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Does Maternal Employment Following Childbirth Support or Inhibit Low-Income Children's Long-Term Development?

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Abstract

This study assessed whether previous findings linking early maternal employment to lower cognitive and behavioral skills among middle class and White children generalized to other groups. Using a representative sample of urban, low-income, predominantly African American and Hispanic families (n = 444), OLS regression and propensity score matching models assessed links between maternal employment in the two years after childbearing and children's functioning at age 7. Children whose mothers were employed early, particularly in their first 8 months, showed enhanced socio-emotional functioning compared to peers whose mother remained nonemployed. Protective associations emerged for both part time and full time employment, and were driven by African American children, with neutral effects for Hispanics. Informal home-based child care also heightened positive links.

Keywords

maternal employment; poverty; welfare reform; behavior problems; parental leave

The dramatic increase in maternal employment in recent decades has spurred a substantial body of research on mothers' labor force participation and associations with children's health and well-being. Although the rise in working mothers has occurred across all demographic groups, single, low-income mothers have experienced the greatest recent growth. This trend can be attributed to shifts in family structure and men's wage rates as well as to policy changes aimed at economically disadvantaged mothers, such as the work requirements instituted as part of welfare reform and expansion of the Earned Income Tax Credit (EITC; Haskins, 2006). In response to this notable increase in economically disadvantaged women's employment, it is essential to understand the repercussions for children's development.

The literature on maternal employment and child development generally shows few associations between mothers' work status and the cognitive and behavioral functioning of children (Baydar & Brooks-Gunn, 1991; Chase-Lansdale et al., 2003; Goldberg, Prause, Lucas-Thompson & Himsel, 2008). However, a variety of developmental and economic theoretical models suggest that maternal employment may be particularly influential in the first months of a child's life. An economic viewpoint argues that engagement in the labor market requires a tradeoff of money and time. Maternal employment will increase mothers' economic resources but decrease time and energy to devote to parenting (Becker & Tomes,

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1986). Psychological models such as attachment theory expand upon this argument, positing that employment may reduce the amount of time and experience that mothers have to build sensitive, responsive parenting skills that are essential to the development of secure infant attachments (Bowlby, 1951; Chase-Lansdale & Owen, 1987), which in turn may inhibit children's exploration, learning, and emotional security. Other psychological models argue that balancing employment and the high care demands of infants may be stressful to mothers, negatively influencing maternal well-being, parenting quality, and ultimately child outcomes (Parcel & Menaghan, 1994). In addition, child care for infants is limited, expensive, and often of inadequate quality, thus potentially posing a risk to children's development (Paulsell et al., 2002). Together these models suggest that earlier entries and greater time devoted to employment may be especially challenging for mothers and infants, and further that child care may be an important factor affecting the link between early maternal employment and children's development.

A sizable body of empirical evidence supports these suppositions. A number of large, longitudinal survey studies have found negative links between early maternal employment and children's cognitive and socio-emotional well-being later in childhood. For example, assessing a sample of White children from the NICHD Study of Early Child Care (SECC), Brooks-Gunn, Han, and Waldfogel (2002) found that maternal employment begun before the child's 9th month was linked to negative child cognitive outcomes at 36 months, particularly when the initial employment was 30 hours or more per week. This pattern continued into the first grade, extending to children's behavioral functioning as well (Brooks-Gunn, Han & Waldfogel, 2010). Research with nationally representative samples of mothers has unearthed similar patterns (Han, Waldfogel, & Brooks-Gunn, 2001; Hill, Waldfogel, Brooks-Gunn, & Han, 2005).

Extending the focus to the role of nonparental child care during infancy, numerous studies have found that accounting for childcare type (Baydar & Brooks-Gunn, 1991; Berger, Brooks-Gunn, Paxson, & Waldfogel, 2008; Han et al., 2001) or quality (Brooks-Gunn et al., 2002; 2010) did not substantially alter reported associations between early maternal employment and children's later functioning. But existing studies have rarely assessed possible moderating effects-that is, whether early maternal employment in combination with particular types of nonmaternal care may be differentially linked to the well-being of young children. Formal center-based care is often of higher developmental quality than informal care, which might buffer potential negative effects of maternal employment on children (Coley, Li-Grining, & Chase-Lansdale, 2006; Li-Grining & Coley, 2006). However, center-based care is relatively uncommon for infants (NICHD ECCRN, 1997; Paulsell et al., 2002), whereas informal care arrangements may be more accessible and responsive to mothers' needs and provide more developmentally appropriate care for infants than center care (Coley et al., 2006). Hence informal care might make combining employment and parenting easier for mothers, supporting family functioning and child development. Little evidence exists to speak to these hypotheses. In one study, Waldfogel and colleagues (2002) reported that the negative effects of early and full time employment on White children's functioning were strongest among children in nonrelative informal home arrangements.

Another important consideration in the literature on early maternal employment is the generalizability of results. Some have suggested that the negative implications of maternal employment may not be universal, but rather are concentrated among White, middle-class children, the target of most research in this arena (Baydar & Brooks-Gunn, 1991; Blau & Grossberg, 1992). More recently scholars have recognized that childrearing practices, home contexts, and cultural norms regarding economic and family roles vary considerably across economic as well as racial and ethnic groups and past findings may not be generalizable to all families (Garcia Coll et al., 1996; Parke & Buriel, 2006). In recent years poor mothers

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have faced a host of policy shifts, including work requirements linked to welfare receipt, wage subsidies from the EITC, and enhanced work supports such as childcare and medical insurance subsidies that have both pushed and pulled them into the labor market (Haskins, 2006). For families with limited economic and social resources, the benefits of maternal employment may outweigh negative factors, with mothers' work bringing needed income to families and a psychological boost to mothers (Duncan & Brooks-Gunn, 1997; Harvey, 1999; Raver, 2003). On the other hand, limited access to high quality infant childcare and to spouses or other family members with which to share the challenges of parenting may increase low-income mothers' stress in balancing work with parenting (Gennetian & Knox, 2003; Paulsell et al., 2002). Selection factors are an important consideration as well, given that the same unobservable characteristics of mothers that may lead them into poverty or employment also may be related to their parenting skills and family contexts and thus to child outcomes (Berger et al., 2008). From these conflicting hypotheses comes uncertainty regarding the implications of early maternal employment for low-income children.

