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## Effects of Employment-Based Programs on Families by Prior Levels of Disadvantage

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### Abstract

This study examines how welfare and employment policies affect subpopulations of low-income families that have different levels of initial disadvantage. Education, prior earnings, and welfare receipt are used to measure disadvantage. The analysis of data from experiments suggests that employment-based programs have no effects on economic well-being among the least-disadvantaged low-income, single-parent families, but they have positive effects on employment and income for the most-disadvantaged and moderately disadvantaged families. These programs increase school achievement and enrollment in center-based child care of children only in moderately disadvantaged families. The most-disadvantaged families are found to increase use of child care that is not center based. Parents in these families experience depressive symptoms and aggravation. The findings raise questions about how to support families at the lowest end of the economic spectrum.

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During the 1990s, the United States witnessed a dramatic reduction in welfare caseloads. Between 1996 and 2001, caseloads declined by approximately 50 percent (U.S. House of Representatives 2004). Over roughly the same time period, employment rates among never-married single mothers considerably increased from 49 to 66 percent (U.S. Census Bureau 2007). Researchers attribute the decline in welfare caseloads to favorable economic conditions for very low-wage workers, as well as to a relatively expansive package of income security policies that reward work and require very low-income mothers to participate in the labor force (Schoeni and Blank 2000; Blank 2002; Brock, Nelson, and Reiter 2002).<sup>1</sup> But the overall findings mask the complexity of the situation for chronically low-income families and their children.<sup>2</sup>

A noteworthy proportion of the welfare caseload faces a variety of physical and health barriers to employment. These barriers perpetuate the need for public assistance. Many

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<sup>1</sup> Robert Schoeni and Rebecca Blank (2000) provide a summary of literature examining policy influences and the role of the economy on the labor market increases and welfare caseload reductions in the 1990s.

<sup>2</sup>See David Ellwood and Mary Jo Bane (1985) for an early portrayal recognizing the heterogeneity of the welfare caseload.

single parents who leave welfare continue to face difficulties in making ends meet and attaining stable levels of self-sufficiency (Brauner and Loprest 1999). These realities might explain why recent iterations of federal and local policies recognize the varying needs and challenges of distinct subpopulations of low-income families. The policies target services, offering intensive caseworker support and expanding employment support.

The current study thus examines how welfare and employment policies affect subpopulations of low-income families and children. It compares groups with high, moderate, and low (relatively) levels of disadvantage. To do so, it relies on existing data from various experiments designed to test employment policies implemented as part of the changes in welfare policies.

There are several ways in which employment-based programs for parents might affect families differently, depending on the family's level of disadvantage. One possibility is that the effects of a program on family employment and earnings differ by the disadvantage of the family. However, it is also possible that children are differentially affected by similar economic changes. Even if families with different levels of disadvantage experience similar increases in employment or in earnings, perhaps the most-disadvantaged parents cannot as fully invest in early care or their home environment in ways that aid their children's development. A variety of personal and employment hurdles may make their lives particularly chaotic. Their schedules may be mismatched with those of center-based child care and other important programs for children.

Even if families with different levels of disadvantage are able to invest similarly in their children's environments, the effects on children might differ because of differences in the children's prior experiences. Such interactions with family disadvantage can be either compensatory or cumulative (Bradley, Burchinal, and Casey 2001). If the interaction between child and environment is compensatory, then center-based child care could benefit the most-disadvantaged children by compensating for disadvantages in their home and family environments; that is, this group might gain the most value from these settings. It is also possible that moderately or least-disadvantaged children might be able to gain much from added resources because they already have supportive histories and home environments.

This study analyzes whether the effects of employment-based programs on economic well-being, child-care use, and young children's development vary by initial levels of disadvantage among low-income families. Basing analyses on a pool of data from several experimental studies of welfare and employment programs allows for clean comparisons of subpopulations of low-income families that experience given program requirements or incentives with otherwise identical subpopulations that do not experience such requirements or incentives. As such, estimates are not confounded by the variety of characteristics and circumstances that can influence child development as well as success or failure in the labor market. At the same time, the programs represent a range of strategies that states or localities use in welfare settings.

This study constructs a subpopulation of most-disadvantaged individuals: families that face one or more substantial barriers to employment when they enter the experimental program. Disadvantage is operationally measured by job readiness characteristics that are highly predictive of labor market behavior and therefore potentially affect reactions to the services and benefits of these employment-based programs. Although disadvantage is not defined on the basis of all aspects of family life, other research suggests that the least-job-ready group is likely to have some history of domestic violence, homelessness, mental health problems, or physical health problems. All these factors can influence family life as well as labor

market success (Danziger et al. 2000). Effects of programs for this group are compared to effects for a subpopulation with moderate levels of disadvantage and to those for a subpopulation with low levels.

Measures of education, prior work experience, and welfare history are used to define the three levels of disadvantage. This approach builds on the research of Daniel Friedlander (1988) and Charles Michalopoulos and Christine Schwartz (2000), who find that prior earnings best predict future earnings and that prior welfare receipt best predicts future welfare receipt when compared to predictions based on characteristics including age of youngest child, number of children, sex, race, ethnicity, preference for work, work-related parental concerns, health and emotional problems, and child-care and transportation barriers.

Analyses also consider program effects on the type of child-care setting used during a child's preschool years, distinguishing if care is provided in an organized, center-based setting. Effects of programs on school-aged children's early achievement and behavior are also measured. Similarly, parenting and parental psychological well-being are examined since these potential co-occurring outcomes may affect children's achievement and behavior.

## Literature Review

Questions about barriers that families face, and the relation of these barriers to employment and welfare sanctioning, are typically examined in the literature that studies transitions from welfare to employment. Most often, the hard-to-serve or hard-to-employ group of parents is defined as those with low education, little work experience, substance abuse problems, poor physical health, or poor mental health. Findings suggest that hard-to-serve families achieve lower rates of employment and lower levels of income than families with few barriers (Danziger et al. 2000; Moffitt and Roff 2000). Research also documents that individuals with employment barriers face limited labor market opportunities, including few available jobs (Holzer and Danziger 2001). Welfare recipients who face multiple barriers are at a higher risk of being sanctioned and reaching time limits than those with few or no barriers (Cherlin et al. 2002; Danziger and Seefeldt 2002; Kalil, Seefeldt, and Wang 2002; Pavetti, Derr, and Hesketh 2003).

Michalopoulos and Schwartz (2000) examine program effects on economic outcomes across a range of subpopulations that vary by their initial levels of education, prior earnings, welfare experience, and initial levels of depressive symptoms. They find that earnings supplements, mandatory work policies, and welfare benefit time limits increase earnings about as much for the most-disadvantaged groups as for less disadvantaged groups. Nevertheless, the more disadvantaged earn much less than the less disadvantaged.

Other evidence suggests that moderately disadvantaged subpopulations have a higher number of positive economic outcomes, and larger ones, than those found among very disadvantaged groups. Using data from a set of early welfare and employment studies, Judith Gueron and Edward Pauly (1991) and Friedlander and Gary Burtless (1995) find that welfare-to-work programs have positive effects on economic outcomes for the moderately disadvantaged. The New Hope intervention, which offered earnings supplements and subsidized child care and health insurance to people working full-time, produced larger and more durable effects on employment and earnings for individuals with one barrier to employment than it did for those with no barriers or for those with multiple barriers (Huston et al. 2003; Duncan, Huston, and Weisner 2007).

