

Short-Term and Long-Term Effects of Early Parental Employment on Children of the National Longitudinal Survey of Youth

Elizabeth Harvey
University of Connecticut

This study examined the effects of early parental employment on children in the National Longitudinal Survey of Youth. Minimal effects on children's later functioning were found. Early maternal employment status and the timing and continuity of early maternal employment were not consistently related to children's development. Working more hours was associated with slightly lower cognitive development through age 9 and slightly lower academic achievement scores before age 7 but had no significant relation to children's behavior problems, compliance, or self-esteem. Early parental employment appeared to be somewhat more beneficial for single mothers and lower income families. There was some support for the hypothesis that early parental employment positively affects children's development by increasing family income.

The past several decades have seen an increase in the number of employed mothers, with a particularly large increase in the frequency with which mothers of young children are employed (Bureau of the Census, 1994). Researchers who have reviewed the literature on the effects of maternal employment on children's development have agreed that there is little evidence of negative effects when children are older (Belsky, 1988, 1990; Hoffman, 1961, 1974, 1989). However, there remains debate about the effects of *early* maternal employment on children. After reviewing the literature, Belsky (1988) concluded that maternal employment during infancy had ill effects on children's well-being. Specifically, he concluded that infants who were in nonmaternal care for more than 20 hr per week were at elevated risk for being insecurely attached at age 1 and were more disobedient and aggressive between ages 3 and 8. However, his conclusions have been criticized on several counts. For example, it has been argued that the studies Belsky reviewed failed to take into account background variables that may have been confounded with maternal employment and children's well-being (e.g., Clarke-Stewart, 1988, 1989). In addition, Clarke-Stewart noted that many of these studies were based on nonrepresentative samples. Finally, she argued that the measures of attachment used in these studies may not have predictive validity for children of working mothers and that more longitudinal studies are needed to determine effects on children's later functioning.

In recent years, several studies have addressed some of these criticisms using the National Longitudinal Survey of Youth (NLSY). The NLSY is a survey of women who have been interviewed annually since 1979 when they were 14 to 22 years old. Beginning in 1986, children of these women were also assessed.

Six published studies have used this sample to examine the longitudinal effects of early maternal employment on children's development, controlling for various family background variables. The results of these studies have been surprisingly mixed considering they used the same data set. The sample size and longitudinal design of the NLSY make it potentially valuable for illuminating the effects of early maternal employment. However, rather than shedding light on this issue, conflicting results of studies based on these data have added further confusion.

Although these six studies all used the same data set, they each used quite different methodological approaches with respect to sample selection, construction of independent and dependent variables, and selection of control variables. The present study sought to resolve some of these differences through a reanalysis using an updated version of the NLSY that contained a much larger and more representative sample. In this article, I examined the six studies, explored how their methodological differences might have yielded discrepant results, evaluated their methodological strengths and limitations, and reanalyzed the effects of early parental employment by drawing on the strengths and addressing the limitations of these six previous studies.

A Comparison of Methodological Approaches and Findings¹

Of the six previous studies, none used the exact same sample. Slightly different age ranges were selected, and three studies did not include all races. Four studies included the Peabody Picture Vocabulary Test—Revised (PPVT-R) as a dependent variable, and four studies used the Behavior Problems Index (BPI). Vandell and Ramanan (1992) conducted the only study that examined school achievement. There was surprisingly little overlap across studies in the construction of maternal employment variables. There was also considerable variation in the background variables used as controls. The number of control variables varied from 4 to

Elizabeth Harvey, Department of Psychology, University of Connecticut.
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Correspondence concerning this article should be addressed to Elizabeth Harvey, who is now at the Department of Psychology, Tobin Hall, Box 37710, University of Massachusetts at Amherst, Amherst, Massachusetts 01003-7710. Electronic mail may be sent to eharvey@psych.umass.edu.

¹ A table summarizing these six studies is available from the author.

over 25. Mother's IQ, race, and family income or poverty status were the only variables that were controlled across all six studies. Child gender was the only moderating variable examined in all six studies. Only one study directly evaluated potential mediators of early maternal employment.

It is therefore less surprising that these studies yielded very different findings. In general, the Vandell and Ramanan (1992), Parcel and Menaghan (1994), and Greenstein (1995) studies found no adverse effects of early maternal employment on PPVT-R or behavior problems, and Vandell and Ramanan (1992) found some positive effects on children's Peabody Individual Achievement Test (PIAT) scores. Desai, Chase-Lansdale, and Michael (1989) found negative effects on PPVT-R scores only for boys from high-income families, and Bayder and Brooks-Gunn (1991) found negative effects on PPVT-R and behavior problems for White families only. Belsky and Eggebeen (1991) found adverse effects on their variable called ADJUST, a composite of BPI scores and temperament variables, but when they examined BPI scores alone, they did not find significant effects.

Because the studies were based on the same data set, the conflicting results must be due to one or more of the methodological variations, although it is not clear which. Possible ways in which these methodological differences could have caused these discrepancies and affected results are explored next.

An Examination of Various Methodological Approaches and Their Possible Effects on Findings

Sample selection. Differences in sample selection might be one possible reason for the discrepancies. The children studied by Vandell and Ramanan (1992) were much older and their mothers were much younger than in any other study. Thus, it is possible that any negative effects of early maternal employment disappear by second grade or that maternal employment is not harmful for younger, lower income mothers. Similarly, as Bayder and Brooks-Gunn (1991) pointed out, the discrepancy between their results and those reported by Desai et al. (1989) may have been because the former study included only White children.

There are theoretical reasons why the effects of early maternal employment might vary depending on the age of the child. The effects might fade over time as more proximal factors play a larger role in a child's development. On the other hand, sleeper effects might be observed as minor, early negative effects spiral into larger problems. A cross-study comparison of these six studies supports the former hypothesis. However, a within-study comparison of children across a wide age range would better address this issue. This was not feasible using the 1986 NLSY but is an option with the more recent version.

Each of the studies recognized the importance of addressing race but did so in different ways. Some limited their sample to certain racial groups, arguing that other racial groups were not adequately represented and that the assessments were conducted in English. Others included all children but controlled for race. Using the former approach limits the generalizability of the results, whereas using the latter approach may mask important racial differences. Greenstein (1995) included all races and performed separate analyses by race. This avoids both of these problems, but it does not directly test whether race moderates the effects of early employment, and it increases the number of analyses and the

chance of Type I error. A modification of the approach used by Vandell and Ramanan (1992) would avoid these problems: include all races and evaluate the moderating effect of race. In the updated NLSY, adequate sample size for each racial group is no longer an issue. In addition, beginning in 1988 the PPVT-R was administered in Spanish to those children who so preferred, decreasing somewhat the cultural bias of the assessment. It is important to note that results would still need to be interpreted with caution given questions regarding the validity of standardized cognitive assessments in non-White children.

Constructing maternal employment variables. The different approaches to maternal employment variable construction could be another reason for the discrepancies. For example, Parcel and Menaghan (1994), who found no effects, examined the number of hours worked among employed mothers, whereas each of the other studies involved comparisons between employed mothers and non-employed mothers. It may be that employment status rather than the intensity of employment is related to child development. Consistent with this hypothesis, Desai et al. (1989) found no effects on PPVT-R scores when they compared mothers working full time during the first year with mothers who did not, whereas Bayder and Brooks-Gunn (1991) found an effect on PPVT-R scores when they compared mothers who worked at least 1 hr per week during the first year with mothers who did not work during the first year.

