The Effects of Early Education Intervention on Maternal Employment, Public Assistance, and Health Insurance: The Infant Health and Development Program

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ABSTRACT

Objectives. The purpose of this study was to test whether early education intervention influences maternal employment, education, fertility, and receipt of public assistance and health insurance.

Methods. The Infant Health and Development Program is a randomized trial of the efficacy of early education on the outcomes of 985 low-birthweight, premature children. Families in eight sites received either pediatric follow-up and referral (follow-up only group) or pediatric services plus early intervention services (intervention group) for the first 3 years of the child's life.

Results. Mothers in the intervention group were employed more months and returned to the work force earlier than those in the follow-up only group. Fertility and education were not associated with treatment. Mothers who had some college education received more months of public assistance in the intervention group compared with the follow-up only group. Mothers who were employed received more public assistance and public health insurance in the intervention group compared with the follow-up only group, when maternal employment was controlled.

Conclusions. Findings are discussed in terms of the recent emphasis on two-generational programs directed to providing health, welfare, and child care services to young children and their families. (*Am J Public Health.* 1994;84:924–931)

Introduction

Early childhood intervention programs were developed to help close the gap between disadvantaged children and their more advantaged peers by raising poor children's levels of social and educational competence in anticipation of elementary school. Since the middle 1960s, federal, state, community, and university-based programs have been initiated. The most carefully evaluated (with the exception of Head Start) are the small-scale programs conducted by educational researchers.[1–7]

The programs vary on a number of dimensions—delivery setting (home, school, center, clinic); primary target (mother, child, both); timing of onset (prenatal, infant, toddler); intensity (amount of programming per week); extensivity (length of program); curriculum content; ratios of staff to children; and staff training. However, all programs focus on enhancing child competence. To do so, programs employ a variety of strategies, including (1) working directly with the child, (2) helping the mother improve her interactions and teaching skills with her child, (3) teaching the mother about problem-solving abilities and child rearing, (4) raising the mother's self-esteem and emotional functioning, (5) promoting a return to school or the job market, and (6) procuring health and educational services for the child. All strategies but the first one assume that altering the mother's behavior or attitudes will influence the child indirectly. Indeed, many scholars believe that the long-term success of programs does not depend on their ability to directly alter the cognitive abilities of the child in the preschool years but on their capacity to alter the environment in which the child lives—characteristics of the mother; economic or residential circumstances of the mother; or health, welfare, and educational services offered to the child through the mother's efforts.[8–12]

This idea has widespread support.[4,13,14] However, not all studies have evaluated effects of programs on the mothers; those that have often do not report these effects in the literature, but rather in the final project reports.[15–19] Additionally, many of the early intervention studies were begun in the late 1960s and 1970s, before the rapid increase of mothers of young children in the work force.[20] The provision of full-time, high-quality, center-based child care, as offered by many early intervention programs, is of great benefit to mothers wishing to return to work, especially in the early years of the child's life, when high-quality child care is in such limited supply.[21–23]

This article focuses on the effects on the mothers of early intervention services for families with a low-birthweight, premature infant, specifically with regard to maternal employment, education, and fertility, as well as the use of public assistance (Aid to Families with Dependent Children) and publicly funded health services (Medicaid). The Infant Health

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and Development Program, a randomized trial, offered home visiting from the time of the birth of a low-birthweight, premature child to the child's third birthday and center-based child development programming in the second and third years of life. Home visitors provided information on child development, health and safety, social and medical services, and problem-solving skills. The last two might contribute to receipt of public assistance, health insurance, and employment. The provision of full-time, high-quality child care might benefit employment and education. It was expected that full-time employment benefits and education benefits would be found, with the effects being more likely after the children are 12 months of age, the age at which center-based early intervention began. Stronger maternal employment effects were expected for the less-educated mothers, who often are unable to afford quality child care.[20,22,24] The provision of early intervention services also might affect the number of mothers receiving public assistance and using public health insurance.[25–27] Reductions would be expected, in part because of the fact that more mothers would be in the work force. At the same time, the Infant Health and Development Program staff might have helped women receive services for which they were eligible, which would result in more women from the intervention group receiving services. Although the intervention did not target fertility (as no family planning or maternal postnatal care services were offered), it could indirectly affect fertility via increased health care use. The hypothesis that the intervention indirectly causes a reduction in fertility was tested by comparing the proportion of mothers in the two groups who had a birth during the follow-up period.