Few studies examine subpopulation variations in the effects of programs on children's development. One exception is an in-depth analysis of two employment-based studies that

provided earnings supplements to single parents. Hirokazu Yoshikawa and associates (2003) use a large number of characteristics and propensity scoring to subdivide the samples into quartiles of unemployment risk. The experiment's effects were estimated for the group of families within each risk quartile. In the group with the highest risk of unemployment, the results in one of the two studies show that the program increases employment, earnings, and income. Among children of elementary school age in that group, it is found to decrease school engagement and increase hyperactive problem behavior. Benefits are found, however, in the school achievement and behavior of the children in the group with moderately high risk (Yoshikawa et al. 2003). Research using data from this same study shows that the programmatic effects on children do not differ across subgroups defined by family composition and human capital barriers to employment (Huston et al. 2003).

Studies of interventions that target child development show that benefits to children are clustered among families with low or moderate levels of disadvantage. The Comprehensive Child Development Program in Pittsburgh is found to most benefit children whose parents are not on Aid to Families with Dependent Children, AFDC (Ryan et al. 2002). Similarly, an evaluation of the National Head Start/Public School Early Childhood Transition Demonstration concludes that children from families with higher levels of resources started elementary school with high skills (the top 3 percent of reading and math standardized test scores) and continued to perform at higher levels than children from families with fewer resources (Ramey et al. 2000). Early Head Start's effects on cognitive test scores and the social-emotional behavior of children are found to diminish as the families' risk factors increase (Love et al. 2002). In addition, families with the highest number of risk factors are found to experience the smallest effects from use of center-based child care (Love et al. 2002).

In one evaluation of the Infant Health and Development Program (IHDP), an experimental intervention that provided medical care, intensive early child development curriculum, and a family support program, researchers find that the effects on children's intelligence quotients increase as the number of risk factors decreases (Liaw and Brooks-Gunn 1994). However, when researchers separately estimated how the program affects subgroups distinguished by maternal education, they find that the program benefits children of mothers with low levels of education (Brooks-Gunn et al. 1992). One important factor in all these studies may be children's participation in the experimental programs. For example, the parent's ability to consistently bring a child to center-based preschool interventions may be affected by the number of risk factors such that participation declines as the number of risk factors grows. It might be that compared to very disadvantaged parents, those with fewer risk factors may bring their children more consistently to the preschool center-based intervention programs (Hill, Brooks-Gunn, and Waldfogel 2003). In the IHDP, mothers of children with high attendance rates (more than 400 days) are more likely than those in the comparison group to be employed and less likely to have less than a high school diploma. The effects of the IHDP are positive, and the duration of those effects is positively associated with the child's birth weight; but this association is observed only among children with extensive exposure to the early childhood educational program offered to families in the treatment group (Hill et al. 2003).

Because parents' use of child care increases as employment increases, the quality of such care environments can be an important determinant of children's development, particularly their preparation for school entry (Vandell and Wolfe 2000). There is evidence that the type of care children receive has relevant consequences. Structured, center-based programs, including prekindergarten and Head Start, are found to positively affect children's cognitive functioning and preparation for school entry (Currie and Thomas 1995; Currie and Thomas 1999; Currie 2001; Garces, Thomas, and Currie 2002; NICHD Early Child Care Research

Network 2002, 2004; Loeb et al. 2004; Magnuson, Ruhm, and Waldfogel 2007). In a study of low-income families in three sites, children who attended centers perform better on cognitive tests than those cared for in their own homes or by home-based child-care providers (Loeb et al. 2004). In a secondary analysis of the IHDP, Kyunghye Lee (2005) finds that hours in center-based care are positively correlated with children's performance.

Finally, differences in maternal employment experiences and children's participation in early-care settings across subgroups by levels of disadvantage can also manifest differences in the balance and predictability of family routines in managing work and family responsibilities. With ethnographic evidence from a sample of New Hope participants, Edward Lowe and Thomas Weisner (2004) show that parents consider the fit of child care into the daily routine of life and the benefit to the family as a unit. Families in the study reported needing to use combinations of formal and informal supports because time and income constrain their access to center-based care, but parents still sought out and preferred stability and structure for their children. This is a common theme among other ethnographic portraits of very low-income families (see, e.g., Knox, London, and Scott 2003).

With this broad literature as background, the current study is most similar to that of Yoshikawa and associates (2003). However, it extends and complements that research in several ways. First, disadvantage is defined solely by human capital criteria. The definition enables analyses to avoid confounding indicators of human capital, psychological disabilities, and physical disabilities since those indicators may have varying independent effects on parents' and children's responses to programs. Human capital is measured at the onset of the study, and it is used to define disadvantage, not estimates based on post-random-assignment behavior. The set of employment-based experiments is increased, and the age group is narrowed to preschool-age children. Research finds that these children benefit more than older children from the employment programs tested in the relevant experimental studies (Morris, Duncan, and Clark-Kauffman 2005). Pure experimental analyses are employed to line up patterns of effects across outcomes by subgroup. In addition to economic outcomes, the study examines experimental effects on possible mediating factors in the relationship between parental economic outcomes and child outcomes.

## Theoretical Framework

The experimental programs under investigation include several policy components that are designed to increase employment and earnings. Only one of the programs included special services to address particular barriers or multiple barriers to employment. (The exception is the Human Capital Development program of National Evaluation of Welfare-to-Work Strategies [NEWWS]. This program focused on education.) Prior research shows that the analyzed programs generally increase employment and use of nonparental child care. Some programs improve school achievement for young children (Morris et al. 2001). This study asks how the effects of these employment-based programs might differ by levels of family economic disadvantage. A small increase in income or in work supports may have the largest effect on the most-disadvantaged families because they have very low initial levels of employment and low earnings. Such families therefore have the most room for potential change. This hypothesis suggests a compensatory effect (Bradley et al. 2001). Alternatively, programs may not contribute enough resources to allow the most disadvantaged families to overcome multiple and sometimes co-occurring hurdles; slightly more advantaged families may be better able to use new economic resources or circumstances for the benefit of their children.

This article focuses particularly on the ways in which the examined programs affect use and type of early-care settings. Child care and the quality of the home environment are two pathways by which employment and income programs could affect child development. Many child development theories posit that children's cognitive development benefits from high-quality early-care settings. Previous research indicates that low-income children and children from impoverished home environments particularly benefit from center-based care (Caughy, DiPietro, and Strobino 1994; Gennetian et al. 2005; Gormley and Phillips 2005). If other aspects of their lives are unpredictable or chaotic, children may also benefit from structured and stable care settings with well-designed curricula and well-trained caregivers.

Family work and family stress theories place families in a broad context, taking into account the fact that single parents are required to balance employment with home and child-rearing responsibilities, as well as to negotiate the accessibility and availability of early-care settings. Families must consider the flexibility of hours of early child care and transportation to and from the care setting, as well as predictability and sustainability of employment schedules and economic resources (including child-care subsidies). The confluence of these competing factors can affect parental stress and, in turn, parent-child interaction. Economic theory leads to the prediction that even if a parent prefers center-based care for his or her child, the feasibility of investing in this type of setting is assessed against the price of care, time constraints, and resource limitations. Child-care subsidies are found to increase employment, and the enhanced child-care assistance (which includes more generous reimbursement of child-care costs) in several of the examined programs is found to increase parents' use of center-based care settings (Berger and Black 1992; Fuller et al. 2002; Gennetian et al. 2004; Blau and Tekin 2007).