Ethnic and racial differences are also important to consider. African Americans have a long history of employment and of extended family participating in child rearing which may alter family and child responses (Berger, et al., 2008; Cherlin, 2009). For example, early maternal employment may lead to fewer changes in the home environments and childcare arrangements for African American children, and cultural normativeness and enhanced supports for maternal employment may limit negative effects. Second, there may be differential selection into employment across racial and ethnic groups due to both observed and unobserved differences in work skills and experience (Berger et al., 2008; Hill et al., 2005). Third, African American mothers are more likely to be unmarried and to have more limited financial resources than their White counterparts (Cherlin, 2009). With less access to resources from spouses or other sources, the income and in-kind benefits (e.g., health insurance) derived from African American mothers' employment may play a more significant role in promoting maternal and family functioning, and hence child well-being. Alternately, limited economic and social supports may enhance the stress of balancing work and family responsibilities.

Family and employment patterns are different for Hispanics in the U.S., who overall have notably lower rates of maternal employment than Whites and African Americans, and moderate levels of single-mother families and poverty, in between rates for Whites and African Americans (Lichter & Landale, 1995). Thus, cultural and social norms regarding maternal employment may be less ingrained, resulting in lower supports for mothers' work and for alternate childcare among Hispanics, although we caution that there are also notable differences between subgroups of Hispanics in the U.S. (Lichter & Landale, 1995).

Limited empirical research has addressed the repercussions of early maternal employment within low-income families and families of color. One recent study of primarily low-income, unmarried mother families found that first-year maternal employment predicted lower cognitive outcomes only among White children and worse behavioral outcomes only among Hispanic children, with some indications of improved behavioral functioning among African American children at age 3 (Berger et al., 2008). Other studies have reported negative links between first year maternal employment and White but not African American or Hispanic children's cognitive and behavioral skills through age 7–8 (Brooks-Gunn et al., 2010; Waldfogel, et al., 2002). These studies all suggest that African American children may not suffer deleterious consequences from early maternal employment, but questions remain. In particular, limited attention has been paid to parceling out racial and ethnic versus low-income patterns, and inadequate attention has been paid to important issues such as employment intensity and childcare arrangements.

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In sum, theoretical perspectives and existing literature point to the significance of early childhood when examining the effect of maternal employment and highlight the importance of considering work intensity, race and ethnicity, and childcare arrangements. Little previous research exists on links between early maternal employment and children's cognitive and behavioral functioning within low-income families that face unique pushes and pulls into the labor market. The current study sought to address these gaps by assessing associations between early maternal employment and children's later cognitive and behavioral functioning, focusing on a racially and ethnically diverse sample of poor and low-income families. Four sets of analyses assessed associations among (1) the timing of early maternal employment; (2) the intensity of employment; (3) the moderating role of race and ethnicity, and (4) the moderating role of childcare with children's functioning at age 7. Focusing on a sample of children and families followed from 1999 through 2006, this study sought to address gaps in the literature on maternal employment and family functioning in the more recent policy, economic, and demographic climate of the U.S.

Method

Sampling and Data Collection

The data for this empirical analysis were drawn from the main survey component of *Welfare, Children, and Families: A Three-City Study*, a longitudinal, multi-method study of the well-being of children and families in the wake of federal welfare reform. The Three-City Study main survey interviewed a household-based, stratified, random sample of over 2,400 low-income children and their primary female caregivers (which we term "mothers" as over 90% were biological mothers of the interviewed children) in low-income neighborhoods in Boston, Chicago, and San Antonio. In each household, one child (the "focal" child) was randomly selected for inclusion in the study, drawn from one of two age cohorts: 0 to 4 years or 10 to 14 years. Three waves of surveys have been completed with this sample. Mothers were interviewed individually in their homes and direct cognitive assessments were conducted with children in 1999 (90% screening rate; 83% interview response rate), and again in 2000–2001 (88% retention rate) and 2005 (80% retention rate of wave 1 respondents). Interviews were conducted in English or Spanish. All respondents were paid for their participation in the study. For further details about the survey see Winston et al. (1999).

From the survey sample, an analytic sample was drawn that included only families with focal children aged birth to 24 months in wave 1 who resided with the same primary caregiver over all waves of the survey in which they participated ($N = 444$). Within the analytic sample there were missing observations due to attrition over the waves (16% of the sample) and missing data on individual measures which ranged from 0% to 4% across study variables. Missing data were imputed using multiple imputation by chained equations, implemented in Stata to create 5 datasets (Royston, 2004, 2005). The imputation models included all of the analytic variables (described below and listed in Table 1), including the wave 1, wave 2, and wave 3 values for all time-varying variables to impute missing values. After imputation, sampling weights which adjust for selection criteria and differential response were incorporated in all analyses. The use of these weights made the sample representative of infants in low-income families in low-income neighborhoods in the three cities.

