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First-Year Maternal Employment and Child Outcomes: Evidence from the Fragile Families and Child Wellbeing Study

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Abstract

We use data from the Fragile Families and Child Wellbeing Study (FFCW), a birth cohort of children born to predominantly low-income and single-mothers, to examine associations between first-year maternal employment and child outcomes for groups of children that have been relatively understudied in prior research: those from racial/ethnic minority, unmarried, and low-income families. We first replicate previous analyses of associations between maternal work in the first year of children's lives and children's subsequent cognitive and behavioral scores at age 3. Although our sample is relatively less advantaged and more racially and ethnically diverse than those used in prior studies, these results are generally consistent with prior findings. Most notably, maternal work in the first year after birth is associated with lower vocabulary scores for white children, but not for Black or Hispanic children. However, we also find associations between first-year maternal employment and aggressive behavior for Hispanic children, who have received scant attention in existing work, but not for white or Black children. We then explore variation in associations between first-year employment and child outcomes depending on the timing and intensity of work, as well as on family structure and maternal education. We find differential patterns of association between first-year employment and child outcomes across many of these characteristics.

Introduction

Over the past few decades, there has been an increased awareness of the importance of early childhood experiences for later child development, and a growing body of research has shed new light on the effects of early maternal employment on child outcomes. Several studies have found that children whose mothers work in the first year of their lives have lower cognitive scores and more behavior problems than children whose mothers do not (see, most recently, Hill et al., 2005). However, these findings have varied considerably by family characteristics, raising the question of whether the effects of first-year maternal employment are the same across different types of families. In particular, adverse effects of first-year maternal employment have been found more often in non-Hispanic white families than in African-American and Hispanic families, but with mixed results as to whether effects are larger in higher-income and married couple families or in lower-income and single-mother families. However, a common challenge in this research is that sample sizes for racial and ethnic minority, single-mother, or low-socioeconomic status (SES) families have often been too small to estimate associations with confidence.

Although the employment rate for all mothers with infants has increased substantially over the past thirty years, understanding the effects of first-year maternal employment among different racial and ethnic groups is particularly important given that patterns of first-year employment vary considerably across these groups and have changed differentially in the most recent decades. Figure 1 presents trend data from 1990 to 2004 for the labor force participation of 15 to 44 year old women who had a birth in the previous year, by race/ethnicity. The overall labor force participation rate for new mothers rose between 1990 and 1998, and declined thereafter, resulting in an overall increase from 52.8 percent to 54.6 percent in the labor force

participation of new mothers between 1990 and 2004. Considering differences by race/ethnicity, the trends for white and Black women follow this general pattern, although the increase for Black women was substantially larger over this period of time (from 46.9 to 55.2 percent, compared to 54.5 to 56.1 percent for white women). The labor force participation of Hispanic women, however, hit a low of 37.4 percent in 1992, but then rose more than 10 percentage points to 48.3 percent by 2004. As shown in Figure 2, there were also differences by marital status, with unmarried mothers experiencing far larger increases than married mothers. Between 1990 and 2004, the labor force participation rate of unmarried mothers increased from 43.5 to 53.5 percent, while decreasing from 56.4 to 55.3 percent for married mothers. Furthermore, Current Population Survey data suggest that increases in first-year employment between 1990 and 2004 were particularly large among women who had less than a high school education (Dye, 2005).

These increases in the employment of single mothers and less-educated mothers with infants are consistent with the overall pattern of recent increases in maternal employment among single-mother and low-income families. It is well-established that the welfare reforms of the 1990s, in conjunction with a strong economy and initiatives to make work pay, such as expansions in the Earned Income Tax Credit, dramatically increased the employment of low income single mothers in the second half of the 1990s. Yet, we know little about the effects of that employment on child outcomes (Blank, 2002). Our study, by examining the relationship between first-year maternal employment and children's outcomes in a contemporary, post welfare reform cohort, will help address this gap.

In this study, we examine the relationship between first-year maternal employment and child outcomes for precisely those groups that have been less studied in prior research: unmarried, low-SES, and racial/ethnic minority families. Our sample is drawn from the Fragile

Families and Child Wellbeing Study, a birth cohort of children born to predominantly low-income and single-mothers (although some higher-income and married couple families are included) in 20 medium to large U.S. cities. The sample is racially and ethnically diverse: about half of the sample is African-American and nearly a quarter is Hispanic. We first examine associations between maternal employment in the first year of children's lives and measures of cognitive development and behavioral problems when they are approximately 3 years old. These analyses largely replicate prior work (see, e.g., Waldfogel, et al., 2002), but for a considerably more diverse (and disadvantaged) sample than has previously been available for this type of inquiry. We take advantage of that diversity to estimate all of our models separately for sub-groups defined by race/ethnicity (white, Black, and Hispanic) given that prior research has found substantially different patterns of association between first-year maternal employment and child outcomes for these groups. Next, we explore whether these associations differ according to both the number of hours per week the mother worked in the first year and also the period at which she began or resumed working in the first year. The first of these factors has been found to be an important determinant of the effects of first-year maternal employment in several studies, while the second has received much less attention in the current literature. Finally, we investigate whether there are differences in associations between first-year maternal employment and child outcomes by family structure and maternal education level. These analyses allow us to assess the extent to which differences in associations between first-year maternal employment and child outcomes vary by other family characteristics. They also may provide insight into whether earlier findings regarding differences in associations between first year employment and child outcomes across racial groups may in part be explained by differences in work behaviors (regarding the

timing and intensity of first-year employment), family structure, and maternal education across these groups.

To briefly preview our results, we find negative associations between first-year maternal employment and cognitive development for white children, but not for Black or Hispanic children. The associations for white children do not vary by the timing of their mothers' returns to work, nor by the number of hours worked. However, they are stronger for children whose mothers were single or cohabiting at the time of birth than for children whose mothers were married, as well as for children whose mothers had only a high school education or less, as compared to those whose mothers have completed more than high school. We also find associations between early maternal employment and child aggressive behavior for Hispanic children, who have received scant attention in the existing literature, but not for white or Black children. These associations are larger when mothers return to work earlier in the first year. They are also larger for Mexican children than for other Hispanic children, and for children whose mothers have less education, as compared with those where the mother has completed more than high school. Overall, these results reinforce findings from earlier studies suggesting that associations between first-year maternal employment and child outcomes vary considerably by family characteristics. In common with prior research, however, we caution that the associations we estimate may not represent causal effects and acknowledge that, in the absence of a randomized experiment, we can not be certain that we have controlled for all of the factors that may both matter for child outcomes and differ for mothers who begin or resume work at various periods following a birth.

Prior Research

In this section, we review the existing research on associations between first-year maternal employment and child outcomes, as well as differences in these associations by race/ethnicity. We also discuss the ways in which prior results have varied by the intensity (i.e., number of hours working) and timing of returns to work in the first year following a birth, family structure, and SES.

Associations between first-year maternal employment and child outcomes

A large literature has examined how first-year maternal employment is related to child cognitive and behavioral outcomes (for reviews, see Shonkoff and Phillips, 2000; Smolensky and Gootman, 2003). Although the early literature did not always distinguish employment in the first year of life from employment subsequent to the first year, it is now well-documented that the effects of first-year employment are likely to differ from the effects of employment subsequent to that year. Therefore, it is now common for studies of maternal employment to control separately for first-year employment and subsequent employment. Studies that do so typically find that children score more poorly on cognitive tests and/or measures of behavior problems if their mothers worked in the first year of life (Haskins, 1985; Desai et al., 1989; Baydar and Brooks-Gunn, 1991; Belsky and Eggebeen, 1991; Blau and Grossberg, 1992; Bates et al., 1994; Neidell, 2000; Han et al., 2001; Waldfogel et all, 2002; Brooks-Gunn et al., 2002; Baum, 2003; Ruhm, 2004; James-Burdumy, 2005; Hill et al., 2005).