## Data, Sample, and Descriptive Characteristics

### Experimental Welfare and Employment Studies

As a response to welfare waivers offered by the federal government during the late 1980s and 1990s, several states and localities implemented novel welfare and employment programs. These policies were evaluated with random assignment designs. Several key policy experiments were designed to increase employment among single parents. These policies include (1) rewarding employment by enhancing income disregards that enable the state to calculate welfare benefits without considering income from work or by use of earnings supplements; (2) requiring welfare recipients to participate in job searches, to use employment services, or to move directly into employment as a condition for receiving welfare; (3) imposing time limits on welfare receipt; (4) mandating educational activities such as participation in high school, general equivalency diploma (GED) preparation, adult basic education classes, English as a second language classes, vocational training, and college classes; and (5) expanding financial and nonfinancial child-care resources that are primarily aimed at facilitating the use of center-based or licensed care.<sup>3</sup>

Among the samples of single-parent families, the effects of these policies on parents' economic security, child-care use, and children's achievement are fairly well documented (Schoeni and Blank 2000; Bloom and Michalopoulos 2001; Gennetian and Michalopoulos 2003; Gennetian et al. 2004). Earnings supplements increase income and employment.

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<sup>3</sup>In all studies, parents in the control groups were eligible for child-care subsidies offered through AFDC (prior to 1996) and for some subsidies outside the welfare system. In some experiments, members of the program groups had the same standard child-care subsidies as their control counterparts, but other programs included a range of additional policy components that are identified as "enhanced child-care assistance." These policies can be grouped into five sets: resource and referral, encouragement of formal care, higher income eligibility limits than the standard, direct payment to providers, and reduced bureaucratic barriers. Several other policies tested in these experimental programs are not the focus of this study. Such policies include streamlined eligibility rules for single- and two-parent families, increased asset limits on automobiles, and extensions to time limits for use of Medicaid benefits.



Mandatory employment services increase employment, but because welfare benefits are exchanged for increased earnings, they do not typically increase income. Programs offering enhanced child-care assistance increase the use of center-based, formal care and have no measured effect on the use of home-based and informal care (Crosby, Gennetian, and Huston 2005). On the whole, the programs improve achievement in the early elementary grades for children who were in their preschool years at random assignment (Morris, Duncan, and Clark-Kauffman 2005).

This article draws on data collected in several of these random assignment studies of welfare and employment programs, which are described in table 1. A detailed description can be found in the individual study reports as cited in table 1. The table illustrates key features of these programs and how they differ. The NEWWS study uses a three-group design. Welfare recipients are randomly assigned to one of three groups: the control group, a mandatory employment program group (also known as labor force attachment programs), or an education program group (also known as human capital development programs) in three sites (Atlanta, Grand Rapids, MI, and Riverside, CA). The Minnesota Family Investment Program (MFIP) evaluation also tests a three-group research design. Welfare recipients are randomly assigned to the control group, to a program that offered financial incentives for employment, or to a program group that coupled financial incentives with mandatory employment services. The Connecticut (CT) Jobs First study, in contrast, tests the joint effects on various outcomes of a program that combines a very generous earnings supplement with a very short time limit in two cities: New Haven and Manchester, Connecticut. Each of the studies conducted a survey at a follow-up point and collected administrative records data on employment, earnings, and welfare receipt throughout the follow-up period. As table 1 shows, utilized data were collected during follow-up surveys that had high response rates. All studies except for the Florida Family Transition Program (FTP) were conducted 2–3 years after random assignment. In the FTP, the first follow-up survey was conducted 4 years after random assignment.

Currently, government programs combine variations of several of the features tested in these studies. Temporary Assistance for Needy Families (TANF) programs include requirements for work participation, and many states have enhanced the earnings disregard and expanded the child-care resources available to low-income families. The TANF benefits are also subject to a time limit in many states (Parrott et al. 2007; Farrell et al. 2008). Though few states offer earnings disregards as generous as those examined in this article, federal and state governments offer an earnings supplement in the form of the Earned Income Tax Credit and the dependent care tax credit (Morris, Gennetian, and Duncan 2005).

### **Measures of Economic, Child-Care, and Child Outcomes**

The individual program evaluations outlined above provide the data for the analyses. Each of these evaluations features a common set of comparable outcomes that measure socioeconomic characteristics, demographic characteristics, economic well-being, use of child care, and children's academic achievement.

To conduct the analyses, a pooled data set is created, encompassing all the observations from this portfolio of welfare and employment studies. The sample comprises focal children of single parents (i.e., parents who did not identify themselves as married at baseline and whom caseworkers or program staff identified as single parents). Focal children were randomly selected, were of preschool age at the time their parents entered the study, and were 4–9 years old at the follow-up interview. Child-care histories and data on child outcomes were collected for the focal children. Focal child data, including data on child developmental outcomes and on parents' use of child care for all children under age 13, come from the follow-up surveys. Each of the program evaluations provides detailed

information about the child-care arrangement for at least one focal child per family. Data from the New Hope project include information on up to two focal children per family. All focal children were under the age of 13 when these data were collected. There are 5,526 children and 5,505 mothers in this study.

Preschool-age children in this study are those who reach the age of 4 years during the period for which the child-care history was collected. Five-year-old children are also included if, at the time of the survey, they were not yet enrolled in kindergarten. Most children in the sample were 3 or 4 years old during the period when these data were gathered. For example, the CT Jobs First survey asked about child-care arrangements during the 12–36 months after random assignment. Children who were of preschool age (3–5 years old) at that time were 2–4 years old at random assignment.

All the employment and earnings measures are based on Unemployment Insurance records data from the states or provinces in which the programs are located. These data provide information on quarterly earnings of the single parent. They exclude earnings from any self-employment or informal employment, as well as employment that may occur outside of the state or province of residence at the time of study entry. They also do not capture income produced by other household members. Two measures, average quarterly employment and average quarterly earnings, provide estimates for each of the quarters for which there is information about child care. For example, child-care information for FTP families is available for the year prior to the follow-up interview; therefore, families' average quarterly employment and earnings are calculated for the year prior to the follow-up. Child-care information for New Hope families is available for the 2 years prior to the follow-up, so employment and earnings are calculated for these two years. Income is constructed as the sum of welfare income (identified through public assistance records), earnings, and the value of the earnings supplement (when appropriate). Income from other members of the household or the noncustodial parent is excluded, as is income from child support.

Information about child care is collected from mothers in a follow-up survey. Although the follow-up period for each of the studies varies slightly, a comparable time line of child-care use (as well as of employment, earnings, and income) is constructed for the period roughly between 12 months and 2 years prior to the time that the child outcome information was collected.