Measures

Maternal employment variables—In each wave of the survey, mothers reported on their employment experiences using a monthly calendar for the prior two years, reporting on each job lasting at least 2 months including the start and end date and number of hours

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worked per week. These data were used to create a series of variables assessing the timing and intensity of mothers' employment from the time of the focal child's birth through the following two years. The first employment variable assessed whether the mother worked in the first two years following the birth of the focal child versus remained out of the labor force (e.g., reported no employment spell lasting at least 2 months with a start or end date within this two-year period). Employment was next coded into more specific timing periods, delineating three mutually-exclusive categories of (1) mothers who were consistently nonemployed over this two year period; (2) mothers whose first employment spell occurred within the first 8 months after childbirth (this group included mothers who were employed prior to childbirth and continued in the same job spell after childbirth with no notable work disruption as well as mothers who were not employed at the time of childbirth and began a new employment spell prior to the child's 9th month); and (3) mothers who were nonemployed at birth and whose first employment spell thereafter began between the focal child's 9th and 23rd months. Initial analyses with these data explored 6 month, 9 month, and 12 month delineations of entry into employment, finding the 9th month cut to be the most predictive of child functioning, replicating prior research (Brooks-Gunn, et al., 2002). An additional employment variable delineated whether the mother's first job following the focal child's birth was part time (< 30 hours) or full time (≥ 30 hours per week). This cutoff was also chosen to replicate prior research (e.g., Brooks-Gunn et al., 2010). Finally, the consistency of mothers' employment was explored to determine whether mothers were remaining employed once they had entered the labor force after childbirth. It was found that only 3% of the sample (n = 16) showed a pattern of entering employment early and then quickly exiting and remaining unemployed.

Child functioning—Two aspects of child functioning were measured at wave 3 when children averaged 7 years old: cognitive skills and behavioral-emotional functioning assessed with full-scale, well-validated developmental assessment measures. Children's cognitive skills were directly assessed by field interviewers, using the Woodcock-Johnson Psycho-Educational Battery Revised (WJ-R) Letter-Word Identification and Applied Problems subtests to assess children's reading and math skills, respectively (Woodcock & Johnson, 1989, 1990; Woodcock & Munoz-Sandoval, 1996). Standard scores were created using the methods and norms suggested by the authors of the instrument, with higher scores indicating greater cognitive skills.

Children's emotional and behavioral functioning was measured using mothers' reports on the Child Behavior Checklist (CBCL/6-18; Achenbach & Rescorla, 2001). DSM-oriented scales were created in this newer version of the CBCL in order to create more clinically-relevant and specific measures of child functioning, including scales of affective problems, anxiety problems, somatic problems, attention deficit hyperactivity (ADHD) problems, oppositional defiant problems, and conduct problems (Achenbach, Dumenci, & Rescorla, 2003). Internal consistency estimates for the six subscales ranged from α = .64 – .83 in the Three-City Study. Analyses utilized standard scores (t-scores), in which higher scores indicated greater problems.

Covariates—In addition to the primary variables of interest, a number of child and family characteristics which might select mothers into employment and also might affect child functioning also were assessed. These variables were all, unless otherwise noted, reported by mothers at the first interview when focal children were between 0 and 24 months old (m = 12.5 months). Thus, these variables were reported within the time period covered by the primary variable of interest, maternal employment in the 24 month period following the child's birth. Child covariates, all reported by mothers at wave 1, included child race and ethnicity, coded as African American, Hispanic (of any race), or White and Other, child gender, and child age in months. Additional child variables included an indicator for low

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birth weight (< 2500 grams) and a second indicator of whether the child showed a likelihood of developmental delays in communication, fine motor, gross motor, problem solving, or personal-social realms. Delays were assessed using mother reports and direct interviewer assessments on The Ages and Stages Questionnaire (ASQ), a developmental screener with excellent validity and reliability (Squires, Potter, & Bricker, 1999). A final child covariate assessed the primary type of childcare used to care for the child, assessed at wave 1 or wave 2 to line up with the timing of the mothers' first employment. Childcare was delineated as mother care, formal (center) care, or informal care, including both relative and nonrelative home care. Childcare was also coded according to intensity, delineating part time (< 30 hours per week) and full time (≥ 30 hours per week) care.

Covariates for mothers included demographic and human capital characteristics. All were measured at wave 1 except for literacy skills, which were assessed at wave 2. Mother age was measured in years. Education was coded categorically as less than a high school degree, a high school diploma or GED (omitted group), or more than a high school degree, and mothers' literacy skills were directly assessed with the Woodcock-Johnson Psycho-Educational Battery Revised (WJ-R) Letter-Word Identification subscale, utilizing standard scores (t-scores) (Woodcock & Johnson, 1989, 1990; Woodcock & Munoz-Sandoval, 1996). An indicator assessed whether mothers were proficient in English speaking, reading, and writing skills (with mothers who reported speaking, reading, and writing English "not at all" or "not very well" coded as "not proficient"). Mothers' marital status was designated as married versus single, and the number of children in the household was coded linearly.

Additional control variables reported by mothers at wave 1 assessed economic and employment resources. Indicator variables denoted whether the mother was employed in the year prior to the focal child's birth, and whether the mother or child received welfare in the prior 2 years. A final variable indicated whether the mother had an employed spouse in the household at wave 1. The family's cash resources at wave 1 were assessed through an income-to-needs ratio comparing the total household income to the federal poverty line. We also assessed mothers' employment status at wave 3 (an indicator of whether the mother had been employed for the majority of the 11 months prior to the wave 3 interview) to adjust for the concurrent link between mothers' employment and child functioning at wave 3.