TABLE 1—Comparison of Intervention and Follow-Up Only Groups at Randomization[a]: The Infant Health and Development Program

	Intervention (n = 366)[d]	Follow-Up Only (n = 595)[d]
Child characteristics		
Mean (SD) birthweight,[b] g	1819 (439)	1781 (468)
Mean (SD) score on neonatal health index[c]	100.7 (16.0)	99.6 (15.8)
Percentage male[b]	50	49
Maternal characteristics[d]		
Mean (SD) education,[b] y	12.0 (2.6)	12.4 (2.4)
Mean (SD) age,[b] y	24.6 (5.9)	24.9 (6.1)
Ethnicity,[b] %		
Black	53	52
Hispanic	10	11
White/other	37	37
Percentage employed (at randomization)	31	30
Percentage employed (before pregnancy)	80	79
Percentage in school (at randomization)	11	12

[a]No significant differences between groups.
[b]Randomization procedure included birthweight, gender, maternal education, maternal age, and maternal ethnicity.
[c]Neonatal health index is length of neonatal stay controlled by birthweight and site, standardized so that the mean = 100 and the SD = 16; high scores indicate better health.
[d]Numbers may vary because of missing data for maternal characteristics.

Methods

Design

The Infant Health and Development Program is a multicenter, randomized, controlled trial to evaluate the efficacy of an intervention consisting of early child development programs and family support services in reducing the prevalence of health and developmental problems among low-birthweight, premature infants (in this study, defined as infants with a birthweight of $\leq$2500 g and a gestational age of $\leq$37 weeks). The intervention model and the specific curricula used for low-birthweight infants in the Infant Health and Development Program were adapted from two longitudinal studies of early intervention with full-term children of low-income families: the Abecedarian Project and Project CARE.[28,29] Comprehensive child and parent curricula were delivered through home visiting, parent groups, and children's attendance at a child development center program. The two treatment groups were an intervention group that received all three of the above curricula plus high-quality pediatric follow-up through age 3 years and a follow-up only group that received only the pediatric follow-up. Referrals were made as necessary. Sites were responsible for assisting families, when needed, to obtain access to health care; three sites chose to provide primary care for their subjects.

The intervention program was initiated immediately after randomization on the infant's discharge from the hospital and continued until a corrected age of 3 years (i.e., the age was corrected for the estimated number of weeks premature). The protocol specified four home visits per month in year 1 and two visits per month in years 2 and 3. On average across all sites, families received about three visits per month in year 1 and 1.5 visits per month in years 2 and 3.[30] The child development centers provided the intervention group children with an enriched, extrafamilial, educational experience using a learning-game format beginning at 12 months (corrected age) and continuing until the last child at the site reached 36 months of age (corrected age). The children were scheduled to attend the center at least 4 hours daily, 5 days per week. The mean number of hours attended per day was 5. The comprehensive educational program emphasized cognitive, linguistic, and social development.[31]

The primary outcomes in the Infant Health and Development Program were related to the child's cognitive development and behavioral competence, areas in which low-birthweight premature infants are at risk for adverse outcomes. Secondary outcomes focused on mothers. The provision of the program's services may affect the families by allowing mothers to take advantage of educational or employment opportunities and to have increased access to and use of health care and community resources. Analyses on access to and use of health care services are reported in McCormick et al.[32]

Sample

Informed consent was sought from the parents of 1442 eligible infants at eight sites (sites are listed in Acknowledgements). Omitting one twin from each family and refusals, 985 infants were designated as the primary analysis group and constitute the cohort for the trial (see Table 1; for a description of the sample, see reference 33).

