

National Impact Evaluation of the Comprehensive Child Development Program

Executive Summary

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Prepared for

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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

Preface and Acknowledgments

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.

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.,

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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

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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.

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

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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

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.

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

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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.

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.

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.

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.

The length of time that a family was enrolled in CCDP was not associated with educationally or substantively meaningful outcomes for families.

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.

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".

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.

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.

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.

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.

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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

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

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 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 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.

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.

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.

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.

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

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

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

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.

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

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.

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

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.

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.

REFERENCES

Administration on Children, Youth, and Families (1994). Comprehensive Child Development Program: A national family support demonstration, Interim report to Congress. Washington, DC: U.S. Department of Health and Human Services.

Administration on Children, Youth, and Families (February 1995). Project Head Start statistical fact sheet. Washington, DC: U.S. Department of Health and Human Services.

Barnes, H., Goodson, B. & Layzer, J. (February 1995). National evaluation of family support programs: Research review. Cambridge, MA: Abt Associates Inc.

Barnett, W.S. (February 1995). "Long-term effects of early childhood programs on cognitive and school outcomes." The future of children: Long-term outcomes of early childhood programs, 5(3): 25-50. Los Altos, CA: Center for the Future of Children, the David and Lucile Packard Foundation.

Bickman, L. (July 1996). "A continuum of care: More is not always better." American Psychologist, 51(7):689-701.

Burns, B., Farmer, E., Angold, A., Costello, E. & Behar, L. (in press). "A randomized trial of case management for youths with serious emotional disturbance." Journal of Clinical Child Psychology.

Campbell, D.T. (1971). Methods for the experimenting society. Paper presented at the meetings of the American Psychological Association, Washington, DC.

Cauce, A., Morgan, C., Wagner, M. & Moore, E. (February 1995). Effectiveness of intensive case management for homeless adolescents after nine months. Paper presented at the Eighth Annual Research Conference: A System of Care for Children's Mental Health: Expanding the Research Base, Tampa, FL.

CSR, Incorporated. (1997) Process evaluation of the Comprehensive Child Development Program. Washington, DC: CSR, Incorporated.

Huz, S., Evans, M., Morrissey, J. & Burns, B. (February, 1995). Outcomes from research on case management with serious emotional disturbances. Paper presented at the Eighth Annual Research Conference: A System of Care for Children's Mental Health: Expanding the Research Base, Tampa, FL.

Johnson, D. & Walker, T. (1991). Final report of an evaluation of the Avance parent education and family support program. Report submitted to the Carnegie Corporation. San Antonio, TX: Avance.

Larner, M., Halpern, R. & Harkavy, O. (1992). Fair Start for children: Lessons learned from seven demonstration projects. New Haven, CT: Yale University Press, 218-245.

National Commission on Children (1991). Beyond rhetoric: A new American agenda for children and families, final report. Washington, DC.

Olds, D., Henderson, C., Phelps, C., et al. (1993). "Effect of prenatal and infancy nurse home visitation on government spending." Medical Care, 31(2):155-74.

Quint, J.C., Polit, D.F., Bos, H. & Cave, G. (1994). New Chance: Interim findings on a comprehensive program for disadvantaged young mothers and their children. New York, NY: Manpower Demonstration Research Corporation.

Ramey, C. (1994). Personal communication. Birmingham, AL: University of Alabama at Birmingham, Civitan International Research Center.

Ramey, S.L. & Ramey, C.T. (1992). "Early educational intervention with disadvantaged children--To what effect?" Applied & Preventive Psychology, 1:131-140.

Schweinhart, L.J., Barnes, H.V. & Weikart, D.P. (1993). Significant benefits: The High/Scope Perry Preschool Study through age 27. (Monograph 10). Ypsilanti, MI: High/Scope Educational Research Foundation.

St.Pierre, R., Layzer, J., Goodson, B. & Bernstein, L. (June 1997). National impact evaluation of the Comprehensive Child Development Program: Final report. Cambridge, MA: Abt Associates Inc.