Results

Sample Description

Table 1 presents descriptive statistics for the sample. Just over 1/5 of mothers reported no employment in the two years following the focal child's birth, with 1/2 of mothers beginning employment prior to the child's 9th month, and 28% beginning employment between 9 and 23 months. Regarding employment intensity, 22% of mothers worked part time and 56% full time. The sample was highly economically disadvantaged. The average income was below the poverty line, 52% of mothers reported receiving welfare in the two years prior to wave 1, and 35% of mothers had less than a high school degree. About 1/4 of mothers were married, and the majority of the sample was African American (42%) or Hispanic (55%).

The second through fourth columns of Table 1 present the sample descriptives for the different employment patterns, with the ever employed and the nonemployed groups presented first, followed by the more specific employment timing groups. Significant differences between the ever employed and nonemployed groups are designated with upper case superscripts, and significant differences between the employed before 9 months, employed after 9 months, and nonemployed groups are designated with lower case superscripts. Numerous differences in mother and family characteristics emerged between

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employment groups, suggesting the importance of selection factors in understanding early maternal employment within this population.

Among the child characteristics, the only significant characteristic that emerged was the type of childcare. Children of mothers who remained out of the labor force were more likely to be in mother care and less likely to be in formal or informal childcare than their peers. In relation to mother characteristics, nonemployed mothers were less likely to have been employed in the year before the focal child's birth or in the months preceeding wave 3 than their counterparts in all employed groups. Nonemployed mothers also reported lower English proficiency. Both nonemployed mothers and mothers who began employment between their child's 9th and 23rd months had lower education and literacy skills as well as lower household income than their peers. Mothers who began employment later in their child's infancy also were younger and more likely to have a history of welfare receipt than women who remained nonemployed or began employment prior to their child's 9th month. No significant differences emerged in family structure. The final panel of Table 1 presents bivariate relations between patterns of early maternal employment and child functioning at age 7. Results indicate no significant differences for cognitive skills, however children of nonemployed mothers had higher emotional and behavioral problems at age 7 in comparison to children of mothers who entered employment prior to the child's 24th month.

Multivariate Analyses Assessing Maternal Employment During Child's Infancy

OLS regression models—In order to assess whether early maternal employment was associated with later child functioning controlling for factors which might select mothers into employment and also affect children's development, numerous modeling techniques and specifications were employed. Analyses began with ordinary least squares (OLS) regression models. A series of model specifications were assessed, first controlling for individual correlates (e.g., child gender), then adding covariates which might be predictive of both maternal employment decisions and child outcomes (e.g., maternal education and skills, marital status, child developmental delay in infancy) and then adding covariates which might be jointly determined with maternal employment decisions (e.g., income, childcare type). The pattern of results with regards to the maternal employment variables did not differ substantially across these models, and hence we include the most inclusive set of covariates in all OLS models, seeking to best control for factors which might bias measured links between early maternal employment and child outcomes. We also ran a specification omitting the 3% of mothers who entered employment soon after childbearing but then quickly exited. Results did not change, and thus we present models for the full sample.

The first set of OLS models assessed child outcomes at age 7 as a function of whether mothers were employed in the first two years after childbirth versus nonemployed. Results, presented in the top panel of Table 2, show two consistent patterns. First, controlling for a rich array of child, maternal, and family covariates, early maternal employment was not significantly associated with enhancements or detriments to children's cognitive skills. Second, early maternal employment was consistently associated with lower levels of emotional and behavioral problems among children at age 7. More specifically, maternal employment during children's infancy was associated with significantly lower anxiety problems, somatic problems, and conduct problems. Effect sizes were moderate, ranging from .46 SDs for anxiety problems and .52 SDs for somatic problems to .68 SDs for conduct problems.

Replication with Propensity Score Matching (PSM)—In addition to OLS models, we conducted propensity score matching models (PSM) to optimize controls for potential biasing selection factors. Propensity score matching techniques restructure correlational data

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to mimic randomized experimental data where an experimental group and control group are matched on characteristics, leading to a less biased estimate of the treatment effect (Dehejia & Wahba, 2002; Rubin, 1997). In the first step of each PSM model, we used a probit regression model to calculate a propensity score for each case, which is a predicted probability of being in the "treatment" group, defined here as the employed group. One of the challenges of propensity score matching is finding an optimal model specification to create the propensity scores, and scholars differ on whether it is preferable to use a narrowly targeted sample of variables, assessed prior to the "treatment" and clearly exogenous to the treatment decision, or to use a richer and broader array of predictor variables to more fully capture variability in the likelihood of being in the treatment group (Guo & Fraser, 2010). To address this concern, we tested different model specifications to create the probability scores. The model we selected omitted covariates that might reasonably be predicted by mothers' early employment, specifically childcare, family income-to-needs, and children's developmental delay measured at wave 1, and mothers' employment at wave 3; we also omitted child age at wave 1. In more restricted model specifications we further limited the probit equation to remove other potentially endogenous variables including welfare receipt, marital status, and employed spouse. Results for these other specifications (results not shown) replicated all of our results presented below, which employ the slightly expanded list of covariates.

In the second step, the propensity scores were used to create matched samples of "treatment" versus "control" cases, that is matched samples of mothers in the employed versus the nonemployed groups. We used nearest neighbor matching with common support, in which each treatment case is matched to the control case with the closest propensity score. This technique has been shown to decrease bias (Dehejia & Wahba, 2002). We also limited our matched cases to treatment cases within the region of common support, excluding cases without good matches. Because PSM techniques in STATA cannot be conducted with mim commands, we completed these analytic steps 5 times, with each of the 5 imputed datasets.