In each study, the primary approach to constructing maternal employment variables was to create categories of early employment characteristics and dummy-code variables to examine each category. Creating categorical maternal employment variables can be useful in interpreting results because it is sometimes easier to use categories to organize information. Researchers have also justified using categories to detect nonlinear effects (Parcel & Menaghan, 1994). However, this approach has been criticized (Scarr, 1991) and presents the following problems. For the most part, these categories were formed from continuous variables, so there are infinite ways one could form categories. This approach can also exclude some participants if the categories do not include every employment pattern. For example, Belsky and Eggebeen's (1991) approach to variable construction excluded almost half of the children in their study. This approach also results in arbitrary boundaries between categories. Participants with similar employment patterns will often be assigned to two different categories. Furthermore, using continuous variables does not preclude one from examining nonlinear effects of early employment and in fact provides more sensitivity in detecting such relationships. Another problem with previous studies' use of categories is that they often combined different dimensions. For example, comparing mothers who worked full time during the first year with mothers who did not combines information about the timing and intensity of early employment. It is not clear whether results reflect one or both employment dimension.

Selecting control variables. The six studies varied in their approaches to selection of control variables, with some studies controlling for many more variables than others did. Some studies used theory to guide variable selection, others used empirical methods, and others used a combination. In addition, some studies controlled for family variables assessed at the same time that the dependent variables were measured (in 1986), whereas others did not. Three of the studies that used theory only used a larger number of control variables and tended to control for 1986 variables. These

three studies were also the only ones that failed to find any adverse effects of maternal employment.

Controlling for relevant background family characteristics reduces third-variable effects and removes error from the dependent variable. However, if a background variable does not correlate with child outcome, then it cannot act as a third variable and including it will not remove error. In fact, including irrelevant variables in regression models will on average increase standard errors and make it more likely that Type II error will occur. Therefore, the three studies may have failed to find adverse effects because they included irrelevant variables. Thus, in addition to using theory in control variable selection, it is important to empirically evaluate whether each background variable should be included in the regression equations.

In selecting control variables, one must distinguish between selection factors and mediators of the effect of early employment on children. Selection factors are variables that might affect, but are not affected by, early employment. These might include parents' education and mothers' IQ. Mediators are variables that are affected by patterns of early employment and in turn affect children. Thus, many variables assessed in 1986 should not be considered selection factors. Selection factors and mediating effects must be examined using different analytic approaches. For example, each of the six studies controlled for family income or poverty status measured *after* the birth of the child. One of the ways in which early maternal employment may positively affect children may be through its financial benefits. Controlling for income after the child is born involves controlling for an important benefit of maternal employment. It is not surprising, then, that some of these studies found detrimental effects of maternal employment when they statistically removed its positive effects. Family income *before* the birth of the child should be controlled, because the wealth of the family is likely to affect whether a mother chooses to be employed. However, income after the child's birth should be examined as a mediating variable of positive effects of early employment.

Improvements in the Sample

The sample available in the more recent NLSY is stronger than the 1986 sample used by five of the six studies in several ways. First, the 1986 NLSY data on which these studies were based were from unusually young, low-socioeconomic status (SES) mothers. The NLSY has continued to follow these women and their children, and the data set now contains more older, higher SES mothers. Thus, the most recent version of the NLSY allows for an examination of the effects of early maternal employment in a more representative sample. Whereas the children in the 1986 data were estimated to represent the first 40% of the offspring that these women would bear, the recent data set is estimated to represent the first 70% to 75% of these women's offspring (Center for Human Resource Research, 1997). In addition, the sample size is now much larger. This should allow for more stable, robust results and should provide more confidence that null effects truly represent no or negligible effects rather than Type II error. Furthermore, the more recent data allow for an examination of much longer term effects, because there are now a sizable number of elementary school age children in the sample. This also means that two

additional outcome variables specific to older children are available: self-esteem and academic achievement.

Paternal Employment

In contrast to the focus on the effects of maternal employment on child development, few studies have examined early paternal employment. McHale and Huston (1984) found that fathers' time in paid work affected the amount but not the quality of interaction with their infants. However, Parcel and Menaghan's (1994) analysis of the NLSY indicated that fathers working fewer hours during their children's first few years was associated with more behavior problems in children. The small body of literature on fathers' employment focuses on job quality or unemployment rather than on how the time demands of fathers' jobs affect the family (e.g., Barling, 1986).

The Present Study

The more recent NLSY provides the opportunity to reexamine the effects of early parental employment on children's development, addressing a number of important limitations of these six previous studies as follows: (a) A larger, more representative sample was used that should significantly increase the generalizability of results; (b) selection factors were distinguished from mediating variables; (c) control variables were selected using both theory and empirical decision rules; (d) the sample contained a wider age range of children allowing for an evaluation of short-term and long-term effects of early employment; (e) children from all races were included; and (f) whenever possible, continuous variables of early parental employment were used rather than artificially creating categorical variables. Thus, by drawing on the methodological strengths and addressing the methodological weaknesses of previous studies of early parental employment, it is hoped that this study will more fully realize the potential of the NLSY to address this topic.

Past research and theory have been conflicting regarding the effects of early parental employment, making it difficult to make specific predictions regarding the presence or direction of effects. Although previous inconsistent results are likely caused by methodological differences, the studies differ in too many ways to determine which findings are correct. Thus, the goal of this study is to examine whether and when early parental employment affects children's emotional, cognitive, and academic development.

Method

The NLSY Sample

The NLSY is a survey of approximately 12,600 individuals who have been interviewed annually since 1979 when they were 14 to 22 years old. This survey oversampled African American, Hispanic, and economically disadvantaged White individuals. The economically disadvantaged White oversample was dropped in 1990 for financial reasons. In 1986, 1988, 1990, 1992, and 1994, the survey conducted child assessments on offspring of the female participants.

Children of all races who were between 3 and 12 years of age at any of the five child assessment dates and who were born in 1980 or later (several background variables were unavailable for children born before 1980) were included. To assess possible developmental differences in the effects of early employment, I examined four different age groups separately: 3- to

4-year-olds, 5- to 6-year-olds, 7- to 9-year-olds, and 10- to 12-year-olds. See Table 1 for descriptive statistics on this sample.

It should be noted that there is partial overlap of participants across these four age groups; each age group contains some participants who were also included in another age group. Of the 4,924 children who were 3- to 4-year-olds, 3,371 were also in the 5- to 6-year-old group. There were 4,486 children in the 5- to 6-year-old group, 3,203 of whom were also in the 7- to 9-year-old group. There were 3,711 children in the 7- to 9-year-old group, 1,951 of whom were also in the 10- to 12-year-old group. There were 2,095 children in the 10- to 12-year-old group. Thus, some of the data in this study are longitudinal and some are cross-sectional. (These figures are based on the number of children in each age group who had scores on at least one of the child outcome measures. The actual number of participants for each analysis varies because not all children were administered all measures.) In addition, although this sample is more representative than samples used in previous studies of early maternal employment (Bayder & Brooks-Gunn, 1991; Belsky & Eggebeen, 1991), it still does not represent women who bear children after age 34 and is still somewhat socioeconomically disadvantaged.

Measurement of Variables

Early maternal employment variables. Five indexes of early maternal employment were used. They were constructed on the basis of mothers' reports of how many weeks after their children's birth they returned to work and their estimates of the average number of hours they worked per week during each quarter-year of the first 3 years of their children's lives.