St.Pierre, R., Swartz, J., Gamse, B., Murray, S., Deck, D. & Nickel, P. (1995). National evaluation of the Even Start family literacy program: Final report. Cambridge, MA: Abt Associates Inc.

Wasik, B., Ramey, C., Bryant, D. & Sparling J. (1990). "A longitudinal study of two early intervention strategies: Project CARE." Child Development, 61: 1682-96.

Yoshikawa, H. (1995). "Long-term effects of early childhood programs on social outcomes and delinquency." The future of children: Long-term outcomes of early childhood programs, 5(3): 51-75. Los Altos, CA: Center for the Future of Children, the David and Lucile Packard Foundation.

National Impact Evaluation of the Comprehensive Child Development Program

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CHAPTER I

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 Kauai 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, accessibility, 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.

¹A “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.

²The 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 managers 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 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 meet 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 years³

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.

³It 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

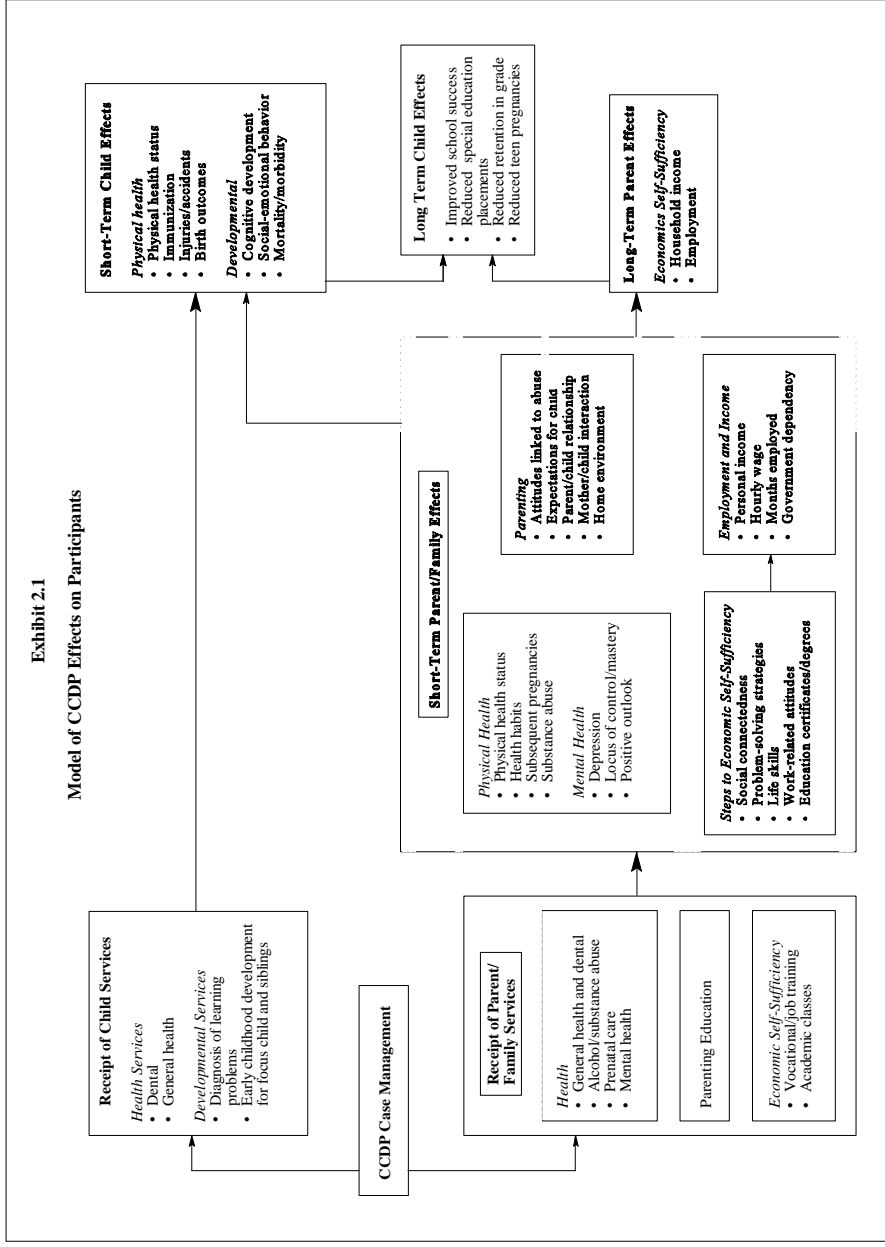
The process study report prepared by CSR, Incorporated draws many important conclusions about the implementation of local projects participating in the CCDP demonstration. Some of these conclusions based on early implementation of CCDP projects are quoted here (ACYF, 1994, xxx - xxxiii):

- **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.



