difference between the hourly wages of CCDP and control group mothers.

- **CCDP had no effect on receipt of public assistance.** The proportion of families receiving AFDC declined over the course of the study by close to 20 percentage points, as increasing numbers of mothers entered the workforce, but there were no significant differences between CCDP and control group families. The number of families that received all of their income from AFDC declined by almost 25 percentage points, while the proportion of families that derived all of their income from earnings more

than doubled; again, there were no significant differences between CCDP and control families.

PARENTING ATTITUDES AND BEHAVIOR

- **CCDP had no effect on parents' beliefs about or attitudes towards child rearing..** Parents' beliefs about child rearing changed little during the course of the study and there were no significant differences between CCDP and control group parents. At the end of the study, parents' scores on a standardized measure of attitudes predictive of abusive behaviors roughly matched those of norms established for the measure.

- **CCDP had no effect on aspects of the home environment related to children's cognitive stimulation.** Scores on the HOME Inventory when the focus child was four years old were not significantly different for CCDP and control group parents. The average score on the HOME was 33 out of a possible score of 45.

- **CCDP had no effect on parent-child interaction** An observational measure of mother-child interaction during a teaching task when the focus child was three years old showed no significant differences between CCDP and control group mothers and children. Scores for families in this evaluation were quite close to the mean scores of the norming sample for mothers with more than a high school education, and their children.

- **CCDP had no effect on parents' pregnancy behaviors.** While less than five percent of mothers reported getting late prenatal care (i.e., in the second trimester), there were no significant differences between CCDP and control group mothers. The same percentages of mothers in both groups reported using alcohol, cigarettes or illegal drugs during pregnancy.

EXHIBIT 4.1

ECONOMIC SELF-SUFFICIENCY MEASURES AND VARIABLES

MEASURE	VARIABLE
Employment	
Employment status	Mother employed at time of interview (no/yes)
	Partner employed at time of interview (no/yes)
	Mother or partner employed at time of interview (no/yes)
Level of employment	% of months mother worked over prior quarter (0-100%)
	Nature of jobs worked by mother (0=no job; 1=single part-time job; 3=multiple part-time jobs; 4=full-time job)
	Average # hours per week worked by mother over life of the study
	% time mother employed over life of study (0-100%)
	% time partner employed over life of study (0-100%)
	% time mother or partner employed over life of study (0 - 100%)
	Mother continuously employed throughout the study (no/yes)
Income	
Household income	Total prior year's income from all sources at time of interview ($/year)
	Mother's hourly wage at time of interivew ($/hour)
Mother's income from earnings	Mother's weekly wage at time of interview (hourly wage x number of hours per week worked)
Dependence on Public Assistance	
Receipt of AFDC	Mother received AFDC at time of interview (no/yes)
Reliance on AFDC	Sources of household income at time of interview (0 = no income, 1 = AFDC only, 2 = AFDC + earnings, 3 = earnings only)
On AFDC throughout study	Mother remained on AFDC throughout the study (no/yes)
Receipt of food stamps	Family received food stamps at time of interview (no/yes)
Steps to Employment	
Participation in academic or vocational training	Mother enrolled in academic, vocational or job training programs at time of interview (no/yes for each)
Acquisition of educational credential	Mother held a high school diploma, GED or vocational certificate by the end of the study (no/yes for each)
	Mother completed some college courses by the end of the study (no/yes)
	Mother received a college degree by the end of the study (no/yes)

EXHIBIT 4.2

SUMMARY OF CCDP'S EFFECTS ON ECONOMIC SELF-SUFFICIENCY

OUTCOME MEASURE	TYPE OF ANALYSIS	SIGNIFICANCE OF TREATMENT EFFECT ON:	
		LEVEL OF PERFORMANCE	RATE OF GROWTH (SLOPE)
Employment			
Mother employed	longitudinal analysis:[a] nonlinear growth curve	p=.392	p=.534
Family in which husband/partner was employed	longitudinal analysis:[a] nonlinear growth curve	p=.079	p=.815
Family in which either mother or husband/partner was employed	longitudinal analysis:[a] nonlinear growth curve	p=.617	p=.408
Months mother worked in prior quarter	longitudinal analysis:[b] growth curve	p=.785	p=.579
Nature of jobs worked by mother	longitudinal analysis:[b] growth curve	p=.372	p=.950
# hours/wk worked (all mothers)	longitudinal analysis:[b] growth curve	p=.591	p=.428
# hours/wk worked (working mothers)	longitudinal analysis:[b] growth curve	p=.606	p=.178
Time mother employed (over life of study)	cross-sectional analysis:[c] OLS regression	p=.120	N/A
Time husband/partner employed (over life of study)	cross-sectional analysis:[c] OLS regression	p=.074	N/A
Time mother or husband/partner employed (over life of study)	cross-sectional analysis:[c] OLS regression	p=.122	N/A
Mother continuously employed (over life of study)	cross-sectional analysis:[c] OLS regression	p=.947	N/A
Income			
Total household income	longitudinal analysis:[b] growth curve	p=.082	**p=.022**
Mother's weekly wage (all mothers)	longitudinal analysis:[b] growth curve	p=.591	p=.863
Mother's weekly wage (working mothers)	longitudinal analysis:[b] growth curve	p=.910	p=.755

EXHIBIT 4.2

(CONTINUED)

OUTCOME MEASURE	TYPE OF ANALYSIS	SIGNIFICANCE OF TREATMENT EFFECT ON:	
		LEVEL OF PERFORMANCE	RATE OF GROWTH (SLOPE)
Dependence on Public Assistance			
Family on AFDC	longitudinal analysis:[a] nonlinear growth curve	p=.887	p=.975
Level of family reliance on AFDC (low score = greater reliance)	longitudinal analysis:[b] growth curve	p=.622	p=.928
Family on AFDC continuously (life of study)	cross-sectional analysis:[c] OLS regression	p=.308	N/A
Family receiving food stamps	longitudinal analysis:[a] nonlinear growth curve	p=.531	**p=.037**
% time family received food stamps (life of study)	cross-sectional analysis:[c] OLS regression	p=.478	N/A
Steps to Employment			
Mother enrolled in academic, vocational or job training program	longitudinal analysis:[a] nonlinear growth curve	p=.100	**p=.0001**
Mothers had a high school diploma, vocational certificate, or GED	cross-sectional analysis:[c] OLS regression	p=.065	N/A
Mother had some college	cross-sectional analysis:[c] OLS regression	p=.148	N/A
Mother had a college degree	cross-sectional analysis:[c] OLS regression	p=.782	N/A

[a] Longitudinal analysis for this variable used hierarchical nonlinear models to test for the difference between group logits (outcome **level** at 60 months) and between group slopes (**rate of growth** over multiple time points); these differences were adjusted for a set of baseline covariates used in all impact analyses.

[b] Longitudinal analysis for this variable used hierarchical linear models to test for the difference between group means (outcome **level** at 60 months) and between group slopes (**rate of growth** over multiple time points); these differences were adjusted for a set of baseline covariates used in all impact analyses.

[c] Cross-sectional analysis for this variable used two-tailed large-sample z-tests of the difference between estimated group means for continuous variables and between estimated group logits for binary variables.

EXHIBIT 4.3
ECONOMIC SELF-SUFFICIENCY DESCRIPTIVE STATISTICS, AT LAST INTERVIEW
FOR CCDP AND CONTROL GROUP FAMILIES

OUTCOME MEASURE	CCDP			CONTROL		
	N	MEAN[A]	SD	N	MEAN[A]	SD
Employment						
Mother employed	1979	40%	48	1977	41%	48
Family in which husband/partner employed	1973	34%	44	1971	33%	44
Family in which mother or husband/partner was emplyd	1971	57%	47	1968	58%	47
Months mother worked in prior quarter	1913	41%	43	1928	42%	43
Nature of jobs worked by mother	1915	.95	1.26	1929	.95	1.27
# hours/wk worked (all mothers)	1915	14.23	18.34	1929	14.37	18.16
# hours/wk worked (working mothers)	779	34.97	11.33	794	34.91	11.02
Time mother employed (over life of study)	1333	33%	31	1519	31%	31
Time husband/partner employed (over life of study)	1235	30%	31	1449	28%	31
Time mother or husb/part emplyd (over life of study)	1229	50%	33	1441	48%	34
Mother continuously employed (over life of study)	1333	6%	22	1519	6%	23
Income						
Total household income	1812	$12,005	$9,495	1810	$11,614	$9,168
Mother's weekly wage (all mothers)	1915	$93	$140	1919	$94	$138
Mother's weekly wage (working mothers)	730	$245	$122	756	$239	$120
Dependence on Public Assistance						
Family on AFDC	1963	53%	48	1969	50%	48
Level of family reliance on AFDC (lo score = great rel)	1960	1.92	.96	1963	1.94	.97
Family on AFDC continuously (life of study)	1341	26%	40	1525	24%	39
Family receiving food stamps	1912	68%	45	1929	68%	46
% time family received food stamps (over life of study)	1332	68%	33	1513	68%	34
Steps to Employment						
Mother enrolled in academic, voc or job training prog	1911	26%	43	1929	22%	41
Mother had a hs diploma, voc certificate, or GED	1916	71%	44	1930	69%	44
Mother had some college	1916	22%	40	1932	20%	39
Mother had a college degree	1698	7%	24	1695	6%	24

[a] Estimated means were based on data collected at the last interview for each family.

Exhibit 4.4: Percentage of Mothers Employed, by Quarter

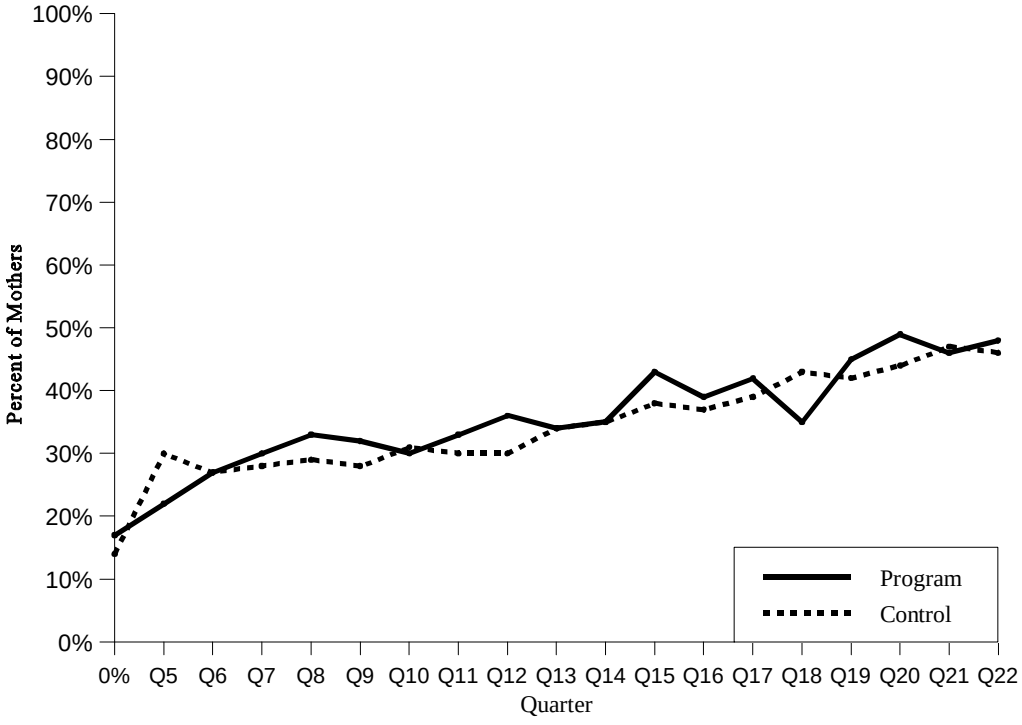


Exhibit 4.5: Percentage of Families in Which Husband or Resident Partner Was Employed, by Quarter

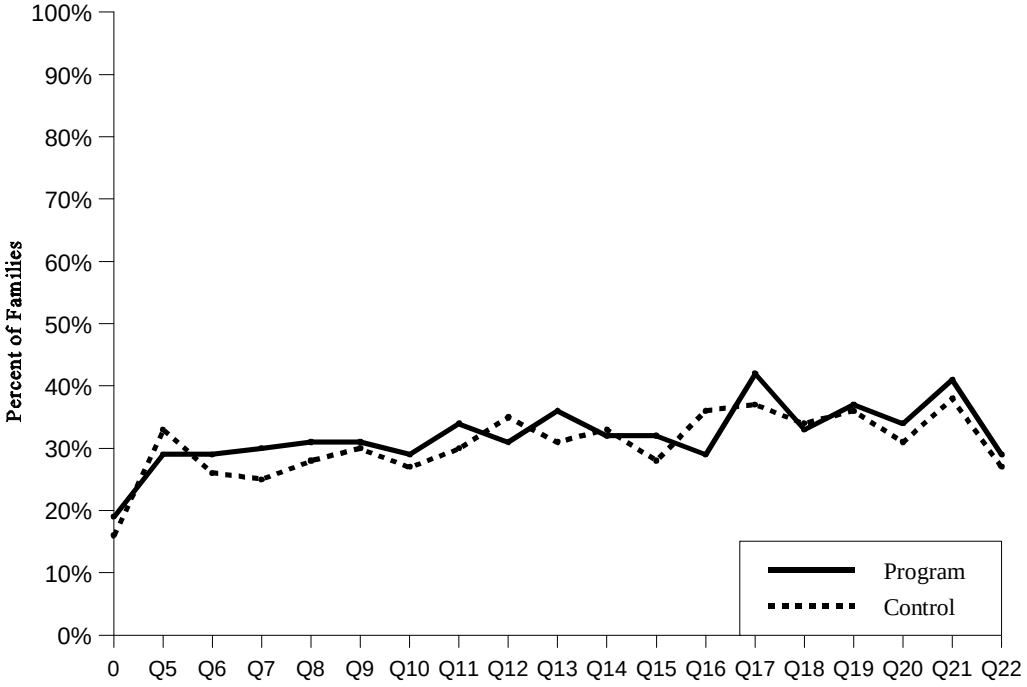


Exhibit 4.6: Percentage of Families in Which Either the Mother or a Husband/Resident Partner Was Employed, by Quarter

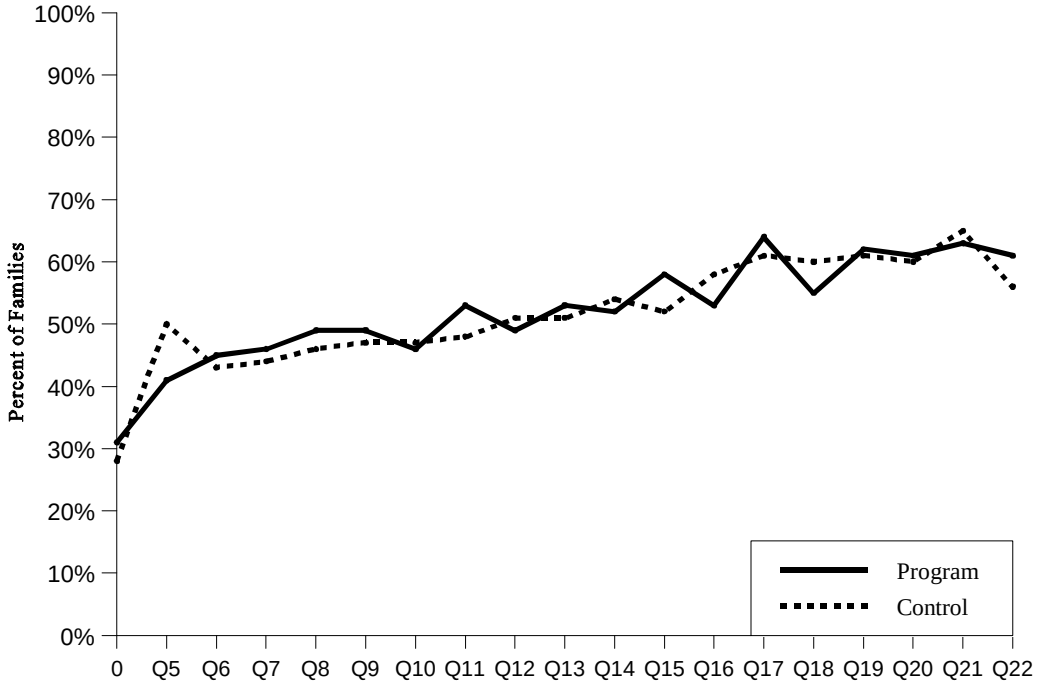


Exhibit 4.7: Percentage of Months That Mother Worked in Prior Quarter, by Quarter

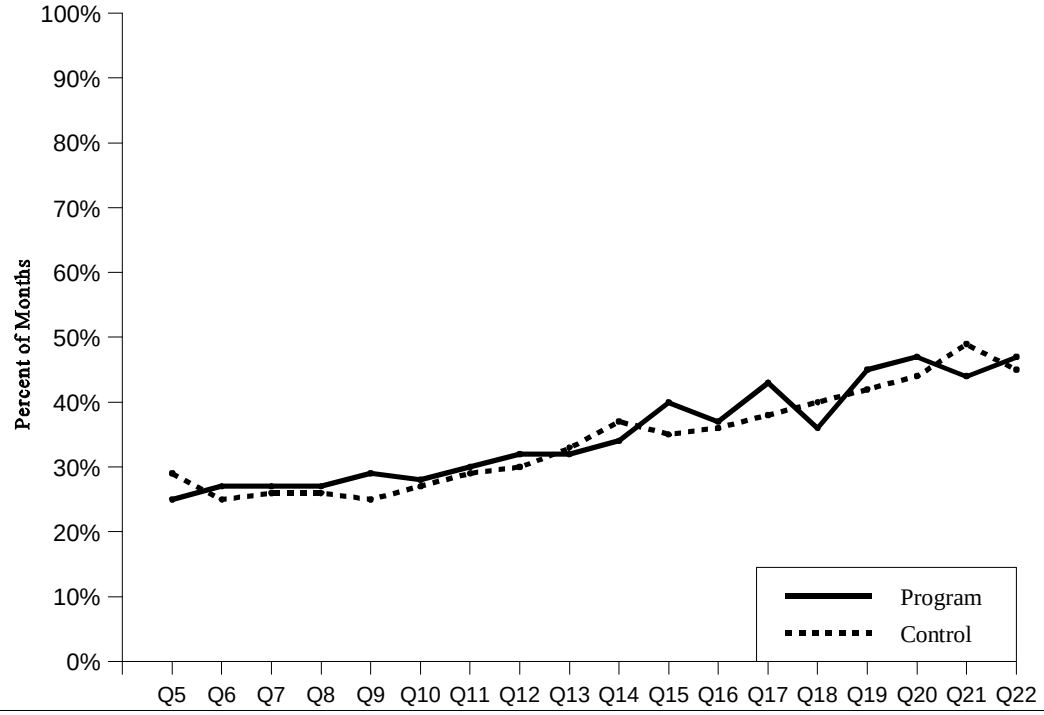


Exhibit 4.8: Average Number of Hours per Week Worked by Mother, by Quarter (All Mothers)

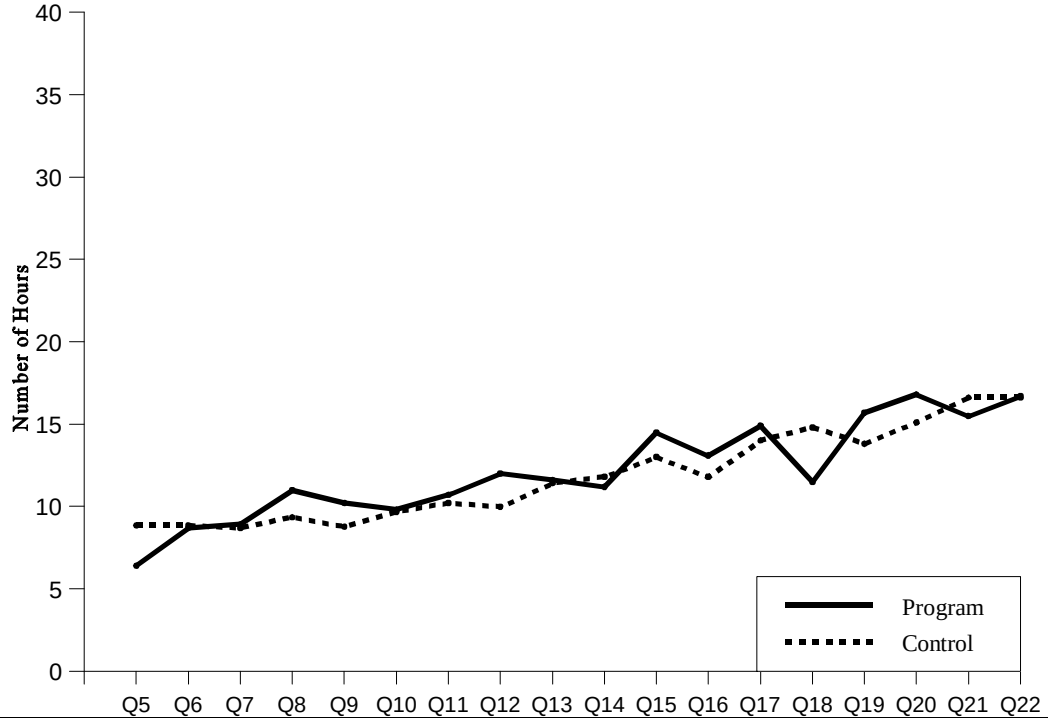


Exhibit 4.9: Average Number of Hours per Week Worked by Mother, by Quarter (Working Mothers Only)

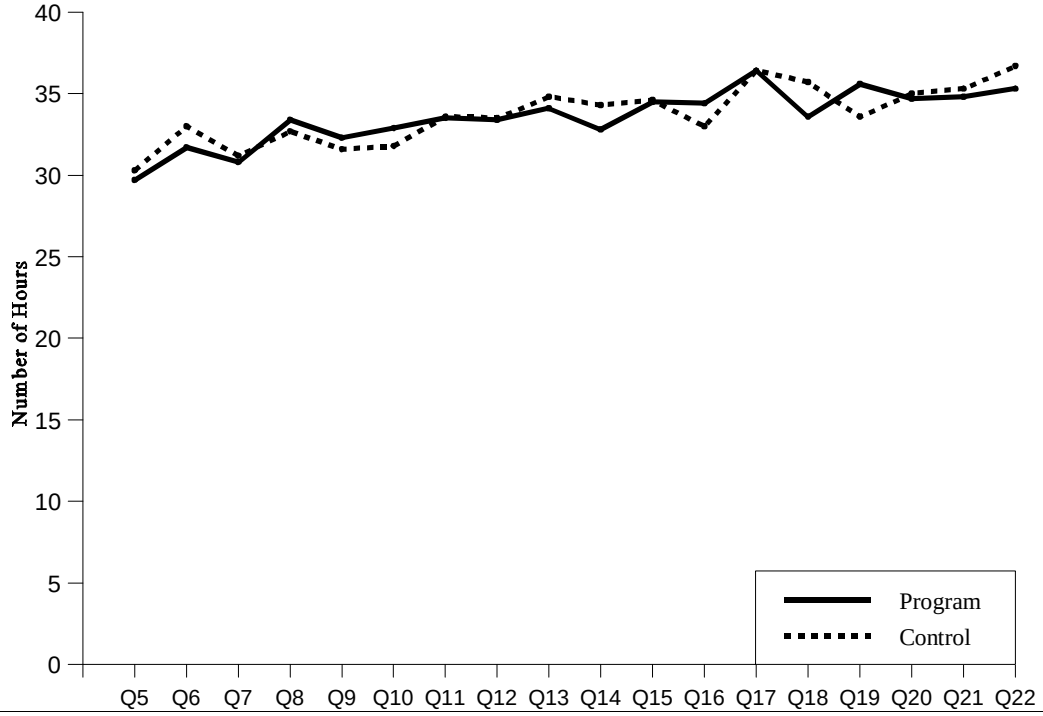


Exhibit 4.10: Nature of Jobs Worked by Mother, by Quarter

Exhibit 4.11: Average Annual Household Income, by Quarter

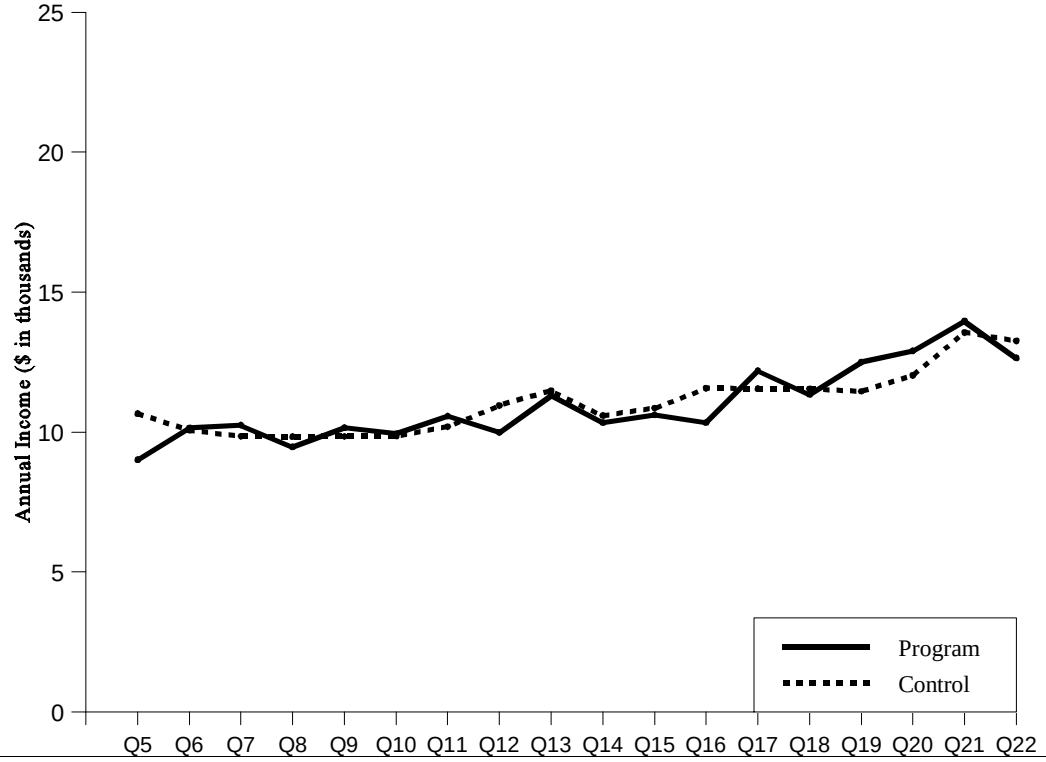


Exhibit 4.12: Mothers' Average Hourly Wage, by Quarter

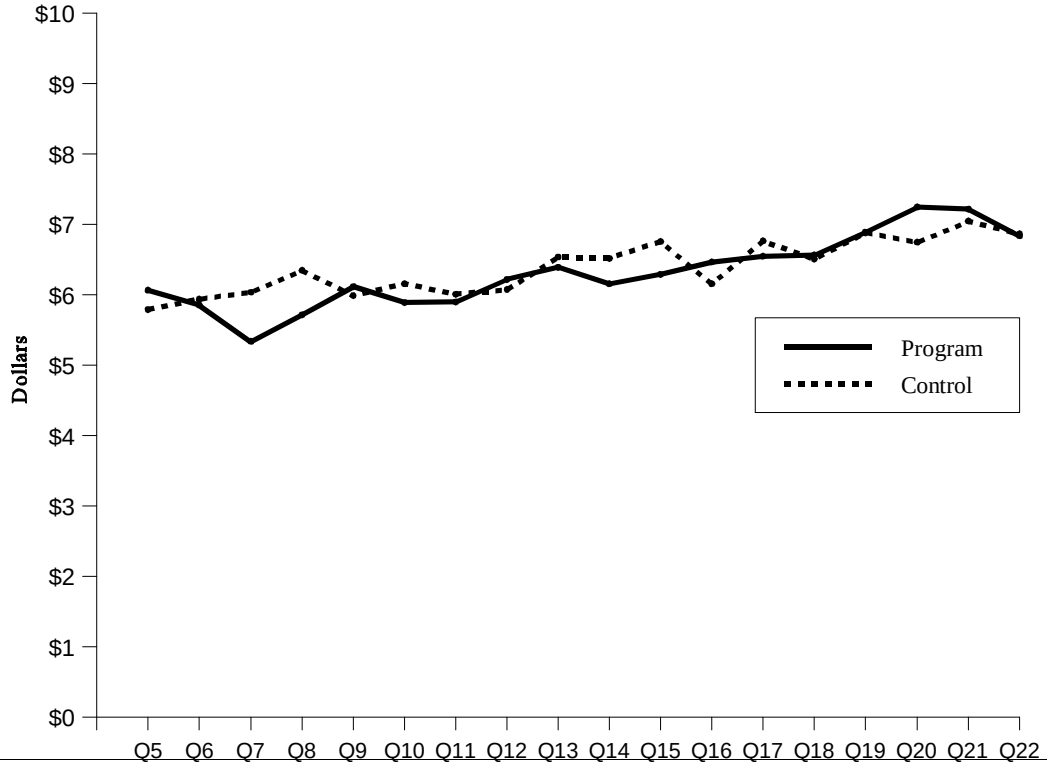


Exhibit 4.13: Average Weekly Income
Mother's Earnings, by Quarter (All Mothers)

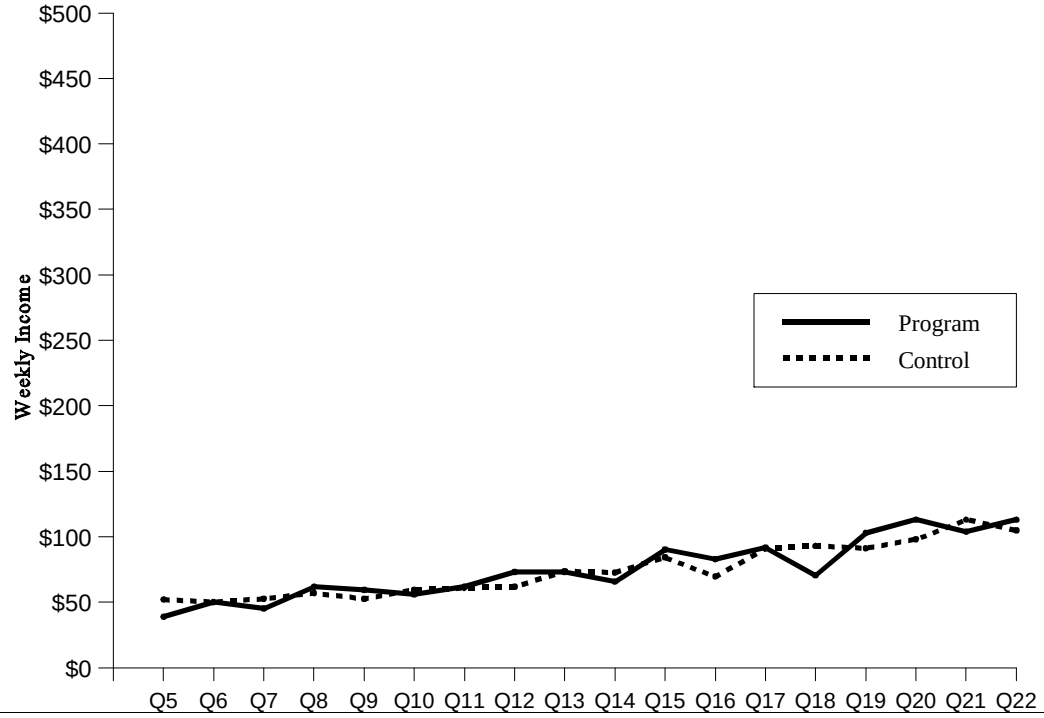


Exhibit 4.14: Average Weekly Income From Mother's Earnings, by Quarter (Working Mothers)

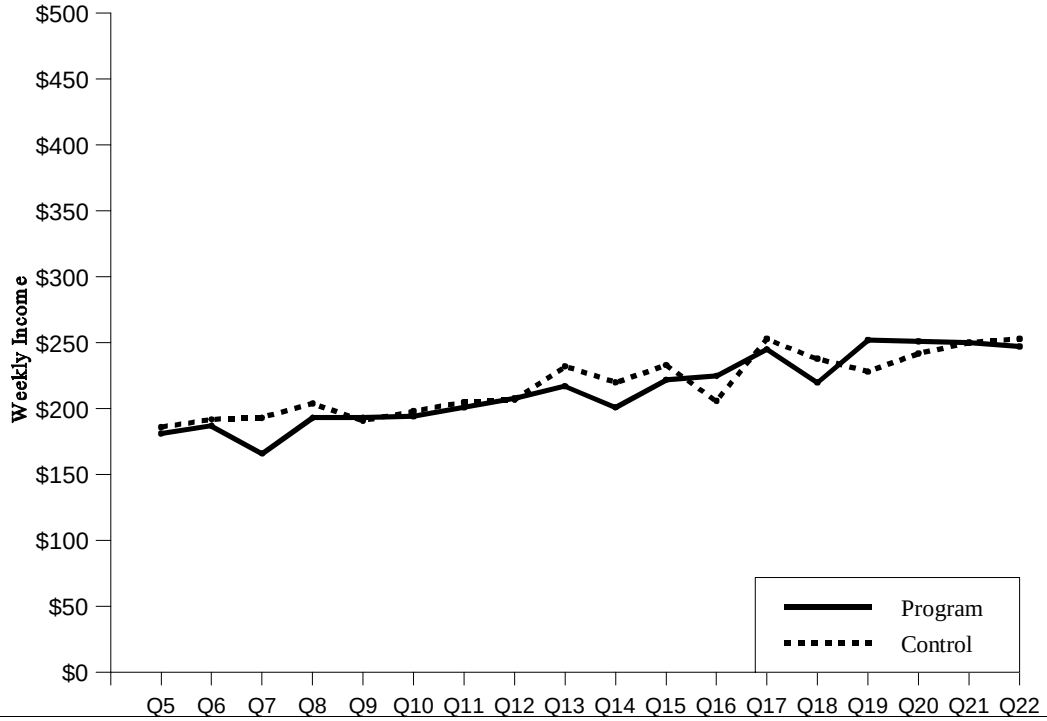


Exhibit 4.15: Percentage of Families Receiving AFDC, by Quarter

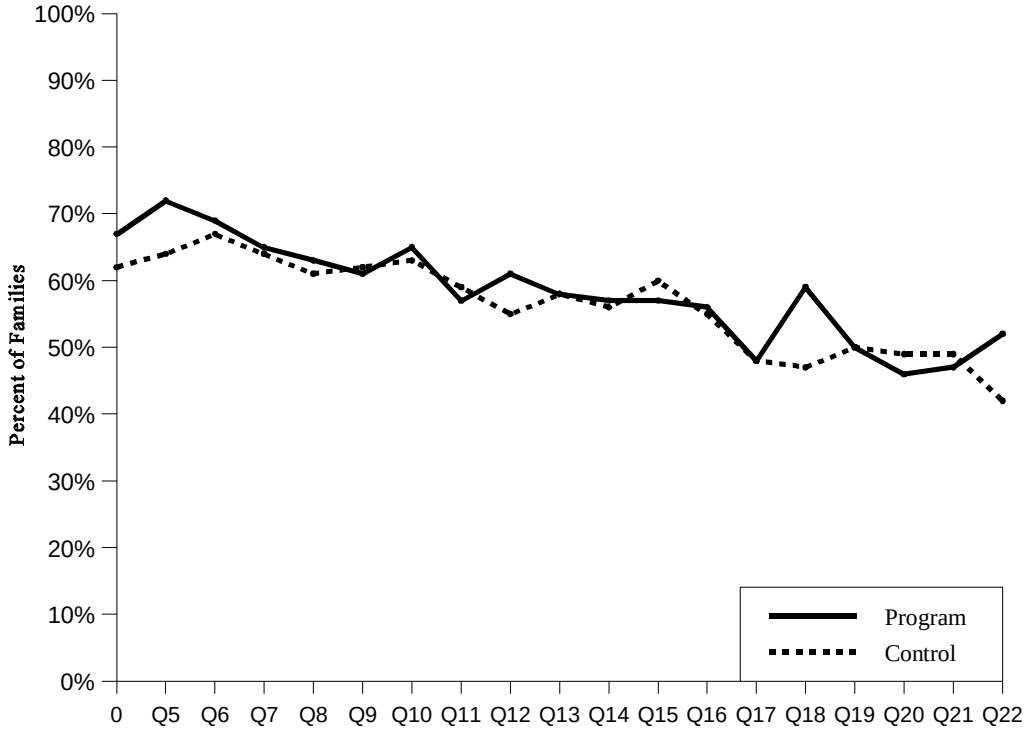


Exhibit 4.16: Percentage of Families Receiving All of Their Income From AFDC, by Quarter

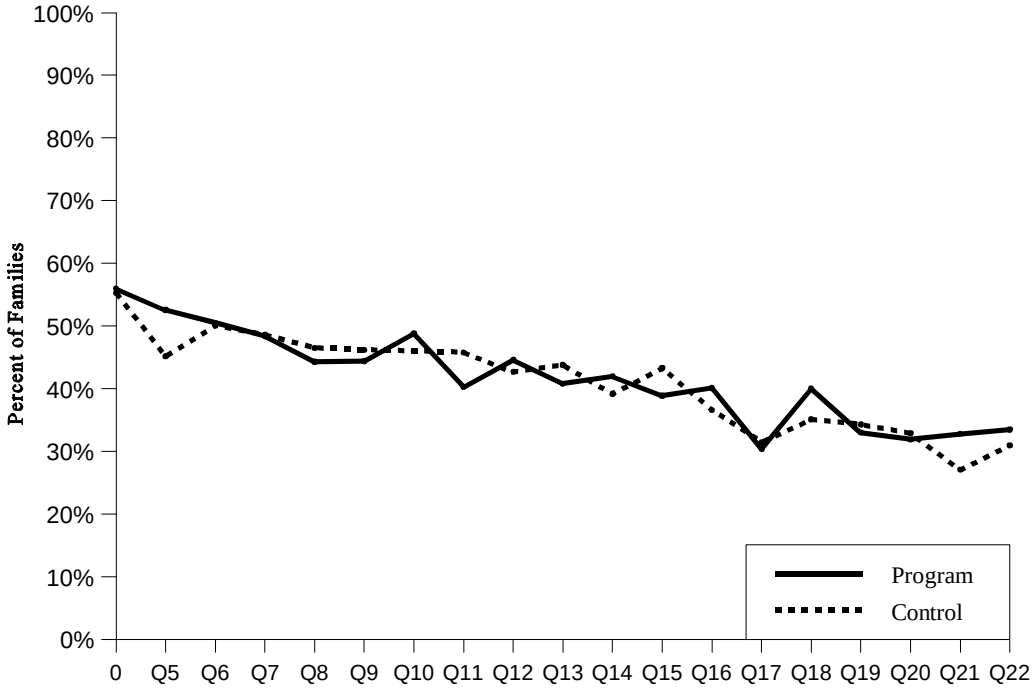


Exhibit 4.17: Percentage of Families Receiving All of Their Income From Earnings, by Quarter