For an evaluation of whether early employment status affects children, the first variable indicated whether or not the mother was employed at some time during the child's first 3 years (*employment during the first 3 years*); mothers who reported returning to work by the 156th week after their child's birth were coded 1 and mothers who did not return to work in the first 3 years were coded 0. The second, third, and fourth variables were applicable only for women who were employed at some point during the first 3 years. The second variable was the number of weeks after the child's birth before the mother returned to work (*timing of early employment*), the third variable was the average number of hours per week that she worked when she returned to work (*early employment hours*), and the fourth variable was the number of quarters the mother did not work after she had returned to work (*discontinuous employment*). Early employment hours was constructed by identifying the quarter-year during which the mother returned to work and calculating the average number of hours per week she worked from this quarter-year until the child's third birthday (not including quarters during which she reported working 0 hr). Many of the previous studies on the NLSY have included a variable representing whether or not mothers worked during the first year of the child's life. Although the timing of early maternal employment should capture the effects of employment during the first year, a variable *employment during the first year* was also included to facilitate comparison of the results of this study with the findings of previous studies.

Note that employment during the first 3 years and early employment hours could have been combined into one variable by assigning mothers who were never employed during the first 3 years a score of 0 hr. However, doing so assumes that the difference between not being employed and

Table 1
Descriptive Statistics

Variable	Age of child											
	3-4 years			5-6 years			7-9 years			10-12 years		
	%	<i>M</i>	<i>SD</i>	%	<i>M</i>	<i>SD</i>	%	<i>M</i>	<i>SD</i>	%	<i>M</i>	<i>SD</i>
Timing ^a		31.88	40.00		34.35	40.45		36.50	41.26		40.32	42.62
Hours ^b		33.64	11.28		33.43	11.20		33.30	11.02		32.76	11.02
Fathers' hours ^c		43.24	10.13		43.07	9.96		42.90	9.65		42.92	9.37
Discontinuity ^d		2.03	2.82		2.21	2.84		2.30	2.87		2.48	2.94
BPI		105.24	14.78		105.57	14.77		107.36	14.20		108.06	14.34
SPPC								202.20	33.60		205.04	32.47
PPVT-R		87.77	18.82		89.50	17.48		90.47	17.79		98.89	12.56
PIAT					101.36	11.86		101.09	11.70		98.89	12.56
Family income (\$)		23,697.72	19,766.25		20,085.91	16,152.10		17,647.86	14,208.02		15,168.42	11,989.10
Mothers' education (years)		12.06	2.30		11.75	2.19		11.53	2.09		11.21	1.99
Mothers' age at child's birth (years)		24.61	3.51		23.34	3.29		22.33	2.93		21.09	2.45
Mothers' AFQT		77.32	26.57		75.38	26.47		73.96	26.18		71.75	25.94
Child's birth order		1.97	1.05		1.87	0.99		1.79	0.95		1.69	0.89
Fathers' education (years)		12.84	2.26		12.60	2.13		12.38	2.07		12.09	1.94
Fathers' age at child's birth (years)		27.67	4.76		26.90	4.53		25.90	4.27		24.90	4.14
Employed during child's first 3 years	75			74			74			73		
Employed during child's first year	36			33			29			26		
Married at first interview after child's birth	66			62			58			55		
African American	28			29			31			34		
Hispanic	20			21			21			25		

Note. BPI = Behavior Problems Index; SPPC = Self-Perception Profile for Children; PPVT-R = Peabody Picture Vocabulary Test—Revised; PIAT = Peabody Individual Achievement Test; AFQT = Armed Forces Qualification Test.

^a Timing of early employment. ^b Early employment hours. ^c Early paternal employment hours. ^d Discontinuity of early employment.

being employed 5 hr per week is the same as the difference between working 35 hr per week and working 40 hr per week. That is, it could not be assumed that not being employed is simply one end of the employment intensity dimension. Early employment status (comparing being employed with not being employed) might have a different effect on children than the intensity of employment and was therefore examined separately.

Early parental employment variable. Mothers reported the average number of hours per week that their spouses spent at their jobs every year from 1979 to 1994. The variable for *early paternal employment hours* consisted of an average of the spouse's job hours over the first 3 yearly assessments following the birth of the child.

Child outcome measures. Five child outcome variables were examined: compliance, behavior problems, cognitive development, self-esteem, and academic achievement. For children who were in one of the four specified age ranges at more than one assessment date, their multiple scores were averaged to obtain the best possible estimate of their functioning.

Compliance was assessed using a six-item subscale from the Temperament scale, which was developed for the NLSY. This scale correlates modestly but significantly with later behavior problems (Center for Human Resource Research, 1995). Higher scores indicate greater compliance.

Children's behavior problems were assessed using the BPI, which was developed to measure behavior problems in children age 4 and older. Many items were derived from the Child Behavior Checklist (Achenbach & Edelbrock, 1981) and other child behavior scales (Graham & Rutter, 1968; Kellam, Branch, Agrawal, & Ensminger, 1975; Peterson & Zill, 1986; Rutter, 1970). The parent reports the frequency with which the child exhibited each of 28 specific problems (1 = *often true*, 2 = *sometimes true*, 3 = *not true*). Standard scores (based on all children, not same sex) were used, with higher scores indicating more behavior problems. This scale has demonstrated good construct validity (Center for Human Resource Research, 1993).

Children's self-esteem was measured using the global self-worth subscale of the Self-Perception Profile for Children. This is a self-report measure that assesses children's sense of self-competence in the domain of academic skills and general self-worth (Harter, 1985). It correlates highly with teacher ratings and has good reliability (Harter, 1985). This measure was administered to children age 8 years and older.

Children's cognitive development was assessed using the PPVT-R (Dunn & Dunn, 1981), a widely used test of receptive language. This measure was administered to all children age 3 years and older. It was administered to all children in 1986 and 1992, and only to children without a previous valid score in 1988, 1990, and 1994. Children's academic achievement was measured using the PIAT. Three subtests from the PIAT were administered to children age 5 years and older: mathematics, reading recognition, and reading comprehension. Standard scores were used for both the PPVT-R and PIAT. Both cognitive measures have good reliability and validity (Dunn & Dunn, 1981; Dunn & Markwardt, 1970).

Selection factors. Theory and previous research suggested a number of family background variables that might act as selection factors for early employment. The following background variables were created for examining the effects of early maternal employment: family income, mother's education, mother's age at the child's birth, child gender, mother's IQ, child's race, birth order of the child, and marital status. For the effects of parental employment, the following background characteristics were used: family income, father's education, father's age at the child's birth, child's gender, child's race, and birth order of the child. Fathers' IQs were not assessed in the NLSY. Mother's reports of these variables at the first assessment following the birth of the child were used, except for income, which was based on reports regarding the year before the child's birth. Mother's intelligence was assessed using the Armed Forces Qualification Test (AFQT), which was administered to all NLSY participants in 1980. The AFQT consists of the sum of scores on four subtests of the Armed Services Vocational Aptitude Battery: word knowledge, numeric operations, paragraph comprehension, and arithmetic reasoning.

Moderating variables. On the basis of theory and research, the following variables were examined as possible moderators of the effects of early parental employment: marital status, race, gender, family income, and job satisfaction. The six NLSY studies yielded conflicting findings regarding the moderating effects of these variables, but each variable was supported by at least one study. Job satisfaction was assessed by asking individuals to indicate how they felt about their current jobs on a 4-point scale from 1 = *like it very much* to 4 = *dislike it very much*. Previous studies have suggested that job satisfaction predicts child functioning (Brody, Stone-man, & MacKinnon, 1986; Gold & Andres, 1978), and it was thought that this would more directly assess the moderating effects of occupational complexity reported by Parcel and Menaghan (1994).

Results

Descriptive statistics for the entire sample and separately for each age group are presented in Table 1. Correlations among the early parental employment variables and child outcome variables are presented in Table 2. These simple correlations suggest that before controlling for selection factors, mothers' working early in the child's life is generally associated with more positive child outcome; however, more intense maternal employment (working more hours) is associated with less positive child outcome. Early parental employment tended to be associated with more positive child outcomes.