Variation in associations by race/ethnicity

Prior studies have identified considerable variation in the effects of first-year maternal employment on children's development across different racial and ethnic groups. Adverse effects of first-year maternal employment on cognitive outcomes tend to be observed for non-Hispanic white children, but not for African-American children (see, e.g., Waldfogel, et al., 2002).

Hispanic children have rarely been studied at all. For instance, in analyses using the NLSY-CS, Baydar and Brooks-Gunn (1991) find that maternal employment in the first year of a child's life has significant negative effects on cognitive outcomes for white children but not African-American children (Hispanic children are not included in this study). In a follow-up study that also excludes Hispanic children, Han et al. (2001) follow children from the NLSY and, again, find that maternal employment in the first year of a child's life has significant negative effects on cognitive outcomes for white children (but not African-American children), with some of these effects persisting to age seven or eight. The Han et al. (2001) study also reports some negative effects of maternal employment in the first year on behavioral problems as late as age seven or eight, but again these effects are found only for white children. Similarly, analyses using the NICHD Study of Early Child Care reveal associations between first-year maternal employment and poorer cognitive development for non-Hispanic white children, but not for the smaller sample of African-American and Hispanic children (N=174 combined) (Brooks-Gunn et al., 2002). Most recently, Hill et al. (2005), in a study of the effects of early maternal work patterns on children's cognitive and behavioral development (using NLSY-CS data), were unable to determine whether the effects of maternal employment differed for African-American and Hispanic children, nor whether effects for these groups of children differed from effects for non-Hispanic white children, due to small sample sizes for African-American and Hispanic children.

Prior research has not established why first-year maternal employment might have different effects in African-American or Hispanic families than in non-Hispanic white families. One possibility is that the differential effects reflect other differences in maternal, child, or family characteristics. For example, if African-American families are more likely to be headed by low-income single mothers, and if low-income single mother families gain more from a

mother's employment, this difference might account for the differential effects of maternal employment seen across racial and ethnic groups. However, the fact that differential effects have been found across racial and ethnic groups, even after controlling for many child and family characteristics including family structure and income, makes this less likely. In our work, we address this issue by controlling for family structure, income, and maternal education, and also by explicitly modeling interactions between first-year maternal employment and family structure and maternal education for each group. Estimates for these interactions may shed new light on whether observed differences in associations between first-year maternal employment and child outcomes across racial/ethnic groups may be driven by differences in these characteristics.

A second potential explanation for differential effects across racial/ethnic groups is differential selection into employment. If, for example, white women who do not work in the first year are primarily affluent married women, then those who do work may be negatively selected. This might contrast with the situation for lower-income African-American families, where those who do not work may disproportionately be low-income single mothers, in which case those who work would be positively selected. To reduce the possibility of selection bias, we analyze each racial/ethnic group (white, Black, and Hispanic) separately and include extensive controls for maternal characteristics, including a measure of the mother's cognitive development.

A third possibility is that the differential effects of first-year employment on child outcomes reflect differences in families' attitudes towards the mother working. To the extent that maternal employment has been more normative in African-American families, it may be less disruptive of family life or easier for family members to accommodate than in white families. If this is the case, we would (potentially) expect maternal employment to have more adverse effects in Hispanic families than in African-American families, given the greater likelihood that

Hispanics hold traditional values about maternal employment and family roles. To address this hypothesis, we present some evidence on attitudes in our sample and also test for whether controlling for attitudes, or interacting attitudes with first-year maternal employment, helps account for differences by racial/ethnic group.

Variation in associations by intensity, hours, family structure, and SES

In studies that have found adverse effects of first-year maternal employment on children's cognitive or behavioral outcomes, these effects are generally (although not always) found to be stronger for children whose mothers worked greater numbers of hours in the first year (see, e.g., Han et al., 2001; Waldfogel et al., 2002; Brooks-Gunn et al., 2002; Ruhm, 2004). Findings from Waldfogel, et al. (2002), Brooks-Gunn, et al. (2002), Ruhm (2004), and Hill et al. (2005), for example, all suggest that there may be larger negative effects of first year maternal employment (for at least some groups of children) when their mothers work longer hours. However, Han et al. (2001), in a study using data from the National Longitudinal Survey of Youth-Child Supplement (NLSY-CS), find no significant differences between child outcomes for children whose mothers worked full- versus part-time during the first year.

There are also a few studies that have focused on the timing of work during the first year and suggest that earlier returns during this period are associated with slightly poorer developmental outcomes on at least some measures. Han et al. (2001) find that employment begun in the first three quarters of the first year tends to have more adverse effects on later cognitive and behavioral outcomes than employment begun in the fourth quarter (see also Baydar and Brooks-Gunn, 1991; Baum, 2003, who also analyze samples from the NLSY-CS). Most recently, Berger, Hill, and Waldfogel (2005) investigate the effects of mothers' returns to work in the first 3 months, again using data from the NLSY-CS, and find that children whose

mothers returned within the first 3 months are less likely to receive routine health care in the first 12 to 18 months and also have more behavior problems at age 4 than children whose mothers return later; however, returning by 3 months had no significant effects on children's vocabulary scores at age 3 or 4 in that study.

Finally, although limited, the empirical evidence to date has produced mixed findings as to whether associations between first-year employment and child outcomes differ by family structure and SES. Some studies find that negative associations between first-year maternal employment and child outcomes are stronger in more advantaged families (i.e., married couple families, higher-income families) (see e.g. Desai et al., 1989), but others do not (see, e.g., Han et al, 2001; Brooks-Gunn et al., 2002). Han et al. (2001), for instance, find larger adverse effects of first-year maternal employment in married couple than single-mother families, as do Brooks-Gunn et al. (2002) and Ruhm (2004). In addition to family structure, some existing studies have used family income (generally in the year prior to birth) as a proxy for SES and have reported mixed findings. Results from an early analysis by Desai and colleagues (1989), for example, suggest that first-year maternal employment is negatively associated with intellectual ability for boys in higher income families. In more recent work, however, Han et al. (2001) find that the adverse effects of early employment on cognitive ability are larger for children in lower-income families (while Ruhm's (2004) results regarding high and low wage workers are inconclusive).[1]

On the whole, prior work that has examined the intensity and timing of maternal employment within the first year of life suggests that both intensity and timing matter, at least for some outcomes and for some groups of children. It also suggests that these associations vary by income and family structure, although the precise nature of this variation remains unknown. Yet,

[1] However, Han, et al. (2001) also find that children in higher income families experience more behavior problems when their mothers work during the first year. We could not find any studies that reported differential effects of maternal employment by maternal education.

as shown above, relatively few studies have examined differential effects of either the intensity or the timing of maternal employment *within* the first year on parenting behaviors and child outcomes. Furthermore, existing studies have been hampered by small sample sizes for racial/ethnic minority and lower socioeconomic status families, making it difficult to estimate effects for these families with certainty. To address these issues, we utilize a largely low-income, single-mother, and racial/ethnic minority sample to both estimate associations between first year employment and child outcomes and to explore whether these associations differ by intensity and timing of work in the first year, as well as by family structure and maternal education. We use maternal education, rather than family income, as a proxy for SES because the former may be less likely to be determined by a mother's childbearing choices.[2]

Empirical Strategy and Key Predictors

In the analyses that follow, we estimate 6 sets of ordinary least square (OLS) regressions that focus on associations between maternal employment in the first year of a child's life and two child outcomes at age 3: receptive vocabulary and aggressive behavior problems. These measures, which are described in detail below, have been widely used in prior work in this area including in several studies of children age 3 or 4 (using data from both the NLSY-CS and the NICHD-SECC). Given that the previous literature has consistently found differences in these associations by race and ethnicity, we estimate separate models for non-Hispanic white, African-American, and Hispanic children in all analyses.