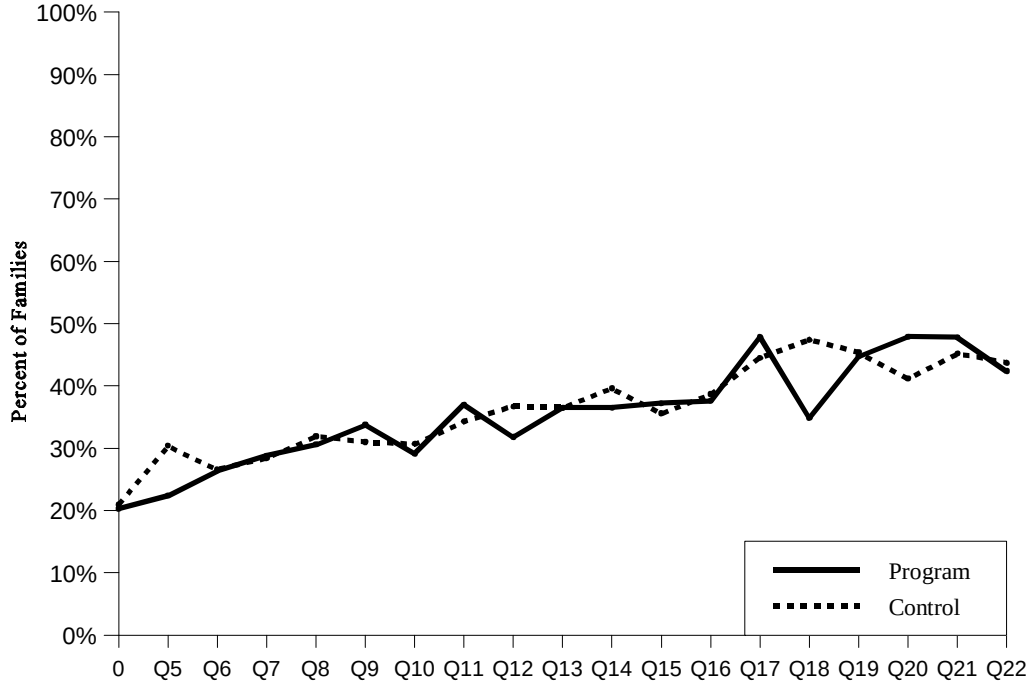


Exhibit 4.18: Percentage of Families Combining AFDC Income With Income From Earnings, by Quarter

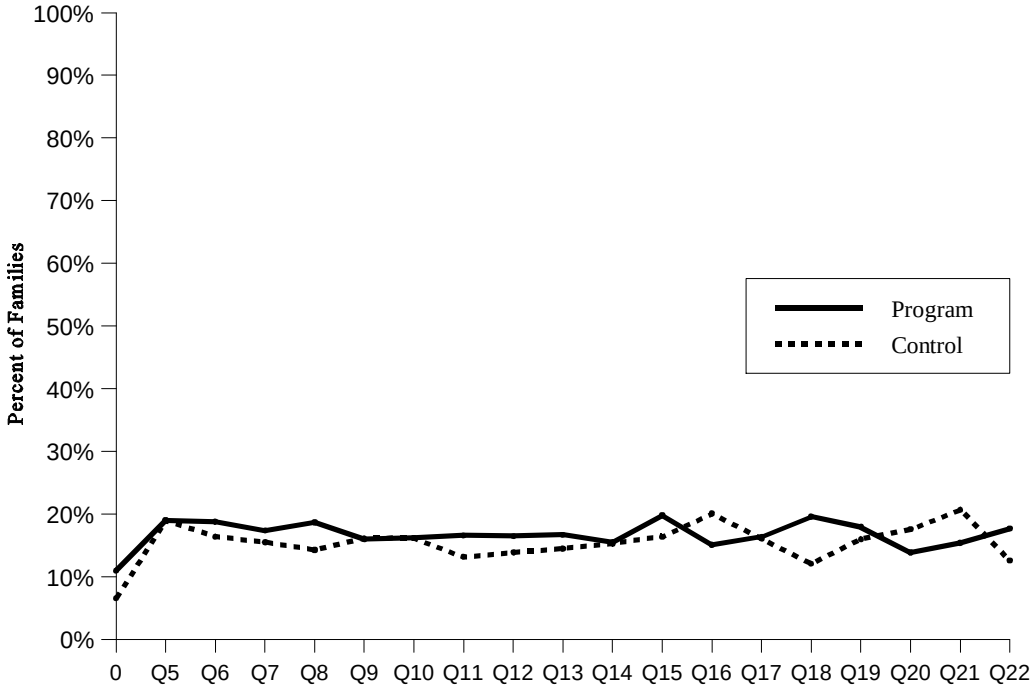


Exhibit 4.19: Percentage of Families Receiving Food Stamps, by Quarter

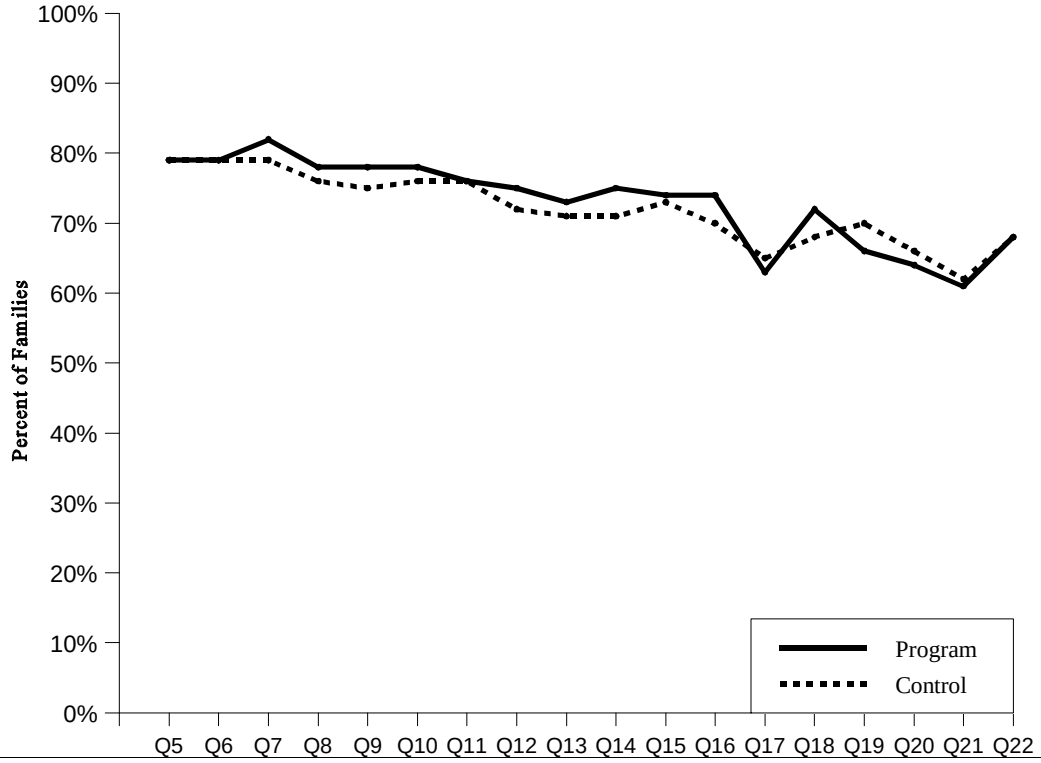


Exhibit 4.20: Percentage of Mothers Participating in Academic, Vocational or Job Training Programs, by Quarter

EXHIBIT 4.21

PARENTING MEASURES AND VARIABLES

MEASURE	VARIABLE
Parenting Attitudes and Beliefs	
Adult-Adolescent Parenting Inventory (AAPI)	Raw scores for four subscales (annual): • *Inappropriate expectations for child* • *Lack of empathy for child's needs* • *Belief in the value of corporal punishment* • *Role reversal*
Home Environment	
Observation for Measure of the Environment (HOME)	Raw score (child age 4 years)
Parent-Child Interaction	
NCATS Teaching Scale	Raw scores for four subscales (child age 3 years): • Mother's sensitivity to child's cues • Mother's response to child's distress • Mother fosters child's social-emotional growth • Mother fosters child's cognitive growth *Total for mother* (child age 3 years) combined score for the four subscales *Total for child* (child age 3 years) combined score for two subscales measuring child's ability to give clear cues and respond to mother's cues
Mother's Pregnancy Behaviors For All Children Born Subsequent to Focus Child	
Late prenatal care	Mother received late prenatal care (no/yes)
Risk behaviors during pregnancy	Mother smoked cigarettes (no/yes) Mother used alcohol (no/yes) Mother used illegal drugs (no/yes)

EXHIBIT 4.22
SUMMARY OF CCDP'S EFFECTS ON PARENTING

OUTCOME MEASURE	TYPE OF ANALYSIS	SIGNIFICANCE OF TREATMENT EFFECT ON: LEVEL OF PERFORMANCE	SIGNIFICANCE OF TREATMENT EFFECT ON: RATE OF GROWTH (SLOPE)
Parenting Attitudes and Beliefs (AAPI) (2-5 years)			
Inappropriate expectations for child (raw score)	longitudinal analysis:[a] growth curve	p=.805	p=.790
Lack of empathy for child's needs (raw score)	longitudinal analysis:[a] growth curve	p=.743	p=.090
Belief in value of corporal punishment (raw score)	longitudinal analysis:[a] growth curve	**p=.050**	p=.431
Role reversal (raw score)	longitudinal analysis:[a] growth curve	p=.833	p=.306
Home Environment (raw score) (4 years)	cross-sectional analysis:[b] OLS regression	p=.145	NA
Parent-Child Interaction (NCATS Teaching Scale) (3 years)			
Mother's sensitivity to child's cues (raw score)	cross-sectional analysis:[b] OLS regression	p=.926	NA
Mother's response to child's distress (raw score)	cross-sectional analysis:[b] OLS regression	p=.599	NA
Mother fosters child's social-emotional growth (raw score)	cross-sectional analysis:[b] OLS regression	p=.885	NA
Mother fosters child's of cognitive growth (raw score)	cross-sectional analysis:[b] OLS regression	p=.331	NA
Total for mother (raw score)	cross-sectional analysis:[b] OLS regression	p=.642	NA
Total for child (combined raw scores for two subscales)	cross-sectional analysis:[b] OLS regression	p=.917	NA
Mother's Pregnancy Behaviors For All Children Born Subsequent to Focus Child			
Mother received late prenatal care	cross-sectional analysis:[b] logistic regression	p=.765	NA
Mother smoked cigarettes	cross-sectional analysis:[b] logistic regression	p=.744	NA
Mother used alcohol	cross-sectional analysis:[b] logistic regression	p=.205	NA
Mother used illegal drugs	cross-sectional analysis:[b] logistic regression	p=.755	NA

[a] Longitudinal analysis for this variable used hierarchical linear models to test for the difference between group means (outcome **level** at 60 months) and between group slopes (**rate of growth** over multiple time points); these differences were adjusted for a set of baseline covariates used in all impact analyses.

[b] Cross-sectional analysis for this variable used two-tailed large-sample z-tests of the difference between estimated group means for continuous variables and between estimated group logits for binary variables.

EXHIBIT 4.23

PARENTING DESCRIPTIVE STATISTICS, FOR CCDP AND CONTROL GROUP FAMILIES

OUTCOME MEASURE	AGE 3 YEARS		AGE 4 YEARS		AGE 5 YEARS	
	CCDP	CONTROL	CCDP	CONTROL	CCDP	CONTROL
Parenting Attitudes and Beliefs (AAPI, 36-60 months)[a]	n=1443	n=1432	n=1291	n=1287	n=1507	n=1544
Inappropriate expectations for child						
Mean raw score	22.45	22.47	23.12	23.08	23.54	23.36
Standard deviation	2.93	2.97	3.06	3.02	2.92	2.86
Lack of empathy for child's needs						
Mean raw score	30.18	29.92	30.39	30.33	30.94	30.48
Standard deviation	4.84	4.88	4.86	4.79	4.59	4.63
Belief in value of corporal punishment						
Mean raw score	34.62	34.12	34.72	34.17	34.88	34.23
Standard deviation	5.42	5.36	5.36	5.41	5.39	5.36
Role reversal						
Mean raw score	29.30	29.27	29.69	29.86	30.55	30.27
Standard deviation	5.46	5.66	5.69	5.49	5.18	5.32
Home Environment (HOME, 48 months)[b]			n=1321	n=1423		
Mean score	NA	NA	32.55	33.03	NA	NA
Standard deviation			9.46	9.45		
Parent-Child Interaction (NCAST Teaching Scale, 36 months)[c]	n=1369	n=1430				
Mother's sensitivity to child's cues						
Mean raw score	9.22	9.22	NA	NA	NA	NA
Standard deviation	1.30	1.37				
Mother's response to child's distress						
Mean raw score	10.37	10.34	NA	NA	NA	NA
Standard deviation	1.54	1.58				
Mother fosters child's social-emotional growth						
Mean raw score	8.36	8.35	NA	NA	NA	NA
Standard deviation	1.79	1.86				
Mother fosters child's cognitive growth						
Mean raw score	12.23	12.33	NA	NA	NA	NA
Standard deviation	2.93	3.04				
Total for mother						
Mean raw score	40.20	40.30	NA	NA	NA	NA
Standard deviation	5.59	6.05				
Total for child						
Mean raw score	14.66	14.65	NA	NA	NA	NA
Standard deviation	3.33	3.53				

[a] For the AAPI, high scores indicate less abusive attitudes.
[b] For the HOME, high scores indicate a more supportive home environment.
[c] For the NCAST, high scores indicate more appropriate parent-child behaviors.

EXHIBIT 4.24

SUMMARY OF CCDP'S EFFECTS ON MOTHER'S PREGNANCY BEHAVIORS FOR ALL CHILDREN BORN SUBSEQUENT TO THE FOCUS CHILD

OUTCOME MEASURE	CCDP	CONTROL
Mother received late prenatal care		
N	1084	1106
Mean	25%	25%
Standard Deviation	43	42
Mother smoked cigarettes		
N	1080	1112
Mean	28%	29%
Standard Deviation	43	43
Mother used alcohol		
N	861	887
Mean	13%	15%
Standard Deviation	32	33
Mother used illegal drugs		
N	839	858
Mean	3%	3%
Standard Deviation	13	10

EXHIBIT 4.25

MEAN SCORES ON THE ADULT ADOLESCENT PARENTING INVENTORY FOR POOLED CCDP AND CONTROL GROUP MOTHERS AND NORMING SAMPLES, BY ETHNICITY[a]

AAPI SUBSCALE	WHITE CCDP AND CONTROL GROUP MOTHERS (N=1015)		NORMING SAMPLE				BLACK CCDP AND CONTROL GROUP MOTHERS (N=1636)		NORMING SAMPLE			
			NON-ABUSIVE WHITE FEMALES		ABUSIVE WHITE FEMALES				NON-ABUSIVE BLACK FEMALES		ABUSIVE BLACK FEMALES	
	0	S.D.	0	S.D.	0	S.D.	0	S.D.	0	S.D.	0	S.D.
Inappropriate expectations for child	24.50	3.15	24.07	3.73	23.56	3.43	23.14	2.97	23.25	3.80	22.91	4.17
Lack of empathy for child's needs	33.04	4.68	33.72	4.36	30.43	5.56	30.19	4.91	32.78	4.53	28.36	5.43
Belief in value of corporal punishment	36.77	5.62	36.68	6.67	35.59	5.87	33.17	5.69	34.59	6.73	33.40	6.47
Role reversal	33.23	5.06	30.60	5.58	28.76	6.02	29.61	5.43	28.89	5.86	25.08	7.08

[a] AAPI scores are based on the last interview for each family in the analytic sample, and data were pooled across CCDP and control families. Means for Hispanic mothers are not given since they were not represented in the norming samples.

EXHIBIT 4.26

MEAN SCORES ON THE NURSING CHILD ASSESSMENT TEACHING SCALES FOR NORMING SAMPLES OF LOW EDUCATION AND HIGH EDUCATION MOTHERS[a]

NCATS SCALES	NORMING SAMPLE			
	LOW EDUCATION MOTHERS N = 160		HIGH EDUCATION MOTHERS N = 469	
	Mean	S.D.	Mean	S.D.
Mother				
Mother's sensitivity to child's cues	8.56	1.90	9.16	1.62
Mother's response to child's distress	9.96	1.88	10.04	1.78
Mother fosters child's social emotional growth	8.27	2.06	8.99	1.83
Mother fosters child's cognitive growth	10.95	3.68	12.51	3.39
Mother total score	37.74	7.43	40.69	6.85
Child				
Child total score	14.53	4.85	15.44	4.29

[a] Mothers in the norming sample are 19 to 25 years of age; low-education mothers had less than 12 years of education; high-education mothers had 12 or more years of education.

CHAPTER 5

EFFECTS ON CHILDREN ACROSS ALL PROJECTS

The CCDP model was based on the assumptions that the program would enhance children's development indirectly, through parenting education and support for increased economic well-being for the family, and directly, through the provision of quality early childhood experiences and adequate preventive health care. As Chapter 4 showed, parenting skills, life skills, and family economic well-being, all of which were hypothesized routes for achieving indirect effects on children, were **not** changed by the program. Therefore, we would not expect that CCDP could enhance child outcomes indirectly, i.e., mediated through changes in the parent behaviors and family circumstances. This leaves the possibility that CCDP affected child outcomes directly, through the provision of high-quality early childhood education. CCDP children did spend more time than their control group counterparts in center-based child care. If the child care settings were of high quality and children's attendance was consistent, a difference in the quality and quantity of services received could lead to improved child outcomes.

This chapter presents findings about the impacts of CCDP on various aspects of the development of children. The analysis pools data across all 21 projects in the evaluation. Analyses of project-level data are presented in Chapter 6.

RATIONALE FOR EXPECTED EFFECTS

CCDP was intended to enhance the development of children from low-income families. As was discussed in Chapter 1, CCDP, like a number of other social programs, was based on the assumption that poverty adversely affects children's development, especially during the critical early years, and threatens children's chances for later success in life. Poverty is assumed to affect child development through multiple mechanisms:

- directly, when normal mental and physical health and development are adversely affected by inadequate resources (food, shelter, basic medical care) and/or the presence of harmful substances in the environment (e.g., lead paint, unclean air);
- directly, when brain development is affected by deprivation of adequate emotional, cognitive and material stimulation, and through elevated levels of early stress; and
- indirectly, when emotional, social, and cognitive development is negatively impacted by parental difficulties in providing an adequate caretaking environment and a responsive, supportive parent/child relationship.

With these concerns as background, CCDP employed two broad strategies for improving child outcomes. First, CCDP focused on the material, psychological, and cognitive resources in the

child's home environment, under the assumption that enhancing these resources would lead to enhanced development for the children. To this end, CCDP undertook to increase parents' ability to provide adequate material resources for their children (through case management), and their ability to be effective caretakers in terms of teaching and supporting their children's mental, physical and emotional development (through home visits by early childhood specialists or care managers). Second, CCDP sought to ensure that any care children received outside the home was developmentally-appropriate, under the assumption that for low-income children in particular, developmentally-appropriate care is linked to better short-term child outcomes. To address this goal, CCDP monitored the quality of care children received outside the home.

Are these two assumptions underlying CCDP's intervention strategy for children supported by research? In terms of the link between parenting and child outcomes, although there is strong evidence of a correlation between child development and various components of parenting (educational resources in the home, parent behavior, parent attitudes), there is little evidence that programs can change parenting behaviors, and even if that was possible, there is little evidence that changing parenting leads to measurable changes in children. As was noted in Chapter 4, a few well-designed academic programs with well-specified curricula have produced convincing evidence that changes can be made in maternal knowledge, attitudes and behavior (Johnson & Walker, 1991; Travers, et al., 1982; Andrews, et al., 1982; Quint, et al., 1994). However, these and other studies also suggest that while it is possible to use parenting education to influence parent knowledge and attitudes and, possibly, their behavior with children, there is no research evidence that parenting education, by itself, will result in improved child outcomes (Barnett, 1995; Barnes, Goodson & Layzer, 1995). In one study that directly examined this question, there was no correlation between child development outcomes and program effects on the mother's teaching ability, discipline style, and self-esteem (Scarr & McCartney, 1988).

In Chapter 4 we described research which showed that a number of interventions have been able to affect parents' participation in education and vocational classes and educational achievement. We also reviewed research documenting that these changes in program participation lead to, at best, small effects on employment, income from earnings, and welfare dependency. Given the difficulty of producing large effects in these areas, it is not surprising that there is little research evidence about whether minimally-enhanced economic outcomes lead to improved outcomes for children. It may well be the case that large changes in a family's economic well-being would lead to important improvements in child outcomes, but so far no social programs have been able to produce substantial economic improvements in the lives of low-income families.

The second assumption linking early childhood experiences to improved child outcomes has stronger research support, although the strength of the evidence depends on the form of early childhood experience. Four types of early education and care predominate in this population:

- home-based early childhood education,
- compensatory early childhood education,
- center-based child care, and
- family day care (provided by relative or non-relative).

Below we briefly discuss the research evidence linking each of these forms of care to child outcomes.

Home-based early childhood education. Most home-based early childhood education programs target children less than three years of age. The research indicates that only those home-based early childhood programs that target children at biological risk (low birth weight, special needs) have significant short-term effects on children's intellectual test performance (Olds & Kitzman, 1993). Programs for children at environmental risk have not demonstrated similarly consistent effects, although there is a trend toward positive effects on children of low-income unmarried teenagers (Olds & Kitzman, 1993).

Compensatory early childhood education. There is substantial research evidence that high-quality early childhood interventions for at-risk children can lead to improved outcomes for children, both in the short-term and over longer periods of time. A recent review of research on the effects of early childhood programs (Barnes, Goodson & Layzer, 1995) summarized the evidence from center-based interventions for at-risk preschool children:

- **High-quality early childhood programs consistently show large short-term effects on children's cognitive development**. This is based on evidence from small experimental research studies (see the *Consortium for Longitudinal Studies*, 1983, which reports findings from 11 early childhood programs; and the *Abecedarian Project*, Campbell & Ramey, 1994; Ramey, Yeates & Short, 1984; Martin, Ramey & Ramey, 1990) as well as evidence from evaluations of large public preschool programs (see evaluations of *The Child Parent Center*, Reynolds (1992, 1994, 1996); of *Head Start*, McKey, et al., 1985; and Lee, et al., 1988; and of *Project Giant Step*, Layzer, Goodson & Layzer, 1990).
- Although **fewer early childhood programs provide evidence of effects on social-emotional functioning**for children, there are some indications that intervention programs can have positive effects in this area as well (see Lee, et al., 1988; McKey, et al., 1985; Honig, et al., 1982).
- **Effects on standardized cognitive tests fade out in the early elementary years** (Castro & Mastropieri, 1986; McKey, et al., 1985). On the other hand, a number of programs, most notably the Perry Preschool (Schweinhart, et al., 1993) and the Abecedarian project, have shown long-term positive effects on school-based indicators such as retention in grade and school dropout (see Barnett, 1995, for a review of this literature).

Center-based child care. Studies of the effects of day care have focused to a large extent on the question of potential negative impacts on children, particularly on the child's attachment security. A recent review of the literature on nonparental child care suggests some complex relationships between care, quality of care, age of entry, and outcomes (Lamb, in press). For ***infant*** day care, the review reaches the following conclusions:

- There is at most a modest association between infant day care and the security of the child's attachment to the mother, and no association between day care and children's social problems.
- The quality of nonparental child care for infants appears to modulate the effects of care on many aspects of child behavior and adjustment: High-quality care may have positive effects on children's social development, while poor quality care may be associated with increased aggressiveness and assertiveness.
- While high-quality infant day care has positive effects on the intellectual, verbal and cognitive development of low-income children, care of unknown quality may have negative effects on children from more advantaged backgrounds.

Studies of day care for ***preschoolers*** indicate that enrollment in day care per se does not reliably facilitate or impede the development of children's social and emotional development. However, high quality of care is associated with superior relationship skills with peers and higher personality maturity while low-quality care is associated with deficient social skills and less maturity (Lamb, in press). At the same time, nonparental care appears to be associated with increased behavioral problems. High-quality, center-based child care has been shown to have positive effects on children's intellectual development.

Family day care. There is little research on the effects of family day care on children's development.

The research suggests that to the extent that CCDP was able to promote greater participation by program children in early education programs and/or high-quality child care, as compared with participation by control children, positive impacts on child outcomes could be expected, at least in the short-term. We do know that CCDP children participated significantly more in all forms of out-of-home care except family day care[1], but we do not know about the quality of the care. We must assume that both CCDP and control children attended child care programs of uneven quality; however, since CCDP monitored care for program children to ensure that it was not of low quality, it may be safe to assume that the quality of child care for CCDP children was higher, on average. Therefore, we can hypothesize that CCDP ought to have positive impacts on children that are mediated through their participation in higher quality care, and we are justified in continuing our search for the effects of CCDP on children.

The remainder of this chapter describes CCDP's impacts on children. Chapter 7 looks further into the mediating role of early education and child care in bringing about effects on children.

[1] Over the 60 months of the study, CCDP children attended center-based care--both work-related child care and non-work related early childhood programs--significantly more often and for more hours than the control children. See Chapter 7 for a full presentation of these findings.

MEASURES AND ANALYTIC VARIABLES

To capture multiple dimensions of child development, we used several assessment measures that were administered annually. The instruments assessed cognitive and language development, adaptive social behavior, social-emotional problems, and child morbidity and mortality. All of the child assessments were scheduled for administration on the basis of the focus child's chronological age, i.e., to coincide with the child's birth date, rather than on the basis of length of time since enrollment. The fact that the focus child might have been enrolled in the study at any time during an 18 month window (from the earliest point in the prenatal period up through 12 months), means that each annual assessment represents a wide span of times since enrollment.[2]

A number of measures were administered repeatedly to children between 2 and 5 years of age. Having at least three comparable scores for most children in the sample allowed us to estimate the impact of CCDP on the ***level*** of children's performance at the end of the study and on the ***slope***, or pattern, of growth for CCDP and control group children. The specific measures used in this evaluation are described briefly below. Exhibit 5.1 lists the child measures, the data collection schedule, and the analytic variables constructed from each measure.

MEASURES OF COGNITIVE AND LANGUAGE DEVELOPMENT

Three instruments were used to measure children's cognitive development between 2 and 5 years of age: (1) the Bayley Scales of Infant Development were administered at 2 years of age; and (2) the Peabody Picture Vocabulary Test and (3) Kaufman Assessment Battery for Children were administered at 3, 4, and 5 years of age. All of these measures were administered individually to children by independent testers trained to an established standard of reliability. At the start of the study, these testers were not aware of whether children were in CCDP or in the control group.

Bayley Scales of Infant Development (BSID). The BSID (Bayley, 1969) was used to assess childrens' cognitive development at 2 years of age. The BSID is a full-scale assessment measure consisting of 178 Mental Scale items that assess memory, habituation, problem solving, early number concepts, generalization, classification, vocalizations, language, and social skills, and 111 Motor Scale items that assess control of gross and fine muscle groups. A small positive effect on the Bayley (1.7 points, equal to about 0.10 standard deviation units) was reported in the CCDP Interim Report after roughly two years of program enrollment (ACYF, 1994).

Peabody Picture Vocabulary Test—Revised (PPVT-R). The PPVT (Dunn & Dunn, 1981) was used to assess children's receptive vocabulary at 3, 4, and 5 years of age. An individually-administered measure of children's receptive language or vocabulary, the PPVT is considered to provide a quick estimate of verbal ability and literacy-related skills. The test consists of 175 vocabulary items of increasing difficulty. For Spanish-speaking children, the Spanish version of

[2] For example, the Bayley was administered to children between 18 and 35 months of age; depending on the age of the child at enrollment, the age at test administration corresponded to anywhere from 6 to 44 months since enrollment.

the PPVT—the Test de Vocabulario en Imagenes Peabody, or TVIP—was used (Dunn et al., 1986). The TVIP and PPVT were analyzed separately and are reported separately in this chapter.

Kaufman Achievement Battery for Children (K-ABC). The K-ABC is a full-scale standardized measure of cognitive development (Kaufman & Kaufman, 1983) that assesses children's ability to solve problems using simultaneous and sequential mental processes, and acquired reading and arithmetic skills. The test includes 16 subtests, each containing between 15 and 40 items. The subtests are organized into two measurement scales: Mental Processing and Achievement, each of which was analyzed for this chapter.

MEASURES OF SOCIAL AND EMOTIONAL BEHAVIOR

The measures of children's social and emotional development selected for this evaluation reflect a conceptual distinction between adaptive behavior and socio-emotional problems. Adaptive behavior focuses on relationships with others, especially prosocial and cooperative behavior. To the extent that adaptive behavior reflects enduring traits, individual differences may persist over time. However, children can be expected to exhibit enhanced adaptive behavior with age because of the gradual development of cognitive structures underlying feelings such as empathy.

Social and emotional problems are less clearly linked to cognitive development and are traditionally theorized to reflect more enduring aspects of the individual (Achenbach, 1991); they therefore are less likely to be affected by a non-clinical intervention such as CCDP. Nevertheless, there is some evidence that early childhood interventions may reduce the incidence of anti-social or maladaptive behaviors (Yoshikawa, 1995). For the CCDP evaluation, four instruments were used to measure social and emotional development across the age span of interest. All of the instruments rely on parent report to describe children's behavior.

Achenbach Child Behavior Checklist (CBCL) for Ages 2-3 and Ages 4-18. The CBCL for ages 2 to 3 (Achenbach, 1992) and the CBCL for ages 4 to 18 (Achenbach, 1991) provide a report of the frequency of more than 100 behavioral and emotional problems. In addition to a total score, two "wide-band" syndromes can be derived: "Externalizing" includes aggressive, destructive, and delinquent behavior, and "Internalizing" includes somatic complaints, and anxious/depressed and withdrawn behaviors.

Adaptive Social Behavior Inventory (ASBI). Developed as part of the Infant Health and Development Program, the ASBI (Hogan, Scott & Bauer, 1992) measures adaptive or prosocial behaviors for high-risk 3-year-olds. It includes 30 items that describe social behaviors. There are three subscales: Express, Comply and Disrupt. Sample items from the Express scale are "understands others' feelings" and "Is open and direct about what he/she wants." Sample items from the Comply scale are "Is helpful to other children" and "Shares toys or possessions." Sample items from the Disrupt scale are "gets upset when you don't pay enough attention" and "Is bossy, needs to have his/her way." In addition, a measure of Prosocial behavior is computed by combining the Express and Comply subscales. For the purposes of the evaluation, a Total

score was computed by adding all three subscales (with the Disrupt items recoded so that a higher score indicates more positive behavior).

In the CCDP evaluation, the ASBI was administered to children at 2, 3 and 4 years of age. Although the ASBI was developed specifically for children 3 years of age, the authors expressed confidence that the scales would be sensitive to a broader developmental span. For 4-year-olds, the decision was made to use the original 3-year-old version of the ASBI. For 2-year-olds, a modified version was developed by dropping 11 of the original 30 items, based on the determination that their content was not appropriate for children less than 3 years of age. The impact analyses reported here focus on data for the 3- and 4-year-olds. A small positive effect on the prosocial subscale was reported in the CCDP Interim Report after roughly two years of program enrollment (ACYF, 1994).

Developmental Checklist. To assess adaptive social behavior in children age 5 or older, a developmental checklist was constructed from the Work Sampling System developed by Meisels (1992), an assessment system that calls for teacher observations and ongoing records in order to rate children's performance in multiple domains of learning and behavior. For the CCDP evaluation, 24 items were extracted from the "Kindergarten Development Checklist" of the Work Sampling System. These items describe personal and social development, such as "has a positive sense of self," and "shows eagerness and curiosity as a learner." This 24-item version of the Developmental Checklist was first used in the current evaluation.

MEASURES OF CHILD HEALTH

Two indicators of child health were examined in the impact analyses: (1) receipt of preventive health care and (2) child mortality.

Preventive Health Care. Each time that parents were interviewed, data were collected on preventive health care services in the preceding six (or 12) months. In the impact analyses, preventive health care was defined as the average number of medical visits per year. Separate variables were constructed for dental care and preventive medical care.

Child Mortality. In the process of interviewing parents over five years, we identified which of the study children died in childhood. We analyzed the proportion of children in each group who died over the period of the study, and the rate or timing of their deaths.

MEASURES FOR YOUNGER SIBLINGS

This evaluation included several measures of the birth outcomes of children born subsequent to the focus child (Shapiro, et al., 1980).

Birth Weight. Low birth weight infants are at risk of increased infant mortality as well as a variety of developmental delays (McCormick, 1985), medical complications in infancy (McCormick, 1985, 1990; Hack, et al., 1994), and later problems in school such as behavioral difficulties, learning problems, poor academic achievement, and lower cognitive test scores (McBurney & Eaves, 1986; Broman, et al., 1975; Escalona, 1992; Scott, 1987; Klein, et al., 1987; Hunt & Cooper, 1988; Dunn, et al., 1986; Hack, 1994). The likelihood of adverse developmental and cognitive outcomes also is greater in low socioeconomic populations, such as that served by CCDP (Francis-Williams & Davies, 1974; Hoy, et al., 1988). The risk for cognitive deficits has been shown to be present throughout the full spectrum of birth weights less than or equal to 2500 grams, and the risk increases as birth weight decreases (Drillien, 1964; McBurney & Eaves, 1986; Dunn, 1986). For the CCDP evaluation, low birth weight was defined as less than 2500 grams and very low birth weight was defined as less than 1500 grams.

Gestational Age. Premature birth was defined as three or more weeks premature (i.e., gestational age less than 37 weeks). This cut-off for pre-term birth is a standard one, used in national health surveys and statistical reports. Premature delivery is a major predictor of low birth weight (Institute of Medicine, 1985; Graf & Perez-Woods, 1992; Kramer, 1991). The risk of low birth weight is 13 times greater for pre-term births (< 37 weeks of gestation) and the risk of perinatal mortality for pre-term births is approximately 25 times as high for pre-term births as that for term births after 37 weeks (National Center for Health Statistics, 1990, 1992, 1993).

Use of Special Care Nursery. A measure was computed to indicate whether the newborn infant spent any time in an intensive or special care nursery while in the hospital, and if so, the number of nights of special care that were required. The need for such care is a powerful indicator of future health problems, and directly influences the expense of the delivery.

EFFECTS ON COGNITIVE DEVELOPMENT ACROSS ALL PROJECTS

PEABODY PICTURE VOCABULARY TEST

The PPVT is designed to show increasing scores as children mature. In other words, we expect children's PPVT scores to increase as children get older, purely as a function of normal development. CCDP hoped to affect this pattern by accelerating the growth of children in the program relative to children in the control group. Children in the study were assessed with the PPVT at ages 3, 4, and 5 years. Having data at three points in time allowed us to use longitudinal growth curve analysis to estimate the effect of CCDP on PPVT scores at the end of the study and on the rate of growth on the PPVT over time (see Chapter 3 for a more detailed description of the analytic techniques that were employed).

Contrary to the hypothesis that CCDP would accelerate the growth of children in the program, CCDP had no overall effect on standardized scores on the PPVT at age 5 and no overall effect on the trajectory of children's development (or growth) on the PPVT between 3 and 5 years of age

(Exhibit 5.2).[3] CCDP and control children scored at a similar level on the PPVT at age 5 years and showed similar rates of development in the period of the evaluation (ages 3 through 5 years).

Exhibit 5.3 provides a picture of the rate of increase on the PPVT with age with age, for CCDP and control children separately.[4] (The exhibit uses the PPVT **raw score** to show growth, since the standardized score in effect removes the effect of age.) PPVT scores for both CCDP and control children increase with age and the growth curves for the two groups are identical in their slopes as well as the level which children reach by age 5.

Comparison of data from the CCDP evaluation with standardized PPVT scores from a national sample of children of the same chronological age[5] shows that CCDP and control group children in the evaluation scored significantly lower than the children in the standardization sample at 3, 4, and 5 years of age (Exhibit 5.4). Control group scored more than one full standard deviation below the mean for the standardization sample at each age.

TEST DE VOCABULARIO EN IMAGENES PEABODY

The Spanish adaptation of the PPVT, the TVIP, was administered at 3, 4, and 5 years of age to Spanish-speaking children. Similar analyses were done on the TVIP and the PPVT. Longitudinal growth curve analysis was employed to estimate the effect of CCDP on TVIP scores at the end of the study and on the rate of growth on the TVIP over time.

CCDP had no overall effect either on children's level of performance on the TVIP at age 5 years or on their rate of growth over time (Exhibit 5.2). At age 5, CCDP children performed at the same level on the TVIP as children in the control group, and the rate of growth in the period from 3 through 5 years of age was similar for the two groups.

Exhibit 5.3 shows the rate of increase on the TVIP ***raw score*** with age.[4] TVIP scores for both CCDP and control children increased with age; while the growth curve for CCDP children is consistently above that for control children, the difference is not statistically significant, and the lines look nearly identical in terms of their rate of increase over time.

[3] Parallel longitudinal growth curve analyses were done on the PPVT, the TVIP and the K-ABC using raw scores and standardized scores. The size of the treatment effects were the same regardless of the form of the score, and the impact estimates are reported only for the standardized versions of each test.

[4] The exhibit charts mean test scores for all children who were given the test at a particular month of age. Most of the data were collected when the children were near their birthdays. The growth curves are smoothest near 36, 48 and 60 months, where there are the most data.

[5] The standardization sample included 4,200 children; 100 males and 100 females in each six-month age span from 2 years 6 months through 18 years 0 months. The sample was selected to be nationally representative in terms of geographic and socioeconomic distribution. Children of comparable ages in the standardization sample have a mean standardized PPVT score of 100 with a standard deviation of 15.

Comparison of data from this study with TVIP scores for a sample of children in Mexico and Puerto Rico[6] shows that Spanish-speaking children in CCDP and in the control group scored lower than the TVIP norming group (Exhibit 5.5), although the differential between the control group children and the more heterogeneous norming sample was smaller on the TVIP than it was on the PPVT.

KAUFMAN ASSESSMENT BATTERY FOR CHILDREN

The K-ABC was administered annually at ages 3, 4, and 5 years of age. Having three comparable scores for most children in the sample made it possible to use longitudinal growth curve analysis to estimate the treatment effect on both level (score at age 5 years) and on the slope, or pattern of growth over the time period of 3 through 5 years.