Infants were randomized to either the intervention group or the follow-up

only group immediately after hospital discharge, by use of a procedure that involved close monitoring for balance and for absence of bias.[34,35] The characteristics for which balance was sought were birthweight, gender, maternal age, maternal education, maternal race (Black, Hispanic, and White/other), primary language in the home, and infant participation in another study.[33,36,37]

Assessment Schedule

Children in both the intervention and follow-up only groups received pediatric surveillance, as offered through eight clinic visits at 40 weeks of gestational age and at 4, 8, 12, 18, 24, 30, and 36 months postterm age. These visits also were used to collect assessment data. All assessments were conducted in English.

Measures

Maternal outcomes. Outcomes include maternal employment, education, fertility, and receipt of public health insurance and public assistance. Mothers indicated whether they were employed, in school, or receiving public assistance at each clinic visit (4, 8, 12, 18, 24, 30, and 36 months postterm age). These data were used to calculate the cumulative months employed, in school, and receiving public assistance, as well as the timing of work force entry (focusing on the first entry mentioned, not on repeated entrances and exits). Mothers were asked whether they used public health insurance or had any health insurance at 36 months. The number of subsequent births was determined by the responses at the 12-, 24-, and 36-month assessments. Given the skewed nature of the distributions, fertility was coded as having had an additional child by the 36-month assessment (yes/no).

Initial status measures. Several initial status variables were examined because of associations with the primary outcome measures in previous research. Demographic factors include ethnicity, maternal education, and maternal age in years. Sites were examined because they differed on demographic factors.[33,38] Child characteristics were gender, birthweight, and score on a neonatal health index (a measure that standardizes the length of the neonatal hospital stay for birthweight and is converted into a scale with a mean of 100 and a SD of 16, with higher scores indicating better health).[39]

Data Analyses

Multiple linear regressions were performed to test for treatment group effects, controlling for the possible effects of the initial status variables just mentioned. Site was entered as seven dummy codes, and each site was compared with the eighth site. Maternal ethnicity was dummy-coded into two variables (Black vs Hispanic and White/other; Hispanic vs Black and White/other). Maternal education was coded as three categories (less than high school, high school graduation, and some college), maternal age in years, birthweight in grams, and neonatal health on a continuous scale. Additionally, possible interactions of the initial status variables with treatment group were examined in these regressions for all outcome measures.[33]

To see whether group membership influenced the timing of entry into the work force, we conducted Kaplan-Meier survival curve analyses. Additionally, we conducted subgroup analyses using multiple linear regressions to examine effects by ethnicity and education simultaneously. Mothers were divided into those with some college and those with a high school education or less. Effects for Black and White mothers were examined separately. Separate analyses for Hispanics with a high school education or less also were conducted. For these analyses, only sites with at least five families in the intervention group and five in the follow-up only group were included (see reference 38 for a description of the rationale for this procedure and descriptive statistics). Four sites were included for the group that was White and had some college (Arkansas, Harvard, Washington, Yale); four for the group that was Black and had some college (Arkansas, Einstein, Harvard, Pennsylvania); six for the group that was White and had a high school education (Arkansas, Einstein, Harvard, Texas, Washington, Yale); all eight for the group that was Black and had a high school education or less; and three for the group that was Hispanic and had a high school education or less (Einstein, Miami, and Texas).

Results

Maternal Employment

Cumulative months of employment. Mothers in the intervention group were employed for a greater number of months than were mothers in the follow-up only group (1.84 months, $P = .04$). This effect was net of site, demographic, and child characteristics, as found in the multiple linear regression analysis. Maternal age and race did not contribute to the cumulative number of months worked, although maternal education did (5.73 months per category of education, $P = .001$). The vast majority of the mothers in this trial were employed: 80% of the intervention group mothers and 72% of the Follow-up only group mothers worked at least 4 months out of the 3 years of the trial. At the same time, 16% of the intervention group mothers and 21% of the follow-up only mothers worked the entire 36 months.