Our first set of regressions replicates the basic models presented in Waldfogel, et al. (2002), Table 2, which uses NLSY-CS data to explore associations between first year maternal

[2] In results not shown, we have also estimated the models on Tables 2 and 3 using first-year employment*income-to-poverty category (i.e., poverty or below, above poverty to 200% of poverty, and above 200% of poverty) interactions. Overall, results from these models did not provide evidence of differences in associations between first-year maternal employment and child outcomes by the level of family income pre-birth.

employment and cognitive outcomes for white, Black, and Hispanic children. These models allow us to estimate the overall effect of maternal work during the first year on child outcomes and to compare our estimates for the PPVT-R to those reported in Waldfogel, et al. (2002). Here, we estimate OLS regressions for each racial/ethnic group (for each outcome) using an indicator for whether the mother returned to work[3] in the first 12-months following the child's birth as our key predictor variable. We control for current maternal work (at the time of the age 3 interview) and a host of covariates (described below), including a measure of the mother's cognitive ability and a measure of the mother's depression. We count a woman as working in the first year if she worked any hours at all in the labor market that year. Just over 75% of all mothers returned to work by 12-months in this sample. Mean statistics for the indicator for returning by 12-months, shown in the first row of Table 1, reveal that 72% of white mothers, 81% of Black mothers, and 66% of Hispanic mothers in this sample returned to work within 12-months of the focal child's birth.

Next, we investigate whether associations between first year maternal employment and child outcomes differ by work intensity. Here our key predictor variables are interaction terms denoting whether the mother returned to work by 12-months and worked part-time or returned to work by 12-months and worked full-time.[4] The reference category for these analyses is "did not work by 12-months." These models also control for current maternal work (at 36-months) and

[3] We use the term "returned to work" because the majority of our sample (81%) was working pre-birth (the remainder was not working immediately prior to the birth, but may have worked in the past).

[4] Unfortunately, in FFCW women report whether they worked part-time for full-time when they returned to work in the year after the focal child's birth, but not the precise number of hours they worked. They also report the number of hours they are working in their current job at the time of the 12-month interview. However, a considerable proportion of the sample that reported returning to work within 12-months also reported working no hours at that time. For this reason, we have chosen to present results based on the full- versus part-time distinction at the time of return. In other analyses (results not shown, but available upon request), we estimated these models using interactions between first year returns to work and work intensity (modeled as both less than 20 hours/week vs. 20 or more hours per week and as less than 30 hours per week versus 30 or more hours per week) at the 12-month interview, and coding those who reported working no hours in the lower intensity group. Results from those models were relatively consistent with the estimates presented here.

other covariates. Mean statistics (Table 1) suggest that almost 52% of Black mothers worked full-time within a year of the focal child's birth, a higher percentage than for white or Hispanic mothers (35% and 41%, respectively).

Our third set of analyses focuses on associations between the timing of maternal returns to work during the first year of the focal child's life and the child cognitive and behavioral outcomes. We estimate these associations, net of maternal work at 36-months and a host of covariates, via a set of mutually exclusive dummy variables for whether the mother returned by 3 months; later than 3-months, but by 6-months; or later than 6-months, but by 12-months. Again, we count a woman as working in a particular time period if she was working any hours at all in the labor market in that time period, and the reference category in the models is that the mother did not return to work by 12-months. We have chosen to model return timing using these categories primarily because the distribution of returns to work in this sample cluster nicely into these time periods. About 54% of the mothers in this sample who returned to work within 12-months of giving birth returned in the first 3-months,[5] another 26% returned between 3- and 6-months, and the final 20% returned between 7- and 12- months (not shown on table). As shown on Table 1, early returns are very common, with 45% of white, 39% of Black, and 36% of Hispanic mothers working by 3-months. Another 17%, 23%, and 16% returned between 3- and 6- months, and 10%, 19%, and 14% between 6- and 12- months of giving birth.

The fourth set of regressions estimates associations between first-year returns to work and child outcomes by family structure. For these models, we use a set of interaction variables indicating whether mothers who returned by 12-months were single at birth, cohabiting with the child's father at birth, or married to the child's father at birth (not working by 12-months is the

[5] Additionally, it is important to note that returns by 3 months are particularly policy relevant given that the Family and Medical Leave Act allows only 3 months of job protected maternity leave.

reference category). Once again, descriptive statistics (Table 1) show different patterns of employment by family structure across the racial/ethnic groups. In particular, married white mothers are more likely than their single and cohabiting counterparts to return to work by 12-months, while married Black and Hispanic mothers are less likely than other Black and Hispanic mothers to return to work by 12-months.

Fifth, we examine whether the associations of interest differ by maternal education as of the year before the focal child's birth. We estimate these associations with a set of interaction variables for: working by 12-months*less than high school, working by 12-months*high school, and working by 12-months*more than high school (not working by 12-months is, again, the omitted category). Table 1 shows that White and Hispanic mothers with more than a high school education are more likely to return by 12-months than less educated White and Hispanic mothers. Black mothers with a high school education are more likely to work during the first year than both more and less educated Black mothers.

Finally, for the Hispanic subsample, we estimate models interacting return by 12-months with country of origin (Mexican, Puerto Rican, or other) because values regarding both work outside the home and child rearing among Hispanic mothers differ across these groups. Indeed, results from a set of questions regarding such values (discussed below) suggest that Mexican women hold the most traditional attitudes toward women's roles. At the same time, descriptive statistics (Table 1) suggest that Mexican mothers are considerably more likely than other Hispanic mothers to return to work within 12-months.

Data and Measures

Data

Our data are drawn from the Fragile Families and Child Wellbeing Study (FFCW) and its associated in-home module. FFCW is a longitudinal birth cohort study of approximately 4,900 children born between 1998 and 2000 in 20 medium to large U.S. cities.[6] The study includes a substantial over-sample of children born to unmarried parents, resulting in a sample of children who are more likely to live in low-income or poor families, to have absent fathers, and to be African-American or Hispanic than would be the case in a nationally representative sample. A majority of our sample is low income (33% had incomes below 100% of poverty at birth, with another 26% with incomes between 100 and 200% of the poverty line), 75% of the children were born to unmarried parents (39% had single mothers and another 36% had mothers who were cohabiting but not married), and a majority of the children are Black (51%) or Hispanic (22%).