CCDP had no overall effect on the level of children's standardized scores on the K-ABC Mental Processing scale or the Achievement scale nor on their average rate of growth on either scale in the period 3 through 5 years of age (Exhibit 5.2).[3]

Exhibit 5.6 shows the rate of increase in K-ABC ***raw scores*** with age.[4] In order to examine growth, a raw score version of the K-ABC subscales was derived from computing an average percent correct on only those subtests that are common across ages 3 through 5 years. For the Mental Processing scale, there were three subtests common to all ages, and for the Achievement scale, there were three common subtests. K-ABC scores increased with age for both CCDP and control children, and the growth curves for the two groups are almost indistinguishable in both slope and the level of performance reached by age 5 years.

Using K-ABC standardized scores for a national sample of children of similar chronological age[7] as a comparison, we see that the control group children had lower scores on both the Achievement and Mental Processing scales. On the Achievement scale, CCDP and control group children scored nearly one full standard deviation lower than the national sample at all ages (Exhibit 5.7). On the Mental Processing scale, at age 3 years CCDP and control group children scored about half a standard deviation below the mean for the norm group; at age 4 years, the difference was closer to a full standard deviation below the norm group; and, at age 5, the CCDP and the control group children scored less than half a standard deviation below the norm group (Exhibit 5.8).

[6]The TVIP was standardized separately on samples of children in Mexico and in Puerto Rico. In Mexico, a representative sample of 1,219 children was drawn from pubic schools; this sample included 298 children under 6 years of age. In Puerto Rico, the standardization sample included 519 children under 6 years of age. The Puerto Rican sample over represented high socioeconomic categories.

[7]The K-ABC standardization sample included 2,000 children, 100 at each half-year between 2 years, 6 months and 12 years, 5 months. The sample was stratified on sex, parent education, race or ethnic group, and geographic region. The scaled scores for the Achievement and Mental Processing scales have a mean of 100 and a standard deviation of 15.

EFFECTS ON CHILD SOCIAL AND EMOTIONAL DEVELOPMENT ACROSS ALL PROJECTS

CHILD BEHAVIOR CHECKLIST

Parent reports on the child's social-emotional problems were collected with the Child Behavior Checklist (CBCL). At ages 2 and 3 years, the CBCL for Ages 2-3 was used, and at ages 4 and 5 years, the CBCL for Ages 4-18 was used. Longitudinal growth curve analysis was used to test for a treatment effect on the incidence of behavior problems at the end of the study or on the pattern of change in behavior problems over the period of the study. Since the CBCL measure changes at age 4 years, the standardized version of the CBCL scores (normalized T-scores with a mean of 50 and standard deviation of 10) were used in the impact analyses in order to have a parallel measure with a common metric at each age.

Based on these analyses, CCDP had no overall effect on children's social-emotional problems nor on the average rate of change in the number of problems children demonstrate between 2 and 5 years of age (Exhibit 5.2). There was no significant treatment effect on Externalizing behavior, Internalizing behavior, or on the overall total.

Compared with children in the normative samples[8], the standardized CBCL scores for CCDP and control children were higher than the norm group by about half a standard deviation at age 2 years (Exhibit 5.9). Also, the percentage of CCDP and control children scoring in the clinical range is higher than in the nonclinical norming sample. Scores on the CBCL decreased in both the CCDP and control groups until age 5 years, when children in both groups scored at the mean for the norm group. Thus, children in this evaluation appeared to have higher than normal levels of social and emotional problems when they were two years of age. However, by the time they were ready to enter school, children in CCDP and children in the control group each have levels of social and emotional problems that closely resemble the normative sample.

ADAPTIVE SOCIAL BEHAVIOR INVENTORY

While the CBCL focuses on behavior problems, the Adaptive Social Behavior Inventory (ASBI) focuses on children's prosocial behavior. The ASBI was used to collect parent report on the child's adaptive behavior at 3 and 4 years of age. A shortened version of the ASBI was used for 2-year-old children. Since we did not have three parallel measures across time on the ASBI, we were not able to use longitudinal growth curve analysis. Therefore, regression analyses were used to test the treatment effect on the ASBI separately for 3- and for 4-year-old children.

[8]The CBCL/2-3 and the CBCL/4-18 were standardized on a national sample of children who were not receiving mental health services. This included approximately 1,200 children 4 to 18 years of age and 370 children 2 to 3 years of age who were residing in the same households. In the norms sample, 35 percent of the families were judged to be "upper" class, 45 percent were "middle" class, and 20 percent were "lower" class; the majority of families were white.

CCDP had no overall effect on children's adaptive social behavior at either 3 or 4 years of age (Exhibit 5.2). This was true for the three subscales--Express, Comply and Disrupt, and for the two total scores--prosocial and the overall total score.

The average scores on the ASBI for CCDP and control children are shown in Exhibit 5.10. As would be expected, scores reflect increasing adaptive skills over time (i.e., scores increase between 3 and 4 years of age).

In the absence of any standardization of the ASBI, we must look to other samples to try to assess how CCDP children are doing in their adaptive behavior relative to other children of the same age. One comparison for the CCDP sample is a large sample of 3-year-olds who served as the comparison group in the evaluation of the Infant Health and Development Program (IHDP: Hogan, Scott & Bauer, 1992). The comparison group included 545 children, all born premature; the sample was made up of 35 percent white families and 51 percent black families and covered a wide socioeconomic range and therefore is less at-risk than the CCDP sample. Not surprisingly, the IHDP sample of 3-year-olds scored higher on the ASBI than the CCDP 3-year-olds. Although the scores for the two samples on Comply were very similar, the IHDP sample scored about 4 points higher on the Express subscale and, consequently, on the Prosocial score. In addition, there was much more variation among the ASBI scores of CCDP children than among the scores for the IHDP children.

DEVELOPMENTAL CHECKLIST

The ASBI was intended for use only with preschool children. Therefore, a different measure was used to assess adaptive social behavior at age 5. The Developmental Checklist was developed for the CCDP evaluation and administered to parents when their child was 5 years of age or older. Regression analyses revealed a statistically significant but educationally small effect favoring the program children at age 5 (Exhibit 5.2). The small size of the difference (four-tenths of a point, or one-fifteenth of a standard deviation unit) on only one of the measures used in this area, does little to alter the conclusion that CCDP had no meaningful effect on children's adaptive social behavior.

EFFECTS ON CHILD HEALTH ACROSS ALL PROJECTS

PREVENTIVE HEALTH CARE

CCDP had no overall effect on the frequency with which children received preventive medical and dental care (Exhibit 5.2). Children in both groups visited a doctor for preventive health care an average of 1.8 times a year over the course of the study, and received preventive dental care an average of 0.6 times a year (Exhibit 5.11).

CHILD MORTALITY

Throughout the five-year period of the study, 22 CCDP children (1.11 percent) and 17 control group children (0.86 percent) died. In each group, about half of those deaths occurred after recruitment and random assignment but before birth. CCDP had no significant effect on the proportion of child deaths (Exhibit 5.2).

EFFECTS ON BIRTHS SUBSEQUENT TO THE FOCUS CHILD ACROSS ALL PROJECTS

There is a possibility that CCDP might affect younger siblings of the focus children, through its work on parenting. During the time period of this study, the only outcomes available on younger siblings were birth outcomes--the incidence of prematurity, low birth weight, and use of special care nurseries. CCDP had no overall effect on any of these birth outcomes (Exhibit 5.2). Because analyses in Chapter 4 indicated no treatment effects on maternal behaviors during pregnancy, including smoking, drinking, drug use, and timing of prenatal care, the absence of treatment effects on birth outcomes should not be surprising. The incidence of low birth weight in the CCDP sample (see Exhibit 5.12) is consistent with national statistics on the incidence of low birth weight infants in different racial or ethnic groups.[9]

SUMMARY OF FINDINGS

CCDP had no substantively important effects on children's cognitive or socio-emotional development, on children's health, or on birth outcomes for younger siblings.

CHILDREN'S COGNITIVE DEVELOPMENT

- **CCDP had no effect on children's level of cognitive functioning at the end of the program.** At age 5, CCDP and control children were not significantly different in their level of performance on two standardized measures of cognitive functioning—the PPVT (a measure of receptive vocabulary) and the K-ABC (a broad-based measure of cognitive aptitude and achievement). Nor did the two groups of children differ in the rate at which they acquired the skills measured by these tests. Compared with children of the same age from nationally-representative samples, children in the CCDP study fell further behind over time and scored substantially lower at age 5.

[9]U.S. Department of Health and Human Services (1995). ***United States Health 1995.*** Data on low birth weight live births from the Centers for Disease Control and Prevention, National Center for Health Statistics.

CHILDREN'S SOCIO-EMOTIONAL DEVELOPMENT

- **CCDP had no effect on the number of social-emotional problems children exhibited at the end of the program or on the rate of change in number of problems over time,** as reported by parents on the Achenbach Child Behavior Checklist.

- **CCDP had no effect on children's adaptive social behavior at 3 or 4 years of age; it did have a statistically significant but small effect on children's adaptive social behavior at age 5.** At ages 3 and 4 years, CCDP and control group children were given similar ratings by their parents on the Adaptive Social Behavior Inventory. At 5 years of age, on a developmental checklist constructed for this study, the mean rating on adaptive behavior for CCDP children was 57.9 (out of 69 possible points), while the mean rating for control children was 57.5 points. This four-tenths of a point difference is statistically significant but represents a difference of only one-fifteenth of a standard deviation, which is not educationally meaningful.

CHILDREN'S HEALTH

- **CCDP had no effect on children's health,** including receipt of preventive medical or dental care, or on the child mortality rate.

BIRTH OUTCOMES FOR YOUNGER SIBLINGS

- **CCDP had no effect on birth outcomes for children born subsequent to the focus child,** including birth weight, gestational age, or time in special care nurseries.

EXHIBIT 5.1
CHILD OUTCOME MEASURES, DATA COLLECTION SCHEDULE, AND ANALYSIS VARIABLES

OUTCOME MEASURES	SCHEDULE[A]	ANALYSIS VARIABLE(S)
Cognitive Development		
Bayley Scales of Infant Development[b]	2 years (22-30 mos)	Mental Development Index (MDI)—normalized total score for n
Peabody Picture Vocabulary Test—Revised Test de Vocabulario en Imagenes Peabody (Spanish version)	3 years (36-47 mos) 4 years (48-59 mos) 5 years (60-72 mos)	Standardized total score at 36, 48, 60 months PPVT/TVIP analyzed separately
Kaufman Assessment Battery for Children	3 years (36-47 mos) 4 years (48-59 mos) 5 years (60-72 mos)	Standardized scores for Achievement & Mental Processing Scale
Social/Emotional Development		
Achenbach Child Behavior Checklist, Ages 2-3	2 years (24-35 mos) 3 years (36-47 mos)	Normalized t-scores for Total Problems, Externalizing Problems, 60 months
Achenbach Child Behavior Checklist, Ages 4-18	4 years (48-59 mos) 5 years (60-72 mos)	
Adaptive Social Behavior Inventory	2 years (24-35 mos) 3 years (36-47 mos) 4 years (48-59 mos)	Raw scores at 24, 36, 48 months for Express, Comply, Prosocial
Developmental Checklist	5 years (60-72 mos)	Total raw score at 60 months
Child Health		
Preventive health care	At semi-annual and annual parent interviews	Multiple interviews across three years (child age 2 to 5 years): (preventive medical care, (2) Average number of visits/year for de
Child death	At annual parent interview	Date, cause of child death
Birth Outcomes for Children Born After Focus Child		
Birth weight	At annual parent interview	Low (< 2,500 gms) vs. normal birth weight
Weeks premature	At annual parent interview	Premature (< 37 weeks gestation) or full-term
Time in special care nursery	At annual parent interview	(1) Any time in special care nursery, (2) Number nights in specia

a Families could enroll in CCDP if the mother was pregnant or had a child 12 months or younger; measures based on child age corresponded
b Results for the Bayley were reported by ACYF (1994).

EXHIBIT 5.2
SUMMARY OF CCDP'S EFFECTS ON CHILDREN

OUTCOME MEASURE	TYPE OF ANALYSIS	SIGNIFICANCE OF TREATMENT EFFECT	
		LEVEL OF PERFORMANCE	RATE OF GROWTH (SLOPE)
Cognitive Development: Focus Child			
PPVT-R Standardized Total Score[a] [3-5 years]	longitudinal analysis: growth curve[b]	p=.331	p=.315
TVIP Standardized Total Score[a] [3-5 years]	longitudinal analysis: growth curve	p=.203	p=.604
Kaufman Standardized Achievement Scale Score[c] [3-5 years]	longitudinal analysis: growth curve	p=.065	p=.922
Kaufman Standardized Mental Processing Scale Score[c] [3-5 years]	longitudinal analysis: growth curve	p=.060	p=.527
Social/Emotional Development: Focus Child			
Child Behavior Checklist Normalized Total Score[d] [2-5 years]	longitudinal analysis: growth curve	p=.511	p=.272
Child Behavior Checklist Normalized Externalizing Score[d] [2-5 years]	longitudinal analysis: growth curve	p=.624	p=.583
Child Behavior Checklist Normalized Internalizing Score[d] [2-5 years]	longitudinal analysis: growth curve	p=.560	p=.400
Adaptive Social Beh Inventory: Total[e] [3 years] [4 years]	cross-sectional analysis: OLS regression[f]	p=.751 p=.461	NA
Developmental Checklist: Total Score [5 years]	cross-sectional analysis: OLS regression	p=.007	NA
Health: Focus Child			
Preventive medical care (# visits/year) [averaged over life of study]	cross-sectional analysis: OLS regression	p=.660	NA
Preventive dental care (# visits/year) [averaged over life of study]	cross-sectional analysis: OLS regression	p=.835	NA
Child death	cross-sectional analysis: t-test	p=.422	NA
Birth Outcomes: Younger Siblings[g]			
% children with low birth weight (<2,500 gms)	cross-sectional analysis: logistic regression[f]	p=.904	NA
% children born premature (<37 weeks)	cross-sectional analysis: logistic regression	p=.277	NA
% children receiving any care in special care nursery	cross-sectional analysis: logistic regression	p=.056	NA
Number nights in special care nursery	cross-sectional analysis: OLS regression	p=.593	NA

Notes to Exhibit 5.2

a Standardized score for PPVT/TVIP based on distribution of scores in norming sample; computed with mean=100, standard deviation =15.

b Growth curve analyses used hierarchical linear models to test for the difference between group means (**level** of performance at end of study) and group slopes (**rate of change** over multiple time points between 24/36 months and 60 months); these differences were adjusted for a set of baseline covariates

c Standard scores for Mental Processing and Achievement Scales computed as follows: raw scores for component subtests were converted to scaled or standard scores, based on norming sample; the scaled scores were summed for each scale, and these totals were then converted to standard scores with mean=100 and standard deviation=15.

d Normalized T-scores were based on the distributions of scores in the norming samples and were derived so that the mean = 50 and standard deviation=10; higher T-scores indicate more behavior problems.

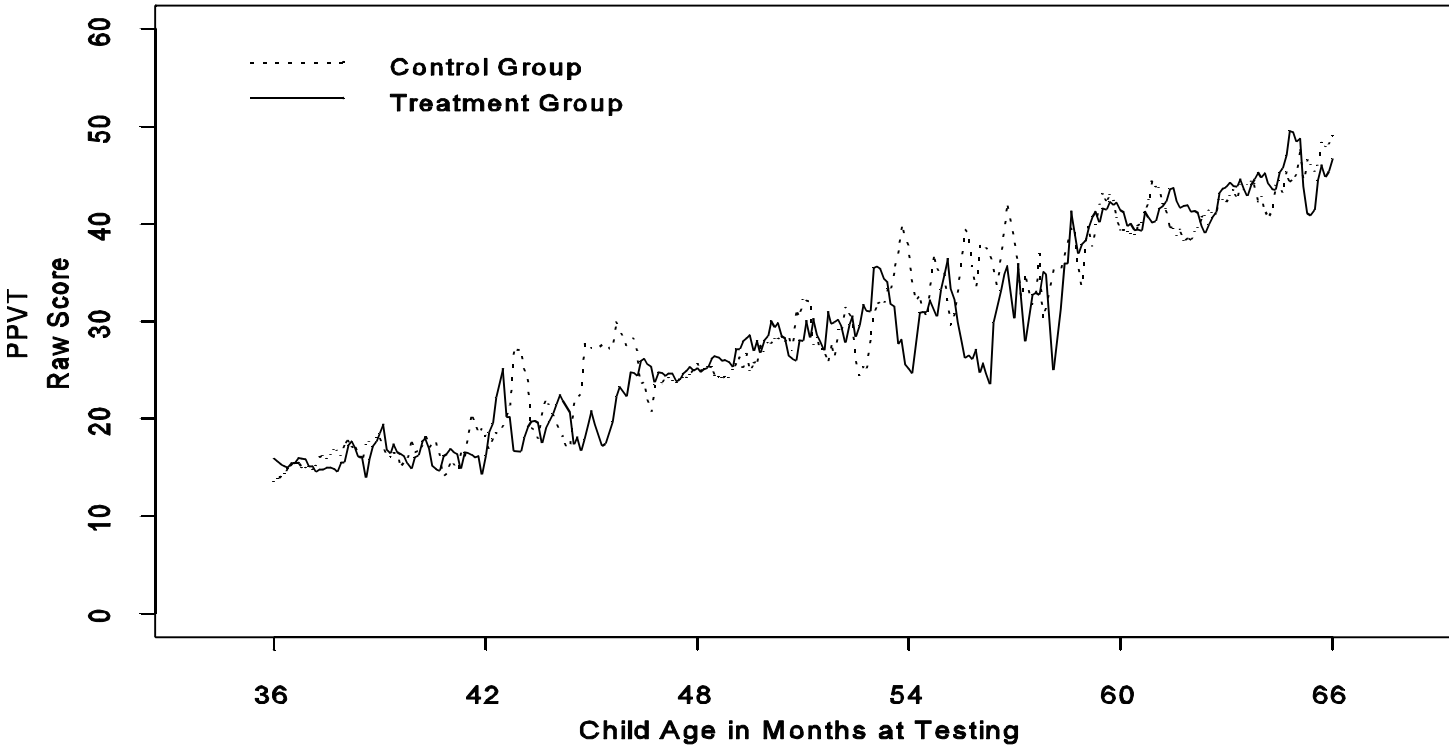
e No treatment effects were found for individual subscales that make up Prosocial: Comply (3 yrs, p=.31; 4 yrs, p=.91) or Express (3 yrs, p=.87; 4 yrs, p=.31).

f Cross-sectional analyses (OLS and logistic regressions) test mean differences adjusted for baseline covariates

g Based on all subsequent births to CCDP and control mothers

EXHIBIT 5.3

GROWTH ON THE PPVT AND THE TVIP FOR CCDP AND CONTROL GROUP CHILDREN



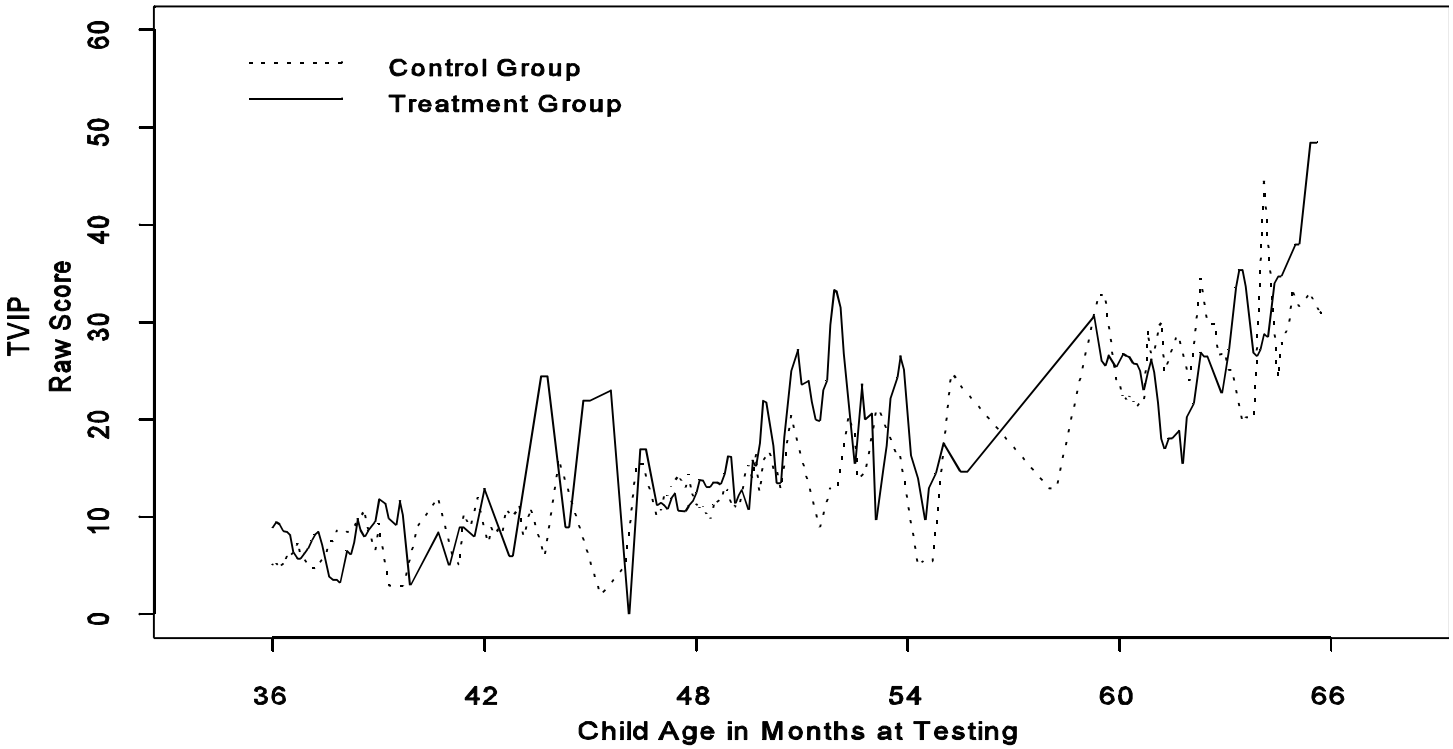


EXHIBIT 5.4

PPVT STANDARDIZED SCORES AT 3, 4, AND 5 YEARS OF AGE, FOR CCDP AND CONTROL GROUP CHILDREN

OUTCOME MEASURE	AGE 3 YEARS		AGE 4 YEARS		AGE 5 YEARS	
	CCDP (N=1255)	CONTROL (N=1216)	CCDP (N=1116)	CONTROL (N=1110)	CCDP (N=1256)	CONTROL (N=1301)
Average score[a]	82.12	81.61	77.46	77.26	81.11	81.00
Standard deviation	13.38	14.04	15.78	15.84	13.96	14.23
% children in average range—85-115 (±1 S.D. from mean)	43%	42%	36%	36%	42%	41%
% children >115 and ≤ 130 (>1 but <2 S.D. above mean)	1%	1%	1%	1%	1%	1%
% children > 130 (>2 S.D. above mean)	0%	<1%	0%	0%	<1%	0%
% children ≥ 70 and <85 (>1 but <2 S.D. below mean)	36%	34%	27%	30%	37%	38%
% children < 70 (>2 S.D. below mean)	20%	23%	36%	33%	19%	19%

a Standardized score for PPVT/TVIP based on distribution of scores in norming sample; computed with mean=100, standard deviation =15

EXHIBIT 5.5

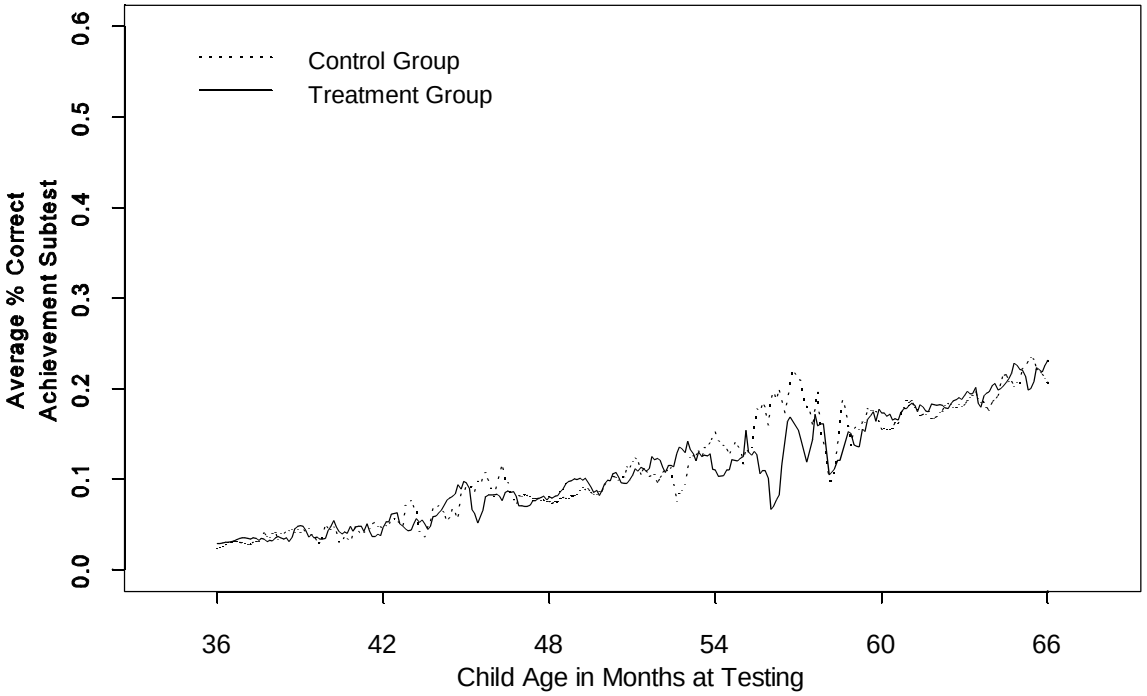
TVIP STANDARDIZED SCORES AT 3, 4, AND 5 YEARS OF AGE, FOR CCDP AND CONTROL GROUP CHILDREN

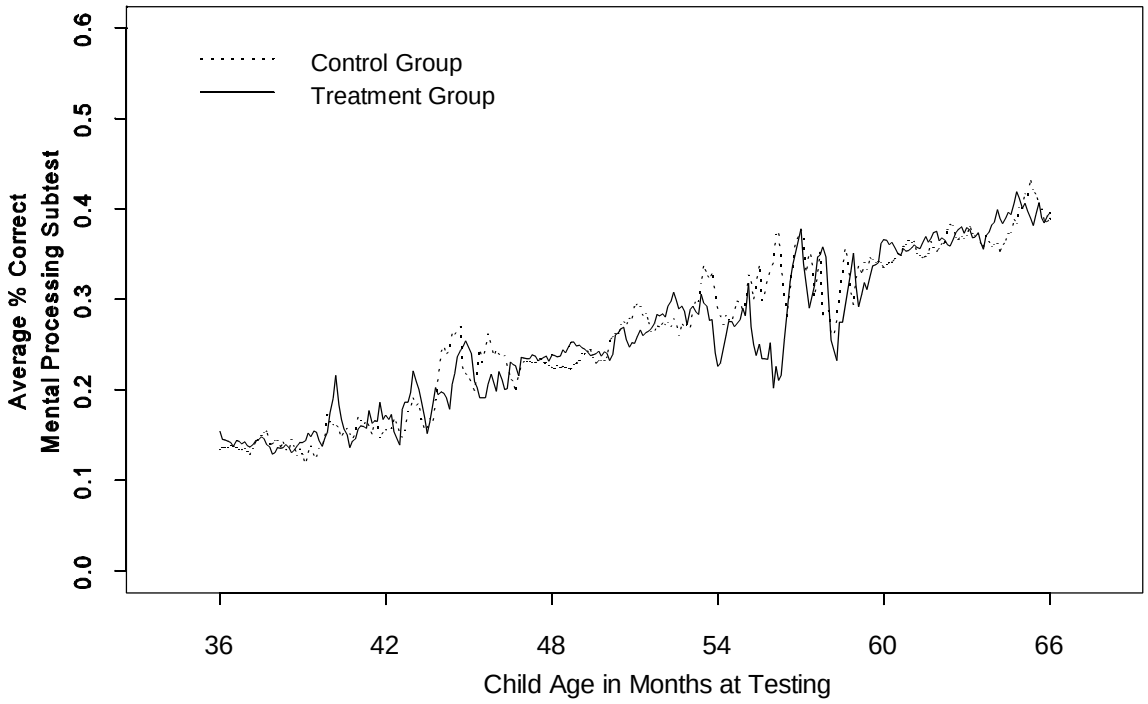
OUTCOME MEASURE	AGE 3 YEARS		AGE 4 YEARS		AGE 5 YEARS	
	CCDP (N=146)	CONTROL (N=115)	CCDP (N=127)	CONTROL (N=124)	CCDP (N=113)	CONTROL (N=116)
Average score[a]	92.10	90.14	88.83	84.60	87.84	86.13
Standard deviation	11.56	10.70	14.30	12.31	15.70	13.47
% children in average range—85-115 (±1 S.D. from mean)	76%	75%	50%	38%	53%	54%
% children >115 and ≤ 130 (>1 but <2 S.D. above mean)	4%	0%	2%	2%	3%	2%
% children > 130 (>2 S.D. above mean)	0%	0%	2%	0%	1%	0%
% children ≥ 70 and <85 (>1 but <2 S.D. below mean)	18%	23%	41%	55%	26%	30%
% children < 70 (>2 S.D. below mean)	2%	2%	5%	5%	17%	14%

a Standardized score for PPVT/TVIP based on distribution of scores in norming sample; computed with mean=100, standard deviation =15

EXHIBIT 5.6

GROWTH ON THE K-ABC AND MENTAL PROCESSING SCALES FOR CCDP AND CONTROL GROUP CHILDREN[A]





[a] Subscale scores are percentage correct on subscales common to all ages 2 through 5 years: 3 Mental Processing subtests and 3 Achievement subtests.

EXHIBIT 5.7

K-ABC STANDARDIZED ACHIEVEMENT SCALE SCORES, FOR CCDP AND CONTROL GROUP CHILDREN

OUTCOME MEASURE	AGE 3 YEARS		AGE 4 YEARS		AGE 5 YEARS	
	CCDP (N=1401)	CONTROL (N=1335)	CCDP (N=1245)	CONTROL (N=1227)	CCDP (N=1384)	CONTROL (N=1440)
Average score[a]	85.99	85.90	85.29	84.25	87.16	86.78
Standard deviation	8.60	9.17	10.67	9.93	10.71	10.63
% children in average range—85-115 (±1 S.D. from mean)	46%	45%	42%	43%	54%	52%
% children >115 and ≤ 130 (>1 but <2 S.D. above mean)	1%	1%	1%	<1%	<1%	1%
% children > 130 (>2 S.D. above mean)	<1%	<1%	<1%	<1%	<1%	0%
% children ≥ 70 and <85 (>1 but <2 S.D. below mean)	52%	53%	53%	53%	42%	43%
% children < 70 (>2 S.D. below mean)	1%	<1%	3%	4%	3%	3%

a Standard scores for Mental Processing and Achievement Scales computed as follows: raw scores for component subtests were converted to scaled scores, based on norming sample; the scaled scores were summed for each scale, and these totals were then converted to standard scores with mean=100 and standard deviation=15.

EXHIBIT 5.8

K-ABC STANDARDIZED MENTAL PROCESSING SCALE SCORES, FOR CCDP AND CONTROL GROUP CHILDREN

OUTCOME MEASURE	AGE 3 YEARS		AGE 4 YEARS		AGE 5 YEARS	
	CCDP (N=1401)	CONTROL (N=1335)	CCDP (N=1245)	CONTROL (N=1227)	CCDP (N=1384)	CONTROL (N=1440)
Average score[a]	92.22	91.01	91.13	90.19	95.28	94.80
Standard deviation	15.42	15.80	13.229	12.56	13.31	13.27
% children in average range—85-115 (±1 S.D. from mean)	60%	56%	62%	64%	70%	69%
% children >115 and ≤ 130 (>1 but <2 S.D. above mean)	5%	5%	4%	3%	6%	7%
% children > 130 (>2 S.D. above mean)	2%	2%	1%	<1%	1%	1%
% children ≥ 70 and <85 (>1 but <2 S.D. below mean)	27%	29%	29%	28%	20%	22%
% children < 70 (>2 S.D. below mean)	6%	8%	4%	5%	3%	2%

a Standard scores for Mental Processing and Achievement Scales computed as follows: raw scores for component subtests were converted to scaled scores, based on norming sample; the scaled scores were summed for each scale, and these totals werethen converted to standard scores with mean=100 and standard deviation=15.

EXHIBIT 5.9
CHILD BEHAVIOR CHECKLIST NORMALIZED T-SCORES AT 2, 3, 4, AND 5 YEARS OF AGE, FOR CCDP AND CONTROL GROUP CHILDREN

OUTCOME MEASURE	AGE 2 YEARS		AGE 3 YEARS		AGE 4 YEARS		AGE 5 YEARS	
	CCDP (N=1456)	CONTROL (N=1566)	CCDP (N=1440)	CONTROL (N=1415)	CCDP (N=1282)	CONTROL (N=1252)	CCDP (N=1489)	CONTROL (N=1530)
Total Score[a]								
Average score[b]	55.94	55.82	53.66	53.69	52.51	52.94	50.55	50.84
Standard deviation	9.91	9.68	10.66	10.49	10.45	10.20	10.87	10.50
% children in clinical range[c]	24.7%	23.2%	20.0%	19.8 %	17.6%	19.2%	15.4%	16.7%
Externalizing Score								
Average score[b]	53.05	53.39	53.05	53.39	53.32	53.89	51.44	51.54
Standard deviation	10.22	10.20	10.22	10.20	10.16	9.80	10.60	10.16
% children in clinical range[c]	14.9%	15.5%	14.9%	15.5%	18.3%	18.8%	16.3%	15.9%
Internalizing Score								
Average score[b]	53.57	53.02	53.57	53.02	48.66	48.68	47.54	47.98
Standard deviation	10.75	10.35	10.75	10.35	9.70	9.52	9.67	9.49
% children in clinical range[c]	21.5%	19.3%	21.5%	19.3%	8.2%	8.1%	7.5%	8.2%

a Total Score includes items that are not part of either the Externalizing or the Internalizing subscales.
b Normalized T-score based on the cumulative frequency distribution of raw scores in the norming sample: mean=50 and standard deviation=10.
c The clinical range identifies children who exhibit more problems than the 90th percentile of scores in a nonclinical sample.

EXHIBIT 5.10

SCORES ON ADAPTIVE BEHAVIOR AT 3, 4, AND 5 YEARS OF AGE, FOR CCDP AND CONTROL GROUP CHILDREN

OUTCOME MEASURE	AGE 3 YEARS		AGE 4 YEARS		AGE 5 YEARS	
	CCDP (N=1663)	CONTROL (N=1713)	CCDP (N=1562)	CONTROL (N=1646)	CCDP (N=1560)	CONTROL (N=1640)
Adaptive Social Behavior Inventory						
Express						
Average score[a]	19.33	19.31	19.50	19.38	NA	NA
Standard deviation	3.35	3.36	3.20	3.25	NA	NA
Comply						
Average score[b]	14.03	13.90	14.83	14.82	NA	NA
Standard deviation	3.82	3.66	3.74	3.65	NA	NA
Disrupt						
Average score[c]	5.25	5.10	5.06	5.13	NA	NA
Standard deviation	2.68	2.57	2.62	2.57	NA	NA
Prosocial (Express + Comply)						
Average score[d]	33.36	33.25	34.33	34.21	NA	NA
Standard deviation	6.24	6.07	6.05	6.01	NA	NA
Total (Express + Comply + Disrupt[e])						
Average score	41.88	41.97	43.18	42.99	NA	NA
Standard deviation	7.76	7.56	7.55	7.39	NA	NA
Developmental Checklist						
Total						
Average score[f]	NA	NA	NA	NA	57.93	57.51
Standard deviation	NA	NA	NA	NA	5.98	5.93

a Total possible score for Express (13 items) = 26; higher score = more expressive
b Total possible score for Comply (10 items) = 20; higher score = more compliant
c Total possible score for Disrupt (7 items) = 14; higher score = more disruptive
d Total possible score for Prosocial (Express + Comply, 23 items) = 46; higher score = more prosocial
e In computing Total Score, items for Disrupt were recoded so that higher score = more positive behavior; Total includes 30 items, for a total possible score of 60
f Total possible score for 24 items = 72

EXHIBIT 5.11

HEALTH OUTCOMES OVER LIFE OF PROGRAM, FOR CCDP AND CONTROL GROUP CHILDREN

OUTCOME MEASURE	CCDP (N=1847)	CONTROL (N=1846)
Number of Preventive Medical Visits/Year		
Mean number of visits/year	1.78	1.76
Standard deviation	1.50	1.23
Number of Dental Visits/Year		
Mean number of visits/year	0.58	0.58
Standard deviation	0.75	0.73
Child Mortality		
% child deaths over 5 years	0.86	1.11

EXHIBIT 5.12

BIRTH OUTCOMES FOR YOUNGER SIBLINGS IN CCDP AND CONTROL FAMILIES

BIRTH OUTCOMES	CCDP (N=1076)	CONTROL (N=1108)
Low Birth Weight (< 2,500 grams)		
% children with low birth weight	10.2%	10.3%
Premature Birth (< 37 weeks)		
% children born premature	9.8%	11.1%
Use of Special Care Nursery		
% children receiving any care in special care nursery	16.9%	20.4%
Time in Special Care Nursery		
Mean number nights in special care	2.29	2.42
Standard deviation	7.39	8.43

CHAPTER 6

VARIATION IN EFFECTS: SITES AND SUBGROUPS

Though the preceding chapters provided evidence that CCDP had no ***overall*** effects on participating families, it is possible that the program produced positive effects in some projects, or for some subgroups of participants. This chapter presents findings to address two questions about variation in CCDP's effects:

- Did some ***sites*** produce positive effects on children and/or parents? If so, why did CCDP in these sites work better than in other sites?
- Did CCDP work better (or have effects) for ***subgroups of participants***, such as teenage mothers vs. older mothers, children whose mothers were depressed vs. children whose mothers were not depressed, mothers with a resident partner vs. mothers without a resident partner.

The results reported in this chapter need to be interpreted in the context of the overall findings documented in Chapters 4 and 5 of this report--that there are no large or significant effects of CCDP on any of the major outcome variables. Given the overall effect of "zero," it follows that any significant positive effects in one or more CCDP sites must be counterbalanced by significant negative effects in some site(s), or by a combination of "almost significant" negative effects in other sites. Similarly, if CCDP appears to have a positive effect on some variables for teenage mothers, then this effect must be counterbalanced by a negative effect on the same variables for older mothers. Hence, we see only minimal prospects for finding large between-site differences in the effects of CCDP, or substantial CCDP effects for some subgroups of participants.

SITE-LEVEL VARIATION IN EFFECTS

While the CCDP program was conceived and designed at the federal level by ACYF, individual CCDP projects were implemented by local grantee agencies. And while Congress, the federal government, researchers, program implementers, and other consumers of this research are interested in the overall effectiveness of the CCDP ***program***, there is an understandable interest in whether and how the effects of CCDP varied between local ***projects or sites***. This section provides information about project-level variation in the effectiveness of CCDP.