Although no main effects of child characteristics were found in the multiple linear regression, a significant interaction between treatment and birthweight was found ($P = .02$). Investigation of the mean number of months that mothers worked for the two birthweight groups revealed that the treatment group differences appeared in the lighter, not the heavier, birthweight group. Mothers in the intervention group who had lighter infants (weighing 2000 g or less at birth) worked more months than mothers in the follow-up only group with lighter infants (mean of 18.1 months vs 15.3 months). Mothers of heavier infants (in the 2001- to 2500-g group) worked 14.3 months in the intervention group and 16.2 months in the follow-up only group.

Subgroup analyses indicated that the beneficial effect of the intervention on maternal employment occurred in mothers with a high school degree or less (Table 2). Black mothers were employed an average of 2.51 months more in the intervention group compared with the follow-up only group ($P = .05$); White mothers, an average of 5.05 months more in the intervention group compared with the follow-up only group ($P = .02$). (These differences are slightly different than those presented in Table 2, because they are based on the regression analyses controlling for initial characteristics, whereas the data in Table 2 are simple means.)

Timing of entry into the work force. The Kaplan-Meier survival analysis for timing of first reported entry into the work force by child's age (corrected for prematurity) is presented by treatment group in Figure 1. As can be seen, mothers in the intervention group were more likely to enter the work force somewhat earlier than the mothers in the follow-up only group ($P < .06$). The differences appeared when the children were 18 months of age.

Given the interaction between treatment and birthweight found in the analysis of cumulative months of employment, we examined the timing of the first

TABLE 2—Cumulative Months of Maternal Employment, Education, and Public Assistance, by Treatment Group, Maternal Education, and Ethnicity: Infant Health and Development Program

	Mean (SD) Employment, mo		Mean (SD) Education, mo		Mean (SD) Public Assistance, mo	
	INT (n = 300)[b]	FU (n = 486)[b]	INT (n = 308)[b]	FU (n = 500)[b]	INT (n = 307)[b]	FU (n = 500)[b]
Total sample	16.7 (12.9)	15.6* (14.2)	4.9 (9.0)	4.2 (2.6)	14.4 (15.8)	12.6 (15.2)
College education						
Black[a]	23.9 (11.2)	25.5 (13.0)	7.6 (12.4)	3.8 (7.6)	12.0 (16.1)	5.4** (11.1)
White[a]	22.4 (14.2)	21.8 (14.6)	2.4 (7.6)	4.1 (7.9)	3.2 (10.4)	0.2* (1.6)
High school education or less						
Black	14.1 (12.1)	12.0* (12.8)	6.2 (9.3)	5.0 (8.0)	20.6 (15.1)	20.3 (14.9)
White	18.1 (11.5)	14.0* (13.2)	2.3 (5.8)	2.9 (6.0)	8.4 (13.1)	9.5 (13.5)
Hispanic	7.7 (11.3)	9.9 (12.6)	7.5 (10.8)	3.5 (7.7)	22.8 (16.5)	20.4 (16.6)

Note. INT = intervention group; FU = follow-up only group.
[a]Means for education by ethnicity subgroup include mothers from those sites that had five or more families in both the intervention and follow-up only groups (see reference 36 and the text). Too few Hispanic mothers had some college to analyze.
[b]Numbers vary somewhat because of missing data (measures are aggregated over time).
*$P < .05$; **$P < .10$.

work-force experience reported after the child's birth for the lighter and heavier low-birthweight infants. For the infants with birthweights of 2000 g or less, mothers in the intervention group were likely to enter the work force earlier than those in the follow-up only group, with differences first emerging when the child was about 8 months of age ($P < .001$). In contrast, no significant differences were found for the heavier infants.