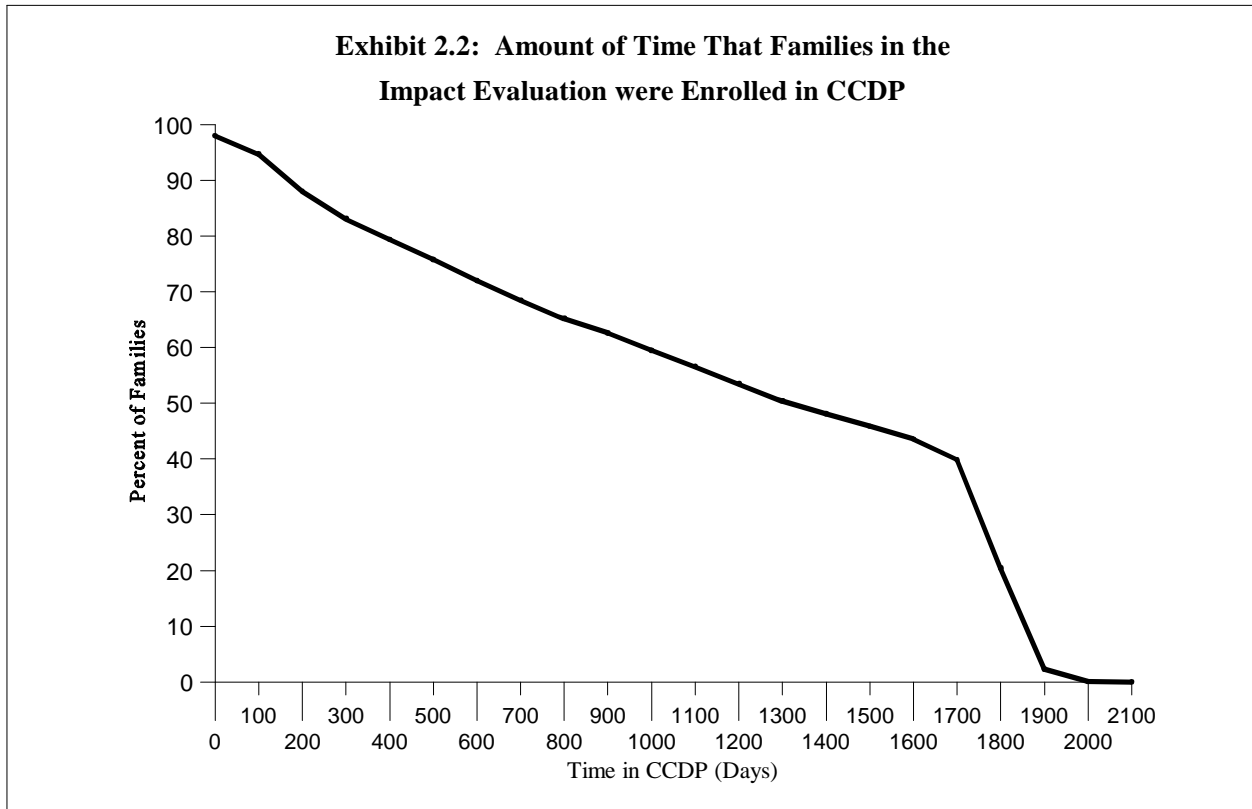


EXHIBIT 2.3		
NUMBER OF DAYS ENROLLED BY AVERAGE CCDP FAMILY, BY SITE		
SITE ID	MEAN	STANDARD DEVIATION
01	946	623
02	1,390	598
03	855	639
05	1,236	547
06	1,183	651
07	1,161	726
08	1,603	504
09	1,078	692
10	1,273	579
11	1,483	534
12	1,335	662
13	1,496	574
14	1,313	617
15	1,208	682
16	1,001	712
17	1,263	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

¹One 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 deliver 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.