RATIONALE FOR SITE-LEVEL ANALYSES

The impact evaluation was designed to assess the overall effectiveness of CCDP, as implemented in 21 projects. We attach primary importance to the cross-site impact analysis because the major policy and research questions posed for this study ask about the ***effects of the overall CCDP program*** rather than the ***effects of individual CCDP projects***. What is most desired in the assessment of social programs is the ability to demonstrate a model which is robust and which

works in a variety of locations, under different circumstances, with different populations. This is uncommon, but research shows that some programs do show large effects across a range of projects. One example is the evaluation of the Infant Health and Development Program which showed positive effects at age 36 months on IQ, child behavior, and child morbidity which did not vary significantly across projects (IHDP, 1990).

Nontheless, and in part because this evaluation has shown no significant overall program-level effects, there is an understandably keen interest in whether and how CCDP's effects varied on a project-by-project basis. This interest is further justified by the history of social program evaluation which contains many instances of studies which find substantial variation in the effectiveness of model programs as implemented in multiple projects. For example, the national Follow Through evaluation reported by Stebbins, et al. (1977) studied the relative effects of a series of educational programs (e.g., "skill and drill," "open education," "learning to learn"), each of which was implemented in many projects, and found that the variation between different projects within a given educational program was greater than the variation between programs.

It is of somewhat lesser interest to show that a program or model works only in a few special sites. The research literature contains examples of "programs" which cannot be replicated because they relied on the skills of a particularly charismatic leader (e.g., the PUSH/EXCEL program started in the 1970s by Jesse Jackson), or programs which worked in only one site out of many for a special set of reasons (e.g., the California GAIN evaluation, which had positive results only in one site—Riverside).

Many evaluations of social science programs have included project-level analyses. However, few of these studies have had a sufficient number of projects to do a statistically defensible comparison of the relative effects of a program as implemented in different "types" of projects, e.g., comparing projects which offer high-intensity services with projects offering low-intensity services, or comparing projects in urban areas with projects in rural areas. Such analyses would have to include a minimum of 20 to 30 projects of each "type" in order to achieve even minimal levels of statistical power. In this evaluation we have 21 projects in total, far fewer than would be required to do formal statistical analyses of differences between groups of projects.

More often in research studies, site-level analyses are qualitative and/or exploratory in nature. That is, the effects of all of the projects under study are arrayed in order to identify outliers—particularly effective or ineffective projects. The researchers then attempt to try and understand why the identified projects seem to work well (or poorly) by examining project characteristics, participant characteristics, and by interviewing project staff. These analyses are informative and useful for generating hypotheses about what type of an approach works best and how future programmatic research efforts might best be able to test such hypotheses.

Given the interest in seeing whether there were site-to-site differences in the effectiveness of CCDP projects, are there any reasons to expect to find such differences? Or are there reasons to expect that such differences do not exist?

Variation in Project-Level Characteristics. CCDP projects varied on many dimensions that could affect impacts on families. For example, CCDP projects varied in terms of ***urbanicity***. Some projects were in large urban areas, others were in smaller cities, and still others were in rural sites. The location of a project is related to factors such as the safety and population density of neighborhoods in which participating families live, the types of services available, the types of families served, and the types of problems faced by participating families.

Another way in which projects varied is in terms of ***auspice and project history***. CCDP projects were operated by many types of grantees—community-based organizations, a school district, hospitals, universities, etc. These different organizations brought very different philosophies about service provision, different understandings of early childhood development, and varying degrees of collaborative, integrated service arrangements with community service providers. The auspice of the project also may be related to factors such as the background, training, and experience of staff, the types of organizational arrangements that can be put in place, as well as the organizational and local governance climate. While most of the grantees had a history of working with families in their community, often providing services similar to those provided through CCDP, they varied in terms of whether they operated similarly comprehensive programs prior to CCDP and in the specific emphasis of those programs. This has implications for the ability of a project to get up and running with the comprehensive array of services required by CCDP, and for the programmatic emphases that the project brought to CCDP.

Variation in Participant Characteristics. Differences in participant characteristics might also lead to variation in effects across projects. While all families recruited for CCDP had incomes below the poverty level, Exhibit 6.1 shows that families in different sites varied greatly in terms of selected baseline variables (data are combined across CCDP and control groups, since the measures were taken at baseline and the groups were randomly assigned). For example, most of the CCDP projects served a predominant racial/ethnic group. Eleven projects served predominantly African-American families, five projects served predominantly Hispanic families, and the remaining five projects served predominantly White families. On average, 38 percent of the families in the CCDP evaluation sample had a resident father-figure in the home, but this ranged from less than 15 percent in some projects to over 75 percent in other projects. There was similar between-site variation in each of the other baseline characteristics shown in Exhibit 6.1: the percentage of mothers with a high school diploma ranged from a low of 21 percent to a high of 71 percent; the percentage of working mothers ranged from a low of four percent to a high of 34 percent; the percentage of mothers who were teenagers at the birth of their first child ranged from a low of 19 percent to a high of 58 percent; the percentage of focus children who were low birth weight infants ranged from four percent to 17 percent; and finally, the annual per-person income ranged from a low of $1,072 to a high of $2,673.

This substantial variation in participant characteristics means that CCDP sites faced different challenges. Some had many families headed by teenage mothers, some had many families with no partner in the home, some had many families where the mother did not graduate from high school, and so on. As a result, some sites may have had an easier or more difficult time in trying to achieve CCDP's goals.

Variation in the Implementation of CCDP. There also are factors which may have worked in the opposite direction—to ***minimize*** variation in effects between CCDP projects. In particular, ACYF put in place a well-defined conceptual model of CCDP and did an excellent job of providing training and technical assistance in implementing the model, providing clear compliance standards for meeting model requirements, and monitoring each project's adherence to that model (see the discussion in Chapter 2). This means that the amount of between-project variation in effects attributable to differential implementation of CCDP should be relatively small, unlike many demonstrations, where site-to-site implementation varies substantially.

No Overall Effects. Finally, and perhaps most important, our expectation for finding effective sites is constrained by the evidence presented in Chapters 4 and 5 that there were no important cross-site effects attributable to CCDP. If there had been overall positive effects, then we could assume either that (1) the program worked equally well in all sites, or that (2) some sites did exceptionally well while others were ineffective. In either case, the total positive site-level effects generated by the program would be large enough to generate a statistically significant overall effect. The finding of no overall effects means either that (1) all sites were ineffective or (2) some sites had positive effects (helped families) while others had negative effects (CCDP families did worse than they would have without the program). In this case, any positive effects are counterbalanced by the negative effects.

There are some circumstances under which CCDP might have had negative effects in some sites on certain outcome variables. For example, some prior studies of employment and training programs found negative short-term effects on earnings, since adults were enrolled in school or training instead of working (Fischer & Cordray, 1995). The explanation for such findings is that the short-term negative effects on earnings ought to be reversed in the future. Except for this particular situation, we find it difficult to conceive of any circumstances under which a CCDP project could have negative effects on families, and so in the context of no overall effects, the prospect of finding sites with large positive effects seems bleak. The best we might hope for is to find one or two sites with relatively small positive effects, which when averaged with the "no effect" findings from many other sites leads to an overall finding of no effect.

IDENTIFYING EFFECTIVE SITES

We begin by noting that the process of identifying effective sites is as much an art as a science. The approach we have taken is appropriate and defensible, and we believe that it is the best approach given the design of the evaluation.[1] While other researchers might use a different approach and apply different criteria (we offer a somewhat different approach later in this chapter), we doubt that they would reach qualitatively different conclusions.

Our approach to identifying effective sites builds on the analyses that were used to assess the overall effects of CCDP (site-level analyses were conducted for many different outcome variables;

[1]The approach used here was developed by Abt Associates staff and technical experts from the project's Advisory Panel.

the results of the individual site analyses were pooled to arrive at an overall effect estimate for each outcome variable). Exhibit 6.2 is a table of p-levels indicating the statistical significance of CCDP's site-level effects for eight outcome domains and 36 separate outcome variables. Each p-level carries a sign (+ or -) indicating whether the direction of the statistical test favored CCDP (+) or the control group (-). That is, a "+" sign indicates that the difference was "good" (CCDP families moved in the appropriate direction relative to control families) while a "-" sign indicates that the difference was "bad" (CCDP families moved in the wrong direction relative to control families). Sites are identified only by number.

While we present a p-level for each site-level outcome analysis, readers should be careful not to attach meaning to the fact that some sites have many "+" signs while others have many "-" signs--very few of the p-levels are statistically significant. In considering whether certain sites are particularly effective, we have to pay special attention to the problem created by conducting so many statistical tests on so many correlated outcome measures. We used the following approach.

Eliminate Outcome Variables That Were Redundant. The first step was to drop from our list of outcomes any variables that were redundant with others that measured the same construct. For example, in Chapter 5 we assessed the effects of CCDP on two CBCL scales (Externalizing and Internalizing) as well as the CBCL total. For the purpose of identifying effective sites we included the two scales but not the total. As another example, in Chapter 4 we analyzed the effects of CCDP on three employment variables: whether the mother was employed at the end of the program, whether the partner in the household (if there was one) was employed, and whether either the mother or partner was employed. For identifying effective sites we used only the last of these three variables—whether either the mother or partner was employed. Thus, the 36 variables shown in Exhibit 6.2 exclude 15 variables that were discussed in the chapters on overall effects.[2]

Focus on Outcome Variables Where There Is Significant Between-Site Variation in Effects. The next step was to eliminate from consideration any of the 36 outcome variables where there was no significant differential effect of CCDP across sites.[3] If the site-level effects did not vary significantly for a given variable, then there was little reason to consider that variable when trying to identify effective sites. This was an important decision; one which helped us avoid capitalizing on site-level effects that occur purely by chance. We might not have taken this approach if we were able, ahead of time, to hypothesize which sites, because of their programmatic emphases, would be expected to produce positive effects on which outcomes. Because the CCDP process study (CSR, Incorporated, 1997) did not supply data in this area, it was impossible to predict whether certain sites would be expected to do better than others on any given measure. To avoid simply "fishing" through the data for stray positive or negative effects, we thus restricted our analyses to outcomes where we had evidence that sites performed differently from one another.

[2]This does not mean that the remaining 36 variables are uncorrelated. For example, the PPVT and K-ABC tests exhibit moderate correlations. We removed from consideration any variables that were correlated simply on the basis of their construction, e.g., a total score was removed if the subscale scores were included.

[3]For each of the 36 outcome variables we computed a two-way analysis of variance (treatment status by site) to determine whether there was a significant interaction between being in CCDP and being in a particular site.

As is shown by the highlighted rows in Exhibit 6.2, there was a significant treatment by site interaction ($p<.10$) for 13 of the 36 outcome variables, including all three of the child cognitive outcomes and one or two variables in each of the other outcome domains. We used a liberal significance cutoff for these analyses since we only have 20 sites[4] in each analysis and the resulting statistical power is low.

Identify Statistically Significant Site-Level Effects. The final step was to identify each cell in Exhibit 6.2 where a site had a significant effect on a given variable. To do this we used a relatively stringent $p<.01$ level. This degree of conservatism is justified on the basis of the large number of statistical tests computed for each site. While we wanted to identify effective sites, we did not want to do so by capitalizing on results that could have occurred purely by chance.

Draw Conclusions About Site-Level Effects. Examination of Exhibit 6.2 allows us to draw a number of conclusions:

- **Significant site-by-treatment interactions were found for 13 of the 36 outcome variables**. This indicates that there was reason to expect some sites to do better than others on these 13 measures.
- **There is a scattering of significant site-level effects**. Of the 720 statistical tests performed (20 sites * 36 variables), we would expect to find 7 significant results by chance alone (.01 * 720). We found 19 significant results at the $p<.01$ level; 16 of these were in the positive direction (CCDP families did better than control group families) and 3 were in the negative direction (control group families did better than CCDP families). There are more significant effects than would be expected on the basis of chance alone, but the pattern of a small number of positive effects counterbalanced by a few negative effects is exactly what we expected given the overall finding of no effects across all projects.
- **All but 4 of the 19 significant site-level effects were on the 13 variables where there was a significant amount of site-level variation in outcomes**. This finding gives us confidence that we did not eliminate important numbers of site-level effects by focusing on the 13 variables where site outcomes were found to vary.
- **Most projects had no significant effects**. Six projects had no effects on any of the 13 outcome variables. Thirteen projects had one significant effect (some positive, some negative) on one of the 13 outcome variables. Because CCDP emphasized comprehensive services with the resulting expectation that positive effects would occur in multiple domains, we searched for projects that were able to demonstrate positive effects in multiple areas.
- **One project (Site #2) had a positive effect on three of the 13 outcome variables, in three different outcome domains**. No other project had a

[4]We eliminated one project from the site-level analysis due to missing data on selected outcomes.

positive effect in more than one outcome domain. Because of CCDP's emphasis on comprehensive services and the resulting expectation that positive effects would occur in multiple domains, we focused on the one site where this occurred. We believe it is likely that there are real differences on outcomes for the CCDP and control groups in Site #2 and that it is worthwhile to explore this issue further.

ANALYSIS OF IMPACT DATA FOR SITE #2

Outcomes on Which Positive Effects Were Produced. Site #2 had a strong positive effect on each of three different variables in three different outcome domains: a measure of child cognitive development (the PPVT), a measure of employment (the percentage of months during the study that the mother or partner was employed), and a measure of the usage of federal benefits (the percentage of months during the study that the family received food stamps). Unlike other sites, it appears that Site #2 was able to improve the lives of CCDP families in multiple areas, a critical finding for a program that provided such a wide range of services and hoped for an equally wide range of impacts. This gives us confidence to look more deeply into the data to determine (1) whether Site #2 was "marginally effective" on other measures, and (2) the size of Site #2's effects.

Examination of Exhibit 6.2 using a less stringent statistical test ($p<.05$) shows that CCDP in Site #2 had positive effects on a second measure of child cognitive development (the K-ABC), on a second measure of the use of federal benefits (whether the mother was on AFDC at the end of the program), and on total household income. There also were positive effects on two subscales of the Adult-Adolescent Parenting Inventory. These findings lend additional evidence to the conclusion that something positive happened in Site #2—positive effects on children's cognitive development; on families' employment, income, and use of federal benefits; and on parenting.

Size of Site #2's Effects. Exhibit 6.3 shows CCDP and control group data for each of the variables on which Site #2 produced a significant effect. In terms of child cognitive development, Site #2's effect on the PPVT was 9.4 points, more than 0.6 standard deviation units, which is generally considered to be a moderately large effect for a social science program (Cohen, 1977). Control group children in Site #2 had an average PPVT score of 84.0 at 5 years of age. This puts them a full standard deviation below the mean of the norm group (mean of 100, standard deviation of 15). The CCDP group, with an average score of 93.4, was midway between the control group and the norm group.

Site #2's effect on the K-ABC Achievement scale was 3.9 points, equal to 0.26 standard deviation units, a small but non-trivial effect. Control group children had an average score of 88.2, about three-quarters of a standard deviation below the mean of the norm group. As was the case for the PPVT, CCDP children were between the control group and the norm group, with an average score of 92.1 (more than half a standard deviation below the mean of the norm group).

With respect to income and employment, Site #2 increased by 22 percentage points the average amount of time that either the mother or partner in the household was employed (from 47 percent

in the control group to 69 percent in CCDP), decreased by 20 percentage points the number of mothers who were on AFDC at the end of the study (from 65 percent in the control group to 46 percent in CCDP), and decreased by 19 percentage points the average amount of time that families received food stamps (from 74 percent in the control group to 55 percent in CCDP). Finally, CCDP families in Site #2 had higher annual household incomes than control group families—$17,029 vs. $13,407, respectively. All of these differences represent moderately large effects in a key outcome area.

With respect to parenting, CCDP in Site #2 had positive effects on two of the four AAPI scales. CCDP parents scored higher on the scale measuring parents' empathetic awareness of their child's needs (raw score difference of 1.6 points, equal to 0.37 standard deviations), and higher on the scale measuring the appropriateness of parents' expectations for their child (raw score difference of 1.3 points, equal to 0.35 standard deviations). The AAPI defines cutoff scores for each of its four scales. Parents scoring below the cut off are deemed "at risk" for abusive behavior toward their children. In Site #2, 67 percent of the CCDP parents were not at risk of abusive behavior on any of the four AAPI subscales, compared with 46 percent of the control group parents. These are small to medium-sized effects, but given the difficulty that most interventions have in changing parent behaviors, the effects in Site #2 are worth noting.

DISCUSSION OF SITE #2'S EFFECTIVENESS

It is one thing to identify an effective site. It is quite another to explain why this site is effective when other sites sharing many of the same characteristics were not effective. Perhaps its effectiveness had something to do with project-level characteristics such as location, auspice, or availability of local services. Perhaps it had to do with participant characteristics. Perhaps it had to do with the strength and experience of the Project Director. Perhaps it had to do with the nature of the CCDP program in Site #2 and the length of participation. Alternatively, the site's effectiveness may be attributable to a myriad of factors about which we know very little. Here we discuss some of the possibilities.

Perhaps Site #2 Served a "Less At Risk" Population. The data in Exhibit 6.1 allow us to characterize the population served by Site #2 as follows, relative to other CCDP sites:

- 97 percent white families (vs. 31 percent overall)
- 59 percent families with a partner in the home (vs. 38 percent overall)
- 50 percent mothers with a high school degree (vs. 49 percent overall)
- 11 percent working mothers (vs. 15 percent overall)
- 26 percent teenage mothers (vs. 36 percent overall)
- 6 percent low birth weight children (vs. 10 percent overall)
- $2,390 per person annual income (vs. $1,780 overall)
- 45 percent depressed mothers (vs. 43 percent overall)

Several of these variables indicate that Site #2 may have served a population slightly less at risk compared with other CCDP sites (e.g., more families with a partner in the home, fewer teenage mothers, fewer low birth weight babies, and higher per person income). Perhaps Site #2's task was made somewhat easier by the nature of the participants it served, although some other sites had even "easier" participants.

Perhaps Site #2 Had the "Right" Location. Site #2 was classified as a "rural" CCDP project, but is located in a small city located in a rural area within a state that provides a relatively high level of coordinated and community-based support for low-income families. The problems faced by projects in small cities in relatively rural areas are different, and possibly more tractable, than the problems faced by projects in inner cities or by projects in extremely rural areas where families are widely scattered and socially isolated. Staff in Site #2 believe they benefitted from having centralized operations and functions--the project once had a satellite office which did not work well because it was outside the daily flow of project operations.

While they had the requisite low incomes, CCDP families in Site #2 typically were not isolated geographically or physically--they often lived in the same neighborhoods as CCDP staff, and their children attended the same schools as children of CCDP staff. The CCDP staff knew and respected program families, and there was no sense that CCDP parents were qualitatively "different" from CCDP staff. There is a strong sense of "community" in Site #2, and the program of which the CCDP project is a part is seen as an important entity in the community, and as a good place to work.

Perhaps Site #2 Had the Correct Focus. Site #2 was the only CCDP project in which the grantee was a school district. This had important programmatic implications in that the focus of the project was clearly on children's development and education; the economic self-sufficiency of mothers and other family members was not an important part of Site #2's CCDP project in the early years. During those years, Site #2 worked to help parents develop a firm relationship with and attachment to their children, with the idea that children rather than adults should be the focus of the program. The focus for children from birth through age three was on training in infant development, learning activities, motor/language development, modeling of caregiving behaviors, and parent/child playgroups which encouraged parent/child interaction outside the home. Once children reached age three or four they were placed in center-based programs.

Perhaps Site #2 Had a Particularly Strong Staff. Site #2 has a history of stability and quality in staffing. The Project Director remained in charge from the start to the end of the project. In addition, the Project Director was cited by her staff as always being accessible and as taking part in daily program operations, instead of being "merely" an administrator. Most of the other key CCDP staff were with the project from the start, and many lived in the area and worked for social service agencies prior to working for CCDP. Substantial amounts of research on schooling leads to the conclusion that the single most important factor in having a successful school is the quality of the school principal (Fullan, 1991), and CCDP projects may well operate in the same fashion.

Perhaps Site #2 Did an Especially Good Job of Collaboration. The school Superintendent (the project's Executive Director) was extraordinarily supportive of CCDP and allowed the Project Director great freedom in organizing and running the project. Neither the Superintendent nor the Project Director were concerned about protecting "turf," and all CCDP staff members spent a large amount of time on issues of coordination and collaboration with social service agencies. For example, each senior CCDP staff member was designated as the main point of contact with at least half a dozen local service agencies. CCDP staff sat on the boards of other agencies, attended their meetings, and generally spent a lot of time cultivating relationships through personal connections. It also may have helped that the CCDP program was operating in a community which is relatively resource rich and in which the local governance climate made it easy to collaborate and coordinate with other service providers.

Perhaps Families in Site #2 Had More Exposure to the Program. Families in Site #2 were enrolled in the program for an average of 1,390 days, compared with the CCDP-wide average of 1,210 days of enrollment. While about 6 months above average, Site #2 was not at the top on this measure--families in four other sites in the impact evaluation were enrolled for more days than the families in Site #2. Further, it is not clear whether we ought to expect more exposure to the program to be associated with positive outcomes, since families with long periods of enrollment may have the most severe problems which require the most intensive services and yet make the least progress. This issue is addressed in more detail in the next section of this chapter.

To sum up, there are many reasons why CCDP in Site #2 was more effective than in other sites. The population served may have been somewhat less at risk; the site is located in a state that provides a relatively high level of resources to low-income families, and it benefits from the combination of being a small city in a rural area where program families were not seen as being "inferior" to or qualitatively "different" from program staff; with a school district as the grantee, the site had a clear focus on children and their education; the site had a particularly strong project director and senior staff, all of whom stayed with the project for many years; and finally, site staff appear to have done an especially good job of collaborating with local agencies, due in part to support for these activities from the state and local levels and from the project's executive director.

None of these factors can be singled out as "the reason" why CCDP was more effective in Site #2 than in other sites. The circumstances and context in Site #2 are probably unique, and certainly have acted in concert to produce the positive effects documented in this report.

RELAXING THE STANDARDS FOR IDENTIFYING EFFECTIVE SITES

We believe that the findings presented above are based on the most defensible and appropriate methods for assessing the site-level effects of CCDP. However, requests were made by some reviewers of the report to relax the standards that were used to identify effective sites in order to see whether a more liberal approach would reveal interesting patterns. Hence, we

- removed the standard which required that there be a significant amount of variation in site-level effects for an outcome variable to be considered, and
- relaxed the level for identifying a significant site-level effect from $p<.01$ to $p<.05$.

These two changes in methodology did not lead us to conduct any new analyses. Instead, they affected the way that the existing analyses were interpreted by identifying a greater number of statistically significant effects (see Exhibit 6.4 which contains exactly the same p-values as Exhibit 6.2, but which identifies statistically significant values based on the more relaxed standards). If we accept the relaxed set of standards, we are led to the following conclusions:

- **CCDP produced some positive and some negative site-level effects**. Of the 720 statistical tests performed (20 sites * 36 variables) we would expect to find 36 significant by chance alone (.05 * 720). We found 63 significant results at the $p<.05$ level; 44 of these were in the positive direction (CCDP families did better than control group families) and 19 were in the negative direction (control group families did better than CCDP families). Thus, there were about twice as many positive effects as negative effects. Of all the tests we ran, 6 percent revealed a positive effect, 91 percent indicated no difference, and 3 percent indicated a negative effect.

- **Of the 20 projects we examined, 15 had a positive effect on at least 1 of the 36 outcome variables**. Nine projects (Sites #1, #2, #12, #13, #14, #16, #20, #21, #22) had significant positive effects in more than one domain; 2 sites had positive effects on 7 of the 36 variables (Sites #2, #22); and 1 site had positive effects on 6 of the 36 variables (Site #13).

- **Of the 20 projects, 11 had a negative effect on at least 1 of the 36 outcome variables**. Four projects (Sites #1, #3, #8, #17) had significant negative effects in more than one domain.

We are unsure how to interpret these findings. By definition, adopting a more relaxed standard of evidence ensures that we find a greater number of statistically significant effects. Based on the standards used in this section, an argument could be made that three sites (#2, #13, and #22) stand out from the rest, simply in terms of having a relatively large number of positive effects, effects which occur across multiple domains. The effects for Site #2 were discussed above. For Site #13 we see positive effects on three measures of child cognitive development (the PPVT and the two K-ABC scales), on two measures of child socio-emotional development (the CBCL Internalizing measure and the Developmental Checklist), one measure of child health (Preventive Health Care), and one measure of parenting (the AAPI Appropriate Punishment scale). For Site # 22 we see positive effects on three measures of child cognitive development (the PPVT and the two K-ABC scales) and on four parenting measures (all of the AAPI scales). On the other hand, both sites #13 and #22 combine their positive effects with a negative effect on the HOME scale.

The negative effects attributable to several sites are troubling, especially in the four sites where negative effects occur in more than one domain. Site #1 had negative effects on the PPVT and the CBCL Internalizing measure; Site #3 had negative effects on the percentage of time that parents were employed and on the percentage of time that families received food stamps; Site #8 had negative effects on the percentage of time that parents were employed, on the NCAST parenting scale, and on one of the AAPI scales; and Site #17 had negative effects on preventive dental care and late prenatal care. If we are to believe the findings based on the relaxed set of standards, the CCDP families in these sites performed worse in these areas than they would have if they had not been in CCDP. These negative findings are so counterintuitive that they reinforce our belief that only one of the CCDP sites (Site #2) had effects worth interpreting, while all other sites had patterns of positive and negative effects that were most likely generated by chance alone.

VARIATION IN EFFECTS FOR SUBGROUPS OF PARTICIPANTS

The previous section addressed the question of whether CCDP worked better in some projects than in others. This section asks a parallel question: Did CCDP work better with some subgroups of participants than with others? We examined the differential effects of CCDP for subgroups of mothers and subgroups of children.

DIFFERENTIAL EFFECTS FOR SUBGROUPS OF PARENTS

Defining the Subgroups. To generate unbiased estimates of differential effects for subgroups of participants, the "grouping" variable must be independent of any effects of the program. To ensure that this condition was met, we defined subgroups of participants based on family characteristics measured ***at the time of enrollment in the evaluation***, before families were assigned to CCDP or to the control group, and before they could have received any CCDP services.[5] CCDP could not have had any effect on subgroup variables measured at enrollment.

From the data that were collected on families at enrollment, we selected five variables to define subgroups of parents: maternal education, maternal employment status, age of mother at birth of first child, number of parents in the home, and whether or not the mother was a teenager at the birth of her first child. In addition, we used a measure of maternal depression. While data on maternal depression were collected two years after enrollment rather than at baseline, analyses showed that CCDP did not have an effect on maternal depression at that time point. Hence, we used the maternal depression score at two years as a proxy for depression at enrollment.[6] We compared the effects of CCDP on the following subgroups of parents:

[5]For example, maternal education at the time the child turned 3 years of age might have been used as a grouping variable. This might have led to a biased analysis since it is possible that three years of participation in CCDP would affect the level of maternal education.

[6]Analyses also indicated that depression scores generally decreased over the data collection period. So while maternal depression scores at 2 years were unlikely to be biased in favor of the program or the control group, the depression scores were likely to be lower than they would have been had we used a baseline measure of depression.

- mothers for whom the focus child was the firstborn and mothers for whom the focus child was later-born,
- mothers with a high school education at recruitment into the study and mothers with less than a high school education,
- mothers who were employed vs. not employed at recruitment,
- mothers who were teenagers at the birth of their first child and mothers who were older at the birth of their first child,
- mothers with vs. without a resident partner at recruitment, and
- mothers who were depressed vs. not depressed.

Findings. As would be expected based on previous research, these subgroup variables typically had a significant main effect across both groups on many parent outcomes. To cite a few examples from the data, parenting attitudes and behaviors were more positive for mothers who were not depressed and for mothers who had graduated high school, and household income was associated positively with maternal education at baseline. These findings make sense in light of what we know from descriptive research on these variables. However, while these findings describe the relationship between the subgroup variables and outcomes, they do not tell us anything about the differential effects of CCDP on the subgroups of participants.

Additional analyses showed that CCDP did not have significant differential effects on subgroups of parents for most of the 23 parent outcome variables used in the analysis (Exhibit 6.5).[7] The one exception involves the number of parents in the home: CCDP mothers with resident partners were *more* likely to have received a GED, high school diploma, or vocational certificate than their control group counterparts (73 percent vs. 66 percent, respectively), and were more likely to be employed (47 percent vs. 42 percent) and to work more hours per week (16.2 vs. 14.2) than their control group counterparts. The counterbalancing effect is that CCDP mothers with no resident partner (the majority of mothers) were *less* likely to be employed (38 percent vs. 42 percent), and worked fewer hours (13.2 vs.14.4) than their control group counterparts.

DIFFERENTIAL EFFECTS FOR SUBGROUPS OF CHILDREN

Defining the Subgroups. As was the case for parents, we defined subgroups of children based on variables measured at baseline. The variables included gender, whether or not the child was a first-born, birth weight, home language, maternal education, maternal employment status, number of parents in the home, and age of mother at the birth of her first child. In addition, we also looked at child outcomes as a function of maternal depression (defined at two years, as discussed above). We compared the effects of CCDP for the following groups of children:

- boys and girls,
- first-born children and later born children,
- children of low birth weight and children of normal birth weight,

[7] As was the case for the site-level analyses presented earlier in this chapter, we protected against chance findings by using a reasonably conservative value of $p<.01$ to assess statistical significance.

- children from homes where English was the primary language and children from homes where some other language was primary,
- children whose mothers were teenagers at the birth of their first child vs. not teenagers,
- children whose mothers were employed at recruitment into the study vs. not employed,
- children whose mothers had a high school education and children whose mothers had less than a high school education, and
- children whose mothers were depressed vs. not depressed.

Findings. Outcomes for children were related to baseline characteristics in ways that would be predicted from previous research. For example, outcomes tended to be better for girls, for first-born children, for children who were biologically at-risk at birth, for children of mothers who had graduated high school, for children of mothers who were not depressed, and for children from homes with higher incomes.

CCDP did not have systematically different effects on any subgroup of children. Across 11 different child outcomes there was only one statistically significant subgroup effect on the *level* (Exhibit 6.6) of children's performance out of the 77 comparisons made and one significant subgroup effect on the *rate of growth* (Exhibit 6.7), which are fewer significant effects than we would expect to find by chance alone.

SUMMARY OF FINDINGS

VARIATION IN EFFECTS BY SITE

- **CCDP had no effect on any of 36 different outcome measures in almost all of the projects in the evaluation** This is to be expected given the cross-site findings of no effect as presented in Chapters 4 and 5.

- **One project, identified in this report as Site #2, had significant and moderately large positive effects** on children's cognitive development; on family income, employment, and usage of federal benefits; and on parenting skills. It is likely that a unique combination of local circumstances and other contextual factors combined to produce these positive effects.

VARIATION IN EFFECTS FOR SUBGROUPS OF PARTICIPANTS

- **CCDP had no consistent differential effects on any subgroups of parents or children**.

EXHIBIT 6.1

DESCRIPTIVE STATISTICS ON SELECTED BASELINE VARIABLES, BY PROJECT

SITE ID	% AFRICAN-AMER. FAMILY	% HISPANIC FAMILIES	% PARTNER IN HOME	% MOTHERS W/HIGH SCHOOL DEGREE	% MOTHERS WORKING	% TEENS AT BIRTH OF FIRST CHILD	% LOW BIRTH WGT.	ANNUAL PP INCOME ($)	% MOTHERS DEPRESSED
01	69	24	15	50	8	32	12	1,891	49
02	3	0	59	50	11	26	6	2,390	45
03	85	15	29	41	5	36	10	1,072	49
05	99	0	17	41	8	45	11	1,752	44
06	70	0	26	71	9	38	13	1,559	35
07	64	0	22	48	16	40	14	1,278	49
08	73	0	30	59	24	39	11	1,331	42
09	67	6	35	51	8	46	13	1,802	47
10	0	2	63	62	29	23	5	2,257	47
11	97	0	13	48	20	58	17	1,358	54
12	11	69	50	63	34	29	4	1,648	36
13	2	84	78	47	27	22	8	2,673	44
14	0	100	54	25	6	43	10	1,110	44
15	48	32	37	38	18	48	11	1,415	42
16	1	1	71	71	27	19	4	2,569	27
17	63	8	33	59	19	37	6	1,706	47
18	65	27	12	43	4	42	14	1,408	42
19	0	8	74	62	28	22	4	2,158	49
20	16	60	31	21	7	41	9	1,614	49
21	16	71	57	36	20	21	5	2,293	36
22	11	3	39	54	11	30	7	2,105	39
Total	43	26	38	49	15	36	10	1,780	43

EXHIBIT 6.2[A]
P-LEVELS FOR SITE-LEVEL IMPACT ESTIMATES, BY OUTCOME DOMAIN AND MEASURE

OUTCOME DOMAIN/MEASURE	SITE										
	DO SITES VARY?	1	2	3	5	6	7	8	10	11	12
CHILD COGNITIVE DEVELOPMENT											
PPVT Total	p=.01	-0.013	0.009	-0.209	-0.473	0.902	0.780	-0.139	-0.404	-0.397	-0.710
K-ABC Achievement	p=.07	-0.056	0.029	-0.178	-0.497	0.412	0.924	-0.898	0.836	-0.370	0.289
K-ABC Mental Processing	p=.04	-0.250	0.219	-0.712	-0.169	0.620	0.315	-0.144	-0.526	-0.069	0.324
CHILD SOCIO-EMOTIONAL DEVELOPMENT											
CBCL Externalizing	p=.80	-0.189	0.830	-0.348	-0.386	-0.973	-0.931	-0.788	0.233	-0.734	0.631
CBCL Internalizing	p=.18	-0.026	-0.791	0.485	-0.432	0.531	0.735	-0.845	-0.953	0.448	0.701
Adaptive Social Behavior Total	p=.03	-0.602	0.232	-0.109	-0.529	0.600	0.306	-0.314	-0.862	-0.366	0.973
Developmental Checklist	p=.25	-0.606	0.256	0.767	-0.059	0.099	0.554	0.704	0.589	-0.116	0.592
CHILD HEALTH											
Low Birth Weight	p=.15	-0.852	0.458	-0.448	0.801	-0.101	0.546	-0.673	-0.282	0.039	-0.070
Premature Delivery	p=.09	0.443	0.226	0.448	-0.800	0.699	0.299	-0.632	-0.155	0.009	-0.171
Nights of Special Care	p=.22	0.517	0.252	0.801	0.088	0.503	-0.093	-0.442	-0.326	0.049	-0.312
Preventive Dental Care	p=.78	0.151	0.683	-0.621	0.523	0.769	0.391	0.610	-0.109	0.807	0.757
Preventive Health Care	p=.0004	0.568	0.204	-0.078	-0.225	-0.685	-0.585	0.004	-0.559	0.879	0.569
EMPLOYMENT											
Mother or Partner Employed	p=.78	0.975	0.195	-0.250	-0.230	0.253	-0.551	-0.065	0.185	-0.787	-0.217
% Time Mother Worked Last Quarter	p=.98	0.810	-0.879	-0.697	-0.090	0.421	-0.881	-0.378	0.821	-0.386	0.864
N of Jobs Mother Worked	p=.81	0.491	0.968	-0.516	-0.068	0.557	-0.642	-0.534	-0.730	-0.330	0.682
N of Hours Mother Worked Per Week	p=.81	0.727	-0.784	-0.510	-0.111	0.414	-0.898	-0.602	-0.949	-0.169	0.652
% Time Mother or Partner Employed	p=.001	0.191	0.002	-0.007	-0.711	0.443	-0.290	-0.047	-0.808	-0.740	-0.436
% Mothers Employed Continuously	p=.47	0.919	0.478	-0.158	-0.510	-0.217	-0.142	-0.645	0.910	-0.492	0.227
INCOME											
Household Income	p=.05	0.007	0.055	-0.097	-0.003	0.484	0.112	-0.698	-0.392	-0.895	0.227
Mother's Weekly Wages	p=.64	0.718	0.360	-0.594	-0.040	0.518	-0.340	-0.808	-0.469	-0.175	0.880
Mother on AFDC at End of Study	p=.49	0.741	0.021	-0.141	-0.070	0.125	-0.407	-0.309	-0.684	-0.204	-0.200
% Time Family on Food Stamps	p=.04	-0.969	0.009	-0.028	-0.013	0.604	-0.072	-0.253	-0.874	-0.454	0.185
EDUCATION & TRAINING											
% Mothers in Academic, Voc, Job Train	p=.10	0.727	0.852	0.817	0.379	0.371	0.225	-0.629	0.065	-0.283	0.654
% Mothers w/GED, High Sch, Voc	p=.42	0.062	0.306	0.509	0.144	-0.891	-0.678	0.897	0.558	-0.124	0.047
% Mothers w/Some College	p=.71	0.028	0.318	-0.500	-0.339	0.385	-0.365	-0.154	0.358	-0.959	0.687
PARENTING											
NCAST Child Total	p=.79	0.441	0.921	0.438	-0.180	0.924	-0.035	-0.980	-0.707	-0.700	-0.527
NCAST Parent Total	p=.49	-0.132	0.180	-0.622	0.989	-0.250	-0.170	-0.032	0.871	-0.304	0.858
AAPI Empathetic Awareness	p=.07	0.673	0.046	-0.928	-0.443	-0.322	0.254	-0.102	0.865	-0.144	0.108
AAPI Appropriate Punishment	p=.28	0.414	0.646	0.517	-0.399	-0.228	0.052	-0.050	0.128	-0.272	0.035
AAPI Appropriate Expectations	p=.26	-0.450	0.026	-0.182	0.762	0.394	-0.043	0.787	0.639	-0.056	0.579
AAPI Appropriate Roles	p=.81	-0.922	0.080	-0.941	0.876	-0.608	-0.530	0.796	0.800	-0.169	0.725
HOME Scale Total	p=.001	0.415	0.797	0.374	-0.475	0.755	0.117	0.770	0.447	-0.013	-0.136
BIRTH OUTCOMES											
Late Prenatal Care	p=.01	0.041	0.608	0.267	-0.615	-0.601	0.007	0.167	0.529	0.946	-0.163
N of Birth Risk Indicators	p=.21	0.296	0.514	0.691	0.185	-0.414	0.225	0.931	-0.227	0.330	0.652
N of Births After Focus Child	p=.87	-0.655	0.604	0.959	-0.794	0.477	-0.331	-0.386	0.100	-0.339	-0.953
Birth Spacing	p=.92	-0.414	0.393	-0.582	0.962	0.509	-0.348	0.502	0.563	-0.653	-0.787