FFCW interviewed families in person shortly after the focal child was born and conducted follow-up interviews by telephone when the focal child was approximately 12- and 36-months of age. Subsequent to the 36-month telephone interview, parents were asked to participate in an in-home module designed to assess multiple domains of parenting, the home environment, mother-child interactions, and child cognitive and emotional/behavioral development through both a questionnaire and a set of interviewer observed items. Mothers who refused an in-home visit were asked to complete the questionnaire portion of the in-home module by telephone. In our analyses, samples are limited to white, Black, and Hispanic families in which the mother completed the in-home module (either in person or by telephone). Our analyses focus on two outcome variables (described below) the Peabody Picture Vocabulary Test-Revised (PPVT-R) and the aggressive behavior problems subscale of the Child Behavior Checklist (CBCL). Sample sizes for models using the PPVT-R, which must be completed in person, are considerably smaller than those for aggressive behavior problems, which can be

[6] See Reichman, et al. (2001) for a complete description of the sample and study design.

completed by telephone.[7] A total of 1,905 children have non-missing[8] PPVT-R scores and 2,423 have non-missing aggressive behavior problems scores.[9]

Outcome Variables

We investigate associations between the timing of returns to work and child cognitive development and behavior problems using two outcome measures, both of which are assessed at 36-months. Cognitive development is measured by the child's score on the Peabody Picture Vocabulary Test-Revised (PPVT-R) (Dunn and Dunn, 1981), a receptive vocabulary test that has been widely used to measure children's language and cognitive ability. In FFCW, the PPVT-R was administered during the 36-month in-home interview. Fifty-four sample children (12.7% of the Hispanic sample taking the PPVT-R), who spoke mainly Spanish, were administered the TVIP, a Spanish version of the test. The test can only be administered in person, therefore families that chose to participate in the questionnaire section of the in-home module by telephone have missing data on this measure.

We measure child behavior with the aggressive subscale of the Child Behavior Checklist (CBCL) (Achenbach 1992; Achenbach and Rescorla, 2000). The CBCL is a commonly used measure of children's behavioral problems and has been utilized in prior studies of associations between maternal employment and child outcomes. The child aggressive subscale of the CBCL consists of 15 items scored on a 0-2 point scale, resulting in total scores ranging from 0 to 30.

[7] Children whose mothers refused the in-home visit but completed the questionnaire portion of the in-home module by telephone have missing data for the PPVT-R, but not for the CBCL.

[8] There are several reasons why child observations are not available for some families. In the majority of cases, families completed the survey portion of the "in-home" assessment over the telephone because home visits could not be completed—either because the family refused or had moved to a location where they could not be interviewed in person. In other cases, the child was not present at the time of the in-home interview. Preliminary attrition analyses indicate that, overall, the observable characteristics of both in-home samples (i.e., collected in person and collected by telephone) are quite similar to those of the baseline and core age 3 samples (see Berger, Paxson, and Waldfogel, 2005). Note also that we exclude observations from the two FFCW pilot cities (Austin and Oakland) from these analyses because data on the timing of returns to work within the first year was not collected in those cities.

[9] Sample sizes for white, Black, and Hispanic sub-samples, respectively, on these measures are: 400, 1,078, and 427 for the PPVT-R and 583, 1,272, and 568 for aggressive behavior problems.

For each item, individuals are assigned a score of 0 if they respond that the statement is “not true,” 1 if they respond that the statement is “sometimes or somewhat true,” or 2 if they respond that the statement is “very true or often true” of the focal child. Scores on each item are then summed to create a total score. The specific items are: He/She is defiant; (His/Her) demands must be met immediately; He/She is disobedient; He/She doesn't seem to feel guilty after misbehaving; He/She is easily frustrated; He/She gets in many fights; He/She hits others; He/She has angry moods; Punishment doesn't change (his/her) behavior; He/She screams a lot; He/She is selfish or won't share; He/She is stubborn, sullen, or irritable; He/She has temper tantrums or hot temper; He/She is uncooperative; and He/She wants a lot of attention. Cronbach’s alpha for the CBCL aggressive subscale in FFCW is 0.88. Because the CBCL is reported by the mother and can be administered by phone, we are able to include CBCL data for families that completed the questionnaire section of the in-home module by telephone.

To assist in the interpretation of the estimates, we standardized both child outcomes to have means of 0 and standard deviations of 1. Descriptive statistics, shown on Table 1, suggest that, in the raw data, white children in this sample score more than half of a standard deviation above the sample mean on the PPVT-R, that Black children score about one-fifth of a standard deviation below the mean, and that Hispanic children score about three-hundredths of a standard deviation below the mean. In terms of aggressive behavior problems, white and Hispanic children score slightly below the mean (-0.02 and -0.03 standard deviations) and Black children score slightly above the mean (0.02 standard deviations).

Control Variables

All models include the following controls (measured at birth unless otherwise specified): child male, older siblings born to mother, younger siblings born to mother (measured at 36-

months), mother and father married, mother and father cohabiting, income above poverty to 200% of poverty, income above 200% of poverty, mother's PPVT-R score (measured at 36-months), maternal depression (measured at 12-months), maternal education, mother's age, and an indicator for whether the mother was working at 36-months. The inclusion of mothers' PPVT-R scores, which proxy for cognitive ability, is particularly important since differences in cognitive ability are likely to be correlated with both maternal employment and children's vocabulary development. Controlling for maternal depression is also important, particularly in the behavioral models, because our measure of child behavior problems is mother-reported and may, therefore, potentially be influenced by her mental health status. Because children were of varying ages at the time of the in-home assessment, we also include a control for the child's age (in months) at the time of the in-home assessment in all of our models. Models for Hispanic children control for Mexican, Puerto Rican, and country of origin not reported (other Hispanic is the omitted category). Means for the control variables, by race/ethnicity, are shown on Table 1. Of particular interest, we see that Black mothers are more likely than white and Hispanic mothers to be working at 36-months. Black mothers are also more likely than these other groups to be single, poor, and have less than a high school degree at the time of the birth, as well as to have higher depression scores at 12-months and lower PPVT-R scores at 36-months.

Variables Measuring Attitudes about Work and Family Life

As discussed above, it is possible that different racial/ethnic groups have different values toward women's roles regarding work and family life, and that these differences may partially explain variation in associations between first-year maternal employment and child outcomes. As such, we examined differences by racial and ethnic group in attitudes toward maternal employment and views about work and family life (results not shown in Table 1, but available on

request). At the time of the birth, African-American mothers were most likely to say that they expected to work in the coming year (93% of African-American mothers as compared to 81% of Hispanic and 76% of non-Hispanic white mothers). African-American mothers were also most likely to view employment positively: 80% of African-American mothers said that the wife having a steady job was very important for a successful marriage, while only 64% of Hispanic mothers and 45% of non-Hispanic white mothers felt the same way. At the same time, Hispanic mothers were most likely to believe that it is better if the husband is the breadwinner and the wife cares for the family: 39% of Hispanic mothers agreed or strongly agreed with this statement, compared to only 24% of African-American mothers and 25% of non-Hispanic white mothers. Also suggesting that Hispanic mothers hold a more traditional view of family roles, this group was least likely to object to the statement that the important decisions in the family should be made by the man. Sixteen percent of Hispanic mothers strongly disagreed with this statement, compared to 21% of African-American mothers and 20% of white non-Hispanic mothers.

We also found differences in beliefs about family and work among Hispanic mothers with different backgrounds, with mothers from Mexico expressing the most traditional views. Mexican mothers (62%), for example, were less likely than both Puerto Rican (67%) and other Hispanic (67%) mothers to say that the wife having a steady job was very important for a successful marriage, and more likely to report that it is better if the husband is the breadwinner and the wife cares for the family (42%, 33%, and 39%).

These striking differences in attitudes suggest the importance of estimating our models separately by race/ethnic group and, within the Hispanic group, estimating some models allowing the effects of first year maternal employment to differ for Mexicans vs. other Hispanic women. We present the results of such models below. (We also estimated models in which we

controlled directly for the attitude variables, as well as interacting the attitude variables with first-year maternal employment; however, the results of these models were generally inconclusive).