In all studies, surveys collected detailed retrospective information about type of care if a respondent agreed that he or she had used a regular child-care arrangement for 10 or more hours per week. These child-care arrangements are classified here as center-based or home-based care. Center-based care takes place in group settings designed primarily for child care; it is often licensed by the state, and there are usually multiple caregivers in the center. In this article, center-based care includes child-care centers, preschool programs, Head Start, and organized before- or after-school programs. Home-based care includes unregulated care by relatives or nonrelatives in the caregiver's home or the child's home as well as in family child-care homes that may or may not be licensed or certified. In family child-care homes, a provider cares for a group of children in his or her home. Information about licensing of child care was not collected in most of the studies.

Three mutually exclusive dichotomous variables are created as a result of data from mothers' reports of child-care arrangements for the period (1–2 years) prior to the survey interview. The first of these measures whether the child experienced only center-based care during the period in question. The second variable measures whether the child experienced only home-based care during the period, and the third measures whether the child experienced a mix of center- and home-based care during the period. Data for these



measures are available for the full sample. This study reports on, but does not present, findings on two alternative categorizations of early-care settings. These measure (1) any exposure to center-based care during the period and (2) any exposure to home-based care during the period. These alternative measures are not a central focus of analysis because they confound the total amount of care with type of early-care setting.

Lack of observational information on the quality of care settings is one weakness of the data. However, a growing body of evidence suggests that, for low-income families, the quality of center-based care arrangements, on average, is higher than the quality of home-based arrangements. The findings are based on several process (e.g., the Early Childhood Environment Rating Scale and the Infant/Toddler Environment Rating Scale) and structural measures (e.g., caregiver training and education; Coley, Chase-Lansdale, and Li-Grining 2001; Fuller et al. 2004; Loeb et al. 2004). Center-based care often has a routine daily schedule, a structured curriculum, an environment designed for children, trained caregivers, relatively large groups of similarly aged children cared for by several adults, and ratios of children to adults that are higher than those typically found in home-based care (e.g., Kisker et al. 1991; Kontos, Hsu, and Dunn 1994; Fuller et al. 2004; NICHD 2004). In comparison, home-based care tends to be less formal and less educationally focused. It typically involves one adult caring for one or more children of varying ages. Some exposure to center-based care in theory may be just as important as exclusive use of center-based care in preparing children for school. However, in the evaluations in this article, the children who experience only center-based care during the preschool years are in more months of center care (the percentage of follow-up period in center care is 67 percent) than children who experience a combination of center- and home-based arrangements (the percentage of follow-up period in center care is 46 percent).

Children's achievement is measured at the time of the follow-up survey, when they were in the period from kindergarten through third grade. A variety of methods are used. In every study, parents are asked to draw on their knowledge of schoolwork and report cards to rate how the child is doing in school on a five-point scale (1 = not well at all and 5 = very well). Two studies include standardized tests of children's academic skills. The NEWWS study collected data through the Bracken Basic Concept Scale (Bracken 1984). The Canadian Self-Sufficiency Project (SSP) includes data from responses to the Peabody Picture Vocabulary Test and a test of basic math skills (Dunn et al. 1979). Teacher reports of children's achievement are available from the CT Jobs First and New Hope studies. Two studies, FTP and MFIP, measure children's achievement only through maternal reports.<sup>4</sup> So that the measures of achievement are comparable across studies and child observations, each of the achievement outcomes is standardized by subtracting the child's score from the mean and dividing the difference by the standard deviation for the control group. Analyses maximize all the available information about children's achievement by using every measure and adjusting the standard errors for correlations between measures. Analyses also test whether the findings are sensitive to the type of achievement measure, separately examining effects for maternal reports of achievement from effects for teacher reports and from those for test assessments.<sup>5</sup> Maternal ratings of children's problem behavior were collected at the follow-up survey in each study. Three comparable scales are employed here to assess externalizing

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<sup>4</sup>One concern with maternal reports of children's achievement in the context of these welfare and employment programs is that mothers' reports in the program group may be influenced by their new employment. Thus, although the difference between the program and control groups in maternal reports of achievement is valid, the perception of achievement among mothers in the program group may differ from the perception among mothers in the control group. However, for studies with multiple sources of data on achievement, parent ratings of children's achievement are correlated with teacher reports and test assessments (i.e.,  $r = .41$  between teacher and parent ratings,  $r = .31$  between test scores and teacher ratings, and  $r = .31$  between test scores and parent ratings). These correlations for children whose mothers are in the program group are similar to those for children whose mothers are in the control group.

and internalizing behaviors. For the pooled data set, behavior scales are converted to standardized scores. Mothers in the CT Jobs First, MFIP, and NEWWS studies rated their children's behavior using 26 items from the Behavior Problem Index (Achenbach and Edelbrock 1981; Peterson and Zill 1986). In New Hope, parents completed the 11-item Problem Behavior Scale of the Social Skills Rating System (Gresham and Elliot 1990). Parents in the SSP rated children's behavior using a four-item subscale for externalizing behavior and a seven-item subscale for internalizing behavior (Morris and Michalopoulos 2000). Across studies, the Cronbach coefficient alphas range from 0.63 to 0.82 for the internalizing scales and from 0.70 to 0.87 for the externalizing scales.

Maternal reports of depressive symptomatology and parenting were also collected in the studies' follow-up interviews. Parents were asked about the number of times in the past week that they experienced depressive symptoms. Four studies (CT Jobs First, FTP, MFIP, and New Hope) draw these items from the 20-item Center for Epidemiology Studies–Depression (CES-D) scale (Radloff 1977). Two studies (NEWWS and SSP) use a shortened, 11-item version of the CES-D. A dichotomous measure is created using the threshold to indicate depression (a score of 16 out of 60 when using the full scale) identified in previous research (Radloff 1977;  $\alpha = .82-.91$ ). Parental warmth was measured using three to six items that assess the number of times the child was shown physical affection, praised, and praised to other adults over the week prior to the interview. Items are scored on a four- to six-point scale, depending on the study, and are averaged for a total scale ( $\alpha = .72-.82$ ). Three to nine items (depending on the study) measure harsh parenting by assessing the number of times the respondent reportedly engaged in negative disciplinary behavior, such as losing his or her temper, scolding, yelling at, or spanking the child, in the week prior to the follow-up interview. Items are scored on a four-point scale ( $\alpha = .67-.94$ ). Parenting aggravation and stress are measured by items indicating the extent to which, in the week prior to the follow-up interview, mothers felt angry with their children or trapped by their role as parents; a third item indicates whether mothers report feeling that their children are hard to care for ( $\alpha = .61-.79$ ).

It is not possible to use observations that have missing data on outcome measures of income, child care, or achievement. Less than 0.003 percent of the sample is missing data on income. Child-care data are missing for 1.7 percent of the sample, and data on children's achievement are missing for 4.5 percent of the sample. Overall, missing data are distributed similarly across program and control groups as well as among the three levels of disadvantage.

### Sample and Descriptive Characteristics

Table 2 shows the sample sizes by site within study and by initial levels of disadvantage. For these analyses, sample members are classified as most disadvantaged, moderately disadvantaged, or least disadvantaged. Individuals are classified as most disadvantaged if they had no reported earnings in the year prior to random assignment, did not have a high school diploma or GED at random assignment, and received AFDC for 2 or more years prior to random assignment. Individuals are classified as least disadvantaged if they had earnings in the year prior to random assignment, had a high school diploma or GED at random assignment, and received AFDC for less than 2 years prior to random assignment. Individuals are classified as moderately disadvantaged if they cannot be categorized as least or most disadvantaged. Approximately two-thirds of the current sample is moderately disadvantaged.