Analytic Approach

Testing for nonlinearity and interactions. Because main effects are meaningful only in the absence of interaction or nonlinear effects, the effects of each parental employment variable on each dependent variable were initially tested for nonlinearity and for interactions with moderating variables. First, the relationships between each dependent variable and early maternal employment hours, timing of early maternal employment, discontinuity, and father's employment hours were tested for nonlinearity using quadratic terms of each employment variable. For each child outcome variable, regression equations were created for each of these parental employment variables. The following variables were entered simultaneously: each of the chosen selection factors, one of the early employment variables, product terms for each moderator by the parental employment variable (see below), and a quadratic term of the employment variable.

Interactions between each potential moderator variable and early parental employment variable were evaluated using regression analyses with product terms (Jaccard, Turrisi, & Wan, 1990). For each child outcome variable, regression equations were created for each of the parental employment variables as the principal main-effect predictor. The following variables were entered simultaneously in the prototypic equation: one of the parental employment variables, all chosen selection factors (see below), one moderating variable, and the product term created by multiplying the moderator variable by the parental employment variable. To reduce multicollinearity, I centered the independent variables before forming the product terms (Jaccard et al., 1990). Job satisfaction was examined as a moderator only of early maternal employment hours, timing of early maternal employment, and discontinuity.

Examination of background variables. Each of the background variables for maternal employment was examined to determine whether it was associated with at least one early maternal

Table 2
Intercorrelations Among Early Parental Employment Variables and Child Outcome Variables

Employment or child outcome variable	Employment variable					
	EMP3	Timing ^a	Hours ^b	Discontinuity ^c	EMP1	Fathers' hours ^d
Timing ^a						
Hours ^b		-.17***				
Discontinuity ^c		-.03	-.11***			
EMP1	.43***	-.70***	.17***	-.03		
Fathers' hours ^d	.02	-.01	.02	.02	.01	
Compliance						
3-4 years	-.00	-.01	-.04*	.01	.01	.04*
5-6 years	.04**	-.03	-.05**	-.00	.04*	.05**
BPI						
3-4 years	-.05*	.03	.03	.08**	-.04*	-.03
5-6 years	-.02	.06***	.05**	.05**	-.07***	-.04*
7-9 years	-.03	.05*	.04	.04*	-.06***	-.06***
10-12 years	-.07**	.02	-.01	.08**	-.07**	-.04
SPPC						
7-9 years	.05*	-.03	-.02	.04	.04*	.08***
10-12 years	.07**	-.06*	-.05	-.03	.07**	.00
PPVT-R						
3-4 years	.13***	-.12***	-.14***	-.09***	.14***	.10***
5-6 years	.13***	-.10***	-.17***	-.06*	.14***	.10***
7-9 years	.18***	-.08**	-.13***	-.02	.13***	.15***
10-12 years	.19***	-.12***	-.13***	-.09**	.14***	.06
PIAT						
5-6 years	.14***	-.08***	-.09***	-.05**	.14***	.07***
7-9 years	.17***	-.12***	-.09***	-.05*	.15***	.12***
10-12 years	.18***	-.12***	-.06*	-.06*	.13***	.08**

Note. EMP3 = early employment during the first 3 years; EMP1 = early employment during the first year; BPI = Behavior Problems Index; SPPC = Self-Perception Profile for Children; PPVT-R = Peabody Picture Vocabulary Test—Revised; PIAT = Peabody Individual Achievement Test.

^a Timing of early employment. ^b Early employment hours. ^c Discontinuity of early employment. ^d Early paternal employment hours.

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

employment variable and at least one child outcome variable (using an alpha of .05). Gender was the only variable that did not meet this criterion; it was not associated with the early maternal employment variables. Therefore, it was not entered as a control variable. (However, it was included as a potential moderating variable.) Each of the background variables for parental employment was also examined to determine whether it was associated with father employment hours and at least one child outcome variable. Gender, birth order, and father's age were not associated with father's employment hours and were therefore not included as control variables. Race, income before the child's birth, and father's education were all associated with father's employment hours and at least one child outcome variable and were included as background controls.

Determining significance. Previous studies using the NLSY have used an alpha of .05. Because the large sample size in this study protects against Type II error and because a large number of analyses were conducted, a more conservative alpha of .01 was used to protect against Type I error, except where indicated. Although one could argue that an even more conservative alpha should be used in this study, doing so would make comparison with previous studies very difficult. However, examining potential moderator variables does involve a particularly large number of analyses, because many moderator variables and many age groups were examined. One could collapse across some of these dimensions or focus on only some of

these variables; however, this would result in losing important information and again would limit comparisons with previous studies. Instead, for protection against Type I error, statistically significant interactions were only interpreted if there was converging evidence supporting them. Thus, interactions that were significant at the .01 level were interpreted only if there was some evidence that the interaction also at least approached significance ($p < .05$) in at least one other age group. Although there are theoretical reasons why effects might vary depending on the age of the child (either fading over time or sleeper effects), one would not expect effects to disappear or emerge suddenly. One would expect to see at least weak effects at other ages.

Interpreting significant interactions. Interactions with converging support were interpreted by examining the relation between the employment variable and the child outcome variable at different levels of the moderating variable (see Jaccard et al., 1990, for a description of the procedure). For categorical variables, the relation was examined separately for each category. For continuous variables, the relation was examined at the mean and one standard deviation above and below the mean of the moderator variable.

Employment During the First 3 Years

Nonlinear and interaction effects. Marital status interacted with employment during the first 3 years in predicting behavior prob-

lems at ages 5 to 6, and the interaction approached significance for behavior problems at ages 7 to 9 (see Table 3 for all significant interactions). The direction of the interaction indicated that the relation between being employed during the first 3 years and behavior problems was significantly more positive for married mothers than for single mothers. The relation between employment during the first 3 years and behavior problems was not significant when married and single mother were examined separately; however, for married mothers, employment during the first 3 years was associated with somewhat more behavior problems at ages 5 to 6 at a probability level that approached significance (see Table 4 for interpretations of all significant interactions with converging evidence).

Employment during the first 3 years interacted with marital status in predicting PPVT-R scores in 3- to 4-year-olds. There was also evidence of weak interactions for PPVT-R scores in 7- to 9-year-olds and 10- to 12-year-olds. These interactions indicate that the relation between employment during the first 3 years and PPVT-R scores at these ages was significantly more positive for single than for married mothers. For single mothers but not for married mothers, being employed during the first 3 years was associated with higher PPVT-R scores at each age group except in 5- to 6-year-olds.

Income interacted with employment during the first 3 years in predicting behavior problems at ages 7 to 9, and this interaction

Table 3

Significant Interaction Coefficients (Standardized) Between Early Employment Variables and Moderator Variables

Age of child	Child outcome variable				
	Compliance	BPI	SPPC	PPVT-R	PIAT
		Marital Status × EMP3		Marital Status × EMP3	
3-4 years		-.02		.04**	
5-6 years		-.05**		-.01	
7-9 years		-.04*		.06*	
10-12 years		-.03		.06*	
		Income × EMP3			
3-4 years		.06*			
5-6 years		.001			
7-9 years		.07**			
10-12 years		.06			
				Gender × Timing ^a	
3-4 years				-.02	
5-6 years				.02	
7-9 years				-.08**	
10-12 years				-.04	
				Marital Status × Discontinuity ^b	
3-4 years				-.03	
5-6 years				-.07**	
7-9 years				-.02	
10-12 years				-.03	
	African American × EMP1		Hispanic × EMP1	Gender × EMP1	
3-4 years	-.06*			-.00	
5-6 years	-.02			.00	
7-9 years			.06	.07**	
10-12 years			.09**	.04*	
				Income × Fathers' Hours ^c	Income × Fathers' Hours ^c
3-4 years				-.07**	
5-6 years				-.04	-.06*
7-9 years				-.10**	-.06*
10-12 years				-.04	-.13***
				African American × Fathers' Hours	African American × Fathers' Hours
3-4 years				.10**	
5-6 years				.01	.04
7-9 years				.11*	.11**
10-12 years				.06	.09

Note. BPI = Behavior Problems Index; SPPC = Self-Perception Profile for Children; PPVT-R = Peabody Picture Vocabulary Test—Revised; PIAT = Peabody Individual Achievement Test; EMP3 = employment during the first 3 years; EMP1 = early employment during the first year.