Results

Associations between first-year maternal employment and receptive vocabulary

The top panel of Table 2 shows results for our most basic models estimating associations between first year employment and PPVT-R scores for each racial or ethnic group. Consistent with previous research in this area (see, e.g., Waldfogel, et al., 2002), we find negative associations for white, but not Black or Hispanic children.[10] Because our models control for a similar set of covariates as those used in Waldfogel, et al. (2002), we are able to compare effect sizes with that study, which utilizes a somewhat more advantaged sample from the NLSY-CS. Our model suggests that maternal employment within 12-months of a focal child's birth is associated with a 0.37 standard deviation lower PPVT-R score at age 3 for white children. Waldfogel, et al.'s (2002) analysis suggests an effect size of -0.17 standard deviations in PPVT-R scores at age 3 or 4,[11] about half of the size of the effect found in this study. This difference may be due to differences in child age at the PPVT-R assessment, to differences in measurement of the covariates in the two studies, and/or to differences in the samples utilized by each.

[10] Note that it is possible that the lack of observed association between early maternal employment and PPVT-R scores for Black and Hispanic children may be linked to the way the PPVT-R is scored. The PPVT-R is scored such that children below a certain level are assigned a "floor" score (i.e., scores are bottom coded). As Black and Hispanic children have considerably lower mean scores than white children, they may also be more likely to be assigned the "floor" score (in this case 60). Children with PPVT-R scores that would have been below the "floor" even if their mothers did not work in the first year cannot score lower if their mothers do. As such, we may be missing potential associations among low scoring Black and Hispanic children. To the best of our knowledge this has not been addressed in the existing literature on early maternal employment and cognitive development.

[11] Note that Waldfogel, et al. (2002) report coefficients for raw (not standardized) PPVT-R scores. The -0.17 standard deviation effect size reported here has been calculated by simply dividing the coefficient (-3.23) reported by Waldfogel et al. (2002) by the standard deviation (19.3) on the PPVT-R for the full sample in their analysis (see Waldfogel, et al., 2002, Table 2 for the coefficient and footnote #7 for the standard deviation).

Nonetheless, both studies provide evidence that early maternal employment is associated with adverse cognitive outcomes for white children.

Because none of the results presented on Table 2 are statistically significant for Black or Hispanic children, we limit the remainder of our discussion of associations between first year employment and PPVT-R scores to white children. The second panel of Table 2 addresses variations in these associations by intensity of work. We see that, all else equal, although white children whose mothers worked by 12-months have lower PPVT-R scores, on average, than those whose did not, there are no differences by whether or not the mother worked full- or part-time. This is consistent with results from Han, et al. (2001), but inconsistent with findings from Waldfogel, et al. (2002), Brooks-Gunn, et al. (2002), Ruhm (2004), and Hill et al. (2005), each of which reports larger adverse effects on cognitive outcomes for children whose mothers work longer hours in the first year, compared to those whose mothers work shorter hours. It may be that our findings differ from these others because those studies utilize more accurate measures of hours of employment during the first year than ours. As work intensity in this study is measured according to the mother's report of whether she worked full- or part-time upon returning to work after the birth of the focal child, we can not assess the extent to which such reports correspond to specific numbers of hours worked upon return (nor average hours worked over the course of the first-year).

The third panel of Table 2 examines work timing in the first year. White children whose mothers return to work by 3-months and those whose mothers return between 7- and 12-months score lower on the PPVT-R than white children whose mothers do not return by 12-months. However, none of the timing interactions significantly differ from each other, suggesting that, in this sample, the timing of returns within the first year does not differentially impact vocabulary

for white children. These findings are consistent with those in Berger, Hill, and Waldfogel (2005), but inconsistent with those of Han, et al. (2001).

Results regarding variation by family structure and maternal education are presented in the fourth and fifth panels of Table 2. Here, we see that negative associations between maternal work in the first year and PPVT-R scores for white children are particularly concentrated among those in single- and cohabiting-families. The coefficients for both of these variables are marginally statistically significantly different ($p < 0.10$) from the coefficient for children with married mothers who returned to work by 12-months. These findings stand in contrast to those in Han, et al. (2001), Brooks-Gunn, et al. (2002), and Ruhm (2004), each of which finds larger effects among children in two-parent or married families. One possible explanation for these differences is that the married white families in this sample may be quite different from the samples of married white families in datasets such as the NLSY-CS or NICHD-SECC, given that all of the children in FFCW were born in urban hospitals.

Turning to maternal education, we find that white children with less educated mothers (those with a high school education or less) who return to work in the first year have lower average PPVT-R scores than white children whose mothers do not return in the first year. But, this is not the case for children whose mothers return within the first-year but are more highly educated (i.e., have more than a high school education). That white children with more highly educated mothers do not experience the same adverse cognitive consequences as those with less educated mothers may reflect access to higher quality child care among this group (unfortunately, however, we can not test this hypothesis as we do not currently have data on child care quality). It is also possible that more highly educated mothers are able to compensate for being at work during the first year in ways that less educated mother are not.

As discussed above, one hypothesis regarding differences in associations between first-year maternal employment and child outcomes across racial/ethnic groups is that the racial/ethnic groups differ on a set of characteristics, such as family structure and SES (and/or on the timing and intensity of work following a birth), that interact with first-year maternal employment to differentially affect child outcomes, and that these differential effects are thereby driving observed differences across groups. For example, it is possible that prior studies have found adverse cognitive effects for white children, but not for Black or Hispanic children, because white mothers are more likely to be married or of higher SES (approximated here by education) (or because white mothers return to work sooner and/or work more hours upon return). As such, if first-year employment is more strongly associated with adverse cognitive development among married or higher SES families (or families in which mothers return to work earlier and/or work more hours upon returning), and white families are more likely to have these characteristics, then we would expect to observe stronger associations among white families, even if race/ethnicity is not driving them. That we estimate the effects of interactions between first-year employment and these factors and still find adverse cognitive effects for white, but not Black or Hispanic, families, however, suggests that these factors are not driving such associations.

Associations between first-year maternal employment and aggressive behavior problems

Table 3 re-estimates each of the previous models using child aggressive behavior problems as the outcome variable. The pattern of results shown on this table differs considerably from that found in the analyses presented in Table 2. Here, we find very few associations between first year maternal employment and aggressive behavior problems for white children. And, consistent with previous work (see, e.g., Han, et al. (2001); Brooks-Gunn, et al. (2002)),

there are no statistically significant associations between first year employment and behavior problems for Black children in this sample.

Hispanic children have been much less frequently studied in prior research and, in those studies that have included Hispanic children, sample sizes have generally been too small to precisely estimate effects. Thus there is no appropriate existing study with which to compare our results for Hispanics. However, we find considerable associations between first year maternal employment and increased aggressive behaviors for Hispanic children. Panel 1 of Table 3 shows that Hispanic children whose mothers work by 12-months exhibit, on average, 0.22 standard deviations more aggressive behaviors. Panels 2 and 3 of this table suggest that this association is strongest when mothers return to work within 3-months of the birth, but that it does not vary by work intensity. We also see from Panels 4, 5, and 6 that these effects are concentrated among children with cohabiting and married, less educated (i.e., those with a high school education or less), and Mexican mothers. A possible reason for these findings is that these may be the families where maternal employment in the first year is most at odds with the values that family members hold about the proper role of mothers in work and family life. As we saw earlier, Hispanic women, in general, are more likely than white or Black women to hold traditional attitudes about work and family life, and this is particularly true of Mexican women. We attempted to explore this explanation further by estimating models where we allowed the effects of first-year maternal employment to vary by maternal attitudes towards work and family; however, the results (not shown but available on request) did not tell a consistent story as to a particular set of attitudes that are most strongly predictive of adverse employment effects. Furthermore, to explore differences in attitudes more fully, we would ideally want to include data on these children's fathers' attitudes as well.