<sup>5</sup>Note that because of the random assignment nature of the data, it is not likely that maternal perceptions per se will influence effects on maternal reports of children's achievement, since this perception bias should be roughly equivalent for mothers in experimental and control groups.

Findings are presented for the subsample of children who have an achievement score. These findings are similar to those for children with observations on problem behavior. There are 5,634 observations of children with both outcomes and 6,175 observations of children with an achievement outcome.

Within the moderately disadvantaged group, 35 percent of mothers report having a high school diploma (or GED) but no earnings and had been on AFDC for 2 or more years prior to random assignment; 61 percent of the group reported having a high school diploma and had been on AFDC for 2 or more years. Among the moderately disadvantaged, 46 percent had some earnings in the year prior to random assignment.

Table 3 presents descriptive characteristics of the sample by initial levels of disadvantage. Average reported earnings in the year prior to random assignment are \$1,800 for the moderately disadvantaged and \$8,000 for the least disadvantaged. In general, the moderately disadvantaged families are found to have lower earnings than the least-disadvantaged families and to spend more time on AFDC. Because 73 percent of moderately disadvantaged mothers reported having a high school diploma at random assignment, this group is more job ready than the most-disadvantaged mothers. These three subgroups differ from each other to a statistically significant degree on several other variables including measures of marital status (divorced or never married), ethnicity, whether the parent was under age 18 when the child was born, and number of children.

During the quarter of random assignment, AFDC and food stamps accounted for 98 percent of measured income for the most-disadvantaged control group. Two years after random assignment, AFDC and food stamps accounted for 83 percent of income for the most-disadvantaged control group. In comparison, AFDC and food stamps accounted for 87 percent of income for the moderately disadvantaged control group at random assignment and for 60 percent of their income 2 years later. For the least-disadvantaged control group, AFDC and food stamps accounted for 65 percent of income at random assignment and 36 percent of their income 2 years later.

A point of comparison may be helpful. The eightieth percentile of the income distribution for a national sample of U.S. households in 1993 was \$72,744, and the twentieth percentile was \$15,643 (DeNavas-Walt and Cleveland 2002).<sup>6</sup> In the present sample, the eightieth percentile of the income distribution has income of approximately \$11,600 for the most-disadvantaged families, \$11,700 for moderately disadvantaged families, and \$15,900 for the least-disadvantaged families.

Table 4 presents the means in the control group for employment, educational and job training, and child care. Means are measured over the follow-up period. Available data suggest that 40 percent of the most-disadvantaged control group was ever employed over the follow-up period. By comparison, 69 percent of the moderately disadvantaged control group and 88 percent of the least-disadvantaged control group were employed at some point during the follow-up. The table shows that the percentage of those who were ever employed or attended educational or job training is very similar to the percentage of those who used any type of child care. The similarity suggests that most child care is used when parents are at work or in training. For example, 78 percent of moderately disadvantaged parents were ever employed or report that they attended education or job training, and 75 percent report using some child care.

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<sup>6</sup>Income is given in 2001 dollars. Figures for U.S. household income from the U.S. Census Bureau include only money income before taxes and do not include government-provided noncash benefits.

## Methods

The analyses preserve the random assignment nature of the data by examining experimental effects within subpopulations defined by their baseline characteristics. This allows an examination of the effects of the programs on any individual outcome without encountering confounding observable or unobservable characteristics. These analyses also informally assess potential mediating mechanisms by comparing the patterns of experimental effects across outcomes and subpopulations.

Experimental differences between the program group and control group are estimated using ordinary least squares regressions with adjustments for such covariates as demographics, site, and family structure.<sup>7</sup> Standard errors are adjusted to account for multiple observations per child and multiple children per family. The pooled sample is split into three subgroups by level of disadvantage. This method requires fewer assumptions than those necessary for a model that includes the interaction of treatment status with level of disadvantage. A two-tailed *t*-test is applied to all regression coefficients to assess statistical significance. A chi-square test is conducted to determine if experimental effects for the three levels of disadvantage differ from each other to a statistically significant degree. Findings from a two-tailed test are taken to be trends that indicate a marginal level of statistical significance at  $p < .10$ .

Experimental effects are estimated using the following equation for each subgroup:

$$Y_i = \alpha + \beta_1 P_i + \sum_{k=2}^K \beta_k X_i + \varepsilon_i,$$

where  $i$  represents child;  $Y$  represents the economic, early-care setting, or child outcome of interest; and  $P$  is assignment to the experimental group. The effect of the program on income, earnings, employment, child care, children's achievement, or problem behavior is represented by  $\beta_1$ . The term  $X$  is a vector of baseline characteristics included as controls, and the term  $\beta_k$  represents a vector of coefficients for the baseline characteristics. The term  $\varepsilon_i$  is a normally distributed error term. All control variables are measured before random assignment or at study entry and include marital status (divorced or never married), age of youngest child, number of children, and several additional indicators. These indicators enable analyses to control for random assignment cohort, county, and other study-specific features.

A pure split-sample experimental impact methodology is employed instead of more complex propensity score techniques because the question of interest is whether initial levels of family disadvantage matter. In contrast, propensity score techniques predict behavior on the basis of a set of initial characteristics (for discussion, see Morris and Hendra [2002]). Supplementary investigations (not shown) reveal patterns that are similar to those estimated using groups of families defined by the aforementioned combination of human capital risk factors. These investigations use available data on a host of related risk factors, such as whether the mother was a teen at the child's birth, the number of children in the household, marital history, stability of employment, whether a child is the oldest in the household, and number of residential moves.

<sup>7</sup>Ordinary least squares is the appropriate estimation technique for most of the outcomes. For the four dichotomous outcomes (center-based care use, home-based care use, mixed care use, and depression symptomatology), the models were also reestimated using logit analysis. The findings have the same direction and statistical significance as ordinary least squares.

## Results

### Economic Outcomes and Child Outcomes

Table 5 presents the control group means and estimated effects of experimental programs on maternal economic and employment outcomes, children's achievement, and problem behavior for each of the three subpopulations. Control group means and effect estimates are regression adjusted. The first measure of children's achievement (i.e., achievement: multiple reporters) stems from three types of reporters: parents, teachers, and test scores. The second measure of children's achievement (i.e., achievement: cognitive test assessment) includes only test scores. The two final columns in this table present *p*-values from chi-square tests. Column 7 indicates whether the effects of the three subgroups differ to a statistically significant degree. Column 8 indicates whether the most-disadvantaged group's effects differ to a statistically significant degree from those for the moderately disadvantaged group.

This table suggests that the programs have no measurable effects on economic or children's outcomes in the least-disadvantaged families. Program effects are clustered in the most-disadvantaged and moderately disadvantaged subgroups.

Among families in the most-disadvantaged group, the programs are estimated to increase average quarterly employment (11.7 percentage points,  $p < .001$ ), average quarterly earnings (\$255,  $p < .001$ ), and average quarterly income (\$222,  $p < .01$ ). Children's achievement and behavior in the most-disadvantaged subgroup of the program group families, however, are not found to differ from those of children in the most-disadvantaged subgroup of control group families.