EXHIBIT 6.2
P-LEVELS FOR SITE-LEVEL IMPACT ESTIMATES, BY OUTCOME DOMAIN AND MEASURE

OUTCOME DOMAIN/MEASURE	SITE									
	13	14	15	16	17	18	19	20	21	22
CHILD COGNITIVE DEVELOPMENT										
PPVT Total	0.655	0.999	0.891	0.107	0.396	0.842	0.176	0.049	0.991	0.001
K-ABC Achievement	0.021	-0.847	0.365	0.277	0.432	0.787	0.287	0.093	0.540	0.020
K-ABC Mental Processing	0.04	0.626	0.147	0.723	-0.434	0.775	0.019	0.280	0.999	0.016
CHILD SOCIO-EMOTIONAL DEVELOPMENT										
CBCL Externalizing	0.331	0.216	0.220	0.107	-0.377	0.665	0.389	0.815	-0.765	0.394
CBCL Internalizing	0.028	0.022	0.907	0.017	-0.470	0.367	0.545	-0.893	-0.248	0.579
Adaptive Social Behavior Total	0.348	0.267	0.007	0.002	-0.383	-0.872	-0.227	0.414	0.671	0.271
Developmental Checklist	0.032	0.858	0.107	0.120	0.230	0.473	-0.596	0.253	0.253	0.250
CHILD HEALTH										
Low Birth Weight	-0.091	0.411	0.430	-0.726	0.550	-0.340	-0.200	0.686	0.092	-0.434
Premature Delivery	-0.052	0.12	-0.695	0.195	0.393	-0.387	-0.088	-0.929	0.484	-0.670
Nights of Special Care	-0.284	0.357	0.168	-0.684	0.320	0.507	-0.598	-0.346	0.082	-0.997
Preventive Dental Care	0.983	-0.528	0.093	-0.713	-0.037	0.187	-0.904	-0.526	-0.886	-0.381
Preventive Health Care	0.007	-0.16	-0.601	0.954	0.020	0.710	0.974	-0.229	-0.749	0.183
EMPLOYMENT										
Mother or Partner Employed	0.385	0.574	-0.550	-0.082	-0.429	-0.849	-0.518	0.184	0.449	0.824
% Time Mother Worked Last Quarter	-0.554	0.497	-0.783	-0.539	-0.938	-0.955	0.317	0.633	0.214	-0.618
N of Jobs Mother Worked	0.739	0.726	0.949	-0.677	-0.504	-0.537	0.056	0.317	0.108	0.402
N of Hours Mother Worked Per Week	0.996	0.604	-0.759	-0.325	-0.293	-0.686	0.197	0.433	0.054	0.227
% Time Mother or Partner Employed	0.14	0.037	0.058	0.806	-0.259	-0.159	-0.563	0.017	0.592	0.424
% Mothers Employed Continuously	0.206	0.282	0.378	0.948	0.846	0.378	0.929	0.539	0.389	-0.247
INCOME										
Household Income	0.294	0.392	0.990	0.621	0.842	0.433	0.646	0.676	0.010	-0.449
Mother's Weekly Wages	0.357	-0.483	-0.428	-0.648	-0.352	0.711	0.167	0.515	0.037	0.171
Mother on AFDC at End of Study	0.683	-0.626	-0.180	0.964	0.779	-0.560	-0.454	0.167	-0.800	-0.656
% Time Family on Food Stamps	0.47	-0.591	0.433	0.474	-0.404	-0.158	-0.579	0.157	0.711	-0.229
EDUCATION & TRAINING										
% Mothers in Academic, Voc, Job Train	0.214	0.001	0.661	0.020	0.310	0.921	0.759	-0.865	0.884	0.794
% Mothers w/GED, High Sch, Voc	0.487	0.795	0.678	0.782	-0.990	0.890	0.528	-0.945	0.612	-0.879
% Mothers w/Some College	0.168	0.153	-0.644	0.578	0.055	0.532	0.368	0.673	0.467	0.280
PARENTING										
NCAST Child Total	-0.291	-0.853	0.808	0.840	0.075	0.658	0.151	0.377	0.967	-0.847
NCAST Parent Total	-0.954	-0.355	0.205	-0.312	0.223	-0.404	0.663	0.293	0.585	0.972
AAPI Empathetic Awareness	0.291	0.06	0.506	0.491	0.456	-0.598	-0.024	0.081	-0.593	0.047
AAPI Appropriate Punishment	0.043	0.052	-0.294	0.364	-0.823	0.519	0.465	0.339	-0.985	0.007
AAPI Appropriate Expectations	0.969	0.437	-0.645	0.280	0.749	0.361	-0.116	0.057	0.663	0.000
AAPI Appropriate Roles	0.601	-0.608	0.596	0.530	0.366	-0.807	-0.088	0.183	-0.993	0.001
HOME Scale Total	-0.031	0.014	0.436	0.138	-0.857	-0.810	-0.267	0.373	0.012	-0.025
BIRTH OUTCOMES										
Late Prenatal Care	0.177	-0.246	0.195	-0.892	-0.049	-0.571	-0.358	-0.104	-0.087	-0.684
N of Birth Risk Indicators	0.314	0.233	-0.448	0.893	-0.172	-0.010	0.418	0.358	-0.122	0.406
N of Births After Focus Child	-0.391	0.241	0.560	0.683	-0.748	-0.785	-0.869	0.116	0.673	-0.925
Birth Spacing	-0.351	0.658	0.478	0.563	-0.854	0.964	-0.263	0.373	0.779	0.851

[a] Explanatory notes to Exhibit 6.2

1. Each number in the body of the exhibit is the p-level associated with the significance test for the effect of CCDP in a given site on a given outcome variable.
2. Each p-level has been given a sign, indicating whether the tested difference favored CCDP (+) or the control group (-). All variables were coded so that a "+" represents a desirable effect and a "-" represents an undesirable effect.
3. Shaded rows identify outcome variables which exhibited a significant amount ($p<.10$) of between-site variation in effects. We are justified in considering significant effects only if they appear in the shaded rows. This is standard statistical procedure and is analogous to performing an overall F-test prior to searching for pairwise differences in an analysis of variance.
4. Statistically significant effects ($p<.01$) are enclosed in a rectangle. Solid rectangles indicate positive effects (favoring CCDP) while dashed rectangles indicate negative effects (favoring the control group).

EXHIBIT 6.3

DETAILED DATA ON SITE #2'S EFFECTS

OUTCOME	CCDP MEAN	CONTROL MEAN	CCDP - CONTROL
PPVT standard score (end of study)	93.4	84.0	9.4
K-ABC achievement standard score (end of study)	92.1	88.2	3.9
% time either mother or partner was employed (life of study)	69%	47%	22%
Household income (end of study)	$17,029	$13,407	$3,622
Mother on AFDC (end of study)	46%	65%	-20%
% time family received food stamps (end of study)	55%	74%	-19%
AAPI empathetic awareness (raw score at end of study)	33.8	32.2	1.6
AAPI appropriate expectations (raw score at end of study)	25.0	23.7	1.3

EXHIBIT 6.4[A]
P-LEVELS FOR SITE-LEVEL IMPACT ESTIMATES, BY OUTCOME DOMAIN AND MEASURE

OUTCOME DOMAIN/MEASURE	SITE										
	DO SITES VARY?	1	2	3	5	6	7	8	10	11	12
CHILD COGNITIVE DEVELOPMENT											
PPVT Total	p=.01	-0.013	0.009	-0.209	-0.473	0.902	0.780	-0.139	-0.404	-0.397	-0.710
K-ABC Achievement	p=.07	-0.056	0.029	-0.178	-0.497	0.412	0.924	-0.898	0.836	-0.370	0.289
K-ABC Mental Processing	p=.04	-0.250	0.219	-0.712	-0.169	0.620	0.315	-0.144	-0.526	-0.069	0.324
CHILD SOCIO-EMOTIONAL DEVELOPMENT											
CBCL Externalizing	p=.80	-0.189	0.830	-0.348	-0.386	-0.973	-0.931	-0.788	0.233	-0.734	0.631
CBCL Internalizing	p=.18	-0.026	-0.791	0.485	-0.432	0.531	0.735	-0.845	-0.953	0.448	0.701
Adaptive Social Behavior Total	p=.03	-0.602	0.232	-0.109	-0.529	0.600	0.306	-0.314	-0.862	-0.366	0.973
Developmental Checklist	p=.25	-0.606	0.256	0.767	-0.059	0.099	0.554	0.704	0.589	-0.116	0.592
CHILD HEALTH											
Low Birth Weight	p=.15	-0.852	0.458	-0.448	0.801	-0.101	0.546	-0.673	-0.282	0.039	-0.070
Premature Delivery	p=.09	0.443	0.226	0.448	-0.800	0.699	0.299	-0.632	-0.155	0.009	-0.171
Nights of Special Care	p=.22	0.517	0.252	0.801	0.088	0.503	-0.093	-0.442	-0.326	0.049	-0.312
Preventive Dental Care	p=.78	0.151	0.683	-0.621	0.523	0.769	0.391	0.610	-0.109	0.807	0.757
Preventive Health Care	p=.0004	0.568	0.204	-0.078	-0.225	-0.685	-0.585	0.004	-0.559	0.879	0.569
EMPLOYMENT											
Mother or Partner Employed	p=.78	0.975	0.195	-0.250	-0.230	0.253	-0.551	-0.065	0.185	-0.787	-0.217
% Time Mother Worked Last Quarter	p=.98	0.810	-0.879	-0.697	-0.090	0.421	-0.881	-0.378	0.821	-0.386	0.864
N of Jobs Mother Worked	p=.81	0.491	0.968	-0.516	-0.068	0.557	-0.642	-0.534	-0.730	-0.330	0.682
N of Hours Mother Worked Per Week	p=.81	0.727	-0.784	-0.510	-0.111	0.414	-0.898	-0.602	-0.949	-0.169	0.652
% Time Mother or Partner Employed	p=.001	0.191	0.002	-0.007	-0.711	0.443	-0.290	-0.047	-0.808	-0.740	-0.436
% Mothers Employed Continuously	p=.47	0.919	0.478	-0.158	-0.510	-0.217	-0.142	-0.645	0.910	-0.492	0.227
INCOME											
Household Income	p=.05	0.007	0.055	-0.097	-0.003	0.484	0.112	-0.698	-0.392	-0.895	0.227
Mother's Weekly Wages	p=.64	0.718	0.360	-0.594	-0.040	0.518	-0.340	-0.808	-0.469	-0.175	0.880
Mother on AFDC at End of Study	p=.49	0.741	0.021	-0.141	-0.070	0.125	-0.407	-0.309	-0.684	-0.204	-0.200
% Time Family on Food Stamps	p=.04	-0.969	0.009	-0.028	-0.013	0.604	-0.072	-0.253	-0.874	-0.454	0.185
EDUCATION & TRAINING											
% Mothers in Academic, Voc, Job Train	p=.10	0.727	0.852	0.817	0.379	0.371	0.225	-0.629	0.065	-0.283	0.654
% Mothers w/GED, High Sch, Voc	p=.42	0.062	0.306	0.509	0.144	-0.891	-0.678	0.897	0.558	-0.124	0.047
% Mothers w/Some College	p=.71	0.028	0.318	-0.500	-0.339	0.385	-0.365	-0.154	0.358	-0.959	0.687
PARENTING											
NCAST Child Total	p=.79	0.441	0.921	0.438	-0.180	0.924	-0.035	-0.980	-0.707	-0.700	-0.527
NCAST Parent Total	p=.49	-0.132	0.180	-0.622	0.989	-0.250	-0.170	-0.032	0.871	-0.304	0.858
AAPI Empathetic Awareness	p=.07	0.673	0.046	-0.928	-0.443	-0.322	0.254	-0.102	0.865	-0.144	0.108
AAPI Appropriate Punishment	p=.28	0.414	0.646	0.517	-0.399	-0.228	0.052	-0.050	0.128	-0.272	0.035
AAPI Appropriate Expectations	p=.26	-0.450	0.026	-0.182	0.762	0.394	-0.043	0.787	0.639	-0.056	0.579
AAPI Appropriate Roles	p=.81	-0.922	0.080	-0.941	0.876	-0.608	-0.530	0.796	0.800	-0.169	0.725
HOME Scale Total	p=.001	0.415	0.797	0.374	-0.475	0.755	0.117	0.770	0.447	-0.013	-0.136
BIRTH OUTCOMES											
Late Prenatal Care	p=.01	0.041	0.608	0.267	-0.615	-0.601	0.007	0.167	0.529	0.946	-0.163
N of Birth Risk Indicators	p=.21	0.296	0.514	0.691	0.185	-0.414	0.225	0.931	-0.227	0.330	0.652
N of Births After Focus Child	p=.87	-0.655	0.604	0.959	-0.794	0.477	-0.331	-0.386	0.100	-0.339	-0.953
Birth Spacing	p=.92	-0.414	0.393	-0.582	0.962	0.509	-0.348	0.502	0.563	-0.653	-0.787

EXHIBIT 6.4
P-LEVELS FOR SITE-LEVEL IMPACT ESTIMATES, BY OUTCOME DOMAIN AND MEASURE

OUTCOME DOMAIN/MEASURE	SITE									
	13	14	15	16	17	18	19	20	21	22
CHILD COGNITIVE DEVELOPMENT										
PPVT Total	0.655	0.999	0.891	0.107	0.396	0.842	0.176	0.049	0.991	0.001
K-ABC Achievement	0.021	-0.847	0.365	0.277	0.432	0.787	0.287	0.093	0.540	0.020
K-ABC Mental Processing	0.04	0.626	0.147	0.723	-0.434	0.775	0.019	0.280	0.999	0.016
CHILD SOCIO-EMOTIONAL DEVELOPMENT										
CBCL Externalizing	0.331	0.216	0.220	0.107	-0.377	0.665	0.389	0.815	-0.765	0.394
CBCL Internalizing	0.028	0.022	0.907	0.017	-0.470	0.367	0.545	-0.893	-0.248	0.579
Adaptive Social Behavior Total	0.348	0.267	0.007	0.002	-0.383	-0.872	-0.227	0.414	0.671	0.271
Developmental Checklist	0.032	0.858	0.107	0.120	0.230	0.473	-0.596	0.253	0.253	0.250
CHILD HEALTH										
Low Birth Weight	-0.091	0.411	0.430	-0.726	0.550	-0.340	-0.200	0.686	0.092	-0.434
Premature Delivery	-0.052	0.12	-0.695	0.195	0.393	-0.387	-0.088	-0.929	0.484	-0.670
Nights of Special Care	-0.284	0.357	0.168	-0.684	0.320	0.507	-0.598	-0.346	0.082	-0.997
Preventive Dental Care	0.983	-0.528	0.093	-0.713	-0.037	0.187	-0.904	-0.526	-0.886	-0.381
Preventive Health Care	0.007	-0.16	-0.601	0.954	0.020	0.710	0.974	-0.229	-0.749	0.183
EMPLOYMENT										
Mother or Partner Employed	0.385	0.574	-0.550	-0.082	-0.429	-0.849	-0.518	0.184	0.449	0.824
% Time Mother Worked Last Quarter	-0.554	0.497	-0.783	-0.539	-0.938	-0.955	0.317	0.633	0.214	-0.618
N of Jobs Mother Worked	0.739	0.726	0.949	-0.677	-0.504	-0.537	0.056	0.317	0.108	0.402
N of Hours Mother Worked Per Week	0.996	0.604	-0.759	-0.325	-0.293	-0.686	0.197	0.433	0.054	0.227
% Time Mother or Partner Employed	0.14	0.037	0.058	0.806	-0.259	-0.159	-0.563	0.017	0.592	0.424
% Mothers Employed Continuously	0.206	0.282	0.378	0.948	0.846	0.378	0.929	0.539	0.389	-0.247
INCOME										
Household Income	0.294	0.392	0.990	0.621	0.842	0.433	0.646	0.676	0.010	-0.449
Mother's Weekly Wages	0.357	-0.483	-0.428	-0.648	-0.352	0.711	0.167	0.515	0.037	0.171
Mother on AFDC at End of Study	0.683	-0.626	-0.180	0.964	0.779	-0.560	-0.454	0.167	-0.800	-0.656
% Time Family on Food Stamps	0.47	-0.591	0.433	0.474	-0.404	-0.158	-0.579	0.157	0.711	-0.229
EDUCATION & TRAINING										
% Mothers in Academic, Voc, Job Train	0.214	0.001	0.661	0.020	0.310	0.921	0.759	-0.865	0.884	0.794
% Mothers w/GED, High Sch, Voc	0.487	0.795	0.678	0.782	-0.990	0.890	0.528	-0.945	0.612	-0.879
% Mothers w/Some College	0.168	0.153	-0.644	0.578	0.055	0.532	0.368	0.673	0.467	0.280
PARENTING										
NCAST Child Total	-0.291	-0.853	0.808	0.840	0.075	0.658	0.151	0.377	0.967	-0.847
NCAST Parent Total	-0.954	-0.355	0.205	-0.312	0.223	-0.404	0.663	0.293	0.585	0.972
AAPI Empathetic Awareness	0.291	0.06	0.506	0.491	0.456	-0.598	-0.024	0.081	-0.593	0.047
AAPI Appropriate Punishment	0.043	0.052	-0.294	0.364	-0.823	0.519	0.465	0.339	-0.985	0.007
AAPI Appropriate Expectations	0.969	0.437	-0.645	0.280	0.749	0.361	-0.116	0.057	0.663	0.000
AAPI Appropriate Roles	0.601	-0.608	0.596	0.530	0.366	-0.807	-0.088	0.183	-0.993	0.001
HOME Scale Total	-0.031	0.014	0.436	0.138	-0.857	-0.810	-0.267	0.373	0.012	-0.025
BIRTH OUTCOMES										
Late Prenatal Care	0.177	-0.246	0.195	-0.892	-0.049	-0.571	-0.358	-0.104	-0.087	-0.684
N of Birth Risk Indicators	0.314	0.233	-0.448	0.893	-0.172	-0.010	0.418	0.358	-0.122	0.406
N of Births After Focus Child	-0.391	0.241	0.560	0.683	-0.748	-0.785	-0.869	0.116	0.673	-0.925
Birth Spacing	-0.351	0.658	0.478	0.563	-0.854	0.964	-0.263	0.373	0.779	0.851

[a] Explanatory notes to Exhibit 6.4

1. Each number in the body of the exhibit is the p-level associated with the significance test for the effect of CCDP in a given site on a given outcome variable.
2. Each p-level has been given a sign, indicating whether the tested difference favored CCDP (+) or the control group (-). All variables were coded so that a "+" represents a desirable effect and a "-" represents an undesirable effect.
3. Statistically significant effects ($p<.05$) are enclosed in a rectangle. Solid rectangles indicate positive effects (favoring CCDP) while dashed rectangles indicate negative effects (favoring the control group).

EXHIBIT 6.5

DIFFERENTIAL PROGRAM EFFECTS ON PARENT AND FAMILY OUTCOME MEASURES, BY SUBGROUP VARIABLES[a]

PARENT/FAMILY OUTCOME MEASURES	SUBGROUP VARIABLE					
	FOCUS CHILD A FIRST BORN	MOTHER A HIGH SCHOOL GRAD	MOTHER EMPLOYED	MOTHER TEENAGER AT BIRTH OF FIRST CHILD	RESIDENT PARTNER IN HOME	MOTHER DEPRESSED
Employment						
Proportion of mothers employed	NS	NS	NS	NS	p=.003	NS
Proportion of families in which a husband/resident partner was employed	NS	NS	NS	NS	NS	NS
Proportion of families in which either a mother or a husband/resident partner was employed	NS	NS	NS	NS	NS	NS
Proportion of time mother worked in prior three months	NS	NS	NS	NS	NS	NS
Nature of jobs worked by mother	NS	NS	NS	NS	NS	NS
Number of hours per week worked by mother (all mothers)	NS	NS	NS	NS	p=.007	NS
Number of hours per week worked (working mothers only)	NS	NS	NS	NS	NS	NS
Proportion of time mothers employed over life of study	NS	NS	NS	NS	NS	NS
Proportion of time husband/resident partner employed over life of study	NS	NS	NS	NS	NS	NS
Proportion of time either mother or husband/resident partner employed over life of study	NS	NS	NS	NS	NS	NS
Proportion of mothers continuously employed throughout life of study	NS	NS	NS	NS	NS	NS
Income						
Total household income	NS	NS	NS	NS	NS	NS
Mother's weekly wage (all mothers)	NS	NS	NS	NS	NS	NS
Mother's weekly wage (working mothers only)	NS	NS	NS	NS	NS	NS

EXHIBIT 6.5

(CONTINUED)

PARENT/FAMILY OUTCOME MEASURES	SUBGROUP VARIABLE					
	FOCUS CHILD A FIRST BORN	MOTHER A HIGH GRAD	MOTHER EMPLOYED	MOTHER TEENAGER AT BIRTH OF FIRST CHILD	RESIDENT PARTNER IN HOME	MOTHER DEPRESSED
Dependence on Public Assistance						
Family's receipt of AFDC	NS	NS	NS	NS	NS	NS
Family's reliance on AFDC	NS	NS	NS	NS	NS	NS
Proportion of families that remained on AFDC throughout the life of the study	NS	NS	NS	NS	NS	NS
Proportion of families receiving food stamps	NS	NS	NS	NS	NS	NS
Proportion of time families received food stamps over life of study	NS	NS	NS	NS	NS	NS
Steps to Employment						
Proportion of mothers enrolled in academic, vocational or job training programs	NS	NS	NS	NS	NS	NS
Proportion of mothers who had a high school diploma, GED or vocational certificate by the end of the study	NS	NS	NS	NS	p=.002	NS
Proportion of mothers who had completed some college courses by the end of the study	NS	NS	NS	NS	NS	NS
Proportion of mothers who had received a college degree by the end of the study	NS	NS	NS	NS	NS	NS

[a] Based on large-sample Z-tests of parallelism of group slopes (program impacts).

EXHIBIT 6.6

DIFFERENTIAL PROGRAM EFFECTS ON LEVEL OF CHILD OUTCOMES BY SUBGROUP VARIABLES[a,b]

CHILD OUTCOME MEASURE	SUBGROUP VARIABLE								
	CHILD IS MALE	CHILD IS LOW BIRTH WEIGHT	CHILD A FIRST BORN	MOTHER A H.S. GRAD	MOTHER EMPLYD	MOTHER A TEEN AT BIRTH OF FIRST CHILD	RESID. PARTNR IN HOME	MOTHER DEPRESS	HOME LANG. IS ENGLISH
PPVT: Std. Score at 60 Mos.	NS	NS	NS	NS	NS	NS	NS	NS	NS
TVIP: Std. Score at 60 Mos.	NS	NS	NS	NS	NS	NS	NS	NS	NS
K-ABC Mental Processing Scale: Std. Score at 60 Mos.	NS	NS	NS	NS	NS	NS	NS	NS	NS
K-ABC Achievement Scale: Std. Score at 60 Mos.	NS	NS	NS	NS	NS	NS	NS	NS	NS
CBCL Total Problems: Std. Score at 60 Mos.	NS	NS	NS	NS	NS	NS	NS	NS	NS
CBCL Externalizing Problems: Std. Score at 60 Mos.	NS	NS	NS	p=.0004 (-)	NS	NS	NS	NS	NS
CBCL Internalizing Problems: Std. Score at 60 Mos.	NS	NS	NS	p=.002 (-)	p=.008 (-)	NS	NS	NS	NS
Adaptive Social Behavior Inventory: 60 Mos.	NS	NS	NS	p=.000 (-)	NS	NS	NS	NS	NS
Developmental Checklist: 60 Mos.	NS	NS	NS	NS	p=.0003	NS	NS	NS	NS
Average No. Dental Care Visits/Year	NS	NS	NS	NS	NS	NS	NS	NS	NS
Average No. Medical Care Visits/Year	NS	NS	NS	NS	NS	NS	NS	NS	NS

a Based on significance test of interaction term between program status and subgroup indicator.

b Subgroup analyses not conducted on "Child Death" because low frequency of event meant inadequate distribution of the outcome over various groups.

EXHIBIT 6.7

DIFFERENTIAL PROGRAM EFFECTS ON RATE OF GROWTH OF CHILD OUTCOMES BY SUBGROUP VARIABLES[a,b]

CHILD OUTCOME MEASURE	SUBGROUP VARIABLE								
	CHILD IS MALE	CHILD IS LOW BIRTH WEIGHT	CHILD A FIRST BORN	MOTHER A H.S. GRAD	MOTHER EMPLYD	MOTHER ATEEN AT BIRTH OF FIRST CHILD	RESID PARTNR IN HOME	MOTHER DEPRESS	HOME LANG IS ENGLISH
PPVT: Std. Score at 60 Mos.	NS	NS	NS	NS	NS	NS	NS	NS	NS
TVIP: Std. Score at 60 Mos.	NS	NS	NS	NS	NS	NS	NS	NS	NS
K-ABC Mental Processing Scale: Std. Score at 60 Mos.	NS	p=.003	NS	NS	NS	NS	NS	NS	NS
K-ABC Achievement Scale: Std. Score at 60 Mos.	NS	NS	NS	NS	NS	NS	NS	NS	NS
CLCL Total Problems: Std. Score at 60 Mos.	NS	NS	NS	NS	NS	NS	NS	NS	NS
CBCL Externalizing Problems: Std. Score at 60 Mos.	NS	NS	NS	NS	NS	NS	NS	NS	NS
CBCL Internalizing Problems: Std. Score at 60 Mos.	NS	NS	NS	NS	NS	NS	NS	NS	NS

a Based on significance test of interaction term between program status and subgroup indicator.

b Interaction effect on slope estimated only for measures repeated over time on which longitudinal growth curve analyses were conducted.

CHAPTER 7

RELATIONSHIP OF SERVICE RECEIPT TO PROGRAM IMPACTS

In this chapter we present results from analyses that explore answers to questions about the relationship of the services received by families to program impacts.[1] CCDP was conceived as a five-year intervention, in which families received needed services that were high-quality, appropriate, and timely. We know there was substantial variation in the "amount" of treatment that CCDP families received: CCDP families remained in the program for differing lengths of time (see Chapter 2), and CCDP families received differing amounts of services (CSR, Incorporated, 1997). This variation in length and amount of treatment leads to two types of questions which will be addressed in this chapter:

- Were CCDP's effects larger for families who enrolled in the program for longer periods of time?
- Did families that received more intensive services have better outcomes?

LENGTH OF ENROLLMENT AND OUTCOMES

Questions about the relationship between program impacts and length of enrollment are perfectly reasonable and important but extraordinarily difficult to answer. The difficulty stems from the fact that in CCDP, as in most other social programs, families select the amount of "treatment" they receive. In CCDP, there was no way to insist that families take part for the full five years. In fact, families stayed active in the program for as short or as long a period of time as they liked, and the length of time spent in CCDP is likely to depend on differences in family needs or on differences in motivation that are linked to family attitudinal and psychological characteristics. As a consequence, differences in outcomes for families who participated for long vs. short periods of time cannot be unambiguously attributed to length or amount of participation since they may be strongly linked to other, unmeasured family characteristics.

The only statistically valid way to answer the question "Do families that remain enrolled for longer periods achieve better outcomes?" would be to conduct a study in which the variable "length of enrollment in CCDP" is manipulated experimentally. For example, we could recruit a sample of families and then randomly assign one-fifth of them to enroll for one year, one-fifth to enroll for two years, and so on, until the final fifth of the families was given the opportunity to enroll for five years. There still would be no way to enforce continued enrollment in the program, but at least we would have an unbiased estimate of the effect of a variable that could be labeled

[1]The analyses presented in Chapters 4, 5, and 6 assessed the overall, site-level, and subgroup effects of CCDP by relying on the strength of the randomized experimental design. In those analyses we compared all families assigned to the program with all families assigned to the control group. In this chapter we present the results of analyses which seek to addressquestions that are more difficult to answer given the design of this study, and which are based on subsets of the sample, e.g., only on CCDP families, on a subset of CCDP families, or on subsets of CCDP and control group families.

"the opportunity to participate for different amounts of time." If it were possible to enforce participation (as is the case with some welfare reform initiatives) then the question of interest could be answered more precisely. Note, however, that even if this type of study could be implemented, its policy relevance would be limited to instances where participation in programs could be enforced. In the absence of random assignment to length of participation, we attempt in this section to provide some information about the relationship between length of enrollment in CCDP and program impacts, with the understanding that any conclusions are tentative and subject to competing interpretations.

AVERAGE LENGTH OF ENROLLMENT

The length of time that a family was enrolled in CCDP (measured in this study as the number of days between enrollment in CCDP and termination from the program) is a crude but very basic measure of a family's overall level of participation. It is an important indicator, as was discussed in Chapter 1, since CCDP's developers hypothesized that several years of participation in the program would be required to achieve the program's goals of ensuring that children would be ready for school and that parents would be economically self-sufficient. More precise measures of the "amount of services" received through CCDP can be constructed (see the next section in this chapter), but in the present analysis we respond to the interest expressed by the CCDP community (e.g., grantees staff, ACYF staff, researchers) in whether families that were enrolled for longer periods of time had better outcomes than families that were enrolled for shorter periods of time.

In Chapter 2 of this report we provided descriptive information about the average length of enrollment in CCDP. In summary:

- 82 percent of the families were enrolled for one or more years,
- 69 percent of the families were enrolled for two or more years,
- 58 percent of the families were enrolled for three or more years,
- 48 percent of the families were enrolled for four or more years, and
- 33 percent of the families were enrolled for five or more years.[2]

On average, families were enrolled for 3.3 years. By far, the strongest predictor of length of enrollment was the site in which the family lived--much stronger than other baseline variables such as mother's education level, race/ethnicity, or employment status. In the site with the longest average enrollment, families were enrolled for an average of 4.4 years, while in the site with the shortest average enrollment, families were enrolled for an average of 2.3 years. In three sites the average family was enrolled for four or more years, while in five sites the average family was enrolled for less than three years. Families in these "long enrollment" and "short enrollment" sites do not appear to be different from other sites in terms of the background characteristics described in Exhibit 6.1.

[2]It was possible to be enrolled for more than five years because families that were recruited on the basis of having a pregnant woman in the household (child less than age 0) were allowed to be in CCDP until that child reached age 5 (more than five years of elapsed time).

RELATIONSHIP OF LENGTH OF ENROLLMENT TO OUTCOMES

We conducted two sets of analyses to assess the relationship between the length of time that families were enrolled in CCDP and their outcomes. First, we calculated family-level correlations between selected maternal and child outcomes and the number of days that a family was enrolled in CCDP (Exhibit 7.1). The correlations are quite close to zero, ranging from -.07 to +.11. This means that there is essentially no linear relationship between the length of time that a family participated in CCDP and the outcomes for that family.

A second set of analyses was spurred by comments from CCDP staff who suggested that we conduct the main impact analyses for the evaluation on a restricted sample--those CCDP families that participated for the longest periods of time. We estimated CCDP's effects on several key child and maternal outcome variables using two different samples of CCDP families (the complete set of control group families was used for each analysis):

(1) CCDP families that were enrolled in the program for 3+ years (58 percent of all program families), and
(2) CCDP families that were enrolled in the program for 4+years (48 percent of all program families).

The resulting impacts based on the two subsets of CCDP families were then compared to impacts derived using all of the CCDP families originally assigned to the program (as described in Chapters 4 and 5 of this report). If the hypothesis that a longer period of enrollment leads to better outcomes is correct, then the estimated program impacts should grow larger as we narrow the analytic sample from all CCDP families, to families that participated for 3+ years, and finally to families that participated for 4+ years.

In fact, we do see this hypothesized pattern for child cognitive outcomes (Exhibit 7.2). When we analyzed the full CCDP sample, CCDP had no effect on the PPVT, the K-ABC Achievement scale, or the K-ABC Mental Processing scale. However, when the sample was restricted to families with 3+ years or 4+ years of enrollment, there was a statistically significant (but small) positive effect. CCDP children in families that enrolled for 3+ and 4+ years scored about 1.5 points higher than control group children on each of the three child development outcome measures. Using the restricted analytic samples made no difference in the impacts of CCDP on measures of children's socio-emotional development. While the statistically significant effect on cognitive outcomes is consistent with the hypothesis that more time in CCDP should lead to improved outcomes, the difference of 1.5 points on each outcome measure represents a very small effect size of about one-tenth of a standard deviation unit--differences which are not educationally meaningful.

A similar pattern of results was evident for some measures of economic self-sufficiency (Exhibit 7.2). The impact of CCDP on annual household income and average weekly wages was larger for families that enrolled for longer periods of time than for the entire analytic sample. CCDP

households that remained in the program for 4+ years had an average annual income that was $1,100 higher and had average weekly wages that were $10.51 higher than control group families. Both of these are small differences; .11 standard deviation units and .07 standard deviation units, respectively. This pattern did not hold for participation in AFDC.

The results of these analyses lead us to conclude that the length of time that a family was enrolled in CCDP was sometimes associated with a statistically significant difference in the outcomes achieved by that family, but those differences were not large enough to be educationally or practically meaningful. These findings undermine the hypothesis that CCDP would have appeared markedly more effective if all families had remained enrolled for the full five years.

AMOUNT OF SERVICES AND OUTCOMES

Another common research question for studies of programs which provide educational, social, and health services is "Did families that received more intensive services have better outcomes?" Given the small effects that often are found for social programs, it is natural to ask follow-up questions about interactions between levels of services received and outcomes, and it seems reasonable to hypothesize that families that received more (or more intensive) services would do better than families that received fewer (or less intensive) services.

As we discussed with respect to length of enrollment, CCDP families were not forced to use any particular CCDP service at any particular level of intensity. Therefore, analyses which seek to relate amount/type of service to outcomes take us outside the realm of the CCDP randomized experimental design and open up any findings presented here to competing interpretations.

Our hypotheses for the expected relationship between amount/type of service and outcomes are conditioned by the type of service under consideration. There is research showing that, for certain services, the amount of service received may be negatively related to outcomes. For example, in a study of 20 child abuse and neglect prevention programs, families that received more services had worse family functioning outcomes, presumably because more services meant that the families were in greater need (Layzer & Goodson, 1979). As another example, research often has found negative relationships between the amount of health services provided to individuals and health outcomes (Hadley, 1982). This does not say that the health services are ineffective. Rather, the least healthy individuals are most in need of health care and generally receive more assistance than individuals who are healthier. Even though the services may be helpful, individuals who started off with greater needs generally remain less healthy than individuals who started in good health.

On the other hand, some other types of services often demonstrate a positive relationship to outcomes. For example, researchers typically find positive relationships between the amount of high-quality early childhood education and children's cognitive development (Lamb, in press). In general, the finding for educational services that "more is better" makes sense given the research

on child development, time on task learning in early grades, and international studies comparing the length of school years.

CCDP provided participating families with a very broad range of services, and it would be possible to conduct many different analyses relating type and amount of service to outcomes. Given the limitations of time and resources, the difficulty of incorporating data on the needs of families and participants into the analysis, and the known relationships between participation in center-based care and children's cognitive development, we chose to conduct a closer examination of the mediating role played by center-based care in CCDP, a service which was made available to all focus children regardless of need.

THE MEDIATING EFFECT OF CENTER-BASED CARE

One of the ways in which CCDP hoped to directly affect children's' development was through the provision of high-quality early childhood education and developmentally-appropriate child care. The research evidence supports the following hypotheses (see Chapter 5 for a more extended discussion of the research):

- High-quality early childhood education, delivered in a center-based program, has a positive impact on children's cognitive and socio-emotional development.
- High-quality early childhood education delivered in the home has been shown to be effective primarily for low-birth-weight children who are at biological risk.
- High-quality child care has been shown to improve children's cognitive and socio-emotional outcomes.
- There has been little or no research on the effects of home-based care by family day care providers or family members.
- There is limited evidence linking the amount of early childhood education or care to improvement in child outcomes.

The findings presented in Chapter 5 of this report, that CCDP had no overall effect on many different child developmental outcomes, leaves open questions about the mediating role of early childhood education and care in CCDP. Specifically,

- Did the CCDP children receive better quality early childhood education and care than children in the control group?
- If so, was the higher quality care received by CCDP children linked to better outcomes at the end of the program?

To fully answer the question of the quality of care received by CCDP and control children, we would need to have measured the quality of each of the settings experienced by each CCDP and control group child, either through proxies such as structural characteristics (e.g., group size,

child/staff ratio, care-giver qualifications) or through direct observation and rating of the environment and child/staff interactions. This would have been an enormous and complex task, and resources were not available for a study that would provide this type of child-level data. Thus, for assessing the quality of child care for individual children we are limited to data collected through annual parent interviews about the type and amount of early childhood education and care received by CCDP and control group focus children between birth and 5 years of age[3].

Type of Care Received. If we had information about the quality of the care that children received, we would have investigated the mediating role of high-quality early childhood education on CCDP's impacts on children, since past research has shown significant impacts only of this kind of care. In the absence of information on quality, we focused on the mediating effect of **center-based care**, including both work-related and non-work-related center care, as the closest proxy we have for the kind of high-quality care that has been shown to promote children's development.

We calculated the percentage of children using each of several different types of care at 2, 3, 4 and 5 years of age (Exhibit 7.3). At each age, CCDP children received more center-based care than did control children. At age 2, CCDP children were more likely as control group children to be in center-based care, both work-related child care and center-based early childhood education. Up through age 4, CCDP children consistently received more center-based child care than did control group children. This difference remained large for work-related child care but, by age 4, the difference in the use of center-based early childhood education, such as Head Start, diminished.

Amount of Center-Based Care Received. Although there is little data to inform us about exactly how the amount of center-based care received by children is related to child outcomes, the most recent comprehensive review of the effects of child care provides evidence (1) that more intensive early intervention programs for children from birth to age 3 have greater impacts than less intensive programs, and (2) that there may be a broad optimal level of the amount of time spent in preschool programs, where children do best if they receive between 40 and 120 hours per month (Lamb, in press).

[3]During each parent interview, the focus child was first classified as participating in work-related care and/or a non-work-related center-based program. Within work-related care, the primary form of care was identified--sibling or parent care, family day care homes, or center-based care. A total for all center-based care combined work-related and non-work-related center care. Even if a child participated in two types of work-related care, only the ***primary*** type of care was recorded. Thus, the numbers may be an undercount of the number of children using each type of work-related care at any time point and of the total amount of work-related care in which children participating.

We defined amount of care as the average number of hours per month spent by focus children in center-based care (Exhibit 7.4).[4, 5] Across the entire sample, children under 3 years of age received an average of 27.9 hours per month of center-based care. This number rises to 45.4 hours of center-based care per month for 3 to 5 year old children. Comparing CCDP with control group children, we see that across the birth through 5 year age range, CCDP children participated more fully than control group children in center-based care: CCDP children received significantly more hours of center-based care than did control group children (42.8 vs. 25.3 hours per month, respectively), and this advantage held both for children less than three years of age (36.6 vs. 19.2 hours per month) and for children in the 3-5 age range (53.9 vs. 36.8 hours per month). However, the difference in average amount of center-based care received by all CCDP and control group children was relatively small--about 17 hours of center-based care per month (42.8 hours for CCDP children - 25.3 hours for control group children), or less than an hour a day.