MEASUREMENT³

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,

²Chi-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.

³Copies 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 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

⁴In 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.

⁵Because 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.

⁶The 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).

⁷The 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:

$$Y_{ij} = \beta_0 + \beta_1 P_{ij} + \beta_2 S_{ij} + \sum_{k=1}^K \beta_k X_{ki} + \epsilon_{ij} \quad (1)$$

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 ($j = 1 \dots J-1$),

X_{ki} are baseline characteristics of family i (i.e., those measured prior to participation in CCDP, such as ethnicity) for $k = 1 \dots K$ 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 variables⁸. 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.

⁸The 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 $\Pr(Y_i = 1 | X, Z_1, \dots, Z_k)$, 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, \dots, Z_k represent the value of k covariates. The functional form of the model can be expressed as follows:

$$p_i = \frac{\exp(\beta_0 + \beta_1 P_{ij} + \beta_2 S_{ij} + \beta_3 X_{ki})}{1 + \exp(\beta_0 + \beta_1 P_{ij} + \beta_2 S_{ij} + \beta_3 X_{ki})} \quad (2)$$

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, $\exp(\beta_j)$'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:

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

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.

⁹Although 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.

¹⁰For 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 occurring in the program group is twice as great as the odds of the event occurring 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:

$$Y_{ij} = \beta_{0j} + \beta_{1j}(t_{ij} - C) + R_{ij} \quad (4)$$

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),

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

β_{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 β_{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 β_{0j} is made interpretable. When $C = 0$, then $\beta_{0j} = 0$, or time of birth of child. In other words, “initial status” is dependent on the chosen time of C . The intercept parameter, β_{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, β_{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, β_{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 β_{kj} are random outcome variables. A between-person model estimated within each site (assuming no site-level effects) was formulated for both the intercept, β_{0j} , and growth rate parameter, β_{1j} , as follows:

¹¹The 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.

$${}_{0j} = {}_{00} + {}_{01}TX_j + {}_{0k}X_{kj} + U_{0j} \quad (5)$$

$${}_{1j} = {}_{10} + {}_{11}TX_j + {}_{1k}X_{kj} + U_{1j} \quad (6)$$

where,

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

${}_{1j}$ 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,

¹²The 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 β_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.

¹³For 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:

$$Y_{ij} = \beta_0 + \beta_1 P_{ij} + \beta_2 S_{ij} + \sum_k \beta_k X_{ki} + \epsilon_{ij} \quad (7)$$

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 ($j = 1 \dots J-1$),

X_{ki} = baseline characteristics of person i (other than the subgroup indicator) for $k = 1 \dots K$ 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