^a Timing of early employment. ^b Discontinuity of early employment. ^c Early paternal employment hours.

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

Table 4
Relations Between Early Employment and Child Outcome at Multiple Levels of Moderator Variables

Employment variable	Moderating variable	Child outcome	Age (years)	Interaction coefficient	β at various levels of moderating variable		
EMP3	Marital status	BPI	3-4	-.02	Married	Single	
			5-6	-.05**	.00	-.04	
			7-9	.04*	.05*	-.05	
			10-12	.03	.05	-.03	
EMP3	Marital status	PPVT-R	3-4	.04**	Married	Single	
			5-6	-.01	-.03	.07**	
			7-9	.06*	.02	-.01	
			10-12	.06*	-.03	.12**	
EMP3	Income	BPI	3-4	.06*	Low	Medium	High
			5-6	.00	-.06	-.00	.05
			7-9	.07**	.01	.01	.01
			10-12	.06	-.06*	.02	.11***
EMP1	Gender	PPVT-R	3-4	-.00	Boys	Girls	
			5-6	.00	-.00	-.00	
			7-9	.07**	-.09 ^a	.04	
			10-12	.04*	-.04	.04	
Fathers' hours ^a	Income	PPVT-R	3-4	-.07**	Low	Medium	High
			5-6	-.04	.07**	.02	-.04*
			7-9	-.10**	.02	-.01	-.04
			10-12	-.04	.13**	.06	-.01
Fathers' hours ^a	Income	PIAT	5-6	-.06*	Low	Medium	High
			7-9	-.06*	.03	-.02	-.07***
			10-12	-.13***	.07*	.02	-.02
					.06	-.03	-.12***
Fathers' hours ^a	Race	PPVT-R	3-4	.10**	African American	Non-African American	
			5-6	.01	.18**	-.01	
			7-9	.11*	.02	.01	
			10-12	.06	.24*	.01	

Note. EMP3 = early employment during the first 3 years; BPI = Behavior Problems Index; PPVT-R = Peabody Picture Vocabulary Test—Revised; EMP1 = early employment during the first year; PIAT = Peabody Individual Achievement Test.

^a Early paternal employment hours.

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

approached significance for behavior problems at ages 3 to 4. For high-income families, employment during the first 3 years was associated with significantly more behavior problems at ages 7 to 9. In contrast, for low-income families, employment during the first 3 years was associated with fewer behavior problems at ages 7 to 9 at probability levels that approached significance. However, these effects were not observed in any other age group.

Main effects. Table 5 presents the relations between early maternal employment and child outcome controlling for background variables. No effects were significant for employment during the first 3 years.

Timing of Early Employment

Nonlinear and interaction effects. There was no evidence of a quadratic effect of timing of early employment on any of the child outcome variables. Gender interacted with timing of early employ-

ment in predicting PPVT-R scores in 7- to 9-year-olds; however, there was no converging evidence for this interaction.

Main effects. Table 5 presents the relations between timing of early employment and child outcome. The only significant main effect was for compliance in 3- to 4-year-olds. Returning to work later was associated with more compliance; however, this effect was small.

Early Employment Hours

Nonlinear and interaction effects. There was no evidence of a quadratic effect of early employment hours on any of the child outcome variables. There were no significant interactions involving early employment hours.

Main effects. More early employment hours was associated with significantly lower PPVT-R scores at ages 3 to 4, 5 to 6, and 7 to 9, and with significantly lower PIAT scores for 5- to

Table 5

Relations Between Early Parental Employment Variables and Child Outcome Variables Controlling for Background Variables: Standardized Regression Coefficients (β s)

Parental employment	Child outcome					Parental employment	Child outcome				
	Compliance	BPI	SPPC	PPVT-R	PIAT		Compliance	BPI	SPPC	PPVT-R	PIAT
EMP3						Discontinuity^c					
3-4-year-olds						3-4-year-olds					
β	-.03	-.02		.01		β	.06**	.03		-.02	
<i>n</i>	3,640	1,850		2,718		<i>n</i>	2,707	1,417		2,126	
5-6-year-olds						5-6-year-olds					
β	-.02	.01		.01	-.00	β	.02	.01		-.01	.01
<i>n</i>	3,219	3,177		1,489	3,214	<i>n</i>	2,480	2,453		1,127	2,471
7-9-year-olds						7-9-year-olds					
β		.02	-.01	.03	.02	β		-.00	.07*	.06*	-.01
<i>n</i>		2,650	2,086	1,120	2,614	<i>n</i>		2,024	1,589	865	1,995
10-12-year-olds						10-12-year-olds					
β		-.03	.04	.03	.03	β		.03	.01	-.02	-.01
<i>n</i>		1,409	1,387	1,356	1,439	<i>n</i>		1,072	1,052	1,037	1,091
Timing^a						EMP1					
3-4-year-olds						3-4-year-olds					
β	.05**	-.02		.01		β	-.04*	.03		-.00	
<i>n</i>	2,825	1,421		2,132		<i>n</i>	3,640	1,850		2,718	
5-6-year-olds						5-6-year-olds					
β	.01	.01		.02	.02	β	.00	-.03		-.00	.00
<i>n</i>	2,484	2,457		1,130	2,475	<i>n</i>	3,219	3,177		1,489	3,214
7-9-year-olds						7-9-year-olds					
β		.01	.01	.05	-.03	β		-.02	-.00	-.02	.02
<i>n</i>		2,028	1,593	866	1,999	<i>n</i>		2,650	2,086	1,120	2,614
10-12-year-olds						10-12-year-olds					
β		-.03	-.03	-.01	-.02	β		-.04	.02	.00	.01
<i>n</i>		1,073	1,053	1,038	1,092	<i>n</i>		1,409	1,387	1,356	1,439
Hours^b						Fathers' hours^d					
3-4-year-olds						3-4-year-olds					
β	-.00	.04		-.07**		β	.04	-.04		.02	
<i>n</i>	2,803	1,410		2,116		<i>n</i>	2,288	1,203		1,680	
5-6-year-olds						5-6-year-olds					
β	-.02	.04*		-.10***	-.06***	β	.03	-.03		-.01	-.02
<i>n</i>	2,466	2,439		1,120	2,459	<i>n</i>	1,886	1,873		774	1,867
7-9-year-olds						7-9-year-olds					
β		.05*	-.02	-.08**	-.03	β		-.06*	.05	.05	.02
<i>n</i>		2,010	1,578	860	1,980	<i>n</i>		1,434	1,051	650	1,386
10-12-year-olds						10-12-year-olds					
β		.00	-.05	-.05*	-.01	β		.01	-.04	-.05	-.03
<i>n</i>		1,062	1,041	1,027	1,080	<i>n</i>		629	603	595	634

Note. BPI = Behavior Problems Index; SPPC = Self-Perception Profile for Children; PPVT-R = Peabody Picture Vocabulary Test—Revised; PIAT = Peabody Individual Achievement Test; EMP3 = early employment during the first 3 years; EMP1 = early employment during the first year.