There were large site-to-site differences in the amount of center-based care received by CCDP and control group children over the 0 to 5 year age range (Exhibit 7.5). Two projects provided CCDP children with an average of about 90 hours of center-based care per month--equivalent to 4.5 hours per day. On the other hand, three projects provided CCDP children with less than 25 hours of center-based care per month--equivalent to 1.25 hours per day. There also was large site-to-site variation in the difference between the amount of center-based care received by CCDP and control group children. In some sites this difference was substantial--more than 60 hours per month, while in other sites the CCDP/control group difference in amount of center-based care was quite small--about zero.

Relationship Between Center-Based Care and Child Outcomes. Compared with control group children, more CCDP children attended center-based care, and CCDP children received more hours of care. We know, from the analyses presented in Chapter 5, that this differential in center-based early childhood experience did not translate into a meaningful impact on children. The question is, why not?

One possibility is that the center-based care received by CCDP children was not of sufficiently high quality to make a difference, so that even if children received enough care, it wasn't good enough to improve their outcomes. As discussed above, the issue of quality of care cannot be addressed, except to say that there is a strong possibility that the care received by CCDP children

[4]Two aspects of the amount of care received by the focus child during the recall period preceding each parent interview were recorded: (1) the number of months during the recall period that the child participated in care, and (2) the total number of hours during the recall period that the child participated in care. Because some parents did not complete an interview each year, we described the amount of care received by computing a standardized measure of the amount of care--the ***average number of hours of care per month***. This was done by dividing the total hours of care reported for a given focus child across all recall periods by the total number of months of care in which that child participated across all recall periods. The number of months of recall data was computed for a family as the sum of the number of interviews for the family multiplied by the recall period for each interview (6 months for all follow-up interviews and 12 months for initial interviews.

[5]As was discussed in Chapter 3 of this report, we found a high correlation (.7) between the amount of early childhood education as measured through parent recall (the data reported in this chapter) and as measured through the CCDP management information system.

was sufficiently variable in quality to diminish the chances of enhanced child outcomes when compared to the outcomes of control group children.

A second hypothesis is that the differential in center-based care between CCDP and control children was not large enough to lead to a positive CCDP impact on children's development. The CCDP/control group differential of 17 hours per month translates into about an hour a day. Even if the center-based care was of the highest quality, it is not clear that giving CCDP children an additional hour of center care per day would result in better outcomes, compared with control children. To examine this question, we conducted multi-level analyses in which we related the difference between the receipt of center-based care and the amount of care for CCDP and control group children to the impact on each of several different measures of child development[6]. These analyses were conducted by using hierarchical linear modeling as described in Chapter 3..

Only one of the six child outcome measures seemed to be sensitive to CCDP/control group differences in participation in center-based care--the K-ABC Mental Processing scale. Two different measures of amount of center-based care (the proportion of months in which children had some participation in center-based care, and the average number of hours per month in center-based care) were significantly related to the K-ABC Mental Processing scores of 3 to 5 year old children when using a liberal significance level of $p<.10$ (Exhibit 7.6). The regression coefficient for hours per month of center-based care is .082, indicating that we expect the site-level CCDP/control group difference on the K-ABC Mental Processing scale to increase by .082 points for a one hour per month increase in the CCDP/control group difference in amount of center-based care. Similarly, the regression coefficient for proportion of months in center-based care is 10.9, indicating that we expect the site-level CCDP/control group difference on the K-ABC Mental Processing scale to increase by 1.09 points for each 10 percentage point increase in the CCDP/control group difference in proportion of months in care.

Since we expect three or four significant findings out of 36 tests on the basis of chance alone ($p<.10$), we conclude that there is little meaningful relationship between the differential amount of center-based care received by CCDP and control children and the differential in their outcomes. Even if the finding for the K-ABC were statistically reliable, it would mean that to achieve a CCDP/control group difference on the K-ABC Mental Processing scale of one-half of a standard deviation, the CCDP/control group difference in monthly hours would have to be about 90 hours, more than five times its actual size of 17 hours.

[6]This analysis was conducted at both the individual family-level and at the site-level. Children were not randomly assigned to amount of care, and hence many factors other than CCDP influenced the type and amount of care that each child received. To mitigate the effect of family-level factors such as motivation or employment status, we related impacts to differentials in care at the site level, using both CCDP and control families. For each child outcome, the dependent measure was the CCDP impact, or the difference between the CCDP and control group means. The predictor was the difference in the average amount of care received by CCDP and control group children in that site. By conducting the analysis at the site level, we took advantage of the fact that the CCDP and control groups were equivalent (on average) on baseline characteristics. The question tested was whether CCDP projects with the greatest differentials in the amount of center-based care received by children also were the projects with the largest impacts on child outcomes.

SUMMARY OF FINDINGS

LENGTH OF ENROLLMENT AND OUTCOMES

- **The correlations between length of enrollment in CCDP and several maternal outcomes are quite close to zero**, ranging from -.06 to +.11. This means that there is essentially no linear relationship between the length of time that a family participated in CCDP and the outcomes for that family.

- **The length of time that a family was enrolled in CCDP was sometimes associated with a statistically significant difference in the outcomes achieved by that family, but those differences were not large enough to be educationally or practically meaningful.**

AMOUNT OF CENTER-BASED CARE AND OUTCOMES

- **CCDP children received many different types of early childhood education and care**. At the same time, families in the control group used many of the same set of care options for their children.

- We know very little about the quality of the care provided to children in this evaluation. However, **CCDP children received more center-based care than did control group children**--42.8 vs. 25.3 hours per month between birth and age 5. Further, there were large between-site differences in the amount of care received by CCDP and control group families in several of the sites.

- As expected in light of the lack of an overall CCDP impact on children, **there was no consistent relationship between CCDP's impact on amount of center-based care and CCDP's impact on child outcomes** We found that CCDP's impact on K-ABC Mental Processing scores increased as CCDP's impact on number of hours per month of center-based care increased. But, the CCDP/control group difference in monthly hours would have to be about five times its actual size in order to generate a K-ABC increase of one-half of a standard deviation.

EXHIBIT 7.1

CORRELATIONS BETWEEN NUMBER OF DAYS IN CCDP AND SELECTED OUTCOME VARIABLES (BASED ON CCDP FAMILIES ONLY)

OUTCOME VARIABLE	CORRELATION
Income	
Annual Household Income (last interview)	.05
Receiving AFDC (last interview)	-.07
% Months on AFDC (life of study)	-.06
Receiving Food Stamps (last interview)	.02
Employment	
Hours Worked (all mothers, last interview)	.07
Hours Worked (working mothers, last interview)	-.02
Wages (all mothers last interview)	.07
Wages (all mothers, last interview)	-.02
Mother Employed (last interview)	.10
Mother or Partner Employed (last interview)	.11
% Months Employed (life of study)	.10
Parenting	
Inappropriate Expectations for Child (last interview)	.04
Lack of Empathy for Child's Needs (last interview)	.04
Belief in Value of Corporal Punishment (last	.03
interview)	.06
Role Reversal (last interview)	
Child Development	
PPVT Total	.11
K-ABC Achievement	.09
K-ABC Mental Processing	.09
CBCL Total	-.02
CBCL Externalizing	-.01
CBCL Internalizing	-.03

EXHIBIT 7.2

COMPARISON OF IMPACT ANALYSIS RESULTS USING ALL CCDP FAMILIES, FAMILIES WITH 3+ YEARS OF ENROLLMENT, AND FAMILIES WITH 4+ YEARS OF ENROLLMENT

OUTCOME	ALL CCDP FAMILIES (100%)				CCDP FAMILIES WITH 3+ YEARS OF ENROLLMENT (58%)				CCDP FAMILIES WITH 4+ YEARS OF ENROLLMENT (48%)			
	CCDP MEAN	CONTROL MEAN[A]	IMPACT	P-VALUE[B]	CCDP MEAN	CONTROL MEAN[A]	IMPACT	P-VALUE[B]	CCDP MEAN[A]	CONTROL MEAN	IMPACT	P-VALUE[B]
PPVT Total	81.61	81.30	.31	ns	82.78	81.49	1.29	* (.09)	83.18	81.57	1.61	** (.11)
K-ABC: Ach	86.99	86.42	.57	ns	87.75	86.37	1.38	*** (.13)	88.08	86.36	1.72	*** (.16)
K-ABC: MP	94.62	94.27	.35	ns	95.64	94.26	1.38	** (.10)	95.90	94.28	1.62	** (.12)
CBCL: Total	50.48	50.77	-.29	ns	50.64	50.63	.01	ns	50.63	50.60	.03	ns
CBCL: Ext	51.39	51.57	-.18	ns	51.55	51.45	.10	ns	51.45	51.41	.04	ns
Annual HH Income	$12,333	$11,658	$675	*(.07)	$12,670	$11,666	$1,004	**(.11)	$12,842	$11,742	$1,100	**(.11)
Average Weekly Wages	$93.33	$93.67	-$0.34	ns	$99.60	$94.09	$5.51	ns	$104.91	$94.40	$10.51	* (.07)
AFDC	51.8%	50.3%	1.5%.	ns	51.0%	49.3%	1.7%	ns	50.0%	48.8%	1.2%	ns

[a] Adjusted control group means fluctuate due to variation in proportion of CCDP vs. control group families.
[b] Standardized effect size in parentheses

* $p < .05$
** $p < .01$
*** $p < .001$

EXHIBIT 7.3

PERCENTAGE OF CHILDREN USING DIFFERENT TYPES OF CARE, BY AGE OF CHILD

TYPE OF CARE	AGE 2		AGE 3		AGE 4		AGE 5	
	CONTROL (N=1,388)	CCDP (N=1,267)	CONTROL (N=1,810)	CCDP (N=1,746)	CONTROL (N=1,755)	CCDP (N=1,662)	CONTROL (N=1,256)	CCDP (N=1,144)
ALL CENTER CARE (WORK & NONWORK)	21.5%	47.8%	28.6%	51.3%	45.4%	60.7%	41.4%	50.1%
Work-related care	38.7%	55.7%	40.1%	57.5%	49.9%	61.7%	45.6%	51.5%
Family day care	19.3%	13.9%	15.5%	12.8%	16.5%	11.7%	15.7%	11.9%
Center-based care[a]	14.1%	34.7%	19.7%	38.1%	28.1%	43.6%	24.0%	35.2%
Parent or sibling	5.3%	7.1%	4.9%	6.6%	5.3%	6.4%	5.9%	4.4%
Non-work related care								
Center-based ece[b]	11.2%	18.9%	12.4%	20.0%	21.1%	24.3%	22.2%	22.4%

[a] Includes Head Start and other center care while mother is working/in school/employed

[b] Includes Head Start and other early childhood education programs

EXHIBIT 7.4

TREATMENT EFFECT ON HOURS PER MONTH OF CENTER-BASED CARE RECEIVED[A], BY AGE OF CHILD

AGE OF CHILD	ALL CHILDREN	CONTROL		CCDP		SIGNIFICANCE OF TREATMENT EFFECT[C]
	MEAN[B]	MEAN[B]	S.D.	MEAN[B]	S.D.	
< 3 years	27.9	19.2	33.0	36.6	45.8	p<.001 (ES= .43)
3-5 years	45.4	36.8	44.9	53.9	52.6	p<.001 (ES= .35)
0-5 years	34.1	25.3	31.4	42.8	42.1	p<.001 (ES= .47)

a Includes work-related child care and center-based early childhood education.

b Based on a two-tailed large-sample Z-test of the difference between group means. The sample includes about 2,800 cases.

c Means adjusted for site and for baseline family characteristics.

d ES=effect size; represents standardized difference between groups in terms of standard deviation units.

EXHIBIT 7.5

AVERAGE HOURS PER MONTH OF CENTER-BASED CARE, BY TREATMENT GROUP AND SITE

SITE	CENTER-BASED CARE (AGE 0-5)		
	CCDP	CONTROL	CCDP - CONTROL
1	57.6	36.2	21.4
2	43.9	21.2	22.7
3	28.1	22.0	6.1
5	26.5	26.8	-0.3
6	21.3	15.7	5.6
7	88.0	48.9	39.1
8	37.9	15.2	22.7
9	47.4	22.1	25.3
10	23.7	23.7	0.0
11	87.1	49.0	38.1
12	32.0	23.1	8.9
13	41.6	10.1	31.5
14	44.7	20.6	24.1
15	92.5	26.3	66.2
16	29.2	22.3	6.9
17	42.8	32.6	10.2
18	46.7	27.9	18.8
19	34.3	15.5	18.8
20	20.6	10.3	10.3
21	40.9	16.0	24.9
22	48.1	32.4	15.7

EXHIBIT 7.6

SITE-LEVEL RELATIONSHIP BETWEEN CENTER-BASED CARE AND CHILD OUTCOMES

OUTCOME VARIABLE (SITE-LEVEL CCDP/CONTROL DIFFERENCE)	PARTICIPATION IN CENTER-BASED CARE (SITE-LEVEL CCDP/CONTROL DIFFERENCE IN PROPORTION OF MONTHS)						AMOUNT OF CENTER-BASED CARE (SITE-LEVEL CCDP/CONTROL DIFFERENCE IN HOURS/MONTH)					
	AGE <3		AGE 3-5		AGE 0-5		AGE <3		AGE 3-5		AGE 0-5	
	BETA	P-VALUE	BETA	P-VALUE	BETA	P-VALUE	BETA	P-VALUE	BETA	P-VALUE	BETA	P-VALUE
PPVT Total	.419	.918	.103	.988	.382	.944	-.007	.828	-.012	.835	-.016	.716
K-ABC Achievement	.344	.876	4.259	.280	.686	.819	-.004	.807	.016	.605	-.003	.878
K-ABC Mental Processing	4.281	.154	**10.94**	**.044**	**6.871**	**.095**	.035	.147	**.082**	**.062**	.048	.127
CBCL Total	-.674	.771	-5.619	.179	-1.726	.584	-.006	.753	-.040	.232	-.012	.629
CBCL Externalizing	-.506	.822	-3.982	.321	-1.248	.682	-.003	.889	-.029	.364	-.007	.760
CBCL Internalizing	-1.967	.350	-5.376	.161	-3.255	.267	-.012	.506	-.034	.271	-.019	.401

[a] Includes center-based work-related care and early childhood education programs

CHAPTER 8

CONCLUSIONS

The CCDP demonstration was designed to test the effectiveness of using a case management approach to ensure the delivery of comprehensive services to low-income families. Early in this report we set forth the chain of events—the necessary conditions—that must occur in order for CCDP to accomplish its goals: (1) the theory and assumptions underlying the conceptual model of the program must be correct; (2) the program must be adequately defined at the federal level; (3) the program must be adequately implemented at the local level; and (4) the program must produce measurable positive effects. This conceptualization of the CCDP demonstration proceeds in a temporal fashion, from theory to program definition to program implementation to evaluation. However, when we present evidence and draw conclusions about the effectiveness of the program we have to work backwards, first presenting specific evidence about program effects, followed by evidence about the strength of program definition and implementation, and concluding with a more general discussion of the implications of the evaluation findings for the theory underlying the conceptual model of the program.

PROGRAM IMPACTS AND COSTS

CCDP's legislation specified that ACYF undertake a demonstration program in which CCDP would be tested in multiple projects. The law specified that "(2) The Secretary shall enter into contracts, agreements, or other arrangements with at least 10, but not more than 25, eligible agencies . . . " (Public Law 100-297, Sec. 670N).

In order to select a set of CCDP grantees, ACYF conducted a competitive grant program in which prospective grantees were invited to prepare proposals. The proposals were judged by ACYF staff, and 24 grantees were selected (21 of which participated in the impact evaluation). Although the grantees were selected competitively, rather than randomly, the presumption is that the CCDP projects implemented by this group of grantees are reasonable representative of the kinds of projects that would be implemented under a broader program of CCDP grants. In fact, this is a reasonable assumption—the CCDP projects were implemented in urban and rural areas, in many different states, under many different auspices, serving many different populations. Though the findings of the impact evaluation cannot be generalized to any larger population on a strict statistical basis, most consumers of this research would be willing to say that the demonstration projects provided a test of CCDP under a wide set of conditions which adequately reflect the types of settings in which CCDP projects might be implemented if the program were expanded.

An evaluation of the impacts of CCDP on participating families was included as part of the CCDP demonstration. The evaluation was based on an experimental design in which eligible families in each project were randomly assigned to be in CCDP or in a control group (about 2,200 families per group). Data were collected annually over a five-year period on more than 100 different

outcome measures for participating mothers and children (CCDP services were to be provided to all family members--due to resource constraints the evaluation only measured the mother and the "focus child"). High response rates were obtained by well-trained data collection staff, who lived in each of the 21 sites. The study was well-designed and well-executed, and there is little doubt that the findings from the evaluation accurately reflect the true impacts of CCDP on families and children.

Changes Occurred in the Lives of Both CCDP Families and Control Group Families. We measured many changes over time in the lives of CCDP families. Some of these changes were increases in children's vocabulary and achievement scores, in the percentage of mothers in the labor force, and in mother's average income. On the other hand, we saw decreases over time in the percentage of families relying on AFDC and Food Stamps, and in the percentage of mothers who were depressed decreased. We saw similar patterns of positive change on many other variables. These patterns are consistent with the findings reported in local evaluations conducted by many of the CCDP grantees, and if we analyzed data only on families who participated in CCDP we might have concluded that the program had worked quite well.

However, this would have been a mistaken conclusion, because analyses of data collected on control group families showed that ***exactly the same changes observed in CCDP families occurred in families in the control group***[1]. Vocabulary and achievement scores increased for children in the control group, just as they did for children in CCDP. Also, mothers in the control group found employment and earned more money, the percentage of control group families receiving AFDC and Food Stamps decreased, and fewer control group mothers were depressed. This pattern of findings tells us that over a five-year period, control group families cannot be assumed to be static or unchanging. Rather, children in the control group progress through developmental stages, and their mothers continue their education and find jobs. In general, these changes are not as large or as positive as the normal changes that occur for children and mothers from higher income families (for example, CCDP and control group children do not gain as much on the PPVT or K-ABC as children in the norms groups for those measures), but still, the lives of low-income families do change over time, and generally in a positive direction.

These findings point out the need for a randomly assigned control group. Data collected only on CCDP families would have given the misleading impression that the observed improvements in the lives of low-income families were attributable to participation in the program. When we see that the same types of improvements happen for control group families, we realize that we are observing normal changes in the lives of families—changes that cannot be attributed to CCDP.

[1]CCDP's developers hoped that the time and energy put in to coordinating existing services would eventually lead to community-level improvements in service delivery systems. If community-level changes did happen, the services received by control group families might have been improved, diminishing the observed effects of CCDP on families in the program. However, changing community service systems takes a substantial amount of time, so that even if long-term improvements in the community service mix did result from CCDP, these changes could not have had an effect on the services received by control group families in the time frame of this evaluation.

CCDP Did Not Produce Any Important Positive Effects on Participating Families. We compared outcomes for CCDP families with outcomes for control group families over a five-year period and reached the following conclusions:

- Five years after the program began, **CCDP had no statistically significant impacts on the economic self-sufficiency of participating mothers, nor on their parenting skills** That is, mothers in the control group performed as well on these measures as CCDP mothers.
- Five years after the program began, **CCDP had no meaningful impacts on the cognitive or social-emotional development of participating children**. That is, children in the control group performed as well on these measures as children in CCDP. Nor did CCDP have any impacts on children's health or on birth outcomes for children born subsequent to the focus children.
- **CCDP had no important differential effects on subgroups of participants** (e.g., teenage mothers vs. older mothers, mothers who entered CCDP with a high school diploma vs. mothers who entered without a high school diploma, mothers living with a partner vs. mothers living without a partner, male vs. female children). There was a scattering of differential impacts for some subgroups on some outcomes, but there was no systematic pattern which would allow us to conclude that CCDP worked better for some subsets of participants than for others.

Thus, when the data were analyzed across all of the CCDP projects, we see a very convincing and consistent pattern—on average, CCDP did not make a measurable difference in the lives of program participants. Early data from the CCDP process study (ACYF, 1994) showed that two years into the program, there were high levels of service participation on the part of CCDP families. A complementary finding based on early data from the impact evaluation (ACYF, 1994) showed that CCDP families received significantly higher levels of some services than control group families, although many control group families found and participated in a wide range of services without the benefit of CCDP.[2] Subsequent data from the CCDP process study (CSR, Incorporated, 1997) showed that CCDP families continued to participate at high levels in many different types of services. Thus, CCDP clearly was successful at organizing and delivering services to families. However, the evidence presented in this evaluation shows that the services did not have the intended impacts on mothers and their children.

One CCDP Project Had Important Positive Effects. The main focus of the impact evaluation was to assess the overall effectiveness of CCDP, measured across multiple projects. What is most desired in the assessment of social programs is the ability to demonstrate a model which is robust, which works in a variety of locations, under different circumstances, with different populations. It is of lesser interest to show that a program or model works only in a few special sites. Of course,

[2]For example, CCDP mothers were more likely than control group mothers to receive a range of services from a case manager, to participate in academic or vocational classes, and to participate in parenting education classes; and CCDP children were more likely than control group children to participate in child care programs.

there is an understandably keen interest in whether and how CCDP's effects vary on a project-by-project basis, especially in light of the fact that this evaluation has shown no significant overall program-level effects.

We examined the effectiveness of CCDP in each of the sites that participated in the evaluation. Because there were no overall effects of CCDP, it is no surprise that almost all of the CCDP projects had no positive effect on more than 30 different outcome variables. However, one site, identified in this report as Site #2, had statistically significant and moderately large positive effects in several different outcome domains: children's cognitive development; families' employment, income, and use of federal benefits; and parenting attitudes.

In terms of child cognitive development, Site #2's effect on the PPVT was 9.4 points, equal to an effect size of .63 standard deviation units (a moderately large effect), and Site #2's effect on the K-ABC was 3.9 points, an effect size of .26 standard deviation units (a small but non-trivial effect). With respect to income and employment, Site #2 increased by 22 percentage points the average amount of time that either the mother or partner in the household was employed (from 47 percent in the control group to 69 percent in CCDP), decreased by 20 percentage points the number of mothers who were on AFDC at the end of the study (from 65 percent in the control group to 46 percent in CCDP), and decreased by 19 percentage points the average amount of time that families received food stamps (from 74 percent in the control group to 55 percent in CCDP). Finally, Site #2 families had higher annual household incomes than control group families—$17,029 vs. $13,407, respectively. All of these differences represent moderately large effects.

With respect to parenting, CCDP in Site #2 had positive effects on two of the four AAPI scales that are indicative of abusive parental behaviors. CCDP parents scored higher on the scale measuring parents' empathetic awareness of their child's needs (raw score difference of 1.6 points, equal to .37 standard deviations), and higher on the scale measuring the appropriateness of parents' expectations for their child (raw score difference of 1.3 points, equal to .35 standard deviations). The AAPI defines cutoff scores for each of its four scales. Parents scoring below the cut off are deemed "at risk" for abusive behavior toward their children. In Site #2, 67 percent of the CCDP parents were not at risk of abusive behavior on any of the four AAPI subscales, compared with 46 percent of the control group parents. These are small to medium-sized effects, but given the difficulty that most interventions have in changing parent behaviors, the positive effects in Site #2 are worth noting.

It is one thing to identify an effective site. It is quite another to explain why this site was effective when other sites sharing many of the same characteristics were not effective. There are many possible explanations as to why CCDP in Site #2 was more effective than in other sites. The population served was somewhat less at risk than the population served in many (but not all) other sites; the site is located in a state that provides a relatively high level of support to low-income families, and benefits from the combination of being a small city in a rural area where program families were not seen as being "inferior" to or qualitatively "different" from program staff;; with a school district as the grantee, the site had a clear focus on children and their

education; the site had a particularly strong project director and senior staff, all of whom stayed with the project for many years; and finally, site staff appear to have done an especially good job of collaborating with local agencies, attributable in part to support for these activities at the state level and from the project's executive director. None of these factors can be singled out as "the reason" why CCDP was more effective in Site #2 than in other sites. The circumstances and context of Site #2 are probably unique, and certainly have acted in concert to produce the positive effects documented in this report.

Length of Enrollment in CCDP Did Not Make an Important Difference to Outcomes. One assumption made by CCDP's developers was that it would require multiple years (from birth until entry to school) to ensure that children would be ready for school and that parents would become economically self-sufficient. The length of time that a family was enrolled in CCDP is a crude but basic measure of a family's overall level of participation in the program.

Analyses were conducted to compare CCDP's impacts using the full sample of CCDP families, as well as the subset of CCDP families that participated for three or more years, and the subset that participated for four or more years. The results of these analyses lead us to conclude that the length of time that a family was enrolled in CCDP was sometimes associated with a statistically significant difference in the outcomes achieved by that family, but those differences were not educationally or substantively meaningful.

Amount of Center-Based Care Made a Small Difference to Outcomes. A common research question for studies of programs which provide educational, social, and health services is "Did families that received more intensive services have better outcomes?" Hence, we examined the role played by center-based care in mediating child development outcomes.

First, we found that CCDP children received many different types of early childhood education and care. At the same time, families in the control group used many of the same set of care options for their children. While we know little about the quality of the care provided to children in this evaluation, we did find that CCDP children received more center-based care than did control group children--42.8 vs. 25.3 hours per month between birth and age 5.

As expected in light of the absence of an overall CCDP impact on children, there was no consistent relationship between CCDP's impact on amount of center-based care and CCDP's impact on several different child outcomes. We found that CCDP's impact on K-ABC Mental Processing scores increased as CCDP's impact on number of hours per month of center-based care increased. But, the observed relationship was not strong, and the CCDP/control group difference in monthly hours would have to be about five times its actual size in order to generate a K-ABC increase of one-half of a standard deviation.

CCDP is a Costly Intervention. By any yardstick, CCDP is an expensive program. Data from CCDP's process evaluation (CSR, Incorporated, 1997) show that the total cost of CCDP averaged $15,768 per family per year (excluding the costs of participating in mandated research and evaluation activities), or about $47,000 for each family in the evaluation, given an average

length of participation of more than 3 years. As described by CSR, Incorporated (1997), CCDP projects spent an average of 43 percent of their personnel costs on "direct intervention services" (80 percent of direct intervention service monies were spent on case management) and 57 percent on "program support services".

As a way to judge the magnitude of these costs, consider the per family per year costs of a few related programs. We do not have the space to present an analysis of all of the services purchased by each of the programs listed below. The key points to be made are that (1) CCDP is the most comprehensive of all of the programs discussed below, providing a broader array of services to more family members, and (2) as might be expected, CCDP has relatively high per-family costs.

For ***child development programs***, Head Start costs about $4,500 per year for a part-day, part-week child development program for three and four year old children during the school year; Head Start also provides health services for children, involves parents in various program activities, and provides referrals to needed social, medical, and educational services (1994 dollars; Administration on Children, Youth, and Families, 1995). The Infant Health and Development Program cost about $10,000 per year for a full-day, full-week, year-round, highly-intensive infant stimulation and child development program for children one through three years of age (Ramey, 1994). Other IHDP services included home visits and parent activities from the child's birth through age three. Compared with these programs, CCDP had less intensive services for children and significantly more intensive services for parents. In addition, CCDP served all members of each participating family.

For ***two-generation/family literacy programs***, it costs Even Start projects about $2,700 per year to provide adult education, parenting training, and early childhood education services to families, either directly or by brokering community services. Within this broad framework, over 500 Even Start projects provided services which varied greatly in nature and intensity (1994 dollars; St.Pierre, et al., 1995). At a cost of about $1,600 per year, the Avance Family Support and Education Program provided a one-year program of parenting education and educational child care for three hours per week, followed up by a second year that focused on adult literacy (1994 dollars; Johnson & Walker, 1991).

For ***home visiting programs***, the cost of David Olds' Nurse Home Visiting Program in Elmira, NY was about $2,300 per family per year (1994 dollars; Olds, et al., 1993). Costs were similar for four of the Child Survival/Fair Start demonstration projects which ranged from about $1,600 to $2,800 per year (1994 dollars; Larner, et al., 1992). Both of these programs used home visitors to deliver an in-home intervention.

For ***job training and welfare-to-work programs***, the New Chance program cost about $8,300 per year to provide a full-day, full-week program for mothers including life skills, parenting education, pediatric health education, adult education, and GED preparation (1994 dollars; Quint, et al., 1994). A second phase of the program provided vocational training, internships, and job placement.

Cost comparisons are difficult to make because the dollars allocated to social programs are often used to buy very different sets of services, and these examples are not intended to provide an exhaustive comparison of the costs incurred by similar social and educational programs. Rather, the point of this brief comparison is to point out that the comprehensive nature of the services provided by CCDP make the annual cost per family relatively high when compared with other social programs that have similar aims.

Can We Expect to Find Future Positive Effects and Associated Cost Savings? An obvious question that arises is "Might we find positive effects on CCDP children or mothers at some future time?" This question arises because some evaluations have found that the most important benefits of early childhood programs did not become apparent until many years after the program had been completed and children had been followed into the public schools and beyond (most notably, the Perry Preschool Study (Schweinhart, et al., 1993). Several reviews supporting the contention that long-term effects of early childhood programs exist have appeared in the recent literature. For example, Yoshikawa (1995) reviewed 40 evaluations to ascertain the long-term effects of early childhood programs on social outcomes and delinquency. He found that high-quality, high-intensity, center-based programs which integrate early childhood and family support activities were most likely to have positive long-term effects in areas such as parent/teacher ratings of behavior, delinquency, and criminal reports. Barnett (1995) reviewed the effects of 36 center-based early childhood interventions on cognitive and school outcomes and concluded that such programs can produce "...large effects on IQ during the early childhood years and sizable persistent effects on achievement, grade retention, special education, high school graduation, and socialization...the evidence for effects on grade retention and special education is overwhelming."

Some of the studies referenced in the Yoshikawa and Barnett reviews found very large cost savings associated with positive program effects in areas such as reduced retention in grade, reduced special education placement, and reduced criminal activity. However, these studies were following children who had participated in intensive early childhood programs and ***who had first derived large short-term cognitive benefits*** from those programs. Further, Yoshikawa (1995) suggests that the most impressive long-term effects are associated with programs that demonstrated short-term effects both on childrens' cognitive development and on mothers' parenting skills and behaviors.

Neither of these short-term outcomes (improved short-term cognitive benefits for children or improved parenting behaviors for mothers) were found for CCDP children and their mothers. CCDP's early childhood experiences were not intensive, coming first in the form of weekly one-hour in-home parenting education programs when children were under three years of age, and moving to Head Start or other center-based or home-based child development programs for children three to five years of age. CCDP children received an average of 28 hours per month of center-based care from birth to age three, and 45 hours per month from three to five years of age. This is substantially less than the 80 to 180 hours per month received by children in high-intensity programs such as the IHDP. Given the lack of an intensive early childhood program and the lack of short-term or medium-term effects in CCDP, there is no reason to hypothesize long-term positive effects for children who participated in CCDP.

But what about the possibility of long-term effects on mothers? There is scant research in this area, and we know of no literature pointing to the existence of long-term effects of anti-poverty programs on mothers, similar to those found for children who participated in intensive early childhood programs.

If long-term effects of CCDP exist at all, there is some reason to think that they would become evident for children born subsequent to the focus child. If CCDP's approach of providing child development through parenting training works, it is unlikely to have a major impact on the focus children since most of them were born prior to the beginning of parenting training, and focus children had to pass through many important developmental stages before any parenting skills had a chance of improving. On the other hand, children born after the parenting training was provided had a better chance of benefitting from any improved parenting skills. Unfortunately for this line of reasoning, this evaluation showed no significant improvements in the parenting skills of CCDP mothers.

WHY WERE THERE NO PROGRAM IMPACTS?

This is a disappointing set of findings—a consistent pattern which calls for an explanation. In this section we examine the feasibility of several explanations of why CCDP had no effects.

Perhaps the Program was Poorly-Defined. Past evaluations of social programs have found that sometimes a program was so ill-defined that staff at the local level had no idea of what to implement or how to implement it. This was not the case for CCDP. Rather, ***the CCDP program was clearly and carefully defined by ACYF*** so that it could be understood and implemented locally. ACYF provided a detailed definition of the program, strong centralized management and oversight, and associated programmatic regulations and guidance. Program details were fully spelled out in written compliance standards that were clearly communicated to all local grantees. A management information system was put in place by CSR, Incorporated to help monitor service provision and to identify technical assistance needs. Monthly telephone calls were made to local projects and ongoing oversight and technical assistance were provided by CSR, Incorporated, grantee meetings were held three times a year to facilitate the exchange of information and to discuss compliance issues, quarterly progress reports were prepared by each local project, and annual site visits to each project were conducted by ACYF and CSR, Incorporated to assess compliance and provide technical assistance.

Compared with other demonstration projects and other federal programs, there is little question that the CCDP model was well-defined at the federal level, clearly communicated to local grantees in a variety of settings, and closely monitored. This is the first step in constructing a strong demonstration program.

Perhaps the Program Was Poorly-Implemented. Given a well-defined program, it still is possible that local grantees were unable or unwilling to do a high-quality job of implementing the program. Past evaluations have shown that some programs failed due to poor implementation.

Could this have been the reason for CCDP's lack of effects? Not at all. Instead, there is compelling evidence that ***CCDP projects were well-implemented by local grantees***. As reported by ACYF (1994) and CSR, Incorporated (1997), CCDP served the families that it was intended to serve, coordinated the efforts of thousands of service agencies nationwide, and delivered a wide range of services to a high proportion of participating families. CCDP intended to provide up to five years of continuous service to low-income families, and families recruited for the CCDP demonstration and evaluation participated for an average of more than three years. Compared with other demonstration programs, which often have annual dropout rates of 50 percent or more, CCDP was relatively successful in retaining substantial numbers of families from a traditionally difficult-to-serve section of the population.

The CCDP local grantees deserve credit for successfully implementing a very difficult demonstration project. The grantees showed that it was possible for a wide variety of local agencies to work with the federal government to put a complicated program in place in many locations around the country. Of course, the implementation of CCDP was not perfect, and there were initial start-up difficulties as well as site-to-site variation in the timing and quality of program implementation. But given the high degree of technical assistance and monitoring that was provided to local CCDP grantees by the federal government, CCDP's implementation in this demonstration certainly was far better and more standardized than would be expected if the CCDP model were to be implemented widely, without any special mechanisms for ensuring the fidelity of each project to the model defined by ACYF. Put another way, the implementation of CCDP in this demonstration project is as good as can be expected in any large-scale demonstration of a comprehensive intervention program.

Perhaps the Theory and Assumptions Underlying CCDP Were Faulty. The above findings—good program definition at the federal level, and strong implementation by local grantees, followed by the finding that, on average, the program has made very little difference in the lives of participating families—call into question the theory and assumptions underlying the program. We cannot account for the lack of program impacts by pointing to faulty program definition—the federal government provided clear and careful specifications for how to implement the CCDP model. We cannot say that the program was poorly implemented—the process study (CSR, Incorporated, 1997) shows that the local grantees did a good job of adhering to the government's compliance standards and of delivering the planned services to participating families. We cannot say that families did not participate long enough for effects to become evident or that all of the "success story families" left early—the average family participated for more than three years which is much longer than families participate in almost any other social intervention (even though program services were available for up to five years). We cannot account for the lack of impacts by saying that the evaluation was poorly designed or poorly implemented. The research design was strong, the measurement battery was broad, and response rates were high.

Having ruled out these hypotheses for a lack of effects, we must rethink the basics of the program design—the theory and assumptions underlying the CCDP model. Let us address some of the questions raised by this disappointing pattern of findings.

Were Services of Sufficiently High Quality? CCDP was developed under the assumptions that most of the services needed by low-income families already existed in most communities and that these services were of sufficiently high quality to address the needs of low-income families. It is possible that these assumptions are incorrect and that the problem lies with the services provided through CCDP—perhaps local services were of poor quality, or maybe they were not the services needed by participating families, or maybe they were not sufficiently intensive. CCDP may have been very good at delivering services that were nonetheless ineffective. While the process study (CSR, Incorporated, 1997) does not include information about the quality of services provided through CCDP, it does present data on the extent to which parents reported that services allowed them to meet the goals that they and CCDP staff set for themselves. Although many different goals were set by CCDP families, only a small percentage of parents reported that they actually attained those goals (e.g., 37 percent reported that they obtained adequate housing, 11 percent reported that they increased their parenting skills, 24 percent reported that they obtained health care, 13 percent reported that they obtained social support, 17 percent reported that they furthered their education, 14 percent reported that their children had enhanced cognitive and social development, and so on; CSR, Incorporated, 1997, Exhibits 3-28, 3-29). This suggests that the great majority of participating parents did not think that CCDP helped them achieve the goals they set at the beginning of the program.

Were Services Too Diluted to be Effective? One of the findings that is emerging from studies of child development and family literacy programs with some degree of consistency is that the best way to achieve positive effects is to provide intensive services directly to the individuals that you hope to affect (Yoshikawa, 1995; Ramey & Ramey, 1992). CCDP did not take this approach. Rather, CCDP funds were used to provide a wide variety of services to all family members, and the approach was broad-brush rather than intensive in nature. The idea of "comprehensive services" as implemented in CCDP meant that a great number of services were provided, but none of the services may have been provided with sufficient intensity to be effective.

Did CCDP Rely Too Heavily on Indirect Effects? One of CCDP's key assumptions is that the best way to improve child outcomes is to focus on improving parents' ability to parent their children, rather than providing an educational intervention directed at the child. Our findings raise the possibility that CCDP relied too heavily on the "indirect effects" method of producing impacts on children. During the first three years of the program, until children reached Head Start age, CCDP's main child development efforts were focused on teaching parents to understand child development and interact appropriately with their children, in the hope that parenting skills would be improved with a resulting enhancement in child development.

Recent literature on the ability of parenting education to affect child development (Ramey & Ramey, 1992; Barnett, 1995; Wasik, et al., 1990) casts doubt on the efficacy of this approach. At the same time, there is substantial research evidence that the best way to achieve large effects on children is to provide intensive services directly to children over an extended period of time (Ramey & Ramey, 1992). This research does not dismiss the importance of the parent's role in child development. In fact, there is widespread agreement that competent parenting is related to positive child development. However, research provides few answers to several key questions

related to the potential effectiveness of parenting education: Which aspects of parenting are both (1) important to child development and (2) amenable to timely change? At what point in the parent's life is a parenting intervention most likely to be effective? What parenting education strategies are likely to be most effective?

Could Families Obtain Services Without CCDP? CCDP's developers assumed that low-income families were unable to access existing services efficiently without assistance—perhaps because the service delivery systems in most communities are too complicated, or perhaps because mothers simply do not understand that they are entitled to certain services. CCDP also assumed that once services were identified, they needed to be coordinated. That is, it is not sufficient to inform low-income families about the existence of services. Rather, it was assumed that a case manager was needed to coordinate and ensure service delivery.