Cox proportional hazards analyses were used to test differences in timing of entry into the work force. Variables entered into the regressions were treatment, site, maternal characteristics (education, age, ethnicity), and child characteristics (gender, neonatal health status, birthweight). A significant treatment effect was found ($P = .05$), as mothers in the intervention group entered the work force earlier than mothers in the follow-up only group. Mothers with more education also entered the work force earlier than mothers with less education ($P = .0001$).

Maternal Education

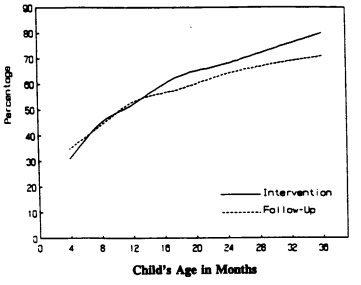
Multiple linear regression analyses on the cumulative number of months in school over the 3 years of the Infant Health and Development Program were conducted, paralleling the analyses for maternal employment. No significant treatment effect was found (Table 2).

The multiple linear regressions suggest that younger mothers spent more months in school than older mothers (0.33 months per year of age; $P = .001$), and Black mothers reported more months of schooling than other mothers (1.90 months, $P = .01$; see also Table 2). An interaction between treatment and race ($P = .04$) suggested that Hispanic mothers in the Intervention group received more months of education than those in the follow-up only group (4.8 months), whereas that was not true of the other two groups of mothers. No significant treatment effects were seen in the subgroup analyses.

Fertility

About one third (36%) of the total group of mothers had at least one additional birth in the 3 years since the target child's arrival (whether a subsequent birth had occurred was used in the regression rather than number of births because of the skewed nature of the distribution; numbers were 304 for the intervention group and 501 for follow-up only group). No treatment effect was found (2% fewer births in the treatment group; $P = .48$).

Not surprisingly, the multiple linear regressions suggest that younger mothers were more likely to have had a subsequent birth (2% of the women had an additional birth per year of age; $P = .0001$). Controlling for all other variables, Black and Hispanic mothers were somewhat more likely to have a subsequent birth (7% and 12%, respectively; $P = .08$ and $P = .06$, respectively). No interactions with treatment group were found, nor were any of the subgroup analyses significant. (To have an 80% chance of detecting a difference between the two groups (two-sided $\alpha = .05$), the absolute difference in proportions would have to be .10 or larger. The difference here was .02.)

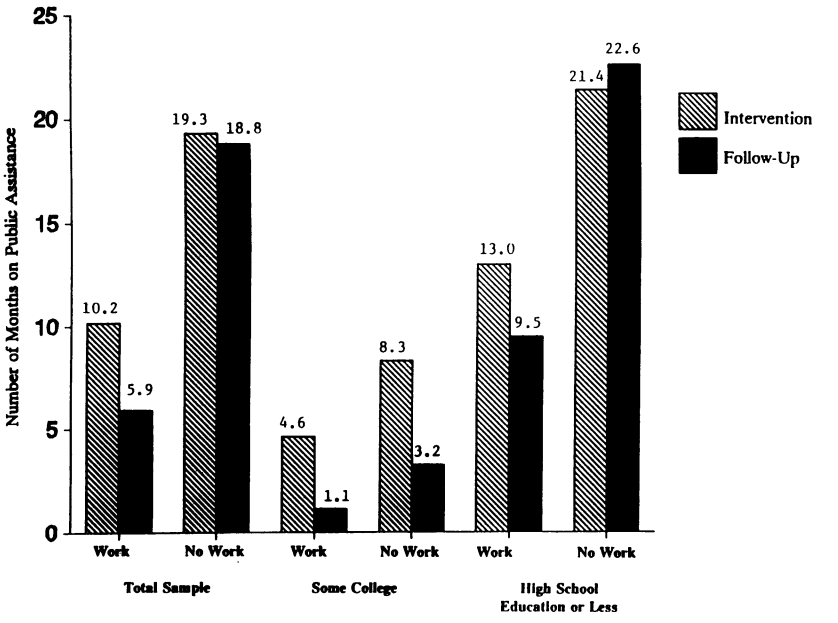


Note. Kaplan-Meier survival analysis. Child's age is postterm.