Conclusions

While we caution that, like previous studies in this area, our results may not represent causal estimates, this is the first study to examine associations between first-year maternal employment patterns and child outcomes in a sample that is comprised primarily of low-SES and racial/ethnic minority mothers who were largely unmarried at the time of the focal child's birth. Our results suggest that, consistent with prior research, these associations are not uniform across racial/ethnic groups. Although our sample is relatively less advantaged and more racially and ethnically diverse than those used in prior studies, our results are generally consistent with prior findings regarding children's cognitive outcomes: we find that maternal work in the first year after birth is associated with adverse cognitive outcomes for white children, but not for Black or Hispanic children. However, we also find associations between first-year employment and child aggression for Hispanic children, who have received scant attention in existing work, but not for white or Black children. This variation suggests that we have a lot more to learn about how maternal employment in the first year of life affects child outcomes, and why.

What might account for these differences across racial/ethnic groups? One hypothesis is that maternal employment may have a different meaning in families from different groups. To explore this, as discussed above, we examined mothers' responses to a set of questions focusing on their attitudes about family life and discovered that, indeed, their attitudes towards women's employment and women's roles differ a good deal by race/ethnicity, with Hispanic women, and especially Mexican women, espousing more traditional values about women's role with regard to employment and the home. As evidenced by these differential responses, maternal employment may take on different meanings in families with different cultural backgrounds. In line with this, we find considerable differences in associations between early maternal employment and child

outcomes by racial/ethnic and cultural background, with first year maternal employment affecting cognitive development only for non-Hispanic white children, and affecting aggressive behavior problems only for Hispanic children.

Our results also provide some evidence that other elements of the family context may matter. Although we do not find that the effects of first year maternal employment on child cognitive development vary by work intensity or return timing, we do find differences in these associations by family structure, with the adverse cognitive effects in this sample concentrated among the unmarried white families. In regard to associations between first year employment and behavior problems among Hispanic children, we not only find that these effects are largest for families of Mexican ancestry, but that they are stronger when employment is begun earlier in the first year. We also find that they are stronger in married couple families (versus unmarried families).

There is, of course, much more to be learned about how maternal employment may affect child outcomes. Future work should look at both the parenting and child care arrangements to which lower SES and racial and ethnic minority children are exposed, as well as at other changes within families that may occur in response to maternal employment. This study did not explore the potential mediating effects of either parenting behaviors or child care arrangements on associations between first-year maternal employment and child outcomes because we were primarily interested in estimating these associations in full (i.e., including those portions that may be accounted for by parenting behaviors and/or child care arrangements). As previous studies have found that these factors tend to explain a portion – although not all – of these associations (see, e.g., Han et al. (2001); Brooks-Gunn, et al. (2002); Waldfogel, et al. (2002)), however, future research should continue to explore how parenting behaviors and child care

arrangements differ by racial/ethnic and SES groups, as well as whether they have differential effects on associations between first-year employment and child outcomes across these groups. Additionally, in this study, we did not control for fathers' characteristics and behaviors. Yet, it is possible that fathers take on different roles and responsibilities across racial/ethnic and/or SES groups when mothers work during the first year of their children's lives. Future work should focus on how fathers' roles may affect associations between first-year maternal work and child outcomes.

Another potentially important area for further exploration is the context of employment in which the mothers (and fathers) in our sample are working. With regard to the adverse effects of first-year maternal employment on child aggressive behaviors in Hispanic families, for instance, it would be important to learn how these effects might relate to on the job stress experienced by low-income working parents. Such factors are beyond the scope of our study, but would be important to include in future research.

Finally, future research should examine the long-run implications of first-year maternal employment for children's development. The children who are the focus of this study were, for the most part, only age 3 at the time these data were collected. Longer run work will allow us to learn whether the effects we have found at age 3 persist over time, and also whether any effects that are not apparent at age 3 might emerge at a later date.

References

Achenbach, T. (1992). Manual for the Child Behavior Checklist/2 – 3 and 1992 Profile. Burlington, VT: University of Vermont Department of Psychiatry.

Achenbach, T., and Rescorla, L. (2000). Manual for the ASEBA Preschool Forms and Profiles. Burlington, VT: University of Vermont, Research Center for Children, Youth, and Families.

Baum, C.L. (2003). "Does Early Maternal Employment Harm Child Development? An Analysis of the Potential Benefits of Leave-Taking." Journal of Labor Economics 21(2): 409-448.

Bates, J.E., D. Marvinney, T. Kelly, K.A. Dodge, D.S. Bennett, and G.S. Pettit (1994). "Child-Care History and Kindergarten Adjustment." Developmental Psychology 30(5): 690-700.

Baydar, N. and J. Brooks-Gunn (1991). "Effects of Maternal Employment and Child Care Arrangements in Infancy on Preschoolers' Cognitive and Behavioral Outcomes: Evidence from the Children of the NLSY." Developmental Psychology 27: 918-931.

Belsky, J. and D. Eggebeen (1991). "Early and Extensive Maternal Employment/Child Care and 4-6 Year Olds Socioemotional Development: Children of the National Longitudinal Survey of Youth." Journal of Marriage and the Family 53: 1083-1099.

Berger, L.M., C. Paxson, and J. Waldfogel. (2005). "Income and Child Development." Manuscript, Princeton University.

Berger, L.M., J. Hill, and J. Waldfogel (2005). "Maternity Leave, Early Maternal Employment, and Child Health and Development in the U.S." Economic Journal 115 (February): F29-F47.

Blank, R. (2002). "Evaluating Welfare Reform in the United States." Journal of Economic Literature 40(4): 1105-1167.

Blau, F.D. and A.J. Grossberg. (1992). "Maternal Labor Supply and Children's Cognitive Development." Review of Economics and Statistics 74(3): 474-481.

Brooks-Gunn, J., W. Han, and J. Waldfogel (2002). "Maternal Employment and Child Cognitive Outcomes in the First Three Years of Life: The NICHD Study of Early Child Care." Child Development 73(4): 1052-1072.

Desai, S., L. Chase-Lansdale, and R. Michael (1989). "Mother or Market?: Effects of Maternal Employment on Cognitive Development of Four Year Old Children." Demography 26: 545-561.

Dunn L.M., and L.M. Dunn. 1981. Peabody Picture Vocabulary Test-Revised. Circle Pines, MN: American Guidance Service.

Dye, J.L. (2005). "Fertility of American Women: June 2004." Current Population Reports, P20-555. Washington, DC: U.S. Census Bureau.

Han, W., J. Waldfogel, and J. Brooks-Gunn (2001). "The Effects of Early Maternal Employment on Later Cognitive and Behavioral Outcomes." The Journal of Marriage and the Family 63: 336-354.

Haskins, R. (1985). "Public School Aggression Among Children with Varying Day Care Experience." Child Development 56: 689-703.

Hill, J., J. Waldfogel, J. Brooks-Gunn, and W. Han (2005). "Maternal Employment and Child Development: A Fresh Look Using Newer Methods." Developmental Psychology, 41(6): 833-850.

James-Burdumy, S. (2005). "The Effect of Maternal Labor Force Participation on Child Development." Journal of Labor Economics 25(1): 177-211.