These two initial PSM steps indicated that the matching technique was highly successful in creating matched samples of mothers in the employed and nonemployed groups in each of the 5 imputed datasets. Following Caliendo & Kopeinig (2008), three methods were used to assess the quality of the matching (results available upon request). First we used t-tests to assess significant differences in the covariates before and after matching. Prior to matching there were significant differences in 8 of the child, mother, and family characteristics between the employed and nonemployed groups in each of the 5 datasets. After matching and limiting the sample to the matched treated and control cases within the region of common support (n = 238 across each of the 5 datasets), there were 0 significant differences between the characteristics of the "treatment" (employed) and "control" (nonemployed) cases. Second, we considered the percent bias reduction for each covariate, finding that the bias was substantially reduced after matching for nearly all variables. As a third matching check, we assessed the McFadden pseudo R^2s of the probit models, which dropped dramatically, from an average of approximately .20 before matching to approximately .02 after matching, with Likelihood Ratio Chi-Square tests going from significant prior to matching to nonsignificant after matching in all 5 imputed datasets. Thus, for each of the 5 datasets, propensity score matching resulted in fully balanced treatment and control groups, limiting bias from all observed characteristics.

After creating matched samples of treatment and control groups within the region of common support, the final step of the propensity score matching analyses involved assessing regression-adjusted effects of the treatment. That is, using the matched cases, we reran the OLS regression models incorporating our full set of covariates in order to control for any potential remaining bias from measured characteristics (Berger et al., 2005; 2008). Results

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from models with the PSM sample are presented in the second panel of Table 2, showing marked similarity to those presented in the full sample models. As before, maternal employment during a child's infancy was not significantly associated with children's cognitive skills at age 7, but predicted significantly lower levels of children's anxiety problems, somatic problems, and conduct problems; in addition, early maternal employment predicted marginally lower hyperactivity problems. The point estimates were notably similar to those for the full sample.

Predicting Child Functioning: Timing of Employment

The next set of results assessed the timing of early maternal employment in a more targeted fashion to best map onto prior research which has indicated that it is maternal employment within the first 9 or 12 months after childbirth that is most strongly linked with lower cognitive and behavioral skills among some children (Brooks-Gunn, et al., 2002; 2010; Hill, et al., 2005). As noted above, we assessed different timing specifications, considering mothers' entry into employment by 6 months, 9 months, and 12 months. Replicating prior research, we found the 9 month specification to be most consistently related to later child functioning. Hence, we specified mothers' early employment into three mutually exclusive categories: remaining out of the paid labor force over the first two years after childbirth (omitted group), entering employment prior to the child's 9th month, and entering employment between the child's 9th and 23rd months.

The final panel in Table 2 presents results from OLS regression models with the entire analytic sample (N = 444) to assess associations between the timing of maternal employment and child functioning at age 7. We reiterate that these, and all further models, controlled for the full set of covariates shown in the top panel of Table 2. Coefficients indicate the effects of entering employment prior to the child's 9th month or entering employment between the 9th and 23rd months in comparison to remaining out of employment. Posthoc analyses assessed significant differences between the two employed groups, with results presented through superscripts. Results from these models indicate no significant links between the timing of maternal employment following the focal child's birth and children's cognitive skills at age 7. In relation to children's socio-emotional functioning, both employed groups showed some beneficial links. Children of mothers who entered employment prior to their 9th month showed lower anxiety problems, lower oppositional defiant problems, lower conduct problems, and marginally lower somatic and attention problems than their peers with mothers who remained nonemployed through the first two years after childbirth. In addition, children whose mothers entered employment between their 9th and 23rd months showed lower somatic and conduct problems and marginally lower anxiety problems than children whose mothers remained out of the paid labor force. Across these significant effects, standardized coefficients ranged from −.40 to −.73, indicating moderate-sized effects. It is important to reiterate that, although the specific patterns of significant coefficients differed across the measures of child socio-emotional functioning, no significant differences were found in the functioning of children whose mothers entered the labor force earlier versus later in their infancy. This pattern supports the use of the dichotomous distinction between mothers employed and not employed during their child's first two years to assess the role of early maternal employment.

Although it would be optimal to replicate the timing of employment models with propensity score matching, the smaller sample sizes in the groups defined by different employment timing prohibited this. Methodologists note that PSM is best suited to larger samples; small samples, particularly when there are notable differences between "treatment" and "control" groups, inhibit the power to create perfectly matched samples (Guo & Fraser, 2010; Rubin, 1997). Although we considered multiple matching techniques, the small sample sizes of the

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employed prior to the child's 9th month (n = 222) and the employed between 9 and 23 months (n = 103) groups prohibited proper incorporation of propensity score matching.

The Intensity of Maternal Employment

Following assessment of the timing of maternal employment, we next assessed the potential moderating roles of employment intensity, race and ethnicity, and childcare. As above, we ran each of these interactive models three ways: first, with the full sample, employing OLS regression models assessing the variable distinguishing mothers employed in the first two years versus those remaining nonemployed; second, with the propensity matched sample; and third, with the full sample incorporating the more specific employment timing breakdowns. All of these models incorporated the full set of child, mother, and family covariates shown in Table 2.