Among the moderately disadvantaged families, the programs are estimated to increase average quarterly employment by 8.0 percentage points ( $p < .001$ ), average quarterly earnings by \$201 ( $p < .001$ ), and average quarterly income by \$247 ( $p < .001$ ). For this group, the programs are also found to have positive effects on children's achievement. For children in moderately disadvantaged families, programs are estimated to improve achievement by 0.102 effect size units ( $p < .01$ ). If a measure of achievement is based solely on cognitive test scores (not maternal reports), programs are found to improve achievement by 0.164 effect size units ( $p < .001$ ). Column 8 of table 5 further shows that estimated program effects on the economic outcomes of the moderately disadvantaged subgroups do not differ to a statistically significant degree from estimated program effects on the economic outcomes of the most-disadvantaged subgroups. However, estimated program effects on children's achievement across these two subpopulations do differ statistically significantly. Finally, table 5 shows that the programs have no estimated effects on internalizing or externalizing behavior problems for any subgroup.

### Child-Care Outcomes

Table 6 presents the control group means and estimated effects of programs on participation in three child-care settings: only center-based care, only home-based care, and mixed care (i.e., a mixture of home-and center-based care). Results are presented for each of the three subgroups. For children in the most-disadvantaged families, the programs are estimated to increase children's participation in home-based care by 9.5 percentage points (a 52 percent increase over control group participation;  $p < .001$ ) and to increase use of mixed-care arrangements by 5.9 percentage points (a 36 percent increase over control group participation;  $p < .05$ ). For children in moderately disadvantaged families, programs are estimated to increase participation in center-based care by 2.3 percentage points (a 12 percent increase;  $p = .096$ ) and to increase the use of home-based care by 2.8 percentage points (an 11 percent increase;  $p = .070$ ). Column 8 shows that the most-disadvantaged and moderately disadvantaged groups differ to a statistically significant degree with respect to

the estimated effects on center-based care ( $p = .043$ ), home-based care ( $p = .033$ ), and mixed care ( $p = .094$ ).

Additional analyses (not shown) explore alternative categorizations of type of care: any exposure to center-based care or any exposure to home-based care during the follow-up period. For children in the most-disadvantaged families, programs are estimated to increase children's participation in any home-based care by 15.3 percentage points, or 44 percent ( $p < .01$ ), but to have no effect on participation in any center-based care. For children in the moderately disadvantaged families, the programs are found to increase children's participation in any center-based care by 3.5 percentage points, or 7 percent ( $p < .05$ ), and any home-based care arrangements by 4.0 percentage points, or 7 percent ( $p < .05$ ). The most- and moderately disadvantaged families differ to a statistically significant degree in the extent to which the programs affect participation in any home-based care ( $p = .001$ ). For children in the least-disadvantaged families, programs are estimated to increase participation in any center-based care by 7.3 percentage points, or 13 percent ( $p < .05$ ).

Additional analyses separate home-based care provided by relatives from that provided by nonrelatives. These analyses are limited because the NEWWS survey questions combine relative and nonrelative caregivers into one category. Of the respondents who report using only home-based care in the remaining studies, 60 percent report using only relative care, 21 percent report using only nonrelative care, and 19 percent report using a mix of relative and nonrelative care. The pattern of program effects on these components of home-based care is similar to that of effects for home-based care overall.

Analyses also estimate effects of four of the experiments (CT Jobs First, FTP, MFIP, and New Hope) on the proportion of months children spent in center-based and home-based care. Although there are no statistically significant estimated effects of the experiments on the proportion of months in each type of care for the three subgroups, the increase in months of home-based care (0.072) for children in the most-disadvantaged families statistically differs from the decrease in months of home-based care ( $-0.027$ ) for children in moderately disadvantaged families ( $p = .092$ ).

Are these observed patterns of effects related to key policy features of the programs? To answer this question, program effects are investigated within each study. Results suggest that the findings within each study are very similar to findings for the data pooled across studies. Analyses also investigate whether findings are clustered in programs that share similar key policy features. For each of the disadvantaged subgroups, estimates are calculated for experimental programs with earnings supplements (pooling data only from MFIP, CT Jobs First, FTP, New Hope, and SSP), programs with a mandatory employment component (pooling data only from NEWWS, CT Jobs First, FTP, and MFIP), and programs with expanded child-care assistance (pooling data only from MFIP, FTP, and New Hope). Programs that share particular policy features and those that do not share features do not differ qualitatively in their outcomes by family level of disadvantage. One interpretation of this finding is that the effects by subgroup are not tied to the particular features of the program models within the study but rather are due to a set of common initial characteristics of the families that cuts across studies.

### Other Mechanisms

Results suggest that experiments vary in the effects on use of different types of early-care settings for the three subgroups. Also estimated are other potential mechanisms by which experiments may affect child development. First, program effects on the number of jobs, and on job schedules at the time of the survey interview, are estimated in an effort to uncover nuances that are related to employment and that can affect children's development.<sup>8</sup> Results



suggest that the most-disadvantaged families experience an increase in number of jobs as a result of program exposure, and this effect differs to a statistically significant degree from the observed increase for moderately disadvantaged families ( $p = .085$ ), but that there were no other detectable effects on job schedules.

Second, additional analyses examine program effects on depressive symptoms and parent-child interactions. For mothers with low human capital, increased employment may increase depression (Zaslow et al. 2001). Additionally, maternal stress may increase with employment, and such changes may also alter parenting practices (Menaghan 1995). To provide more supporting evidence as to whether experiments' possible effects on achievement among the children of the moderately disadvantaged families can be attributed, in part, to observed effects on types of care settings, analyses also estimate the effects of experiments on maternal depressive symptoms and on three measures of parenting (warmth, harshness, and aggravation). The findings on these outcomes are presented in table 6. Results suggest that exposure to these programs increases depressive symptoms among the most-disadvantaged mothers, an estimated effect that statistically differs from those estimated for moderately disadvantaged mothers. Program exposure is not estimated to have statistically significant effects on other aspects of parenting.

## Discussion

In line with prior work, findings suggest that the analyzed programs increase employment, earnings, and income among both the most- and moderately disadvantaged parents but have no detectable effects on parents in the least-disadvantaged families. However, among the moderately disadvantaged, programs are found to increase children's participation in center-based care and to improve their achievement. Although programs also are found to increase use of home-based care among the moderately disadvantaged, the increase is much less than that estimated for the most-disadvantaged subgroup. By contrast, in the most-disadvantaged families, programs are estimated to increase home-based care, mixed care, and maternal depressive symptoms. For these families, program exposure has no measured effects on children's achievement.

The research is guided by both family work and child development theories. In family work theories, economic improvements in families are expected to increase family and child well-being. Why, then, do positive program effects on income not produce positive effects on children's achievement among the most-disadvantaged children? One reason may be that the effect on income among the most-disadvantaged families is not sufficient to enable them to get beyond the basic needs for food security and housing. Findings from the recent long-term follow-up in MFIP provide some support for this hypothesis. Among the most-disadvantaged single parents, the program increased quarterly income by just over \$500 at the 6-year follow-up point. This is nearly double the income increases observed in the data from the 3-year follow-up, which are used in the current study. Also at the 6-year follow-up, children of the most-disadvantaged single-parent families in the program group had higher scores on reading assessments than children in the most-disadvantaged families in the control group (Gennetian, Miller, and Smith 2005).