^a Timing of early employment. ^b Early employment hours. ^c Discontinuity of early employment. ^d Early paternal employment hours.

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

6-year-olds (see Table 5). More early employment hours was associated with somewhat lower PPVT-R scores in 10- to 12-year-olds and more behavior problems for 5- to 6-year-olds and 7- to 9-year-olds all at probability levels that approached significance. However, these effects were quite small. The largest effect on PPVT-R scores indicated that working 10 hr more per week was associated with a 1.5-point decrease in PPVT-R scores. Working 10 hr more per week was associated with only a 0.6-point decrease in PIAT scores in 5- to 6-year-olds.

Discontinuous Employment

The effects of discontinuous employment were examined controlling for timing of early employment, because women who

returned to work earlier would have more opportunity for greater discontinuity compared with women who returned later.

Nonlinear and interaction effects. There was no evidence of a quadratic effect of discontinuous employment on any of the child outcome variables. Marital status interacted with discontinuous employment in predicting PPVT-R scores in 5- to 6-year-olds. However, there was not converging evidence for this effect at any other age range.

Main effects. Greater discontinuity was associated with significantly more compliance in 3- to 4-year-olds. Greater discontinuity was associated with somewhat higher self-esteem and PPVT-R scores in 7- to 9-year-olds at probability levels that approached significance.

Employment During the First Year

Nonlinear and interaction effects. Race interacted with employment during the first year in predicting self-esteem at ages 10 to 12 and compliance at ages 3 to 4. However, there was no converging evidence for either of the interactions at the other age ranges for self-esteem and compliance.

Gender interacted with employment during the first year in predicting PPVT-R scores at ages 7 to 9. This interaction approached significance for 10- to 12-year-olds. These interactions indicate that the relations between employment during the first year and PPVT-R scores in these age ranges were more positive for girls than for boys. Examination of the relation between employment during the first year and PPVT-R scores separately for boys and girls revealed no significant effects, although for 7- to 9-year-old boys, employment during the first year was associated with lower PPVT-R scores at a probability level that approached significance.

Main effects. No significant main effects emerged for employment during the first year.

Early Parental Employment Hours

Nonlinear and interaction effects. There was a significant quadratic effect of early paternal employment hours on compliance at ages 3 to 4. Further evaluation of this nonlinear relationship (the maximum of the obtained quadratic regression equation was identified by setting the first derivative equal to zero) indicated that compliance scores peaked when fathers were employed about 50 hr per week.

Income interacted with early parental employment hours in predicting PPVT-R scores at ages 3 to 4 and 7 to 9. The direction of the interaction suggested that fathers' working more hours was significantly more beneficial for lower income families than for higher income families. For fathers from families whose income fell one standard deviation below the mean, working more hours was associated with significantly higher PPVT-R scores in 3- to 4-year-olds and 7- to 9-year-olds; for fathers from families whose income fell one standard deviation above the mean, working more hours was associated with significantly lower PPVT-R scores in 10- to 12-year-olds and somewhat lower PPVT-R scores in 3- to 4-year-olds.

Income also interacted with early parental employment hours in predicting PIAT scores in 10- to 12-year-olds. This interaction approached significance for 5- to 6-year-olds and 7- to 9-year-olds. For fathers in high-income families, working more hours was associated with significantly lower PIAT scores at ages 5- to 6-year-olds and 10- to 12-year-olds. For fathers in low-income families, working more hours was associated with higher PIAT scores in 7- to 9-year-olds at a probability level that approached significance.

Race interacted with early paternal employment hours in predicting PPVT-R scores in 3- to 4-year-olds. This interaction approached significance for 7- to 9-year-olds. For African American children, fathers' working more hours was associated with significantly higher PPVT-R scores in 3- to 4-year-olds and with higher PPVT-R scores in 7- to 9-year-olds at a probability level that approached significance.

Race interacted with early paternal employment hours in predicting PIAT scores in 7- to 9-year-olds; however, there was no converging evidence for this interaction.

Main effects. There were no significant main effects of early paternal employment hours.

Interactions Among Independent Variables

Regression analyses were conducted to determine whether timing of maternal employment and early maternal employment hours interacted with each other in predicting child development. This interaction term was not significant for any of the child outcome variables. The interaction between early paternal employment hours and each of the early maternal employment hours was also examined. None of the interaction terms was significant.

Examining Income as a Mediating Variable

Previous studies on the NLSY have examined the effect of early parental employment on children controlling for income after the child's birth. As noted earlier, income after the child's birth is a potential mediating variable rather than a selection factor. It has been suggested that early parental employment may positively affect mothers' mental health by increasing family income (Repetti, Matthews, & Waldron, 1989). Similarly, income generated from maternal employment may benefit children. Using path-analytic regression analyses, I tested the following hypothesis: Greater early parental employment would be associated with higher family income during the child's early years, which in turn would positively affect children's development. Note that this hypothesis does not necessarily assume a simple relation between early parental employment and child outcome; it is possible that this positive pathway is offset by other negative pathways, resulting in a null total relation. Following the procedure suggested by Pedhazur (1982), each child outcome variable was first regressed on income after the child's birth, one of the employment variables, and each of the background variables (including family income before the child's birth) to calculate the path coefficient representing the effect of income after the child's birth on the child outcome variable. Next, income after the child's birth was regressed on the employment variable and each of the background variables to calculate the effect of the employment variable on income after birth.

Analyses supported this hypothesis for four of the five maternal employment variables and paternal employment hours for behavior problems and the PIAT but not for the PPVT-R, compliance, or self-esteem. Table 6 presents the path coefficients for behavior problems and the PIAT with each of the four maternal employment variables and early paternal employment hours. The benefits of early employment on child development by means of income appear to weaken over time.

Examination of Cohort Effects

Because this study combined children of the same age who were born as much as 8 years apart, the moderating effects of children's year of birth on each of the early parental employment variables were examined, using regression analyses with product terms as described earlier. There was no evidence of any cohort effects.

Comparisons With Past NLSY Studies

Several analyses were conducted to facilitate comparison between the present study and previous studies on the NLSY. Desai

Table 6
Standardized Path Coefficients for the Effects of Early Employment Variables on Child Outcome Mediated by Income

Employment variable/ Age of child	Employment variable on income	Income on BPI	Employment variable on income	Income on PIAT
Hours^a				
3-4 years	.05**	-.16***		
5-6 years	.05***	-.11***	.05***	.10**
7-9 years	.05**	-.13***	.05***	.08*
10-12 years	.06*	-.07	.06*	.04
Timing^b				
3-4 years	-.10***	-.16***		
5-6 years	-.06***	-.10**	-.06***	.09**
7-9 years	-.09***	-.12***	-.08***	.06*
10-12 years	-.09***	-.07	-.08***	.03
Discontinuity^c				
3-4 years	-.07***	-.16***		
5-6 years	-.09***	-.10**	-.08***	.10**
7-9 years	-.09***	-.12***	-.09***	.06*
10-12 years	-.08**	-.07	-.07**	.03
EMP1				
3-4 years	.07***	-.11**		
5-6 years	.08***	-.10***	.08***	.07**
7-9 years	.11***	-.11***	.11***	.09**
10-12 years	.10***	-.07*	.11***	.04
Fathers' hours^d				
3-4 years	.07***	-.12*		
5-6 years	.06***	-.08*	.07***	.10**
7-9 years	.08***	-.13***	.08***	.11**
10-12 years	.08**	-.14*	.08*	.08

Note. BPI = Behavior Problems Index; PIAT = Peabody Individual Achievement Test; EMP1 = early maternal employment during the first year.