Table 3 presents results addressing employment intensity. Mothers' employment patterns were further distinguished by work hours, with full time work defined as 30 hours per week or more. Posthoc analyses were conducted to assess differences between part time and full time employment. In the full sample model, few results emerged specific to the timing of employment. No significant differences were found between part time and full time employment. Both part time and full time maternal employment predicted lower conduct problems and marginally lower somatic problems among children at age 7 in comparison to nonemployment (effect sizes were .49 and .45 SDs for somatic problems and .62 and .65 SDs for conduct problems). The second panel, with results from the PSM matched sample, largely replicate this pattern. Both part time and full time employment predicted lower conduct problems. In relation to somatic problems, the point estimate for full time employment was a bit larger than in the full sample model, reaching statistical significance, but the point estimate for part time employment was smaller and nonsignificant. More importantly, no significant differences emerged between part and full time employment in their relations with children's cognitive or socio-emotional functioning.

The third set of intensity of employment models assessed the more specific timing patterns of employment, delineating mothers who entered employment prior to their child's 9th month into part time and full time workers, and doing the same for mothers who entered employment during or after the 9th month. Again no significant patterns were apparent with regards to children's cognitive skills at age 7. Considering socio-emotional outcomes, part time employment before 9 months predicted lower somatic, attention, oppositional, and conduct problems in comparison to nonemployment with effect sizes of .52 to .77 SDs. Full time employment prior to 9 months was similarly protective, in comparison to nonemployment, for anxiety and conduct problems (.57 and .75 SDs), and at trend level for oppositional problems (.45 SDs). Finally, full time employment initiated during a child's 9th to 23rd month predicted lower somatic and conduct problems (.66 and .59 SDs), and part time employment begun during this time was marginally protective for conduct problems as well (.56 SDs). Again there were no significant differences between part time and full time employment. In short, these results indicate that no consistent patterns emerged indicating a larger benefit or risk of employment based on work intensity during the first two years after childbearing.

Employment Patterns and Child Functioning in African American and Hispanic Families

The next set of analyses assessed whether links between maternal employment and child functioning differed for African American versus Hispanic children (Table 4). Because the number of White children was too small to analyze separately, they were removed from the sample for this analysis. Models delineating employed versus nonemployed mothers are presented in the top panel of Table 4. An interaction term between employed and Hispanic

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was entered, such that the coefficient on employed now represents the effect for African Americans. Again no significant links were seen between early maternal employment and children's reading and math skills. For socio-emotional outcomes, three main patterns emerged. Specifically, assessment of the employment coefficients indicated that early maternal employment predicted lower anxiety, attention, and conduct problems, as well as marginally lower somatic and oppositional problems for African American children, with moderate to large effect sizes ranging from .56 SDs for attention problems to 1.11 SDs for conduct problems. Second, the interactions indicated that these effects were significantly less protective for Hispanic children in relation to anxiety problems and marginally less protective for conduct problems. Indeed, the simple slopes for Hispanics (not shown) indicated that early maternal employment was not associated with significant improvements in any arenas of functioning for Hispanic children.

Next the propensity score matched samples were assessed. These results showed similar patterns, with even stronger and more consistent results. That is, for African American children, early maternal employment predicted significantly lower anxiety, somatic, attention, oppositional, and conduct problems. These links were significantly weaker for Hispanic children in relation to their anxiety, oppositional, and conduct problems. And once again, assessment of simple slopes showed no significant beneficial effects of early maternal employment for Hispanic children.

The third set of analyses addressed the role of race and ethnicity in combination with the more specific timing of early maternal employment variables. Here a pattern emerged indicating that maternal employment begun between the focal child's 9th and 23rd month was differentially linked to the functioning of African American versus Hispanic children for children's affective, anxiety, and conduct problems, and marginally different for math skills and oppositional problems. Specifically, assessment of simple slopes indicated that entering employment during this period predicted lower affective, anxiety, oppositional, and conduct problems, and marginally higher math skills and lower attention problems for African American children with effect sizes ranging from .45 SDs for affective problems to 1.02 SDs for conduct problems, indicating moderate to large effects. In contrast, links between employment begun between 9 and 23 months and child outcomes were neutral for Hispanic children for all outcomes. Employment begun prior to the child's 9th month was not differentially linked to African American versus Hispanic children's functioning. Again, however, simple slopes indicated that African American children whose mothers were employed in their first 9 months had lower anxiety, attention, and conduct problems and marginally lower oppositional problems in comparison African American children whose mothers remaining out of the labor market (effect sizes of .50 to .85 SDs), whereas few differences were seen for Hispanic children, with simple slopes indicating marginally lower oppositional and conduct problems in relation to early employment (.39 and .46 SDs respectively).

Moderation by Children's Care Settings

The final set of analyses assessed whether links between maternal employment and child functioning were moderated by children's childcare settings. Cross-tabulations revealed decent distributions between mother care, formal center-based childcare, and informal home care arrangements across the employment groups (see Table 1). Notably, 42% of children whose mothers were employed 0–23 months were reported to be in full-time mother care (see Baydar & Brooks-Gunn, 1991 for similar results). On the flip side, 29% of children whose mothers were nonemployed were in nonmaternal care. Prior to discussing the interactive models, we reiterate that adding childcare arrangements as a covariate to the main effect models did not substantially alter the links between early maternal employment and later child functioning. In addition to assessing childcare type, we also assessed hours of

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care (split into no nonmaternal care; part time care for less than 30 hours per week, and full time care for 30 or more hours per week), finding similar results, with no notable shift in links between early maternal employment and child functioning.