FIGURE 1—Timing of entry into the work force for mothers in the intervention and follow-up groups.

Public Assistance

Receipt of public assistance during the 36 months was not associated with treatment group. Large effects were found for ethnicity and education ($P = .001$ for each; see mean values in Table 2). However, a significant interaction between treatment and maternal education ($P = .005$) suggests that the more-educated mothers in the intervention group were more likely to receive public assis-



Note. Sample restricted to sites with five or more children in both the intervention and follow-up groups (see Brooks-Gunn et al.[38]). No Hispanics are included in the group with some college. Work groups: n = 395 for mother not employed (No Work); n = 402 for mother employed when the child was 36 months old (Work). Data are simple means based on subgroup analyses (maternal employment status when the child was 36 months old, treatment group, and maternal education when the child was born).

FIGURE 2—Number of months that mothers received public assistance, by treatment group, maternal employment status at 36 months, and maternal education.

tance than more-educated mothers in the follow-up only group. This was true for the Black subgroup (6.27 months more public assistance; $P = .07$) and the White subgroup (2.42 months more public assistance; $P = .02$).

In a separate regression analysis where maternal employment at 36 months was included as an independent variable, a significant treatment effect was seen ($P = 0.03$). That is, when controlling for maternal employment (which is highly negatively associated with the receipt of public assistance, as expected; $P = .005$), mothers in the intervention group were more likely to receive public assistance (1.78 months longer). A trend toward an interaction between treatment and employment ($P = .09$) suggests that mothers who were employed received more months of public assistance if they were in the intervention group compared with the follow-up only group (Figure 2). A significant interaction between maternal education and treatment group ($P = .04$) suggests that treatment group mothers who had some college education received more months of public assistance, but no association with treatment was found for mothers who had a high school education or less (Figure 2).

Public Medical Insurance

About 40% of the sample reported receiving public health insurance at the 36-month assessment (300 in the intervention group and 472 in the follow-up only group). Such receipt was not associated with treatment group. Overall, 82% of the mothers reported that they had some form of health insurance. Maternal ethnicity, education, and age were not associated with receipt of health insurance. No treatment effects for any form of health insurance were seen, either in the initial analyses or in the second set of multiple linear regressions when maternal employment was entered as a dependent variable. A significant interaction between maternal education and treatment group ($P = .05$) indicates that mothers with more education were more likely to have public health insurance when they were in the intervention group compared with the follow-up only group.

When maternal employment at 36 months is entered into the regression as a independent (control) variable, the intervention group was more likely to have public health insurance (the difference between the two groups was 7%; $P = .02$). A trend ($P = .08$) for an interaction between maternal employment and treatment group suggests that the treatment effects were found for the mothers who were employed at the 36-month point (Figure 3). An interaction between ethnicity and treatment group indicates that the effects were most pronounced for the Hispanic mothers ($P = .03$).

Discussion

Like other early childhood interventions in the first 3 years of life, the Infant Health and Development Program has the potential to influence mothers as well as children. This program differs from most previous studies of interventions that continue past the first years of life by focusing on a biologically vulnerable group—low-birthweight infants—rather than an environmentally vulnerable group—disadvantaged children.[2,40] However, about two thirds of the families in the Infant Health and Development Program were disadvantaged, as defined by low maternal education levels, and income. Children from these families are at increased risk for subsequent problems[10,41] and their mothers may be as well.[32] The inclusion of Hispanic and White families also is a welcome and significant departure from most of the early intervention literature, which focused primarily on Black families.[42,43]