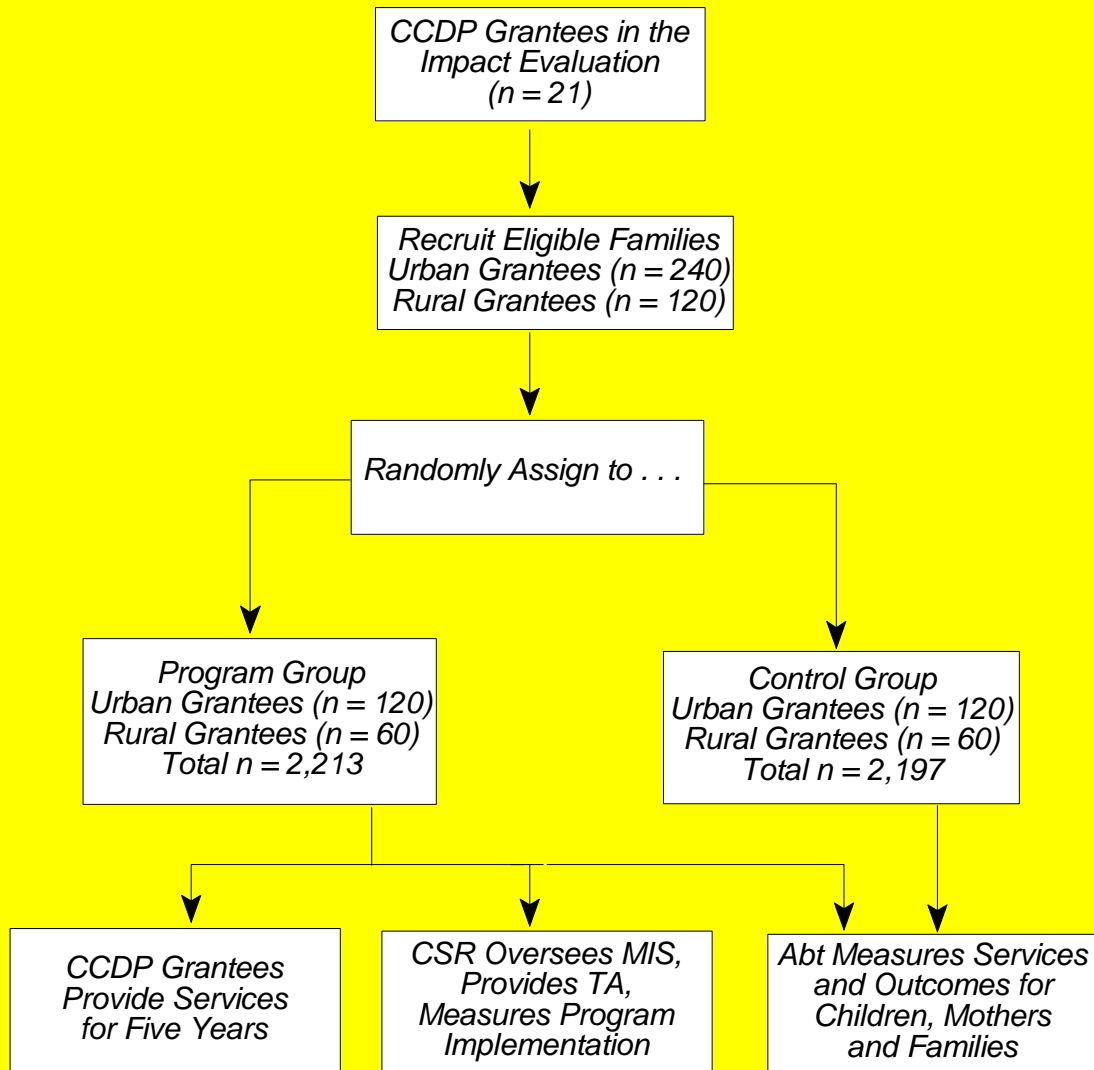


EXHIBIT 3.2												
NUMBER OF PROGRAM FAMILIES RECRUITED, BY SITE AND MONTH												
SITE ID	MONTH (1990)											
	J	F	M	A	M	J	J	A	S	O	N	D
01							23	85	14			
02	1	3	13	15	13	8	3	4				1
03				38	37	16	6		6	1	1	
05						50	33	31	1			
06				49	47	15	9	1				
07				8	25	36	23	22	6			
08							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 time² 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

¹Measurements 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.

²There 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

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 employd	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 4.22			
SUMMARY OF CCDP'S EFFECTS ON PARENTING			
OUTCOME MEASURE	TYPE OF ANALYSIS	SIGNIFICANCE OF TREATMENT EFFECT ON:	
		LEVEL OF PERFORMANCE	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	
		S.D.		S.D.		S.D.		S.D.		S.D.		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.

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	3 years (36-47 mos)	Standardized total score at 36, 48, 60 months PPVT/TVIP analyzed separately
Test de Vocabulario en Imagenes Peabody (Spanish version)	4 years (48-59 mos)	
	5 years (60-72 mos)	
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): (1) Preventive medical care, (2) Average number of visits/year for dental care
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 special care nursery

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 to the child's age at the time of the interview.
b Results for the Bayley were reported by ACYF (1994).