In Table 5 we present results of the interactive models, in which interactions between the formal and informal care indicators and the maternal employment indicators were added to the base OLS regression models. In this case, the main coefficient for the employment variable indicates the effect for the group in mother care. These analyses showed few significant interaction effects. Early maternal employment was significantly more strongly linked with lower attention and conduct problems among children in informal care versus those in mother care. Indeed, among children in informal care arrangements, early maternal employment predicted lower anxiety, attention, and conduct problems, and marginally lower somatic and oppositional problems in comparison to nonemployment. In contrast, early employment was not significantly linked with children's functioning when combined with formal childcare or with mother care. The propensity score matching models in the next panel show a similar pattern of results, again with informal care arrangements and early maternal employment predicting better functioning across an even broader range of child socio-emotional functioning outcomes (anxiety, somatic, attention, oppositional, and conduct problems). These patterns were not found among children in formal childcare or maternal care arrangements whose mother were employed, although differences between childcare groups were not statistically significant.

The final panel in Table 5 presents the results further delineated by the timing of employment, although we caution that cell sizes were small for these combinations. A handful of significant interactions emerged, suggesting that maternal employment begun prior to the child's 9th month was more strongly linked with lower anxiety, attention, and conduct problems when children were cared for in informal childcare settings than in mother care. Simple slopes found lower anxiety, attention, oppositional, and conduct problems among children in informal care settings whose mothers entered employment prior to their 9^{th} months. No significant interactions emerged between employment begun later in the child's infancy and type of care. We re-estimated the main interactive models using child care hours rather than type as a moderator of early maternal employment. Results (not shown) showed few significant interactions with no indication that early maternal employment in combination with full time childcare was detrimental to children.

Discussion

A substantial body of research on maternal employment and children's development has pointed to one relatively consistent finding: maternal employment during infancy, particularly when begun early and at high intensity, appears to pose a threat to White and middle-class children's development as they move into early and middle childhood. Only a few studies have addressed this question within low-income samples of families and across African American and Hispanic populations. Such families may have varying cultural norms regarding employment and different social and economic resources that may alter the risks and benefits associated with early maternal employment. This research gap is particularly salient given the significant social policy changes and burgeoning economy of the late 1990's, which pulled many low-income, African American and Hispanic women into the labor market. Prior research suggested that maternal employment during infancy may not be detrimental for some subgroups of children, particularly African Americans (Berger et al., 2008; Brooks-Gunn et al., 2010; Waldfogel et al., 2002). On the other hand, concern has been expressed over economically and socially disadvantaged women's ability to access alternate care arrangements for their infants and to manage the stresses of combining paid employment and infant care (NICHD ECCRN, 1997; Paulsell et al., 2002). In short,

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evidence has been limited regarding whether low-income and ethnically or racially diverse children might benefit or suffer when their mothers move into the labor market shortly after their birth.

Using a representative sample of urban, low-income, and primarily African American and Hispanic families in three cities that followed children from infancy through age 7, the current study found that early maternal employment, that is employment initiated in the two years following childbirth, was linked to enhanced behavioral and emotional functioning of children in middle childhood. Splitting employed mothers into those who were employed prior to their child's 9th month and those who entered between their child's 9th and 23rd month, we found that both earlier and later employment was linked with enhanced child functioning in comparison to mothers remaining of the labor force during their child's first two years. Mother's employment prior to the child's 9th month was the most consistent predictor, showing significant associations with improved child functioning across the majority (5 of 6) of emotional and behavioral measures. Employment begun between 9 and 23 months after childbearing was also predictive of enhanced functioning among children for some socio-emotional outcomes. Across all socio-emotional outcomes, coefficients were uniformly negative, indicating consistently beneficial or neutral links between early maternal employment and low-income children's later functioning. On the other hand, there were no significant associations between mothers' early employment and their children's later math or reading skills.

One possible explanation for these positive socio-emotional findings is that more capable mothers select into employment, whereas those with lower skills or more family challenges choose to remain at home or are unable to find employment. Indeed, bivariate analyses found that employed mothers, particularly those who entered employment prior to their child's 9th month, had greater work history, more education and skills, and lower welfare use than their peers who remained out of the labor market or who entered employment later. Mothers with early employment also had the highest family incomes (albeit still below the federal poverty line). The pattern of greater human capital among mothers who enter employment soon after childbearing replicates results from other economically disadvantaged samples, such as the Fragile Families and Child Well-being Study (Berger et al., 2008), as well as from more advantaged samples (Brooks-Gunn et al., 2010). These results suggest that there is considerable selection into early employment, and that differences across mothers with distinct employment patterns need to be carefully considered when trying to isolate associations between maternal employment and children's functioning.

Although we could not control for all possible biasing factors, our analyses incorporated a rich array of child, maternal and family characteristics to adjust for their influence on both selection into employment and children's later functioning. Analyses also incorporated propensity score matching techniques which seek to mimic the format of experimental data and provide more stringent controls for potentially biasing factors (Dehejia & Wahba, 2002; Rubin, 1997). Importantly, the propensity score matched samples replicated all of the main patterns of results. Although we cannot definitively rule out the possibility that our results may still be biased by unmeasured heterogeneity, findings suggest that early maternal employment among an economically disadvantaged sample of families may be beneficial to children's later emotional and behavioral functioning, and neither detrimental to nor beneficial for cognitive skills.

It is important to reiterate that the pattern of associations unearthed here differs rather markedly from prior research. In considering this discrepancy, we point to the notable differences in our analytic sample in comparison to other samples used to address the effects

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of early maternal employment, most notably the NICHD ECCRN and the NLSY-CS samples. In comparison to these populations, the Three-City Study sample is highly economically disadvantaged: families had an average family income notably below the poverty line, only a quarter were married, and all lived in moderate poverty or high poverty urban communities. Moreover, the vast majority were ethnic and racial minorities. Even in contrast to the Fragile Families and Child Well-Being sample, the Three-City Study sample is more economically and socially disadvantaged. Moreover, our sample experienced a very different economic and policy context than samples of mothers who gave birth in earlier years, when maternal employment was slightly less normative and when the economic pushes and pulls into the labor market were notably weaker for less-skilled women (Haskins, 2006).