^a Early employment hours. ^b Timing of early employment. ^c Discontinuity of early employment. ^d Early paternal employment hours.

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

et al. (1989) found that income interacted with discontinuous employment and employment during the first year in predicting PPVT-R scores for boys only. Therefore, the interactions between income and discontinuous employment and employment during the first year in predicting PPVT-R scores were examined separately for boys. These interactions were not significant.

Vandell and Ramanan (1992) examined PIAT mathematics and reading achievement separately rather than combining them as was done in the present study. They found a positive correlation between early maternal employment hours and mathematics but not reading achievement. In the present study, the analyses involving early maternal employment hours were conducted again using PIAT mathematics scores, rather than total scores, as dependent variables. The results were similar to those using the total PIAT scores. Thus, the fact that the present study combined PIAT mathematics and reading achievement whereas Vandell and Ramanan examined them separately does not appear to explain the discrepant results between the two studies.

Discussion

This study examined the effects of early parental employment on children's later cognitive, academic, behavioral, and emotional functioning using the 1994 NLSY. It sought to clarify conflicting results from previous NLSY studies by addressing several previ-

ous methodological limitations. Consistent with previous studies, family characteristics including family income, parents' education, mothers' IQ and age, and child race and birth order were related to both early parental employment variables and child outcome variables. Therefore, the effects of early parental employment were examined controlling for these background characteristics.

The results of this study revealed few simple effects of early parental employment. There were no significant main effects of early maternal employment status. Among mothers who were employed during the first 3 years, the only significant effects of the timing of the return to employment and discontinuity of early employment were on compliance in 3- to 4-year-olds and these effects were small; returning to work later and greater discontinuity were associated with somewhat higher compliance. Among mothers who were employed during the first 3 years, working more hours was associated with significantly lower PPVT-R scores up through age 9 and with somewhat lower PPVT-R scores through age 12. However, the effect was small; an increase of 10 hr per week was associated with a 1- to 1.5-point decrease in PPVT-R standard scores. Working more hours was also associated with significantly lower achievement scores in 5- to 6-year-olds. However, this effect was also small; a 10 hr per week increase in employment hours was associated with a 0.6-point decrease in PIAT standard scores. Furthermore, this effect was not maintained

beyond age 6. Early maternal employment hours was associated with children's behavior problems only at probability levels that approached significance and was not associated with children's compliance or self-esteem. There were no significant main, linear effects of fathers' employment hours on children's development. There was a significant quadratic effect of fathers' employment hours on children's compliance at age 3 to 4, with fathers' working about 50 hr per week associated with the highest level of compliance.

There was no evidence that race or job satisfaction moderated the effects of early maternal employment and no consistent evidence that income and gender acted as moderators. Modest support was found for the moderating effects of marital status on early maternal employment. It appeared that for single but not married mothers, being employed during the child's first 3 years was associated with significantly, but only slightly, higher PPVT-R scores. Income and race appeared to moderate some of the effects of early paternal employment. For low-income families, fathers' working more hours tended to be associated with children's higher PPVT-R scores, whereas for high-income families, fathers' working more hours tended to be associated with lower PPVT-R and PIAT scores. There was also some evidence that for African American children, fathers' working more hours was associated with higher PPVT-R scores.

The few significant findings in the present study were only somewhat supported by previous NLSY studies. The finding that the timing and continuity of employment were associated with children's compliance was consistent with Belsky and Eggebeen's (1991) finding that full-time employment during the first and second year was associated with less compliance in children. The present study's finding that maternal employment hours was associated with PPVT-R scores was consistent with Bayder and Brooks-Gunn's (1991) results, but not with Vandell and Ramanan's (1992), Parcel and Menaghan's (1994), and Greenstein's (1995) findings. The finding that greater early maternal employment hours was associated with lower PIAT scores in 5- to 6-year-olds stands in contrast to Vandell and Ramanan's (1992) finding that early maternal employment hours was associated with higher achievement in second-grade children. Finally, the finding that for low-income fathers, working more hours was associated with higher PPVT-R scores stands somewhat in contrast to Parcel and Menaghan's (1994) finding that fathers working more hours was associated with fewer behavior problems but not with higher PPVT-R scores.

Likewise, the present study failed to replicate the significant results of the previous NLSY studies. In contrast to findings presented by Desai et al. (1989), but consistent with Greenstein's (1995) findings, income did not moderate the effects of maternal employment during the first year and discontinuous employment on boys' PPVT-R scores. In contrast to findings presented by Belsky and Eggebeen (1991), early maternal employment hours and employment during the first year were not associated with children's compliance.

Thus, the results of the present study generally conflicted with the six previous NLSY studies, just as the six studies conflicted with each other. It is possible that differences between the present study and previous studies are due to differences in the characteristics of the samples used. The samples used in the previous studies were more homogeneous than the samples used in the present

study. It may be that some of the effects found in previous studies are true for only specific, homogeneous groups. However, the examination of moderating variables such as ethnic group should identify the subgroups for which early employment affects children. The few moderating effects that were found in the present study do not seem to account for any of the previous findings.

Another possible reason why previous findings were not replicated in the present study may be that previous significant findings are simply not robust and were sample specific. Examination of the specific discrepancies provides some support for this explanation. For example, when the effect of employment during the first year on PPVT-R scores was replicated using the same methodology used by Bayder and Brooks-Gunn (1991), the effect approached significance² in the 1986 sample they used but not in the 3- to 4-year-olds taken from the sample used in the present study. There is no evidence that this failure to replicate is due to the moderating influence of variables on which the two samples differ. A more likely possibility, therefore, is that these effects were sample specific. A number of other factors also support this possibility. For most of the studies, nonsignificant relations between maternal employment and child outcome outnumbered the significant relations reported. None of the studies corrected for familywise error, and a relatively liberal alpha of .05 was used. Furthermore, in many of the studies the ultimate sample size on which the significant findings were based was relatively small considering the number of variables entered in each regression equation.

Inconsistencies may also be due to differences in the formation of maternal employment variables. The six previous NLSY studies created categorical variables from continuous variables. This can create inconsistent results in at least two ways. First, maternal employment variables from previous studies frequently combined employment dimensions. For example, Belsky and Eggebeen's (1991) maternal employment variable, which they found to be related to children's compliance, combined information about the timing, intensity, and continuity of early maternal employment. Thus, the present study's finding that early maternal employment hours was not related to children's compliance appears inconsistent with Belsky and Eggebeen's finding; however, if it was the timing and continuity component of Belsky and Eggebeen's variable that accounted for the effect, then the two studies are consistent.

Categorical variables may also cause inconsistent results because the results may vary depending on where the boundaries are drawn. For example, when Bayder and Brooks-Gunn (1991) examined maternal employment hours, they contrasted mothers who worked 10-19 hr and mothers who worked more than 20 hr with mothers who worked less than 10 hr. Parcel and Menaghan (1994) on the other hand contrasted mothers who worked 1-20 hr, mothers who worked 21-34 hours, and mothers who worked more

² I was unable to replicate either finding exactly, although the results were quite similar. McCartney and Rosenthal (1991) reported a similar experience when attempting to replicate Belsky and Eggebeen's (1991) findings using an updated version of the NLSY and attributed it to corrections that were made in later versions. Consistent with this possibility, the sample sizes were somewhat different in my analyses (i.e., there were somewhat more 3- and 4-year-olds in the 1986 data available on the recent version of the NLSY).

than 40 hr with mothers who worked 35–40 hr. To examine whether inconsistent results may have been due to such arbitrarily formed groups, I used these two different categorical systems in the present study to predict PPVT–R scores in 3- to 4-year-olds. With Bayder and Brooks-Gunn's (1991) system, early employment hours was unrelated to PPVT–R scores, whereas, with Parcel and Menaghan's (1994) system, there was a relation (which is in fact opposite to each of their own findings).