EXHIBIT 5.9 CHILD BEHAVIOR CHECKLIST NORMALIZED T-SCORES AT 2, 3, 4, AND 5 YEARS OF AGE, FOR CCDDP AND CONTROL GROUP CHILDREN									
OUTCOME MEASURE	AGE 2 YEARS		AGE 3 YEARS		AGE 4 YEARS		AGE 5 YEARS		CONTROL (N=1530)
	CCDDP (N=1456)	CONTROL (N=1566)	CCDDP (N=1440)	CONTROL (N=1415)	CCDDP (N=1282)	CONTROL (N=1252)	CCDDP (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 5.11		
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

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	Do SITES VARY?	SITE									
		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).

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 interview)	.03 .06
Role Reversal (last interview)	.06
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	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%
<i>Family day care</i>	19.3%	13.9%	15.5%	12.8%	16.5%	11.7%	15.7%	11.9%
<i>Center-based care^a</i>	14.1%	34.7%	19.7%	38.1%	28.1%	43.6%	24.0%	35.2%
<i>Parent or sibling</i>	5.3%	7.1%	4.9%	6.6%	5.3%	6.4%	5.9%	4.4%
Non-work related care								
<i>Center-based ece^b</i>	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 CCDDP/CONTROL DIFFERENCE)	PARTICIPATION IN CENTER-BASED CARE (SITE-LEVEL CCDDP/CONTROL DIFFERENCE IN PROPORTION OF MONTHS)						AMOUNT OF CENTER-BASED CARE (SITE-LEVEL CCDDP/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

* Includes center-based work-related care and early childhood education programs

Exhibit A.2 CCDP SAMPLE RECRUITMENT AND ASSIGNMENT			
	LOGAN	ALBUQUERQUE	LAS CRUCES
Sample Stratifiers	<ul style="list-style-type: none"> • age of mother (teen, nonteen) • ethnicity • site (2) 	<ul style="list-style-type: none"> • site (3) 	<ul style="list-style-type: none"> • site (2) • ethnicity (2)
Assignment to Groups	<ul style="list-style-type: none"> • Assigned equally to three groups 	<ul style="list-style-type: none"> • Assigned equally to three groups 	<ul style="list-style-type: none"> • Assigned equally to three groups
Random Assignment Procedure	<ul style="list-style-type: none"> • CSR method (see appendix) 	<ul style="list-style-type: none"> • CSR method 	<ul style="list-style-type: none"> • CSR method
	FT. WORTH	SAN ANTONIO	BOSTON
Sample Stratifiers	<ul style="list-style-type: none"> • race (3) 	<ul style="list-style-type: none"> • site (2) 	<ul style="list-style-type: none"> • age of mother (teen, nonteen) • ethnicity
Assignment to Groups	<ul style="list-style-type: none"> • Assigned equally to three groups 	<ul style="list-style-type: none"> • Assigned equally to three groups 	<ul style="list-style-type: none"> • Assigned equally to three groups
Random Assignment Procedure	<ul style="list-style-type: none"> • CSR method 	<ul style="list-style-type: none"> • CSR method 	<ul style="list-style-type: none"> • CSR method
	PITTSBURGH	NASHVILLE	BALTIMORE
Sample Stratifiers	<ul style="list-style-type: none"> • site (3) 	<ul style="list-style-type: none"> • site (5) • race (2) • age of mother (teen, nonteen) 	<ul style="list-style-type: none"> • site (2)
Assignment to Groups	<ul style="list-style-type: none"> • Assigned randomly to three groups 	<ul style="list-style-type: none"> • Assigned randomly to three groups in first two rounds • Recruited only replacements in third round 	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • CSR method 	<ul style="list-style-type: none"> • Assigned all possible recruits a random number and listed families in order • Then assigned sequential pairs to program/comparison and recruited in order 	<ul style="list-style-type: none"> • CSR method