Evidence from this evaluation partly refutes this assumption. The evaluation's interim report (ACYF, 1994) showed that during the first two years of the program, control group families were able to access many of the same basic services as CCDP families. Typically, a larger percentage of CCDP families than control group families reported that they received any given service, but in many cases the differences were not large, certainly not as large as we might expect for a program that spent more than $15,000 per family per year to ensure that services were delivered. For example, equal percentages of CCDP and control group families visited a doctor for checkups, received acute medical care, and received dental services.

Early in this evaluation (i.e., about two years into the program) , more CCDP mothers than control group mothers participated in parenting classes (34 percent vs. 11 percent), academic classes (38 percent vs. 26 percent), and vocational classes (18 percent vs. 13 percent), and more worked toward a GED (12 percent vs. 8 percent), an associate's degree (7 percent vs. 3 percent), or a bachelor's degree (6 percent vs. 3 percent). CCDP children were more likely than control group children to participate in work-related child care (66 percent vs. 53 percent), to use formal child care (36 percent vs. 16 percent), and to use nonwork-related child care (25 percent vs. 13 percent). The point is that while these differences were statistically significant, indicating that CCDP was successful at increasing the use of some services by participating families, many control group families were able to obtain services on their own. The resulting impact on the amount of services received by CCDP families may not have been large enough to result in important differences on outcome measures.

These data raise questions about the necessity of the case management structure that was provided through CCDP. If the same percentage of control group families as CCDP families received health services, and roughly half as many control group families as CCDP families received educational services (across all of the educational variables listed above), then either the case management model was not particularly effective at ensuring that services were delivered, or the assumption that low-income families have difficulties accessing services may be ill-founded.

Perhaps the Case Management Model is an Ineffective Approach. The CCDP demonstration and associated evaluation provided a fair test of an important model for combating the deleterious

effects of poverty on families with young children. It is the largest test of the currently popular model of case management combined with integrated service provision. A few other examples of this approach are described below, along with associated evaluation findings.

At the federal level, the Even Start Family Literacy Program provides three main programmatic components: early childhood programs for children, and parenting training and adult education for parents. Although it offers fewer services over a shorter period of time and is substantially less intensive and expensive than CCDP, Even Start projects do have staff acting in the role of case manager (family worker, family advocate, etc.) and are mandated to use local existing services to avoid duplication of effort. A national evaluation (St.Pierre, et al., 1995) found that program participants changed over time (children's test scores increased, mothers became less depressed, etc.) but there were few positive program effects when program participants were compared with children and mothers in a randomly assigned control group (the major positive effect was that Even Start adults were more likely than control group adults to obtain a GED).

At the state level, several large-scale school-based projects using this model have been undertaken in California, New Jersey, Texas, and other states. Evaluation results from studies of these initiatives either are not yet available or are based on weak research designs including no control or comparison groups. Given the findings from randomized studies which show that control group families make important changes in their lives over time, we worry about the utility of evaluations which try to draw conclusions about program impacts when the study design does not include a randomly assigned control group. These studies invariably show that program families improve over time--what they cannot tell us is whether those improvements are greater than those that would occur in the absence of the program under study.

The case management model has been tried in other fields. For example, the Fort Bragg Child and Adolescent Mental Health Demonstration, funded by the U.S. Army, was an $80 million program which delivered mental health and substance abuse services using a coordinated case management approach to involve various service agencies. An evaluation of this program (Bickman, 1996) reached many of the same conclusions as the current study—the demonstration had a systematic and comprehensive approach to planning treatments, more parental involvement, strong case management, more individualized services, fewer treatment dropouts, a greater range of service, enhanced continuity of care, more services in less restrictive environments, and a better match between services and needs. In the face of these positive implementation findings, no positive effects were found on a wide range of child-level outcome measures. Comparison group children who participated in a less expensive, fragmented system of care, without case management, did as well clinically as children in the demonstration. This pattern of findings—good implementation of an integrated case management service delivery system, followed by no effects on program participants—has been seen in other recent studies of child and adolescent mental health services (e.g., Burns, et al., in press; Cauce, et al., 1995; Huz, et al., 1995).

CONCLUSIONS ABOUT THE DEMONSTRATION

Continue to Demand High-Quality Demonstration Projects Involving Randomized Designs. Without such projects, we cannot know which programs work and which ones do not work. Most other social science researchers have reached exactly this conclusion. For example, the Manpower Demonstration Research Corporation is undertaking a study of the New Hope Project, a three-year demonstration designed to test the effect of subsidizing work for low-income individuals. The MDRC researchers wrote that "...the underlying pattern of employment, income, and welfare receipt is represented by the behavior and experiences of the control group. These underlying conditions cannot be ignored, for there is often considerable change over time in the income and welfare receipt of poor households" (Doolittle & Robling, 1994). Our experience in the present evaluation as well as with other recent large-scale studies (e.g., the Even Start evaluation where we measured similar amounts of growth both in Even Start and in control group families) is directly in line with these observations. The evidence is clear—we cannot rely on weak research designs if we are interested in learning about the effectiveness of social interventions, and ACYF has taken exactly the right approach in demanding high-quality randomized studies for many of its recent research activities (e.g., evaluations of the Head Start Family Service Centers, the Head Start Transition Projects, and the Early Head Start Demonstration Projects).

Focus on the Search for Solutions. The CCDP demonstration was a success. At the start of the demonstration, nobody knew whether providing intensive case management was the best way to help low-income families. The demonstration and evaluation were developed to answer this question. Everyone involved in the demonstration and evaluation should be regarded as having an investment in helping low-income families, but not as people who are tied to any particular solution (this was one of Donald Campbell's (1971) most important messages in his seminal article on the "experimenting society"). Instead of being advocates for a particular program, we need to be advocates for solving the problem. Instead of advocating in the absence of research evidence, we need to be intellectually curious about finding the best approaches.

There is no question that this six-year effort provided a fair test of this key policy alternative. It has produced important findings—findings showing that the case management approach does not lead to improved outcomes for parents or children. This is an important piece of information in the fight against poverty.

So was CCDP a waste of money? Of course not. As a demonstration program, CCDP was a respectable and respectful use of public funds, and it accomplished exactly what it was designed to do—find out whether an important approach to serving low-income families works. The fact that the answer is "no" does not diminish the utility of the demonstration or the fine efforts of everyone involved.

APPENDIX A

CONSTRUCTION OF THE EVALUATION SAMPLE

The design of the impact evaluation sample called for the formation of three randomly assigned groups of families: (1) program, (2) control, and (3) replacement in each of 23 projects. This appendix describes the process used to recruit and randomly assign families, the outcome of the recruitment and enrollment process, and the use of replacement families in the evaluation.[1] The conclusions of this analysis of the random assignment process are that:

- **21 of the 23 grantees conducted an appropriate random assignment procedure** and maintained records adequate to be included in the evaluation.
- **One grantee was dropped from the evaluation because they did not randomly assign families** to program and control groups.
- **A second grantee was dropped because of inadequate recordkeeping** Sufficient information was not retained to allow the evaluators to contact the recruited families.

RECRUITMENT

Each grantee had to recruit families in a defined recruiting or catchment area. In general, grantees designated as "urban" sites were expected to recruit a minimum of 120 families to be served (and 120 for the control group), while "rural" sites were expected to recruit a minimum of 60 families per group. The law stated that grantees were expected to recruit at least twice the number of eligible families to be enrolled in CCDP, so that program and control groups could be formed. Subsequently, grantees were instructed to recruit three times as many eligible families, to be assigned randomly to three groups: program, control, and replacement. Each grantee established its own recruitment goals for the three groups. Exhibit A.1 lists the projects and the number of program and control families they expected to serve.

The operating grants for CCDP grantees stipulated that enrollment should be completed by September 1990 and that all core services should be available to program families at that time. Grantees were at different stages of readiness to provide core services at the time operating grants were made and consequently differed as to when they began recruiting and enrolling families. The earliest date that any project began recruiting families was February 1990. Virtually all of the projects completed recruiting their program and control families by fall 1990, although a few projects continued to recruit through spring 1991. The earliest that projects began providing services was March-April 1990; some projects did not begin providing services until fall 1990.

[1]Recruitment of families was done by individual CCDP grantees. CSR, Inc. (the technical assistance and monitoring contractor) was responsible for carrying out the randomization and/or for assisting CCDP grantees with this process. Abt Associates (the evaluation contractor) was not involved in this process.

Each CCDP grantee developed its own recruitment plan. CSR, Inc. monitored the recruitment process across the sites. Grantees identified eligible families through referrals from human service agencies, including hospitals and prenatal clinics, and through door-to-door canvassing. The program guidelines stipulated that not more than 75 percent of the families in a site could be recruited through agency contacts, in order to guarantee that the project was serving some families who were not already linked to the existing service system in the community.

Recruited families were expected to reflect demographic characteristics in proportion to their distributions in the recruiting area. Most of the projects recruited in multiple distinct neighborhoods, communities, counties or towns. Some of the projects formed stratified random samples of families. Exhibit A.2 indicates which projects stratified their samples, and the stratifiers used.

RANDOM ASSIGNMENT PROCESS

ACYF indicated its preference that grantees use a random assignment procedure to determine which families would be enrolled as program and which as control group families. Grantees were allowed to propose alternative assignment procedures if they could assure that the resulting groups would be equivalent. The contractor responsible for the process evaluation and the MIS, CSR Inc., was also responsible for monitoring the recruitment and random assignment of families across the sites.

All but one of the 23 grantees used a random assignment procedure to assign families, at least to the program and control groups. Projects differed on the exact random assignment procedure used, whether the project or CSR did the random assignment, and whether the random assignment was to three groups (program, control and replacement) or to two groups only (program and control). In theory, projects were to first recruit all of their families and then assign them randomly to groups. In practice, most projects recruited and assigned families in multiple waves before reaching their enrollment goals. Exhibit A.2 summarizes the random assignment process for each of the CCDP grantees. The projects fall into the following categories:

- **The first seven grantees listed in the exhibit assigned families randomly to three groups**. In these grantees, the replacement families can be considered to be statistically equivalent to the program and control families. These replacement families were therefore eligible to be in the evaluation sample; whether or not they were included in the evaluation sample depended on why the family that they replace dropped out (see below).
- **The next set of nine grantees assigned families to three groups in the early waves of recruitment and assignment**; in subsequent waves, all eligible families were assigned to the replacement group. In these projects, the replacement families assigned as part of the three-way assignment process are statistically equivalent to the program and control families

assigned in the same waves and were eligible to be used in the evaluation sample. The replacement families that were recruited separately in later waves are not statistically equivalent to the previously-recruited program and control families; unless these replacement families were assigned pairwise to the program and control groups, they were not included in the evaluation sample.

- **The next six grantees listed assigned only to the program and control groups for the first rounds of recruitment**, and formed their replacement group separately in later rounds. None of the replacement families in these projects were included in the evaluation sample.
- **The final grantee did not use a random assignment procedure and was dropped from the impact evaluation**.

DEFINITION OF THE EVALUATION SAMPLE

PROGRAM AND CONTROL FAMILIES

The evaluation sample included any family assigned to the program or control group and notified of its assignment. This includes families who agreed to participate as well as families who refused their assignment. In addition, some families were assigned to a group but were not enrolled because (1) they were determined to be ineligible, or (2) they could not be located for notification of assignment. These families were not included in the evaluation sample.

REPLACEMENT FAMILIES

Replacement families served two purposes in CCDP. First, CCDP grantees used replacement families to replace program families that became inactive (through dropping out, moving, etc.), in order to maintain their service levels. Second, the impact evaluation used selected replacement families. Replacement families were included in the evaluation sample only if (1) they were statistically equivalent to the program and control families, (2) they were randomly selected from the replacement group, and (3) they were used to fill slots in the program or control groups that occurred for three reasons:

- because the project had **difficulty recruiting sufficient numbers of families** to fill all the groups and were given permission by CSR and ACYF to use their replacement families as "original" program or control families;
- because projects **lost families before the families were notified of their group**, for instance because the family had moved; or
- because an **originally-assigned family was determined to be ineligible** at the time of enrollment, for reasons of income, child death, etc.

The evaluation did not include replacement families who replaced families who dropped out *after* notification of their group assignment, even if the replacement families were considered statistically equivalent. This decision was based primarily on resource constraints. If there had been unlimited resources for data collection, the evaluation could have followed both the originally-assigned families (including designated replacement families as defined above) as its first priority, and any statistically equivalent replacement families assigned to the program and control groups to replace dropouts as its second priority. In practice, however, resource constraints limited the evaluation sample to approximately the number of families originally targeted as program and control families in each site.

Two notes about the use of replacement families are in order. First, although recruitment and assignment was done in waves in most of the projects, replacement was not necessarily done by wave. That is, replacement families were not always drawn from the same wave as the original program or control family being replaced. In many of the sites, replacement was not conducted "one-for-one" such that the project could identify which replacement family replaced which program or control family. Replacements were often drawn and assigned in groups, after a set of replacements were needed.

Second, in selecting replacement families, projects sometimes had to go through multiple replacement families in order to obtain a family who could be located, was still eligible, and wanted to participate in the group to which they were assigned. Projects rarely kept track of the status of replacement families who were selected and assigned but who did not participate.

METHODOLOGY FOR DETERMINING THE EVALUATION SAMPLE

At each site, the CCDP data manager was asked to identify the following:

- the name of each family recruited,
- the group to which each family was assigned and how the assignment was done,
- the name of each family enrolled,
- for any family who was recruited but not enrolled, the reason for nonparticipation,
- the name of any replacement family assigned to the program or control group and how that assignment was done, and
- the current status of all assigned families.

Obtaining this information on a family-by-family basis was difficult and complex, in large part because it had to be done "after the fact." Grantees had not understood that they needed to maintain complete and systematic records on the ongoing status of each family recruited and assigned, regardless of what ultimately happened with that family in terms of participation in the program. The replacement process also needed to have been documented in detail. Not all

projects understood clearly the importance to the experimental design of following all families in the original sample and documenting any changes in status for families in the original sample.

Given these problems, retrieving the requested information required several weeks of collaborative work going back and forth with the grantees in order to document the status of each family in the original sample. In some sites, data managers had to reconstruct records for families who were recruited but not enrolled and for families who were replaced. *In one site, recordkeeping was not adequate to allow the evaluators to identify the evaluation sample. This site was dropped from the evaluation.*

DESCRIPTION OF SAMPLE FORMATION IN EACH SITE

Exhibit A.3 shows how the evaluation sample was formed for each project. The columns on the exhibit show, for program and control families separately, the enrollment goal for the project, the number of families assigned to the group, and the status of each of the assigned families.

Enrollment Goal. This column indicates the number of families the program intended to enroll in the program and the control groups.

Number of Families Assigned to Group. The second column shows the number of families initially assigned to the program and control groups. In some of the programs, the number assigned differs by a small amount from the enrollment goal. The chart indicates the reason for these differences. In some cases, the assigned sample is larger than the goal because of twins or because families who were originally assigned to one group had to be moved because they were related to a family assigned to another group.

Number of Families Who Agreed to Participate. The next column indicates the number of families who were assigned to a group (program or control) and who agreed to participate when first informed of their treatment group status. In two sites, replacement families were assigned to the program or control group in order to meet the enrollment goal, i.e., to fill empty slots that could not be filled through recruitment. In these sites, the number of replacement families used is indicated in parentheses. (All of these replacement families were statistically equivalent to the other program and control families.)

Number of Families Lost before Notification or Determined to be Ineligible. The fourth column of the exhibit shows the number of families who were recruited but either could not be located for notification of assignment or who were determined to be ineligible at the time of enrollment. All of the projects assigned replacement families to take the place of these originally-assigned program and control families who could not be enrolled in the project. However, the replacement families used were not always drawn from a statistically-equivalent replacement pool. The chart indicates with an asterisk those projects in which some of the replacement families are not statistically equivalent to the program and control families and therefore cannot be included in the evaluation sample. In these projects, the final number of families in the evaluation sample is

less than the number of families assigned because the evaluation sample did include the nonequivalent replacement families.

Number of Families Who Refused to Participate. The fifth column indicates the number of families who, upon learning of the group to which they were assigned, opted not to participate. These refusals were considered part of the evaluation sample and were followed in the evaluation, even though the family did not want to participate in the program or control group. All of the projects replaced program families who refused with replacements; however, the evaluation followed the originally-assigned family who refused and not the replacement. Most of the projects also replaced control families who refused, and again the evaluation included the original family rather than the replacement family.

Number of Families in Evaluation Sample. The sixth column indicates the final number of families in the evaluation sample. This number usually is the same as the number of families assigned to the group and includes all families who agreed to participate, the statistically-equivalent replacement families assigned to replace lost and ineligible families, and the refusals. In some of the projects, the evaluation sample is smaller than the sample assigned, if some of the replacement families used to replace ineligible families were not statistically equivalent to the program and/or control families.

Attrition Between Recruitment and Notification of Assignment. Across the sites, varying lengths of time elapsed between recruitment of a family and notification about their group assignment. In projects where the elapsed time involved weeks or months, families often were lost before they could be notified of assignment, most often because the family moved out of the recruiting area. For the purposes of the evaluation, it was assumed that this attrition *before notification of assignment* was not biased across the program and control groups. Therefore, we did not track and assess recruited families who could not be located for notification of assignment.

One exception to this rule was made. In some projects, families assigned to the control group were notified of assignment by mail. In these sites, some families who were sent letters could not be located for verification of assignment and enrollment. Unless the project received a returned letter, unopened, it was assumed for the purposes of the evaluation that the family knew of its assignment. Therefore families who were notified by mail but did not enroll are considered the same as refusals. We included these families in the evaluation sample.

Attrition at Enrollment. After recruitment, families were assigned to a group and then were notified of their assignment. At this time, the family was enrolled in either the program or the control group and additional background information was collected. Upon being notified, families either agreed to participate, refused to participate, were determined to have become ineligible, or were unlocatable or had moved. As discussed above, if the family became ineligible or could not be located at the time of assignment, the family was not followed as part of the evaluation sample. Families who refused participation were included in the evaluation sample. Exhibit A.3 indicates the rate of refusals for the program and control groups in each site.

- Among *program* families, 16 of 23 projects had rates of refusal below 10 percent. Another 5 projects had refusal rates of 10 percent to 20 percent. Only 2 of the projects had refusal rates over 20 percent.
- Among *control* families, 19 of the projects report refusal rates below 10 percent.

As discussed above, all of these refusals are included in the evaluation sample and were asked to participate in the assessments.

SUMMARY

Random Assignment. All but one of the projects*randomly* assigned families to the program and the control group, establishing statistically equivalent groups for analysis purposes.

Recruitment of Families into the Study. Fifteen of 23 projects successfully recruited 90 percent or more of the eligible program and control families into the sample (i.e., they had refusal rates of 10 percent or less). Only 3 of the projects had refusal rates of more than 20 percent.

Assignment to the Replacement Group. Sixteen of the projects randomly assigned families to three groups (program, control and replacement) for at least some of the waves of recruitment, thereby establishing a pool of statistically equivalent replacement families.

Use of Replacement Families. Replacement families were included in the evaluation sample only in projects where there was a pool of statistically equivalent replacements and only to replace families who were not notified of assignment to either the program or control group. Replacement families entered the evaluation sample in two ways:

- Two of the projects used some replacement families to meet their initial recruitment goal, when they were unable to recruit sufficient numbers of families to fill up the program and control groups.
- Seventeen of the projects used replacement families to replace originally-assigned families who were determined to be ineligible at enrollment or who were lost/moved before notification of assignment to a group; in 13 of these projects, some or all of the replacement families assigned to program/control groups were included in the evaluation sample.

Recordkeeping. All but one project kept records that were acequate to allow the evaluation team to contact the recruited families.

Exhibit A.1
NUMBER OF FAMILIES TO BE RECRUITED FOR PROGRAM AND CONTROL GROUPS BY CCDP PROJECTS

PROJECT	NUMBER OF FAMILIES PER GROUP
Albuquerque	180
Baltimore	120
Boston	120
Brattleboro	60
Brooklyn	120
Denver	120
Fort Totten	45
Fort Worth	120
Glenwood City	60
Grand Rapids	120
Kansas City	120
Las Cruces	120
Lexington	120
Little Rock	120
Logan	60
Marshalltown	98
Nashville	60
Phoenix	120
Pittsburgh	120
San Antonio	120
Seattle	120
Venice	120
Washington, D.C.	160
Total Families per Group	2,623

Exhibit A.2
CCDP SAMPLE RECRUITMENT AND ASSIGNMENT

	LOGAN	ALBUQUERQUE	LAS CRUCES
Sample Stratifiers	• age of mother (teen, nonteen) • ethnicity • site (2)	• site (3)	• site (2) • ethnicity (2)
Assignment to Groups	• Assigned equally to three groups	• Assigned equally to three groups	• Assigned equally to three groups
Random Assignment Procedure	• CSR method (see appendix)	• CSR method	• CSR method
	FT. WORTH	**SAN ANTONIO**	**BOSTON**
Sample Stratifiers	• race (3)	• site (2)	• age of mother (teen, nonteen) • ethnicity
Assignment to Groups	• Assigned equally to three groups	• Assigned equally to three groups	• Assigned equally to three groups
Random Assignment Procedure	• CSR method	• CSR method	• CSR method
	PITTSBURGH	**NASHVILLE**	**BALTIMORE**
Sample Stratifiers	• site (3)	• site (5) • race (2) • age of mother (teen, nonteen)	• site (2)
Assignment to Groups	• Assigned randomly to three groups	• Assigned randomly to three groups in first two rounds • Recruited only replacements in third round	• Assigned equally to three groups in first round • Round 2: Recruited only P & C and used replacements • Later rounds: Recruited only replacements
Random Assignment Procedure	• CSR method	• Assigned all possible recruits a random number and listed families in order • Then assigned sequential pairs to program/comparision and recruited in order	• CSR method

Exhibit A.2
(continued)

	LITTLE ROCK	MARSHALLTOWN	KANSAS CITY
Sample Stratifiers	• site (3)	• site (3)	
Assignment to Groups	• Assigned first wave to program; control and replacement groups • Additional replacements recruited separately later	• Assigned to three groups with 3:3:1 ratio (P:C:R) in first waves • In last waves, recruited only replacements	• Assigned equally to three groups in first round • Recruited additional replacements in later round
Random Assignment Procedure	• Computer-generated random numbers assigned to families	• CSR drew sample using list and sampling fraction	• CSR method
	BRATTLEBORO	**LEXINGTON**	**GRAND RAPIDS**
Sample Stratifiers		• site (3)	• ethnicity (2)
Assignment to Groups	• Assigned equally to three groups under Round 3; then assigned replacements to fill P & C • Round 4: Recruited only replacements	• Assigned equally to three groups in first two rounds; in remaining rounds, recruited only P & C and assigned replacements to P & C	• Assigned equally to three groups in first eight rounds • In Rounds 8 and 9, recruited only P & C and used some replacements • Rounds 10 & 11, recruited additional P & C • Rounds 12 & 13, recruited only replacements
Random Assignment Procedure	• CSR method	• CSR method	• CSR method
	WASHINGTON, D.C. (DROPPED FROM THE EVALUATION SAMPLE)	**SEATTLE**	**GLENWOOD CITY**
Sample Stratifiers	• ward (4) • age of mother (teen, nonteen) • race (black, Hispanic)	• site (3)	• site (3) • age of mother (teen, nonteen) • urban/rural • reservation/nonreservation
Assignment to Groups	• Assigned to three groups in first two rounds • In Round 3, assigned original replacements to P & C	• Assigned from list to two groups; ascertained agreement to participate *before* notifying of group and "replaced" participants with next name on list • Round 3: Recruited additional replacements only	• Assigned only to P & C in first two rounds • Round 3: Recruited replacements and a small number of Native American families to fill P & C quotas
Random Assignment Procedure	• CSR method	• Used lists of families and used computer-generated randomization program	• All families randomly assigned by computer

Exhibit A.2
(continued)

	BROOKLYN	PHOENIX	VENICE
Sample Stratifiers			• site (3)
Assignment to Groups	• Assigned first rounds of families to P & C only • Recruited replacements separately in later waves	• Assigned to P & C first • Recruited replacements later	• Assigned randomly to P & C • Recruited replacements later
Random Assignment Procedure	• CSR drew sample using alphabetical lists and sampling fraction of three	• CSR drew sample and assigned groups	• Used computer-generated randomization program
	DENVER	**FT. TOTTEN (DROPPED FROM THE EVALUATION SAMPLE)**	
Sample Stratifiers		• site (3)	
Assignment to Groups	• Assigned to two groups by list and "replaced" from list • Round 3: Recruited replacements only	• Of 103 originally recruited families, 45 randomly assigned to P; 23 refused or wanted to be put in C and were randomly replaced from remaining 58 • Recruitment for C was done from remaining families and new recruits	
Random Assignment Procedure	• Used lists of families; assigned randomly to P & C, then contacted families moving down list as families refused, etc.	*See above*	

EXHIBIT A.3
CCDP EVALUATION SAMPLE ATTRITION

Project	Number of Program Children							Number of Control Children						
	Enrollment goal	Assigned to group	Agreed (# of re-placement families	Lost, ineligible before notification	Refused at enrollment	In evaluation sample	Inactive as of 9/15/91,	Enrollment goal	Assigned to group	Agreed (# of re-placement families	Lost, ineligible before	Refused at enrollment	In evaluation sample	Inactive as of 9/15/91,
Albuquerque	180	180	168	10	2 (1%)	180 (120[g])	32 (27%)	180	180	169	9	2 (1%)	180 (120[g])	20 (17%)
Baltimore	120	124[a,b]	105	7* (5)	13 (11%)	123	18 (15%)	120	122[b,d]	94	8* (7)	16 (14%)	117	20 (17%)
Boston	120	122[a,b]	106	9	7 (6%)	122	29 (24%)	120	120[b,d]	87	30* (27)	3 (3%)	117	7 (6%)
Brattleboro	60	62[c]	62 (6)	0	0 (0%)	62	6 (10%)	60	60	60 (7)	0	0 (0%)	60	1 (2%)
Brooklyn	120	120	100 (15)	10	10 (8%)	120	30 (25%)	120	120	107 (32)	5	8 (7%)	120	10 (8%)
Denver	120	120	100	0	20 (17%)	120	47 (39%)	120	120	122[b]	0	0 (0%)	120	4 (3%)
Fort Totten	45	68[a,h]	31	16[h]	21 (31%)	68	15 (22%)	45	9[h]	9[h]	0	0 (0%)	(9)	0
Fort Worth	120	118	92	26	0 (0%)	118	24 (20%)	120	122[b,c]	103	18	0 (0%)	122	0
Glenwood City	60	60	60	0	0 (0%)	60	4 (7%)	60	60	60	0	0 (0%)	60	3 (5%)
Grand Rapids	120	121[b]	121	0	0 (0%)	121	26 (21%)	120	119[d]	119	0	0 (0%)	119	14 (12%)
Kansas City	120	121[a]	84	24* (18)	13 (11%)	115	20 (17%)	120	118[d,e]	85	4	29 (25%)	118	32 (27%)
Las Cruces	120	121[b]	99	18	4 (3%)	121	7 (6%)	120	122[b]	110	11* (10)	1 (1%)	121	4 (30%)
Lexington	120	121[b]	100	21	0 (0%)	121	43 (36%)	120	123[b,c]	102	21	0 (0%)	123	3 1 (25%)
Little Rock	120	122[b]	122	0	0 (0%)	122	11 (9%)	120	121[b]	121	0	0 (0%)	121	2 (2%)
Logan	60	62[a,b]	62	0	0 (0%)	62	21 (34%)	60	58[bd]	58	0	0 (0%)	58	1 0 (17%)
Marshalltown	98	99[b]	95	4	0 (0%)	99	28 (28%)	98	99[a]	95	4	0 (0%)	99	6 (6%)
Nashville	60	60	38	16** (0)	6 (14%)	44	5 (11%)	60	60	42	27** (0)	4 (9%)	46	4 (9%)
Phoenix	120	121[b]	109	12* (5)	0 (0%)	114	16 (14%)	120	121[b]	100	20* (7)	1 (1%)	108	8 (7%)
Pittsburgh	120	118	103	8	7 (6%)	118	21 (18%)	120	121[b]	110	8	3 (3%)	121	14 (12%)
San Antonio	120	120	101	10	9 (8%)	120	17 (14%)	120	122[b]	109	9	4 (3%)	122	4 (3%)
Seattle	120	121[b]	104	17	0 (0%)	121	1 (1%)	120	121[b]	98	23	0 (0%)	121	0
Venice	120	120	95	4* (0)	21 (18%)	116	22 (20%)	120	117[b,e]	90	2* (0)	26 (23%)	116	23 (20%)
Washington, DC	160	322[h,k]	155[h,k]	(up to 167) [h,k]	unkn. [h,k]	120	20 (17%)	160	250[h,k]	133[h,k]	(up to 117) [h,k]	unkn.	120	20 (17%)

EXHIBIT A.3
(CONTINUED)

[a] Increased sample size because families originally assigned to one group were switched to other group so as to be in the same group as another family member.
[b] Increased sample size because of twins.
[c] Group overenrolled by project.
[d] Decreased sample size because families originally assigned to one group were switched to other group so as to be in the same group as another family member or switched out of study because of misassignment.
[e] Underenrollment of assigned families.
[g] 120 families randomly selected for evaluation sample.
[h] See attachments for description of assignment procedures used in site.
[i] Ten additional families who were assigned to program moved to control group by choice and are considered control families by the project; for the evaluation, these families will be treated as inactive program families (refusals).
[j] 118 families assigned, with one set of twins.
[k] Estimated.
* Only some of the families used as replacements were drawn from a statistically significant replacement pool and only equivalent replacements were included in the evaluation sample; programs cannot identify originally-assigned families:
- Baltimore—only 5 of 7 replacement program families could be used in the evaluation; only 7 of 8 replacement control families.
- Kansas City—only 18 of 24 replacement program families could be used.
- Las Cruces—only 10 of II control families could be used.
- Phoenix—only 5 of 12 program families could be used; only 7 of 20 control families.
- Boston—only 27 of 30 replacement control families could be used.
- Venice—0 of 4 replacement program families could be used; 0 of 2 replacement control families.

** Did not have statistically-equivalent replacements to match stratification requirements in replacing ineligible families.

ATTACHMENT A

CSR INCORPORATED'S PROCEDURE FOR RANDOM ASSIGNMENT OF FAMILIES TO PROGRAM, CONTROL AND REPLACEMENT GROUPS FOR A CCDP SERVING 120 FAMILIES

Read all instructions before beginning:

1. On worksheet # 1 list in alphabetical order by last name all the eligible recruited families. (360 families)
2. Since you need 120 families in each group and you have three times this number, your sampling interval is three (3). You will select every third family and assign it to the program group. When the program group is filled (120 families), you will continue to select every third family from those remaining, and assign it to the control group. When the control group is filled, the remaining families will be the replacement families.
3. You must begin with a random start. The random start for your project is 1. Pick the first family on your list and assign it to the program group. Cross that family off your worksheet # 1 and write its name on worksheet number 2—the program list.
4. Count down three families and select the third family (this will be actually the fourth family on your worksheet # 1). Cross that family off worksheet # 1 and write its name on worksheet #2.
5. Continue this process until you fill your program group.
6. When you fill your program group continue counting and selecting families in the same manner, assigning the next 120 families selected to the control group. Write their names in the order selected on worksheet # 3. When you reach the end of your worksheet # 1 list go back to the top of the list and begin again. The second time you go through your worksheet # 1 list count only those families that have not been crossed off (i.e. those not yet selected).
7. When you have filled the control group, the remaining families are replacement families. Write their names in alphabetical order on worksheet # 4.
8. If you have not yet recruited three times the total number of families needed for your program group, you can still randomly assign those that you have recruited. Divide the total number recruited by 3 and assign families to program, control and replacement groups in the same way as described above. You will fill the program group when you have assigned one-third of the families. For example if you have only recruited 60 families, your program group size will be 20 families. Randomly assign families to the program group until you reach 20, and then randomly assign to the control group until you have 20 families. The final 20 families will be replacement families.

APPENDIX B

SAMPLE CHARACTERISTICS

CHARACTERISTICS OF CHILDREN IN THE EVALUATION

This discussion provides information about the "focus child" in each family in the evaluation. The focus child was identified at the time of recruitment into the study, and the plan was that each focus child would either be a newborn infant or would be born soon after recruitment.

Half of the children who participated in the CCDP evaluation were males (50.2 percent) and half were females (49.8 percent). The race/ethnicity of participating children is shown in Exhibit B.1, and three racial/ethnic groups accounted for most of the sample: 43.1 percent of children in the sample were African-American, 26.2 percent were Hispanic, and 26.6 percent were white. In addition, 2.8 percent were American Indian and 1.3 percent were Asian.

Exhibit B.2 shows the distribution of the age of focus children at the time of recruitment into the CCDP evaluation. Women with unborn children were recruited, as well as mothers with newborns. Unborn children are shown in the exhibit as having an age less than zero. About one-third of the mothers in the evaluation were pregnant when recruited into the program. Another 11.6 percent were recruited around the time of the birth of the focus child. The remaining 57.9 percent were recruited after their child was one or more months of age. This exhibit shows the wide age range of focus children participating in the evaluation—the youngest CCDP children were about two years younger than the oldest CCDP children.

CHARACTERISTICS OF PARENTS/FAMILIES IN THE EVALUATION

Although CCDP was intended to provide services to many adults in a household, the evaluation focused on the mother who was recruited into the evaluation. Exhibits B.3 through B.9 describe the mothers and families originally assigned to participate in the evaluation.

The primary language of families in the evaluation sample is shown in Exhibit B.3. The great majority (84.2 percent) of families reported English as their primary language, while 13.7 percent said that Spanish was their primary language, and 2.1 percent had some other primary language. Exhibit B.4 shows mothers' age at the time of birth of their first child, for mothers in the evaluation sample. About 35 percent of the mothers were young teenagers (less than 18 years old) when they first gave birth. Another 25.7 percent were older teenagers (18 or 19 years of age), and the remaining 40 percent were 20 years of age or older.

A distribution of the educational status of mothers in the sample is given in Exhibit B.5. A substantial fraction of CCDP mothers (13.1 percent) never entered high school (reached eighth

grade or less). A larger proportion of mothers (38.2 percent) completed some high school, but did not graduate. Finally, almost one-half of mothers (48.7 percent) graduated from high school. Exhibit B.6 shows the marital status of mothers in the evaluation. Over half of the mothers (58.1 percent) were single and without a partner at the time of recruitment into the evaluation and one-quarter (25.1 percent) were married. The remainder were either separated (6.5 percent), single and living with a partner (5.8 percent), or widowed or divorced (4.5 percent). This pattern is just the reverse of national statistics. The Current Population Survey estimates that during 1988, 29.9 percent of the women who had a baby during 1988 were single, 55.7 percent were married, and 10.2 percent were widowed or divorced.

We also have information on the presence of a father or father-figure in the home. There was no father or father-figure in the home for over three-fifths of the families in the evaluation (61.7 percent), while a father or father-figure was present in the home in over one-third (38.3 percent) of the families.

Several variables characterize the poverty level of the families in the evaluation. One-third of the families (33.7 percent) lived in subsidized housing, and 57.6 percent did not have their own transportation. Exhibits B.7, B.8, and B.9 provide distributions of total household income, number of household members, and per-person income for the evaluation sample. As can be seen, over two-fifths of the families in the evaluation sample (43.5 percent) had total annual household income under $5,000. Another 41.8 percent had household income between $5,000 and $10,000. The remaining 14.7 percent had incomes over $10,000 per year. Household size ranged from one family member (4.4 percent pregnant women with no other household members) to eight or more family members. Most families had two (16.1 percent), three (24.3 percent), four (22.9 percent) or five (14.3 percent) members. Over half the sample (53.9 percent) fell in the range of $1,000 to $2,500 in per-person income per year.

RISK FACTORS FOR CHILDREN IN THE EVALUATION

In addition to the information presented above, data about pregnancy behaviors were collected from mothers participating in the evaluation and used to construct a set of “risk factors” for the focus children, factors which could well affect a child’s cognitive, socio-emotional, and physical development. Information about the risk factors is displayed in Exhibits B.10 through B.16.

One risk factor is the number of months that the mother was pregnant with the focus child before she first saw a doctor about her pregnancy. Mothers who did not see a doctor or who wait until late in their pregnancy before seeing a doctor were unlikely to receive appropriate prenatal care. Exhibit B.10 shows that over three-quarters (77.5 percent) of the mothers in the evaluation sample saw a doctor during the first trimester of their pregnancy with the focus child. Another 19.2 percent waited until the second trimester before seeing a doctor. Only 3.3 percent either did not see a doctor at all or waited until the final trimester of their pregnancy.

A second risk factor is whether the child was born prematurely. Exhibit B.11 shows that close to 90 percent of the children in the evaluation were full-term (delivered no more than two weeks prematurely). Of the remainder, 2.7 percent were three weeks premature, 4.7 percent were four weeks premature, and 4.4 percent were five or more weeks premature.

The third risk factor is a count of the number of pregnancy-related problems that the mother encountered while pregnant with the focus child. The greater the number of problems, the more likely it is that one or more will have a negative effect on the child. Examples of such problems include toxemia, premature labor, weight loss, and placenta previa. Exhibit B.12 shows that over three-quarters (77.8 percent) of the mothers in the evaluation sample reported no pregnancy-related problems, 13.6 percent reported one problem, 4.9 percent reported two problems, 2.6 percent had three problems, and 1.1 percent had four or more problems.

Another indication of health-related problems for children is whether the child had to spend time in a hospital's special care unit after birth. As is shown in Exhibit B.13, over four-fifths of the children in the sample (86.2 percent) did not spend any time in a special care unit. On the other hand, 7.1 percent of the children in the evaluation sample spent one to five nights in special care, 2.7 percent spent six to ten nights, and 4.0 percent spent 11 or more nights in the hospital.

Low birth weight (under 2,500 grams) and very low birth weight (under 1,500 grams) are key indicators of children who are likely to have developmental problems. Exhibit B.14 shows that a very small percentage of children in the sample were very low birth weight babies (1.4 percent), while an additional 8.4 percent were low birth weight babies. According to the National Center for Health Statistics, 6.9 percent of all births across the nation during 1988 were low birth weight. Most of the children in the evaluation sample (81.4 percent) weighed between 2,500 and 4,000 grams, while 8.8 percent weighed over 4,000 grams.

Three additional indicators of risk for children are whether their mother smoked, used alcohol, or used drugs during pregnancy. Exhibit B.15 shows that 71.4 percent of the mothers in the evaluation sample reported that they did not smoke at all during their pregnancy with the focus child; 1.9 percent reported smoking less than one cigarette a day, 9.5 percent smoked between one and five cigarettes a day, 10.1 percent smoked about half a pack—between six and 15 cigarettes a day, 5.7 percent smoked about one package—between 16 and 25 cigarettes daily, and only 1.4 percent smoked more than 25 cigarettes a day.