Another possibility is that the program effects on income are counteracted by the negative effects of maternal depressive symptoms. Increased employment may be a source of stress

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<sup>8</sup>Job schedules are measured on the basis of the shift the respondent reported working during the month prior to the follow-up interview: regular daytime shift, regular evening shift, regular night shift, rotating shift (one that changes regularly from days to evenings to nights), split shift (one consisting of two distinct periods each day), an irregular schedule (one that changes from day to day), or something else.

for the most-disadvantaged parents: Parents in the most-disadvantaged control group show levels of depressive symptoms that are relatively similar to those observed among the moderately and least-disadvantaged control group parents, but this set of employment-based programs is estimated to increase depressive symptoms among the most-disadvantaged parents. Children in the program group do not differ from children in the control group in acting out or sad behaviors, even though program group mothers reported greater psychological distress than control group mothers.

Among moderately disadvantaged families, programs are estimated to increase center-based care by 12 percent and to improve children's achievement by about 0.2 standard deviation units. These results suggest that although participation in center-based care may play a small role in achievement gain, its effects and the estimated increases in employment and income may together mediate positive program effects on children's achievement. Further, families experiencing the various changes may be better positioned to use resource increments that the programs made available to obtain center-based care directly (by receipt of expanded child-care assistance) and indirectly (by increasing income and ability to purchase care). Other studies show that many low-income parents prefer center-based care but find it unaffordable; they will use it when subsidies are made available (Lowe, Weisner, and Geis 2003). Studies that use more complex nonexperimental techniques with these same data also provide evidence that center-based care and the income that is partially used to purchase such care facilitate children's school readiness (Gennetian et al. 2005).

Although the programs are found to increase use of home-based child-care settings in both the most- and moderately disadvantaged subgroups, the most-disadvantaged families are not found to respond to any possible increases in employment and income by increasing use of center-based care arrangements. Mothers in these most-disadvantaged families may be entering employment for the first time (or reentering after a long period of unemployment). They may prefer home-based care arrangements, they may not have the resources available to consider center-based care, and they may have nontraditional or erratic employment schedules that do not match the availability of center-based settings. Results suggest that, at the follow-up survey, the most-disadvantaged program group mothers held a higher number of jobs than their control group counterparts. This could influence their ability to find a convenient child-care center, and it could also influence children directly. Other evidence suggests that, during the period in which these data were collected, much of the home-based care used by very disadvantaged parents was low in quality and may have done little to promote early learning (see, e.g., Collins et al. [2000] for results from the National Study of Low Income Families).

In summary, the co-occurrence of program effects on children's achievement, types of care used, and depressive symptoms provides relatively compelling evidence about the ways in which programs can have a positive influence on children's achievement in the case of some early-care settings or very little or countervailing influence in the case of depression. Subgroup differences in estimated effects of programs on child-care use, parenting, and parent depression are all worthy of further investigation, as are the differences' associations with children's achievement and behavior. This article's findings are consistent with those of other studies in suggesting that policies are not sufficient to improve the development of the most-disadvantaged children by focusing solely on increasing employment among parents of those children. Findings of the current and previous studies also raise questions about how best to support economic self-sufficiency and, at the same time, to improve the chances of children at the lowest end of the economic ladder. Starting points might include expanding access to high-quality child care and early education programs, as well as addressing the complex set of barriers that interfere with stable employment and income.

Policies might also consider the potential effects of work on mothers' emotional and psychological well-being.

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**Table 1**

Description of the Studies Pooled for the Analyses

Study	Key Policy Features Tested	Sites	Year Study Began	Length of Follow-up Period	Sample Size	Age Composition at Random Assignment	Response Rates for Follow-up Surveys (%)	Primary Sources
NEWWS	M, E	Atlanta; Grand Rapids, MI; and Riverside, CA	1991	24 months	1,681	3–5 years	80–91	Hamilton et al. (2001)
MFIP	M, ES, CC	Seven counties in Minnesota	1994	36 months	1,060	2–5 years	80–81	Gennetian and Miller (2002)
New Hope	ES, CC	Milwaukee	1994	24 months	333	3–5 years	79	Bos et al. (1999); Huston et al. (2001, 2003)
SSP	ES	Two Canadian provinces	1992	36 months	1,178	2–4 years	81	Quets et al. (1999); Michalopoulos et al. (2002)
FTP	M, ES, TL, CC	Escambia County, FL	1994	48 months	326	1–2 years	78–80	Bloom et al. (2000)
CT Jobs First	M, ES, TL	New Haven and Manchester, CT	1996	36 months	789	2–4 years	71–80	Bloom et al. (2002)

Note.—NEWWS = National Evaluation of Welfare-to-Work Strategies; MFIP = Minnesota Family Investment Program evaluation; SSP = Canada's Self-Sufficiency Project evaluation; FTP = Florida's Family Transition Program evaluation; CT Jobs First = Connecticut Jobs First evaluation; M = mandatory employment services; E = mandatory educational activities; ES = earnings supplements; TL = time limits on welfare receipt; CC = expanded child-care resources.

**Table 2**

## Sample Size by Study and by Level of Disadvantage

<b>Study</b>	<b>Most</b>	<b>Moderate</b>	<b>Least</b>	<b>Total</b>
CT Jobs First	124	560	105	789
FTP	37	236	53	326
MFIP	113	733	214	1,060
New Hope	31	248	54	333
NEWWS:				
Atlanta	288	777	131	1,196
Grand Rapids, MI	84	386	61	531
Riverside, CA	254	435	73	762
SSP:				
British Columbia	174	367	19	560
New Brunswick	182	415	21	618
Total sample	1,287	4,157	731	6,175
Sample of children	1,146	3,705	675	5,526

Note.—CT Jobs First = Connecticut Jobs First evaluation; FTP = Florida's Family Transition Program evaluation; MFIP = Minnesota Family Investment Program evaluation; NEWWS = National Evaluation of Welfare-to-Work Strategies; SSP = Canada's Self-Sufficiency Project evaluation. Total sample represents the total number of child assessment observations.

**Table 3**  
 Descriptive Characteristics at Random Assignment by Level of Disadvantage

	MOST (1)	MODERATE (2)	LEAST (3)	p-VALUE <sup>a</sup>				
				(1) vs. (2)	(2) vs. (3)	(3) vs. (4)	(1) vs. (2)	(2) vs. (5)
High school diploma or GED (%)	73	100	.000***	.000***	.000***			
Prior AFDC receipt (%):								
No prior receipt before random assignment	5	25	.000***	.000***	.000***			
At least 1 month but less than 2 years before random assignment	21	75	.000***	.000***	.000***			
At least 2 years before random assignment	100	74	.000***	.000***	.000***			
Employed in year prior to random assignment (%)	46	100	.000***	.000***	.000***			
Marital status:								
Never married (%)	69	64	.000***	.000***	.003**			
Separated (%)	29	34	.000***	.000***	.006**			
Ethnicity:								
White (%)	40	44	.000***	.000***	.026*			
Black (%)	38	41	.300	.300	.063+			
Latino (%)	13	9	.000***	.000***	.000***			
Other (%)	9	6	.000***	.000***	.002**			
Parent under age 18 when child was born (%)	12	10	.015*	.015*	.193			
Earnings in year prior to random assignment (thousands of \$)	1.8	8.0	.000***	.000***	.000***			
Age of parent at random assignment	28	28	.376	.376	.314			
Number of children	2.3	2.0	.000***	.000***	.000***			
Number of times moved residence per year <sup>b</sup>	.6	.6	.543	.543	.635			

Note.—AFDC = Aid to Families with Dependent Children; GED = general equivalency diploma. See the text for definitions of the subgroups.