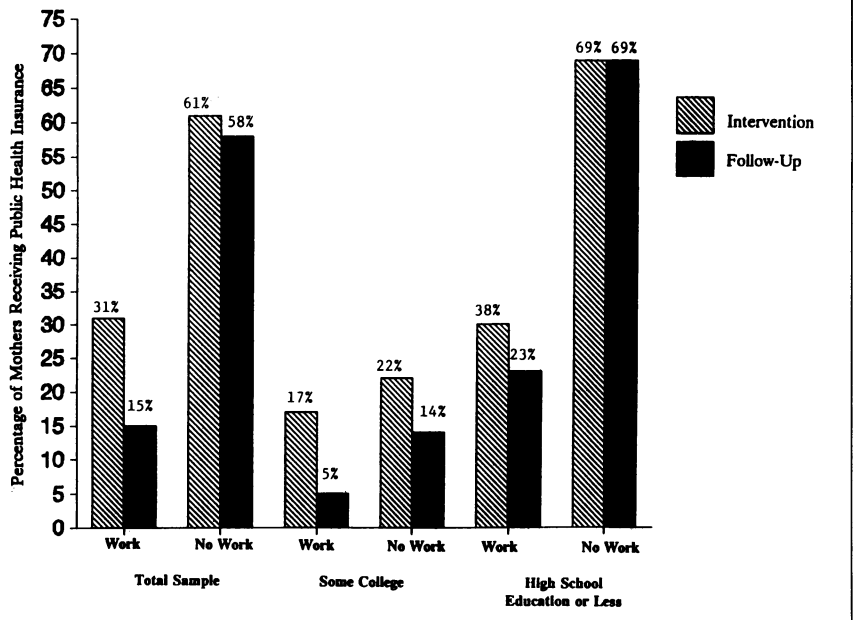
Results from the Infant Health and Development Program parallel those of previous studies with disadvantaged children in that the provision of early intervention services for children under the age of 3 years was found to increase the likelihood of maternal employment. As in other studies, these effects were modest but significant. Benasich et al. reviewed 27 programs providing educationally based intervention services in the first 3 years of life.[15] Of the 11 programs that reported on maternal employment as an outcome, all 5 home-based programs and 5 of the 6 center-based programs found that mothers in the programs were more likely to be employed or to be more stably employed than mothers in the comparison groups. Studies tend to report relatively small effects (e.g., treatment effects lasting less than 4 months). With respect to the timing of entrance into the work force, the

fact that group differences began to appear when children were 18 months of age suggests that the effect was primarily due to the provision of center-based care, which started when the child was between 12 and 13 months of age.[44]

Of importance is the fact that the maternal employment effects were found for mothers with a high school education or less. Other studies have not included mothers with college education. Mothers with less education (who earn less money) are probably unable to purchase high-quality child care,[20] making the Infant Health and Development Program very attractive.

Earlier studies did not examine timing of entry into the work force. Timing is particularly critical given the current debates about the effects of maternal employment and center-based care on children in the first year of life.[20,44,45] In the Infant Health and Development Program about half of the mothers of low-birthweight infants had entered the work force by the infant's first birthday, which is similar to the proportion reported in national samples of mothers.[20] When low-birthweight and normal-birthweight infants were compared by using the data for children in the National Longitudinal Study of Youth,[46] mothers with low-birthweight infants were somewhat less likely to place their children in outside-the-home care in the first year of life than were mothers with normal-birthweight infants.[47] Still, half of these mothers entered the work force during the first year of their child's life. In the Infant Health and Development Program, although actual birthweight was not associated with number of months worked, mothers of infants who had lower birthweights tended to enter the work force somewhat later than mothers of infants who weighed more ($P = .08$).

Of interest is the fact that being in the intervention group (as opposed to the follow-up only group) was associated with a longer period of employment for mothers with lighter low-birthweight infants but not for mothers with heavier low-birthweight infants. Generally, these results may indicate that mothers of lighter low-birthweight infants are reluctant to leave them for long periods of time or to put them in organized child care because the lighter children are sicker or are perceived to be sicker. Indeed, mothers in the Infant Health and Development Program did report that the lighter low-birthweight children experienced more hospital care (hospitalizations and number of hospital days), ambulatory care, and illnesses than the heavier low-birthweight children.[32,33] Thus, the family services provided to the mothers in the intervention group may have lessened their concerns about the health of the lighter low-birthweight infants, either through the information given in the home visits or the availability of high-quality, center-based care with excellent pediatric surveillance.