Neidell, M. (2000). "Early Parental Time Investments in Children's Human Capital Development: Effects of Time in the First Year on Cognitive and Non-Cognitive Outcomes." UCLA mimeo.

Reichman, N. E., J.O. Teitler, I.Garfinkel, and S.S. McLanahan. (2001). "Fragile Families: Sample and Design." Children and Youth Services Review, 23(4-5): 303-326.

Ruhm, C. (2004). "Parental Employment and Child Cognitive Development." Journal of Human Resources 39(1): 155-192.

Shonkoff, J.P., and D.A. Phillips (eds) (2000). From Neurons to Neighborhoods: The Science of Early Childhood Development. Washington, DC: National Academy Press.

Smolensky, E. and J. Gootman (eds) (2003). Working Families and Growing Kids: Caring for Children and Adolescents. Washington, DC: The National Academies Press.

Waldfogel, J., W. Han, and J. Brooks-Gunn (2002). "The Effects of Early Maternal Employment on Child Cognitive Development." Demography, 39(2): 369-392.

Table 1: Mean (and standard deviation) statistics by race/ethnicity			
	White (Obs = 585)	Black (Obs = 1,292)	Hispanic (Obs = 572)
Key predictors:			
Working by 12-months	0.716	0.810	0.659
Working by 12-months, part-time	0.362	0.287	0.253
Working by 12-months, full-time	0.354	0.523	0.406
Working by 3-months	0.446	0.394	0.362
Working 4-6 months	0.171	0.227	0.156
Working 7-12 months	0.099	0.189	0.142
Working by 12-months, single at birth	0.147	0.433	0.215
Working by 12-months, cohabiting at birth	0.231	0.285	0.315
Working by 12-months, married at birth	0.338	0.091	0.129
Working by 12-months, less than high school	0.126	0.217	0.219
Working by 12-months, high school	0.168	0.327	0.201
Working by 12-months, more than high school	0.422	0.265	0.240
Working by 12-months, Mexican			0.309
Working by 12-months, Puerto Rican			0.128
Working by 12-months, other Hispanic			0.177
Outcomes:			
PPVT-R (standardized; Obs = 1,905))	0.538	-0.200	-0.026
	(1.037)	(0.917)	(0.958)
Child aggressive behaviors (standardized; Obs = 2,423)	-0.015	0.024	-0.031
	(0.950)	(1.023)	(0.985)
Covariates:			
Working at 36-months	0.756	0.852	0.748
Single-mother at child's birth	0.179	0.543	0.302
Mother and father cohabiting at child's birth	0.309	0.342	0.474
Mother and father married at child's birth	0.511	0.115	0.224
Income at or below poverty at child's birth	0.113	0.425	0.343
Income above poverty to 200% of poverty at child's birth	0.221	0.266	0.304
Income above 200% of poverty at child's birth	0.667	0.309	0.353
Child male	0.530	0.526	0.498
Older siblings born to mother	0.544	0.651	0.577
Younger siblings born to mother	0.287	0.273	0.259
Mother's PPVT-R (standardized)	0.631	-0.242	-0.073
	(1.067)	(0.965)	(1.227)
Maternal depression (standardized)	0.019	0.088	-0.073
	(1.009)	(1.068)	(0.956)
Mother had less than high school education at child's birth	0.174	0.308	0.420
Mother had more than high school education at child's birth	0.586	0.308	0.297
Mother's age age at child's birth	27.058	24.094	24.652
	(6.415)	(5.563)	(5.825)
Child age (months) at in-home assessment	37.707	37.784	38.646
	(2.711)	(4.912)	(3.761)

Table 2: Early maternal employment and receptive vocabulary (PPVT-R)			
	White	Black	Hispanic
Panel 1: Working by 12-months			
(1) Working by 12-months	-0.367**	-0.006	0.042
	(0.123)	(0.071)	(0.107)
Panel 2: Working by 12-months * intensity			
(1) Working by 12-months, part-time	-0.353**	-0.071	0.012
	(0.133)	(0.080)	(0.126)
(2) Working by 12-months, full-time	-0.385**	0.035	0.063
	(0.137)	(0.074)	(0.117)
Test: (1)=(2) (p-value)	0.767	0.081	0.657
Panel 3: Work timing within 12-months			
(1) Working by 3-months	-0.392**	-0.065	0.121
	(0.131)	(0.078)	(0.120)
(2) Working 4-6 months	-0.256	0.018	0.045
	(0.159)	(0.086)	(0.143)
(3) Working 7-12 months	-0.445*	0.060	-0.131
	(0.193)	(0.086)	(0.148)
Test: (1)=(2) (p-value)	0.311	0.224	0.562
Test: (1)=(3) (p-value)	0.764	0.095	0.073
Test: (2)=(3) (p-value)	0.345	0.612	0.278
Panel 4: Working by 12-months * family structure at birth			
(1) Working by 12-months, single at birth	-0.693*	0.040	0.046
	(0.299)	(0.091)	(0.176)
(2) Working by 12-months, cohabiting at birth	-0.585**	-0.083	0.023
	(0.194)	(0.120)	(0.147)
(3) Working by 12-months, married at birth	-0.132	-0.029	0.083
	(0.162)	(0.197)	(0.216)
Test: (1)=(2) (p-value)	0.759	0.402	0.918
Test: (1)=(3) (p-value)	0.089	0.743	0.890
Test: (2)=(3) (p-value)	0.062	0.815	0.808
Panel 5: Working by 12-months * maternal education in the year prior to birth			
(1) Working by 12-months, less than high school	-0.593*	0.096	0.019
	(0.261)	(0.104)	(0.139)
(2) Working by 12-months, high school	-0.744**	0.000	-0.178
	(0.217)	(0.121)	(0.197)
(3) Working by 12-months, more than high school	-0.109	-0.196	0.436+
	(0.155)	(0.137)	(0.237)
Test: (1)=(2) (p-value)	0.652	0.536	0.401
Test: (1)=(3) (p-value)	0.092	0.084	0.122
Test: (2)=(3) (p-value)	0.015	0.276	0.042
Panel 6: Working by 12-months * country of origin			
(1) Working by 12-months, Mexican			-0.089
			(0.140)
(2) Working by 12-months, Puerto Rican			0.234
			(0.247)
(3) Working by 12-months, other Hispanic			0.055
			(0.199)
Test: (1)=(2) (p-value)			0.236
Test: (1)=(3) (p-value)			0.542
Test: (2)=(3) (p-value)			0.562
Observations	400	1078	427

Note: Coefficients (and standard errors) from ordinary least squares regressions are presented. Outcome variable is standardized. All models control for working at 36-months, child male, older siblings born to mother, younger siblings born to mother, mother and father married at birth, mother and father cohabiting at birth, income above poverty to 200% of poverty, income above 200% of poverty, mother's 36-month PPVT score, maternal depression, maternal education, mother's age at child's birth, and child age at in-home assessment. All models for the Hispanic subsample also control for Mexican, Puerto Rican, and country of origin not reported (other Hispanic is the omitted category). +p<.10; *p<.05; **p<.01; ***p<.001.