Another possible reason for discrepant results between the present study and past NLSY studies may be differences in controlling for selection variables. For example, Parcel and Menaghan's (1994) and Greenstein's (1995) failure to find effects of early maternal employment hours may have been due to the number and nature of control variables they used. First, they controlled for a number of variables (such as the 1986 Home Observation for Measurement of the Environment) that might be more aptly termed mediating variables rather than selection variables. Second, they controlled for a number of variables that did not appear to be significantly related to child outcome and did not present an evaluation of whether these variables were related to early parental employment. This may also explain the discrepancies between these two studies and the other NLSY studies.

The fact that the few small effects that emerged in the present study were generally not found in previous NLSY studies may be due to the greater power of the present study. The effect of early maternal employment hours was very small and not likely detectable with the sample sizes used in previous NLSY studies. This may also explain conflicting results from previous studies to some extent. Power varied across the six studies because of differences with sample sizes ranging from 189 to 2,040.

Thus, although the NLSY provides a potentially ideal vehicle for examining the effects of early parental employment on children's development, methodological variation in using this data set has been an obstacle in addressing this question. This article examined various methodological approaches and selected and applied those approaches that were thought to maximize the internal and external validity of the results and that could increase the potential for cross-study comparison. That is not to say that the methodological approaches selected in this study are not open to criticism; future studies may select alternative methods. What appears to be critical is recognition of the powerful influence that methodology can have on the results of these studies and that greater consideration is given to choosing methodological approaches.

It is important to compare the results of this study not only with previous NLSY studies, but also with other studies examining the effects of early parental employment on children's development. Although earlier reviews examining the effects of early maternal employment reported detrimental effects on children's adjustment (e.g., Belsky, 1988), there is a growing number of more recent studies that have failed to find negative effects of the quantity of early nonmaternal care on children's development (NICHD Early Child Care Research Network, 1997a, 1997b; Roggman, Langlois, Hubbs-Tait, & Rieser-Danner, 1994). Several possible explanations have been suggested for this discrepancy between earlier and recent reports (NICHD Early Child Care Research Network, 1997a). First, it has been suggested that the effects of early nonmaternal care are changing as more and more women are engaging in early employment. However, the absence of a cohort effect in the present study does not support this possibility. Sec-

ond, it may be that recent studies have more systematically controlled for selection factors. However, recent studies have failed to find effects even when selection factors were not controlled (NICHD Early Child Care Research Network, 1997a). In fact, in the present study, positive effects of several early maternal employment variables were observed in the absence of controls. A third proposed explanation is that previous studies with null findings were less likely to be published. Another possibility is that these discrepancies are also due to some of the methodological factors that seem to have caused discrepancies in NLSY studies. It is also important to note that the NLSY studies examined the effects of early maternal employment, whereas many previous studies examined the effects of early nonmaternal or nonparental child care. This difference could also lead to discrepant results, although these two constructs should be highly related.

This is one of the few studies to examine the effects of early paternal employment on children's later development. These results are consistent with McHale and Huston's (1984) finding that early paternal employment hours did not have substantial effects on children's later cognitive and emotional development, but stand in contrast to Parcel and Menaghan's (1994) finding based on the NLSY that fathers' working more hours was associated with fewer behavior problems. In addition to some of the methodological reasons described earlier, this discrepancy may be because the Parcel and Menaghan (1994) sample had lower incomes. The results of the present study suggest that greater early parental hours may be more beneficial for low-income families than for high-income families. However, this study found this moderating effect for PPVT–R and PIAT but not for behavior problems.

The results partially supported the hypothesis that early parental employment has a positive effect on children's development by increasing family income. This positive pathway seemed to affect children's behavior problems and academic achievement but not children's compliance, self-esteem, or language–cognitive development. All of these indirect effects existed largely in the absence of any total effects of early parental employment on behavior problems and academic achievement. This suggests that early parental employment may have both positive and negative effects on children's development that counteract each other. This study has identified one potential positive effect. Future studies are needed to explore other positive and negative pathways. This mediating effect of family income also highlights the importance of distinguishing between selection factors and mediating variables. Controlling for income after birth may yield misleading results; one should not control for a benefit of early employment in examining its effects.

In a comparison of the results of the present study to previous studies of the NLSY, it is important to note that the samples used in previous NLSY studies were subsets of the samples used in the present study. The degree of overlap ranged from study to study. Of the studies using the 1986 NLSY, the greatest sample overlap occurred with the Parcel and Menaghan (1994) sample. Using PPVT–R scores as an example, the percentage of participants in the present sample who were also included in the past study was calculated. The overlap ranged from 24% to 32% for 3- to 4-, 5- to 6-, and 7- to 9-year-olds. The overlap was 68% for 10- to 12-year-olds. The least overlap based on PPVT–R scores occurred with the Bayder and Brooks-Gunn (1991) study with a range of 2% (5- to 6-year-old) to 18% overlap (10- to 12-year-old). Note that this

represents participant overlap; data overlap is even less than these figures suggest. For example, the PPVT-R 7- to 9-year-olds' scores used in the present study have not been analyzed in any previous study. In addition, the data overlap pertains primarily to the BPI and PPVT-R data rather than to the other three child outcome variables. Greenstein (1995) used a more recent version of the NLSY (1990) so his sample overlapped more with that used in the present study. For example, 50% to 60% of the data from 3- to 4-year-olds and 5- to 6-year-old PPVT-R scores in this study were included in Greenstein's analyses. In sum, the present study is based largely on data that have not previously been analyzed. However, the results based on the older children in this study should to some degree be considered follow-up results of children analyzed in previous NLSY studies.

It should also be noted that the analyses in this study are partly based on longitudinal data and partly on cross-sectional data. That is, some of the participants in each age group were also included in another age group. Thus, the analyses conducted on each age group are not independent from analyses conducted on other age groups. The findings at each age range should therefore not be considered independent replications.

These results should be interpreted within the context of the limitations of the study. Although the sample in the present study was more representative of the general population of mothers than previous studies, the sample is still younger and of lower SES than average; these results may not be generalized to older, higher SES parents. In addition, this study addressed ethnicity in only a limited way. Finer distinctions within each of the racial groups should be made in future studies. Of course, this study was also limited by its correlational design. Although attempts were made to statistically control for third variables, other important background variables may have been omitted; the few significant results that were found may have been due to unmeasured third variables. Finally, data regarding the quality of child care were not available in this data set. Previous research indicates that this is an important contextual variable (Belsky, 1990; NICHD Early Child Care Research Network, 1997b). Although maternal employment appeared to have little effect on these children's development, quality of early child care may have a much larger impact. Further study is needed in this area.

Nonetheless, this study adds to the existing literature in several ways. This study had an unusually large sample size, providing more power to detect effects, particularly interaction effects that are notoriously difficult to detect (McClelland & Judd, 1993). This greater power allows more confidence that nonsignificant effects represent no or negligible effects. In addition, the sample was more representative than previous studies. Also, continuous parental employment variables were examined whenever possible rather than artificially created groups formed by categorizing continuous variables. This study used a longitudinal design to examine the long-term effects of early parental employment; previous longitudinal studies have only examined the relatively short-term effects on children. Finally, this is one of the few studies to examine both early maternal and paternal employment variables, recognizing the importance of examining the role of fathers in children's development.

In sum, findings reported by previous NLSY studies may have been somewhat sample and method specific. When methodological limitations were addressed in the present study, few of the previous findings were replicated, and no consistent evidence of

substantial effects of early parental employment on children's later development was found.

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