<sup>a</sup> p-value from regression on level of disadvantage. Adjusted for multiple observations per child.

<sup>b</sup> Baseline surveys for CT, FTP, MFIP, New Hope, and NEWWS asked for the number of moves in the 2 years prior to random assignment. The SSP baseline survey asked for the number of moves in the 5 years prior to random assignment. This measure is per year. See note to table 2 for full titles of the surveys.

+ p < .10.

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

**Table 4**

Employment and Type of Child Care by Level of Disadvantage during Follow-Up: Control Group

	Most (%)	Moderate (%)	Least (%)
Average quarterly employment rate	19.64	45.37	65.65
Ever employed	40.04	68.77	88.41
Attended educational or job training	28.08	40.19	44.35
Ever employed or attended educational or job training	52.90	77.78	93.91
Any child care	54.17	75.35	89.57
Any center-based care	34.96	49.09	56.52
Any home-based care	34.42	56.72	69.28
Only center-based care	19.57	18.63	20.29
Only home-based care	19.02	26.26	33.04
Mixed care	15.40	30.46	36.23
<i>N</i>	552	1,809	345

Note.—Educational or job training includes participation in English as a second language classes, adult basic education classes, general equivalency diploma classes, college classes, vocational training, unpaid employment, job clubs, and job searches.



Table 5

Effects of Welfare and Employment Programs on Economic Outcomes Child Achievement, and Problem Behavior by Prior Levels of Disadvantage

OUTCOME	MOST DISADVANTAGED		MODERATELY DISADVANTAGED		LEAST DISADVANTAGED		p-VALUE FROM $\chi^2$ TEST	
	Control Mean (1)	Effect (2)	Control Mean (3)	Effect (4)	Control Mean (5)	Effect (6)	(2) vs. (4) vs. (6) (7)	(2) vs. (4) vs. (8)
Average quarterly income (thousands of \$) <sup>a</sup>	2.471	.222** (.067)	2.707	.247*** (.048)	3.121	.075 (.136)	.492	.768
Average quarterly earnings (thousands of \$)	.354	.255*** (.071)	1.150	.201*** (.052)	2.099	-.076 (.152)	.142	.540
Average quarterly employment rate <sup>b</sup>	18.930	11.692*** (2.088)	44.842	8.021*** (1.290)	64.027	2.106 (2.664)	.018*	.138
Educational activity	.247	.094*** (.026)	.217	.033* (.014)	.274	.032 (.034)	.011*	.039*
Children's achievement: Multiple reporters <sup>c</sup>	-.202	.025 (.055)	-.037	.102** (.032)	.196	.030 (.075)	.388	.230
Cognitive test assessment <sup>d</sup>	-.192	.013 (.067)	-.115	.164*** (.043)	.026	.043 (.121)	.139	.061+
Internalizing behavior <sup>e</sup>	-.138	-.013 (.041)	.031	-.007 (.027)	.087	.009 (.068)	.962	.909
Externalizing behavior	-.146	-.022 (.042)	.033	-.006 (.028)	.072	.047 (.069)	.701	.763
N by level	1,287		4,157		731			
Total N	6,175							

Note.—Control group mean is the adjusted mean of the outcome for children or parents in the control group. Effect represents the regression coefficient of treatment status. Standard errors are in parentheses. Regressions include the following covariates: marital status, number of children, and parent's age at random assignment, as well as child's gender, race, program site, and type of reporter (parent, teacher, and test score).

<sup>a</sup> Income, earnings, and employment are for the quarters for which information is available about child-care arrangements.

<sup>b</sup> Average quarterly employment rate is presented on a scale of 0 to 100.

<sup>c</sup> Children's achievement is a standardized measure (with a mean of zero) of one or more of the following: maternal reports of achievement (based on a five-point scale), test assessments (such as the Peabody Picture Vocabulary Test), and teacher ratings of achievement (based on a five-point scale). Results are standardized using the full sample mean and control group standard deviation for the analysis sample.

<sup>d</sup> Test scores include the Peabody Picture Vocabulary Test and a math skills test containing a subset of items from the Canadian Achievement Tests from Canada's Self-Sufficiency Project and the Bracken Basic Concepts Scale from the National Evaluation of Welfare-to-Work Strategies.

<sup>e</sup> Behavior measures are standardized using the full sample mean and the control group standard deviation for the analysis sample.

+  $p < .10$ .

\*  $p < .05$ .

.1000  
\*\*\*\*  
 $p < .001$

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**Table 6**  
Effects of Welfare and Employment Programs on Type of Care, Depression, and Parenting by Prior Levels of Disadvantage

OUTCOME	MOST DISADVANTAGED		MODERATELY DISADVANTAGED		LEAST DISADVANTAGED		p-VALUE FROM $\chi^2$ TEST	
	Control Mean (1)	Effect (2)	Control Mean (3)	Effect (4)	Control Mean (5)	Effect (6)	(2) vs. (4) vs. (6) (7)	(2) vs. (4) (8)
Type of child care:								
Only center-based care (%)	21.064	-3.006 (2.188)	19.267	2.261 <sup>+</sup> (1.359)	20.066	2.413 (3.191)	.110	.043*
Only home-based care (%)	18.220	9.456*** (2.648)	25.542	2.820 <sup>+</sup> (1.556)	32.348	-4.006 (3.614)	.008**	.033*
Mixed care (%)	16.456	5.878* (2.265)	31.511	1.240 (1.552)	37.490	4.908 (3.905)	.208	.094 <sup>+</sup>
Depression: CES-D	15.110	1.667* (.820)	14.094	3.053 (.407)	12.767	1.243 (.970)	.112	.063 <sup>+</sup>
Parenting:								
Warmth	.026	.014 (.026)	-.124	.004 (.014)	-.159	.001 (.027)	.930	.739
Harsh	-.079	.189 (.154)	.078	-.028 (.057)	-.087	.159 (.107)	.168	.190
Aggravation	.191	.086 (.064)	-.061	-.009 (.028)	-.229	.011 (.058)	.403	.181
N by level <sup>a</sup>	1,287		4,157		731			
Total N	6,175							

Note.—CES-D = the Center for Epidemiologic Studies Depression Scale. Control group mean is the adjusted mean of the outcome for children or parents in the control group. Effect represents the regression coefficient of treatment status. Standard errors are in parentheses. Regressions include the following covariates: marital status, number of children, and parent's age at random assignment, as well as child's gender, race, program site, and type of reporter (parent, teacher, and test score).

<sup>a</sup> Sample size for achievement-level observations for economic and child-care outcomes.

<sup>+</sup>  $p < .10$ .

\*  $p < .05$ .

\*\*  $p < .01$ .

\*\*\*  $p < .001$ .