Note. Sample restricted to sites with 5 or more children in both the intervention and follow-up groups (see Brooks-Gunn et al.[38]). No Hispanics are included in the some-college group. Work groups: n = 382 for mother not employed (No Work); n = 390 for mother employed when the child was 36 months old (Work). Data are percentages based on subgroup analyses (maternal employment status when the child was 36 months old, treatment group, and maternal education when the child was born).

FIGURE 3—Percentages of mothers receiving public health insurance when the child was 36 months old, by treatment group, maternal employment status at 36 months, and maternal education.

Treatment effects were not found for schooling in the Infant Health and Development Program, unlike some of the previous interventions with disadvantaged children.[15] The intervention group mothers also did not differ from the follow-up only group mothers with respect to subsequent fertility. Mothers in the intervention group did not have lower fertility rates, but they also did not have higher fertility rates (a possibility, given the provision of free child care). Few earlier educational programs examined fertility, in part because family planning services were not offered in these programs. Only 15% of the 27 studies reviewed by Benasich et al.[15] included data on fertility. All reported positive effects and were comprehensive programs,[48–52] and two focused on teenage mothers and their children.[53,54] However, it is possible that longer-term fertility may be affected, rather than fertility at the completion of the program during the target child's toddler-hood years.[53–55]

Receipt of public assistance and health insurance were not examined as maternal outcomes in most of the early childhood intervention literature. However, our findings indicate that treatment effects were seen when maternal employment was controlled for. Of interest is the fact that mothers who were employed were more likely to receive these services when they were in the treatment group, suggesting that these mothers were eligible for public assistance and that the Infant Health and Development Program staff informed them of eligibility and procedures. These mothers presumably were employed in jobs that were low wage, part time, or "off the books." The ability of an early educational intervention program to improve access to health care via health insurance is relevant from a policy perspective, given that the number of families without health insurance

has increased.[26,56,57] Use of health care services was more frequent in the treatment group of the Infant Health and Development Program. These differences appeared at 12 months (results not shown), suggesting that the home-visiting component of the program played a role in the receipt of these services (because center-based schooling did not begin until 12 months).

A limitation of the study is the use of maternal report. Virtually all national studies rely on mothers to indicate employment, education, and fertility history. Reports of public assistance are fairly accurate (when compared with welfare records) over a much longer time period than that used in this study.[55] Additionally, the mothers in the Infant Health and Development Program were asked about these events every 4 to 6 months, which is a shorter recall period than that used in most studies.

Almost all early intervention programs postulate indirect or mediating effects of maternal and parenting outcomes on the child.[58] However, most employ a child-focused evaluation and only look at direct effects on the child. Indirect effects may constitute the "transmission pathways" for long-term effects on the child.[4,13,14] These include not only parenting behavior but also the ability to procure health, child care, and welfare services, as illustrated here. Additionally, enhancing maternal functioning is an important outcome in its own right.[9] Finally, more emphasis is being placed on two-generational approaches to providing services to poor young children and their families[59–61] in the hopes that both will benefit and that good maternal outcomes and service receipt will enhance the likelihood that the children will be positively affected.

The Family Support Act of 1988 is an excellent example of a focus not only on two generations but on integrated services. To help mothers leave the welfare system and enter the work force, they are offered education and job training as well as transitional child care (through a voucher system) and health insurance (through Medicaid). Both of the latter are critical in that the jobs for unskilled or semiskilled workers, such as young mothers with a high school degree or less, pay too little to purchase child care services and usually do not provide health insurance.[61] The results from the Infant Health and Development Program reported here illustrate that providing services to families—even though the focus is on the child and parenting behavior—has the potential to increase employment and to increase the receipt of health and welfare services for those not employed. □

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