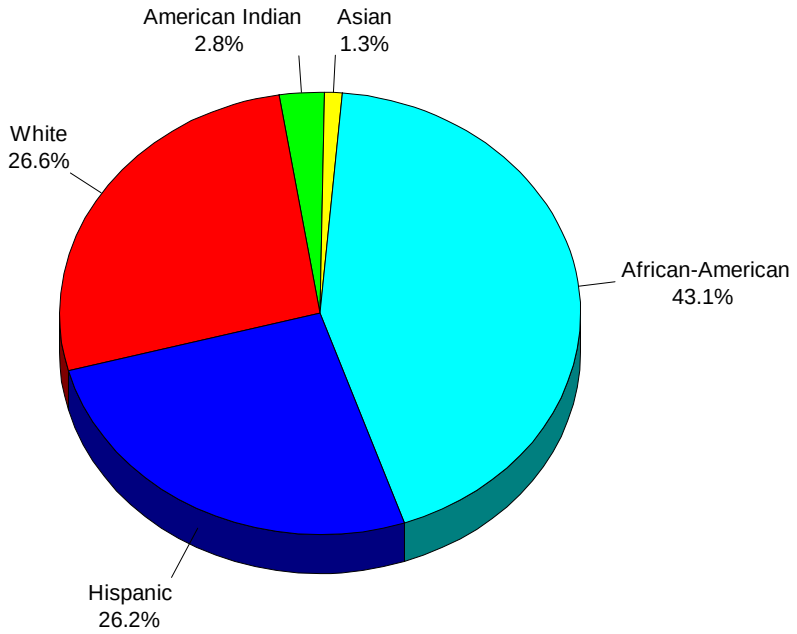
Exhibit B.16 shows that 88.0 percent of the mothers reported that they did not drink any alcoholic beverages during their pregnancy. An additional 6.4 percent drank only a few times during the pregnancy, 2.2 percent had a few drinks per month, 1.5 percent drank once a week, 1.3 percent had a few drinks per week, and 0.6 percent drank daily.

Finally, although not shown in an exhibit, only 2.8 percent of the mothers in the evaluation sample reported any drug use during pregnancy.

COMPARISON OF CCDP WITH HEAD START POPULATION

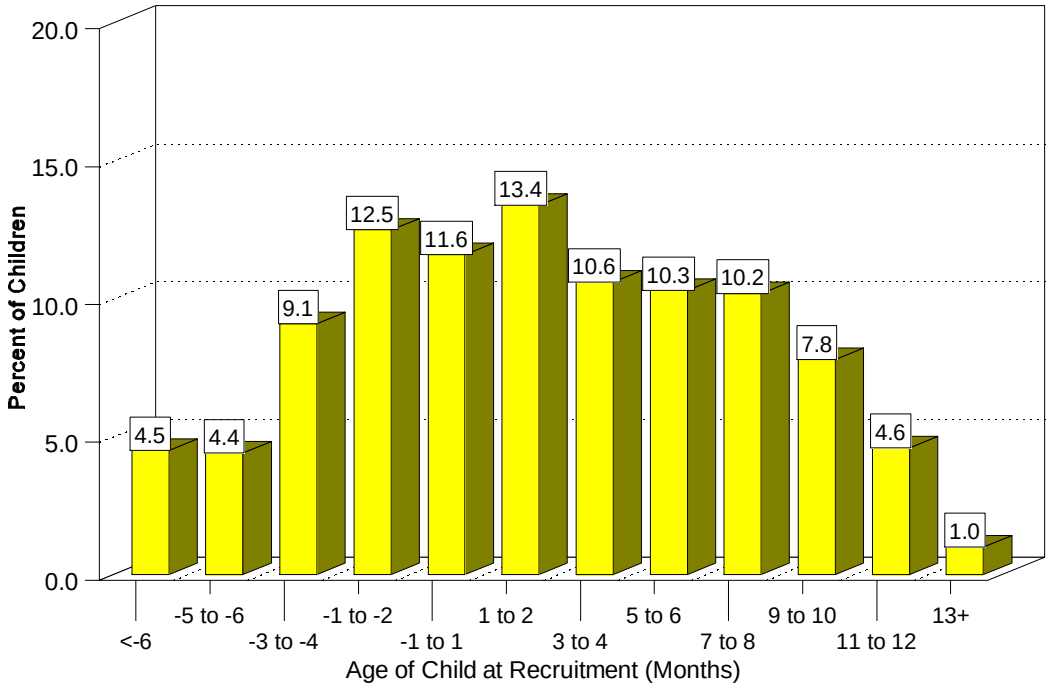
One of CCDP's objectives was to provide research evidence about ways to improve Head Start. Hence, it is important to determine the extent to which CCDP and Head Start families represent the same population. An analysis of selected characteristics of CCDP and Head Start families, as seen in Exhibit B.17, shows that the two groups were quite comparable in terms of household income, racial/ethnic composition, and primary language. The data show that CCDP families had a slightly lower income and were somewhat more likely to be Hispanic or African-American, compared with Head Start families. But these differences were not large.

Exhibit B.1: Race/Ethnicity of Children in the CCDP Impact Evaluation Sample



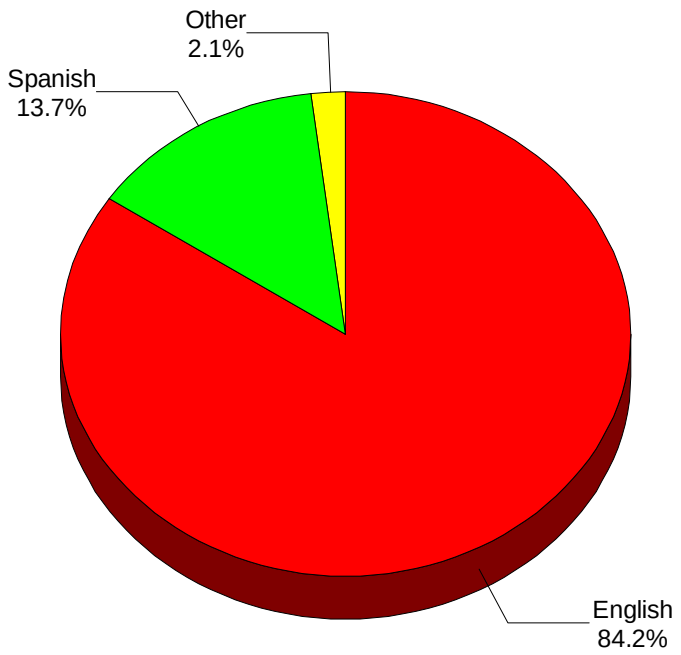
Source: MIS family profile at baseline

Exhibit B.2: Age (in Months) of Children at Recruitment in the CCDP Impact Evaluation Sample



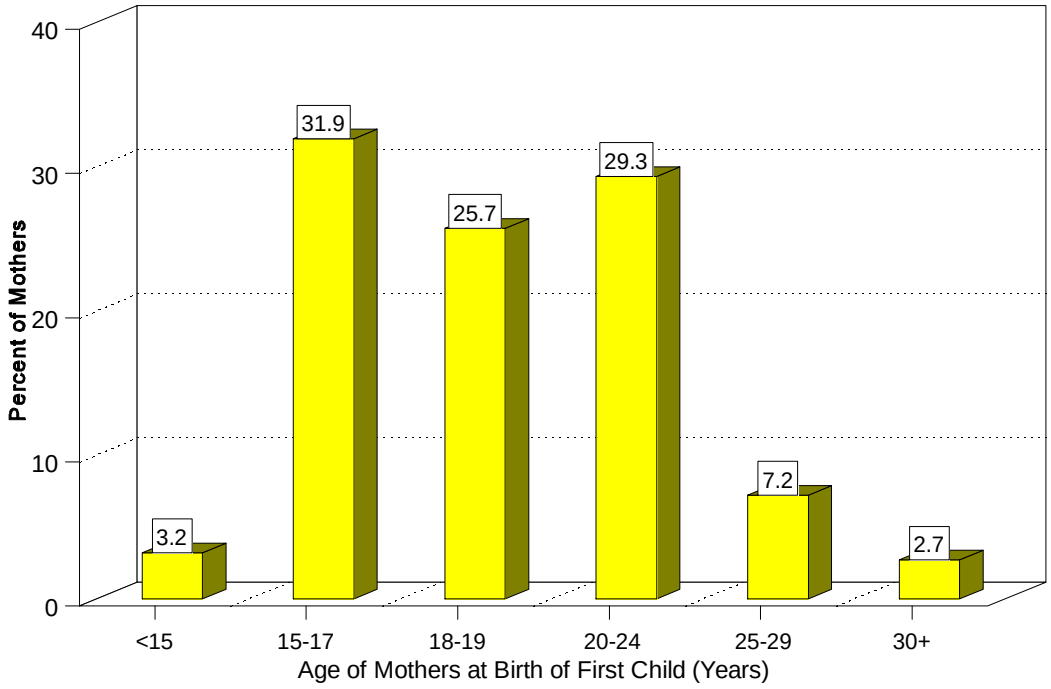
Source: MIS family profile at baseline

Exhibit B.3: Primary Language of Children in the CCDP Impact Evaluation Sample



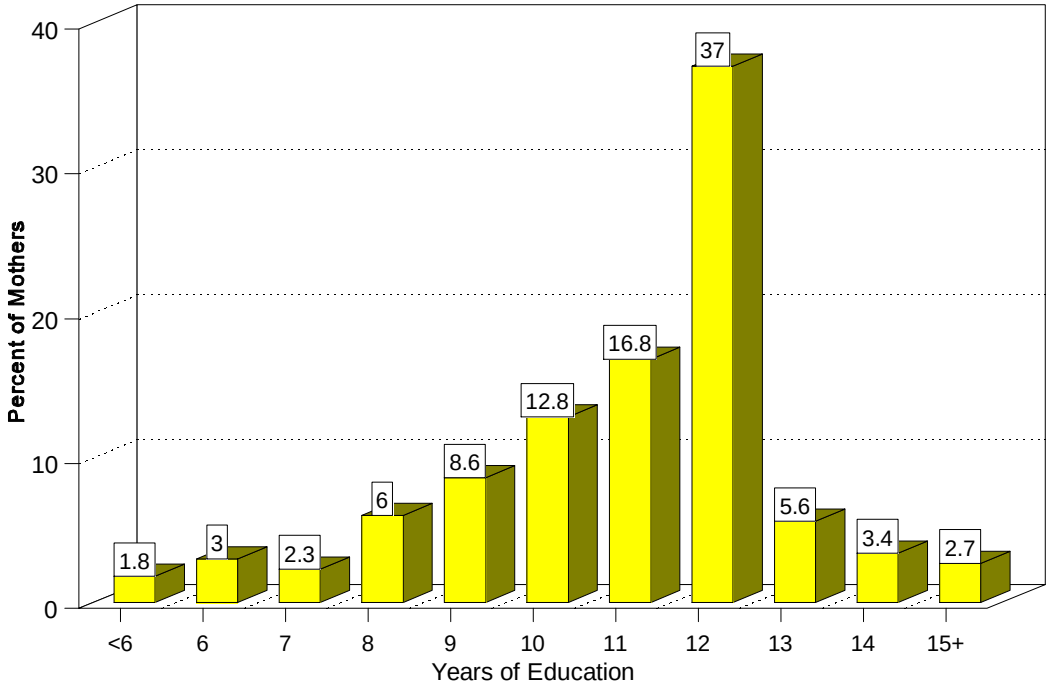
Source: MIS family profile at baseline

Exhibit B.4: Age (in Years) at Birth of First Child for Mothers in the CCDP Impact Evaluation Sample



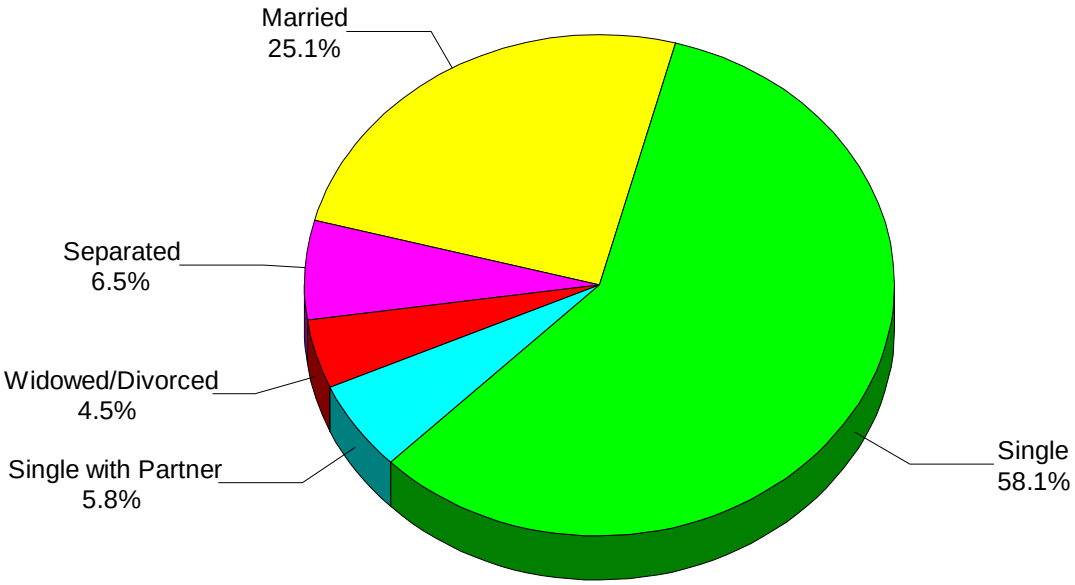
Source: MIS family profile at baseline

Exhibit B.5: Years of Education for Mothers in the CCDP Impact Evaluation Sample



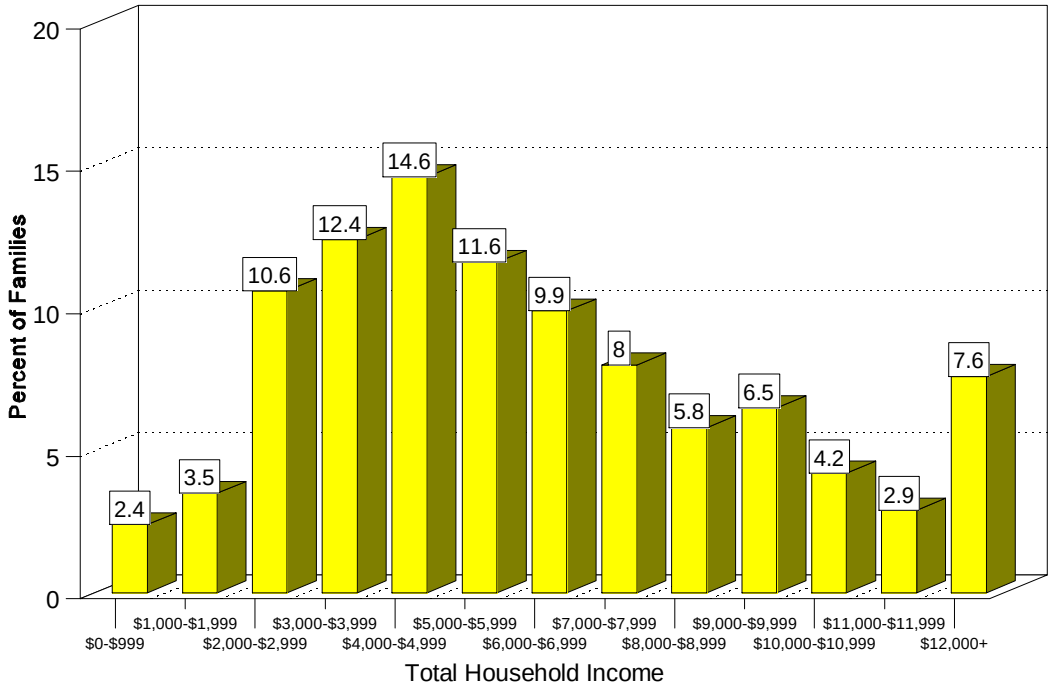
Source: MIS family profile at baseline

Exhibit B.6: Marital Status of Mothers in the CCDP Impact Evaluation Sample



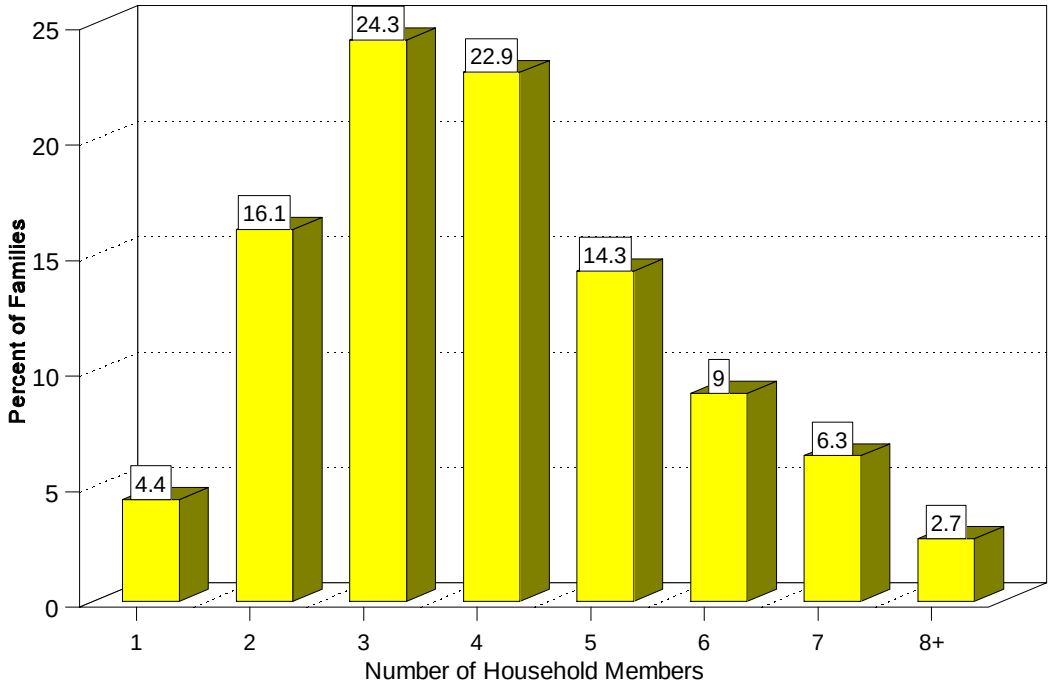
Source: MIS family profile at baseline

Exhibit B.7: Total Household Income for Families in the CCDP Impact Evaluation Sample



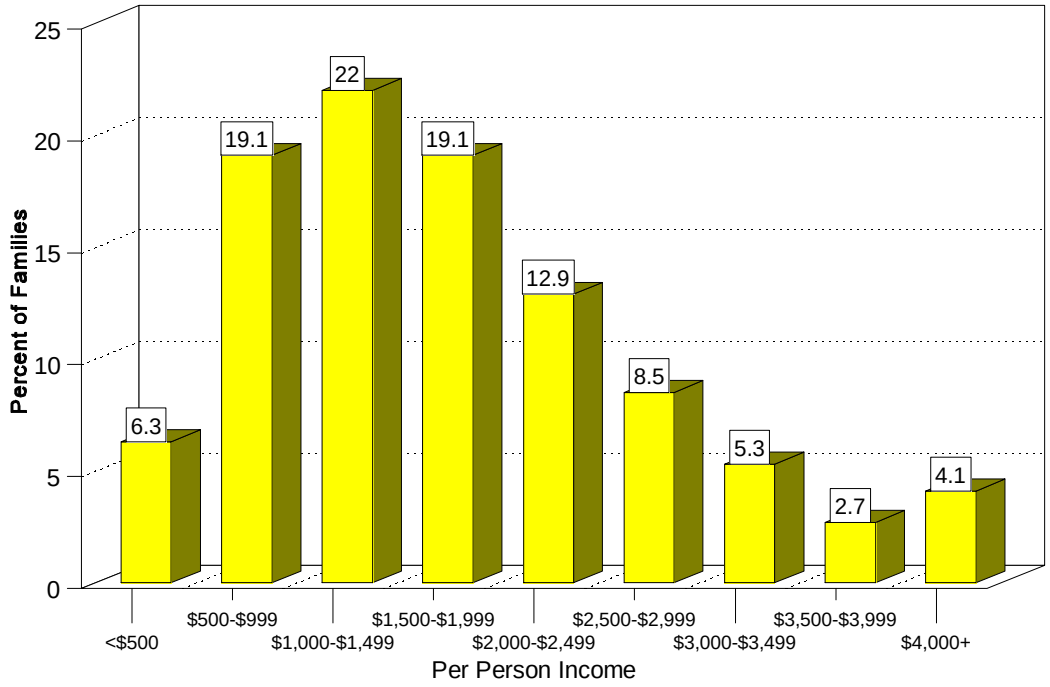
Source: MIS family profile at baseline

Exhibit B.8: Number of Household Members for Families in the CCDP Impact Evaluation Sample



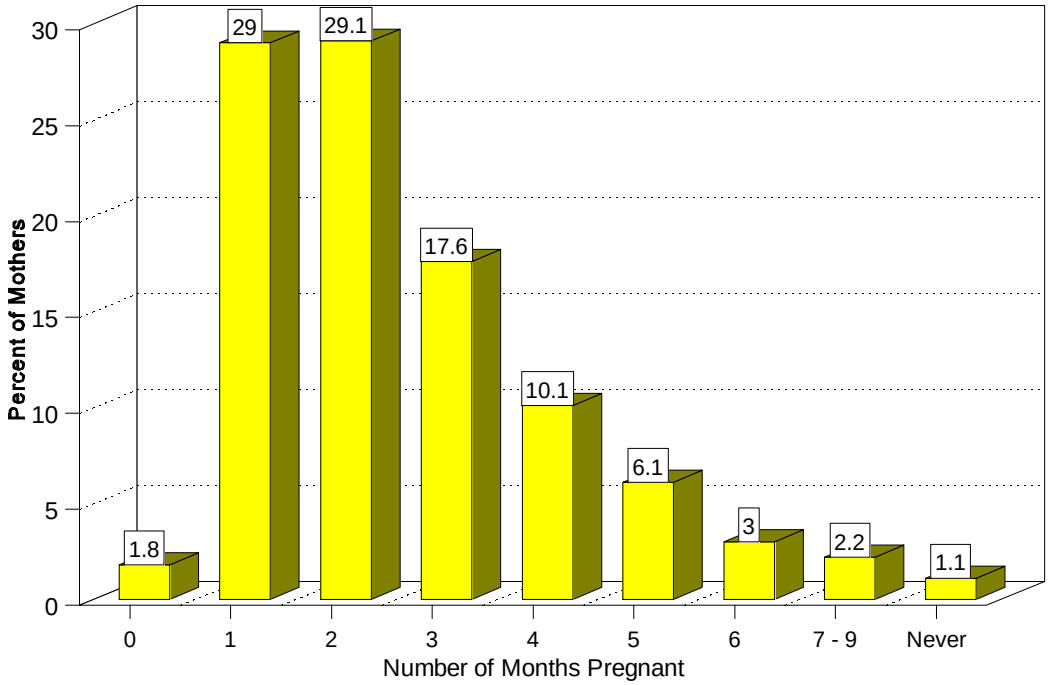
Source: MIS family profile at baseline

Exhibit B.9: Per Person Income for Families in the CCDP Impact Evaluation Sample



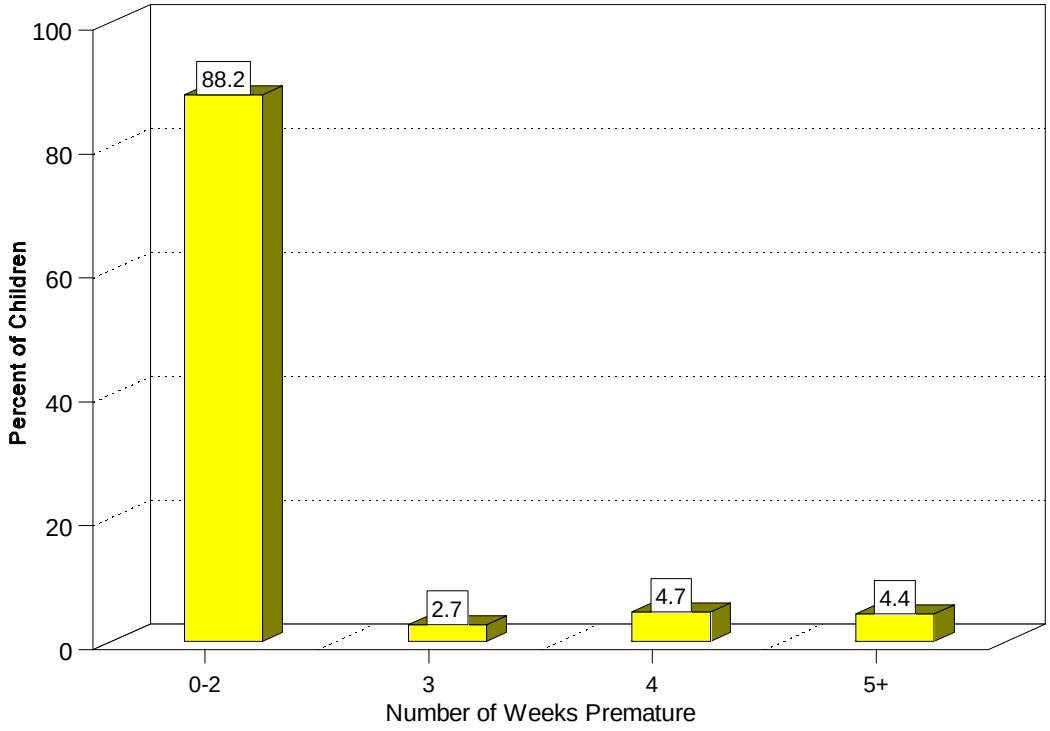
Source: MIS family profile at baseline

Exhibit B.10: Number of Months Mother was Pregnant with Focus Child When She First Saw a Doctor



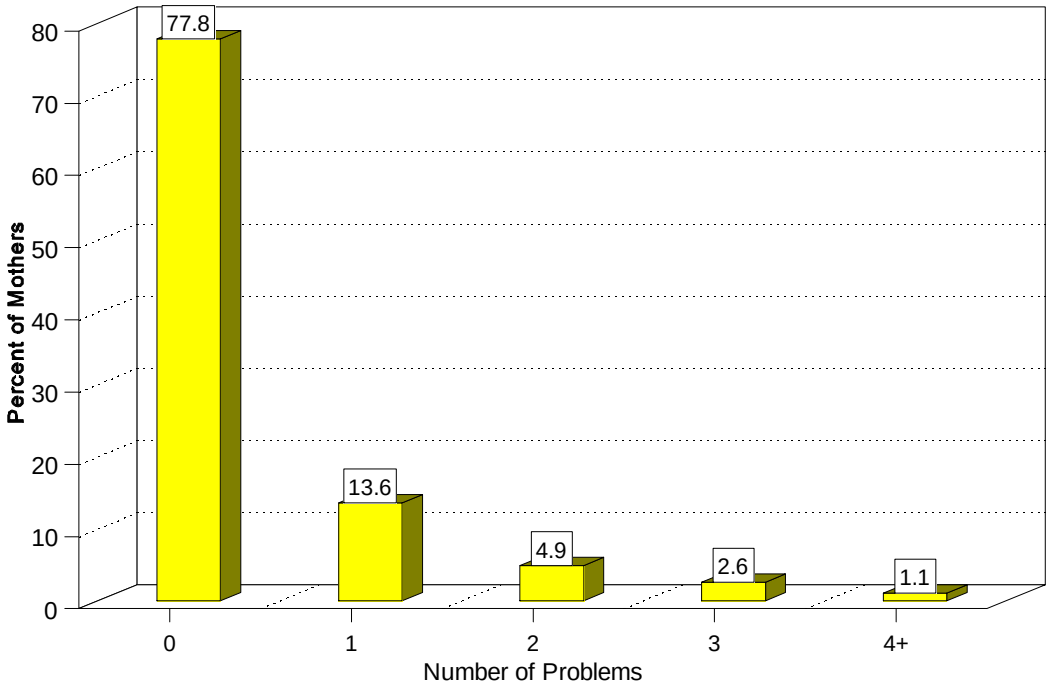
Source: Parent Interview survey items

Exhibit B.11: Number of Weeks Focus Child Was Premature



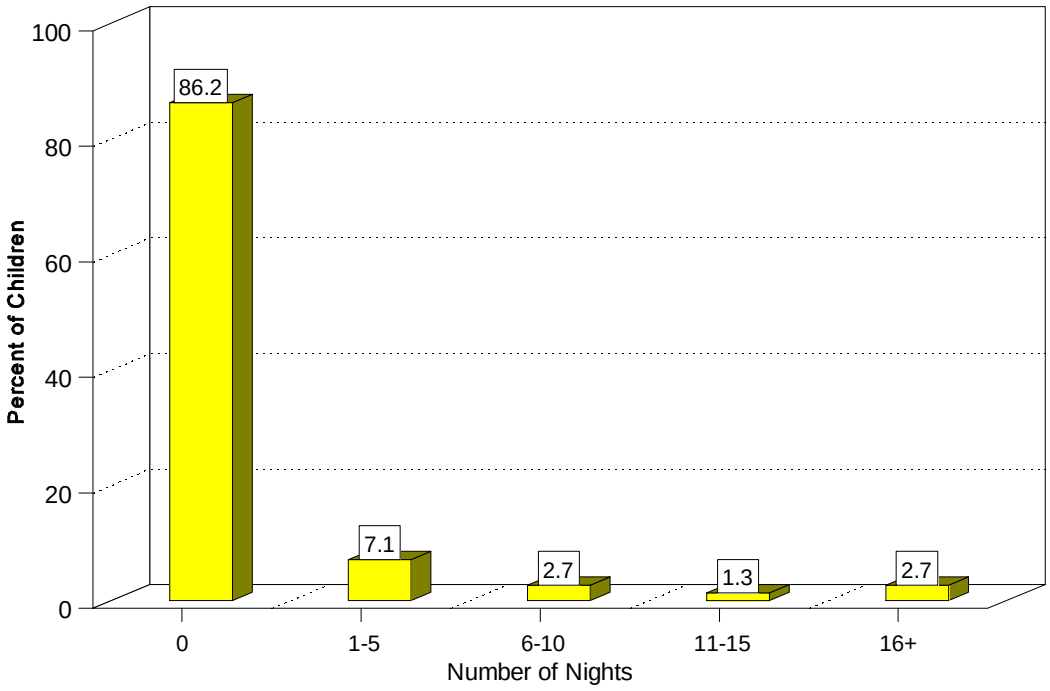
Source: MIS family profile at baseline

Exhibit B.12: Number of Problems During Pregnancy with Focus Child



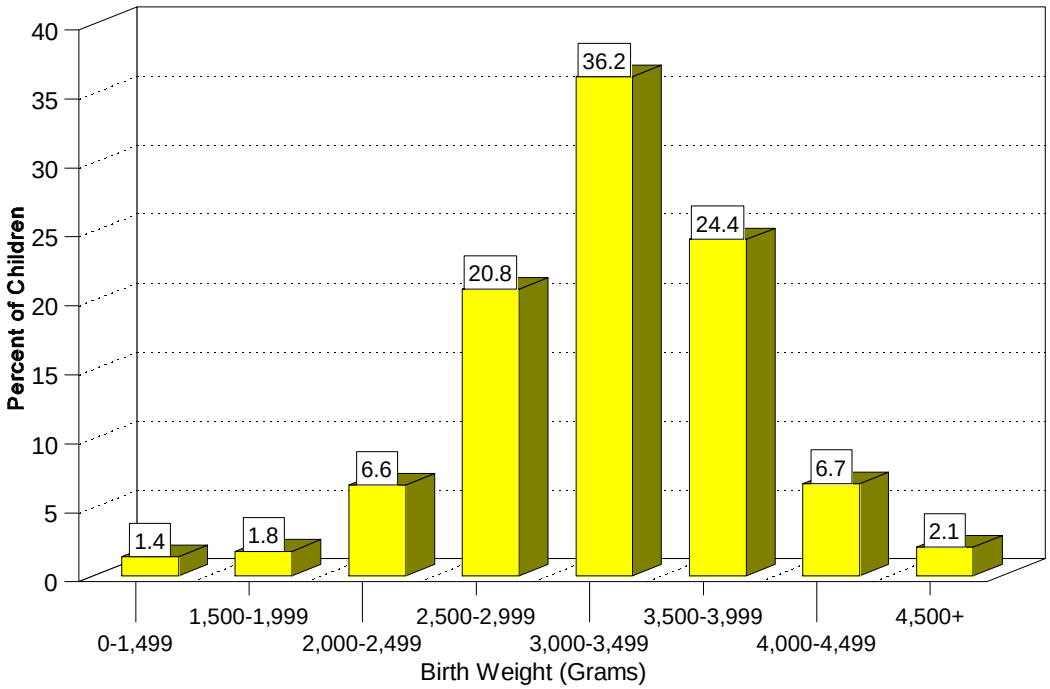
Source: Parent Interview survey items

Exhibit B.13: Number of Nights in Special Care Unit for Focus Children in the CCDP Impact Evaluation



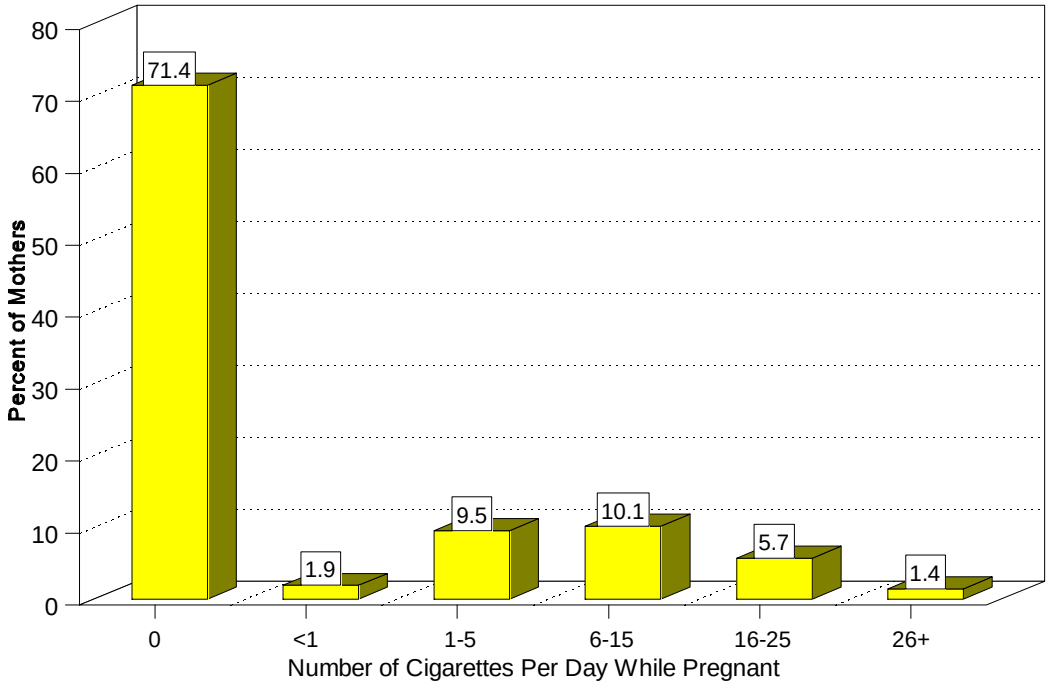
Source: Parent Interview survey items

Exhibit B.14: Birth Weight (Grams) for Focus Children in the CCDP Impact Evaluation Sample



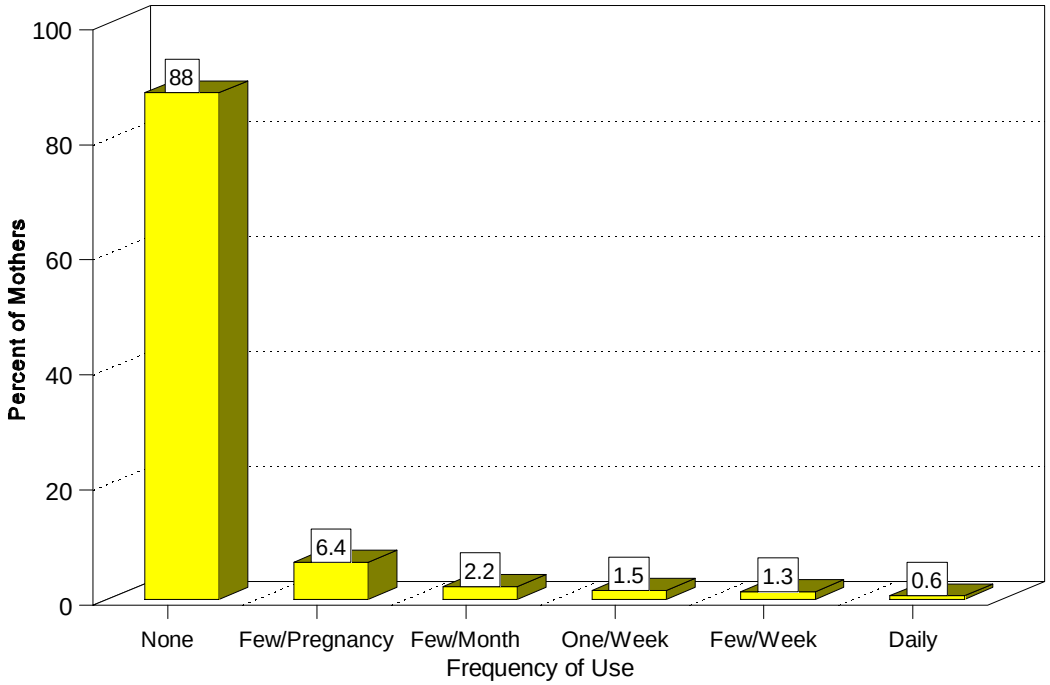
Source: Parent Interview survey items

Exhibit B.15: Number of Cigarettes Smoked Per Day While Pregnant with Focus Child



Source: Parent Interview survey items

Exhibit B.16: Frequency of Alcohol Use While Pregnant with Focus Child



Source: Parent Interview survey items

EXHIBIT B.17

COMPARISON OF CCDP AND HEAD START FAMILY CHARACTERISTICS

FAMILY CHARACTERISTIC	CCDP	HEAD START
Household Income		
Less than $3,000	16.3%	16.2%
$3,000 - $5,999	38.4%	31.6%
$6,000 - $8,999	24.4%	25.4%
$9,000 - $11,999	13.3%	17.0%
$12,000 or more	7.6%	9.9%
Race/Ethnicity		
African-American	42.2%	36.8%
American Indian	2.7%	3.9%
Asian/Pacific Islander	1.4%	3.2%
Hispanic	27.3%	21.5%
White	26.4%	34.6%
Dominant Language		
English	83.6%	81.1%
Spanish	14.2%	15.1%
Other	2.2%	3.8%

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