Exhibit A.2 (continued)			
	LITTLE ROCK	MARSHALLTOWN	KANSAS CITY
Sample Stratifiers	<ul style="list-style-type: none"> • site (3) 	<ul style="list-style-type: none"> • site (3) 	
Assignment to Groups	<ul style="list-style-type: none"> • Assigned first wave to program; control and replacement groups • Additional replacements recruited separately later 	<ul style="list-style-type: none"> • Assigned to three groups with 3:3:1 ratio (P:C:R) in first waves • In last waves, recruited only replacements 	<ul style="list-style-type: none"> • Assigned equally to three groups in first round • Recruited additional replacements in later round
Random Assignment Procedure	<ul style="list-style-type: none"> • Computer-generated random numbers assigned to families 	<ul style="list-style-type: none"> • CSR drew sample using list and sampling fraction 	<ul style="list-style-type: none"> • CSR method
Sample Stratifiers	BRATTLEBORO	LEXINGTON	GRAND RAPIDS
Assignment to Groups	<ul style="list-style-type: none"> • Assigned equally to three groups under Round 3; then assigned replacements to fill P & C • Round 4; Recruited only replacements 	<ul style="list-style-type: none"> • site (3) • Assigned equally to three groups in first two rounds; in remaining rounds, recruited only P & C and assigned replacements to P & C 	<ul style="list-style-type: none"> • ethnicity (2) • 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	<ul style="list-style-type: none"> • CSR method 	<ul style="list-style-type: none"> • CSR method 	<ul style="list-style-type: none"> • CSR method
Sample Stratifiers	WASHINGTON, D.C. (DROPPED FROM THE EVALUATION SAMPLE)	SEATTLE	GLENWOOD CITY
Assignment to Groups	<ul style="list-style-type: none"> • ward (4) • age of mother (teen, nonteen) • race (black, Hispanic) 	<ul style="list-style-type: none"> • site (3) 	<ul style="list-style-type: none"> • site (3) • age of mother (teen, nonteen) • urban/rural • reservation/nonreservation
Random Assignment Procedure	<ul style="list-style-type: none"> • Assigned to three groups in first two rounds • In Round 3, assigned original replacements to P & C 	<ul style="list-style-type: none"> • Assigned from list to two groups; ascertained agreement to participate <i>before</i> notifying of group and “replaced” participants with next name on list • Round 3; Recruited additional replacements only 	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • CSR method 	<ul style="list-style-type: none"> • Used lists of families and used computer-generated randomization program 	<ul style="list-style-type: none"> • All families randomly assigned by computer

Exhibit A.2 (continued)			
	BROOKLYN	PHOENIX	VENICE
Sample Stratifiers			
Assignment to Groups	<ul style="list-style-type: none"> Assigned first rounds of families to P & C only Recruited replacements separately in later waves CSR drew sample using alphabetical lists and sampling fraction of three 	<ul style="list-style-type: none"> Assigned to P & C first Recruited replacements later CSR drew sample and assigned groups 	<ul style="list-style-type: none"> site (3) Assigned randomly to P & C Recruited replacements later
Random Assignment Procedure			<ul style="list-style-type: none"> Used computer-generated randomization program
Sample Stratifiers	DENVER	FT. TOTTEN (DROPPED FROM THE EVALUATION SAMPLE)	
Assignment to Groups	<ul style="list-style-type: none"> Assigned to two groups by list and "replaced" from list Round 3: Recruited replacements only 	<ul style="list-style-type: none"> site (3) 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	<ul style="list-style-type: none"> Used lists of families; assigned randomly to P & C, then contacted families moving down list as families refused, etc. 	<p style="text-align: center;"><i>See above</i></p>	

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 enrollment	Refused at enrollment	In evaluation sample	Inactive as of 9/15/91,
Albuquerque	180	180	168	10	2 (1%)	180 (120) ^b	32 (27%)	180	180	169	9	2 (1%)	180 (120) ^b	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 ^{a,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,b}	31	16 ^b	21 (31%)	68	15 (22%)	45	9 ^b	9 ^b	0	0 (0%)	69	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	31 (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 ^{kl}	58	0	0 (0%)	58	10 (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,c}	90	2* (0)	26 (23%)	116	23 (20%)
Washington, DC	160	322 ^{h,k}	153 ^{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 11 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.