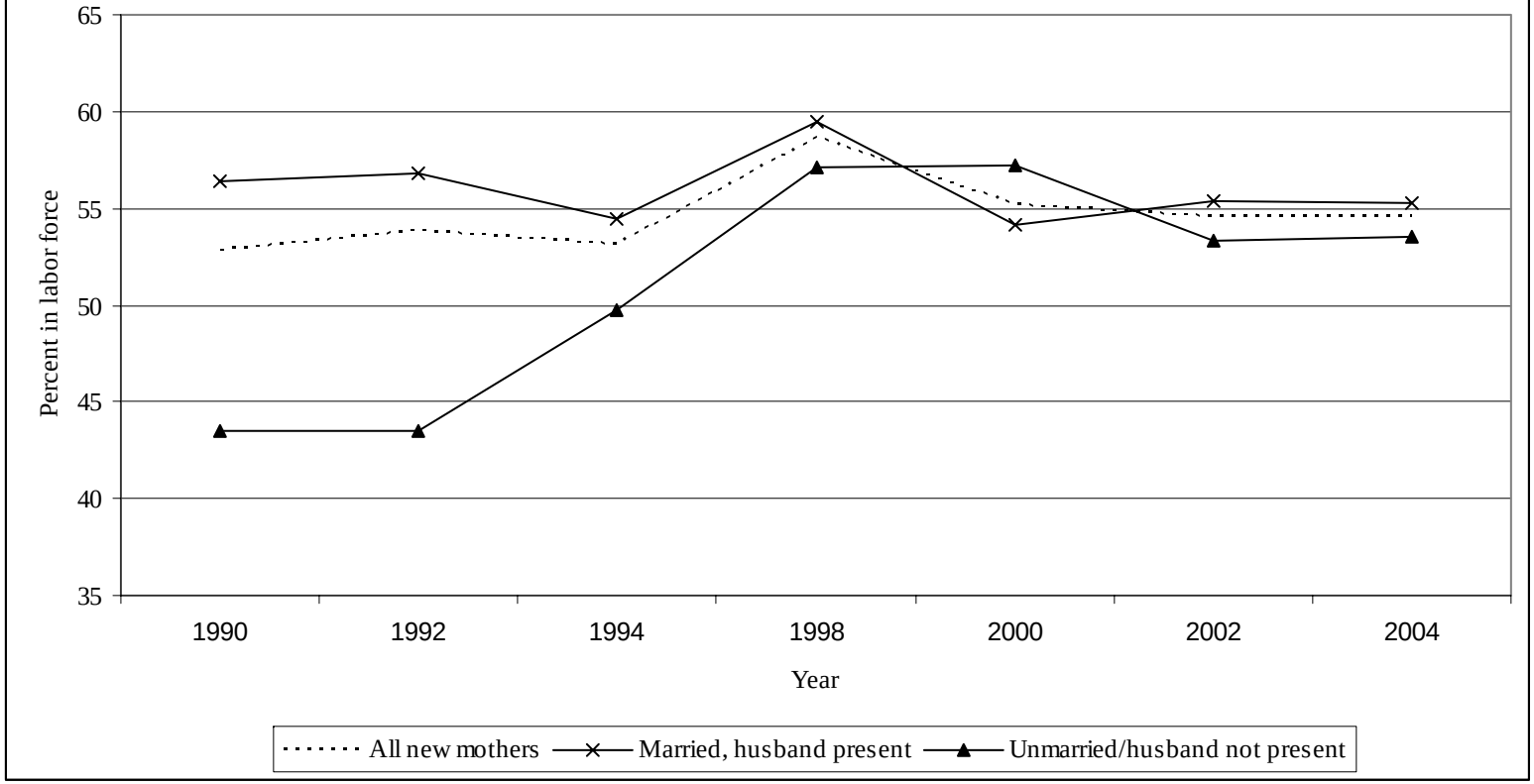
Table 3: Early maternal employment and child aggressive behavior problems			
	White	Black	Hispanic
Panel 1: Working by 12-months			
(1) Working by 12-months	0.044	-0.074	0.215*
	(0.097)	(0.076)	(0.099)
Panel 2: Working by 12-months * intensity			
(1) Working by 12-months, <30 hrs/wk	0.038	-0.042	0.172
	(0.107)	(0.086)	(0.115)
(2) Working by 12-months, >=30 hrs/wk	0.051	-0.097	0.249*
	(0.108)	(0.080)	(0.109)
Test: (1)=(2) (p-value)	0.892	0.846	0.463
Panel 3: Work timing within 12-months			
(1) Working by 3-months	0.007	-0.056	0.350**
	(0.105)	(0.084)	(0.110)
(2) Working 4-6 months	0.086	-0.030	0.161
	(0.127)	(0.092)	(0.133)
(3) Working 7-12 months	0.109	-0.139	-0.021
	(0.147)	(0.092)	(0.135)
Test: (1)=(2) (p-value)	0.467	0.722	0.125
Test: (1)=(3) (p-value)	0.457	0.297	0.004
Test: (2)=(3) (p-value)	0.879	0.212	0.219
Panel 4: Working by 12-months * family structure at birth			
(1) Working by 12-months, single at birth	0.265	-0.147	0.022
	(0.236)	(0.099)	(0.167)
(2) Working by 12-months, cohabiting at birth	-0.066	-0.003	0.267*
	(0.159)	(0.129)	(0.133)
(3) Working by 12-months, married at birth	0.052	0.073	0.379*
	(0.127)	(0.202)	(0.186)
Test: (1)=(2) (p-value)	0.238	0.363	0.236
Test: (1)=(3) (p-value)	0.413	0.317	0.138
Test: (2)=(3) (p-value)	0.543	0.746	0.600
Panel 5: Working by 12-months * maternal education in the year prior to birth			
(1) Working by 12-months, less than high school	0.303	0.126	0.283*
	(0.210)	(0.113)	(0.129)
(2) Working by 12-months, high school	-0.120	-0.109	0.433*
	(0.174)	(0.131)	(0.178)
(3) Working by 12-months, more than high school	0.044	-0.355*	-0.211
	(0.125)	(0.144)	(0.193)
Test: (1)=(2) (p-value)	0.118	0.164	0.475
Test: (1)=(3) (p-value)	0.266	0.008	0.027
Test: (2)=(3) (p-value)	0.428	0.200	0.011
Panel 6: Working by 12-months * country of origin			
(1) Working by 12-months, Mexican			0.452**
			(0.130)
(2) Working by 12-months, Puerto Rican			-0.015
			(0.215)
(3) Working by 12-months, other Hispanic			-0.026
			(0.173)
Test: (1)=(2) (p-value)			0.051
Test: (1)=(3) (p-value)			0.021
Test: (2)=(3) (p-value)			0.968
Observations	583	1272	568

Note: Coefficients (and standard errors) from ordinary least squares regressions are presented. Outcome variable is standardized. All models control for working at 36-months, child male, older siblings born to mother, younger siblings born to mother, mother and father married at birth, mother and father cohabiting at birth, income above poverty to 200% of poverty, income above 200% of poverty, mother's 36-month PPVT score, maternal depression, maternal education, mother's age at child's birth, and child age at in-home assessment. All models for the Hispanic subsample also control for Mexican, Puerto Rican, and country of origin not reported (other Hispanic is the omitted category). +p<.10; *p<.05; **p<.01; ***p<.001.

Figure 1: Labor force participation of mothers 15-44 who had a birth in the last year, by race/ethnicity

Note: Constructed from Dye (2005), Table 4 (Source: June CPS data, selected years). Data for white, non-Hispanic women was not available prior to 1994.

Figure 2: Labor force participation of mothers 15-44 who had a birth in the last year by marital status at birth



Note: Constructed from Dye (2005), Table 4 (Source: June CPS data, selected years). Unmarried/husband not present includes women who were: married, husband absent; separated; divorced; widowed; and never married.