It is also important to consider the broader context of maternal employment in the U.S. The U.S. is the only wealthy industrialized country which does not provide federal paid leave for mothers following childbirth. The Family Medical Leave Act (FMLA) provides 12 weeks of job-protected unpaid leave after the birth or adoption of a new child, but less than half of working mothers meet the eligibility requirements, with poor, single, and African American women having lower eligibility than their more advantaged counterparts(Waldfogel, 2006). Similarly, poor and ethnic or racial minority women are less likely to receive employer-provided benefits such as paid leave (Johnson & Corcoran, 2003). In short, poor and minority women likely have very limited choices after childbirth, with returning to employment perhaps their only option for continued economic support and job security.

In this context of very limited economic and social resources, early maternal employment may have increased families' income and in-kind benefits (such as access to health care and childcare subsidies), improved mothers' self esteem and mental health, and supported children's access to enriching care settings that in turn helped to build their nascent self regulatory and social skills. Early maternal employment also may have helped to protect children from stressful, demanding, or unsupportive home and neighborhood contexts. Although the timing of data collection did not allow us to properly assess these hypotheses in a time-sensitive manner for this sample of children, other research supports the likelihood of many of these suppositions. For example, research with older children in the Three-City Study found that mothers' entry into employment predicted increased income and decreased financial strain and food insecurity, and also predicted enhanced self esteem and decreases in depressive symptoms among mothers (Coley, Lohman, Votruba-Drzal, Pittman, & Chase-Lansdale, 2007). Yet both the current study and other research focused on older children in the Three-City Study sample have found that family income was not a significant mediator of links between maternal employment and children's functioning within this economically restricted sample (Chase-Lansdale et al., 2003). This raises the possibility that other economic and social resources related to employment may be the central factors promoting children's healthy development (Conger et al., 1992). The lack of income mediation may also help to explain why children's cognitive skills were not enhanced through early maternal employment in the same way their socioemotional functioning was. Economic and family models have argued that economic resources may be particularly important in promoting children's learning and cognitive skills through provision of enriching learning activities and materials, whereas maternal and family functioning and stimulating and supportive interactions with children may be more important for children's emotional and behavioral development (Conger et al., 1992; Yeung, Linver & Brooks-Gunn, 2002). Since increases in income were not a driving factor in explaining employment effects in this work, results further suggest the potential importance of other aspects of family resources and functioning.

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Within this representative sample of urban low-income families, the majority of families were African American or Hispanic. Assessment of differences between these two groups revealed that the beneficial links between early maternal employment and children's later functioning were driven by African American children, with primarily neutral effects found for Hispanic children (the White and other subsample was too small to analyze separately). Again, results suggest that early maternal employment showed no detrimental links with low-income children's outcomes, but rather that effects were more positive for African American versus Hispanic children. Hispanic families in this sample represented a broad mix of country-of-origin, with the largest groups being Mexican American, Puerto Rican, and Dominican, which have been found in other research to show markedly different employment and family structure patterns (Lichter & Landale, 1995). Although legal work status was not assessed, it is possible that some of the Hispanic families in this sample faced both legal as well as language barriers to finding formal employment in the U.S. Regardless of the prevalence of their work behaviors, however, our results suggest that mothers' work early in their children's lives was not as consistently beneficial among the Hispanic subgroup as it was for African Americans. With a strong history of maternal employment and mother-headed families, African American families may have cultural norms and practices that better support mothers' work and children's development in alternate care arrangements. Future research should seek to assess whether the quality or stability of work behaviors differ, and whether family processes respond differently to maternal employment across these subgroups.

In addition to assessing the timing of entry into employment, our results also addressed the intensity of mothers' employment. Here again results emerged in contrast to previous literature, which had found that full-time employment during infancy was particularly detrimental to young children's functioning. Our results did not replicate that pattern, finding no significant differences between part time and full time employment in links with children's later well-being. Other research with low-income mothers has found that full time employment is more likely than part time work to bring greater stability, pay, and benefits (Pavetti & Acs, 2001). These aspects of job quality may counteract potential negative effects of mothers' spending more time away from their infants in this population. On the other hand, we caution that our categorization of work hours was rather simplistic. Perhaps most notably, we were not able to separate out over-time from full-time hours because of sample size limitations. Other research with the Three-City Study sample has indicated that mothers' overtime employment (> 40 hours per week) during early childhood is predictive of worse behavioral functioning among children (Coley & Lombardi, 2011), suggesting that there may be diminishing returns from employment effort among mothers of young children.

The current research also addressed the role of children's care arrangements. Adjusting for the type or intensity of care children received did not substantively alter the pattern of associations between early maternal employment and child development, suggesting that childcare did not mediate these links. We also assessed a moderational model, interacting care type and care hours with employment patterns. Relatively few significant results emerged, although one pattern indicated that employment shortly after birth was more beneficial for children when paired with care in informal home arrangements in comparison to care by mothers. One explanation for these results is that working while at the same time caring for one's infant may be particularly stressful for mothers; alternately, this scenario might be a marker for low-quality and low-paying jobs such as informal child care, hair care, or cleaning positions in which mothers are able to care for their infant while also earning pay. Informal care arrangements, on the other hand, which were primary home-based settings in which care was provided by relatives, may be a marker for extended family support and may supply more developmentally appropriate environments for infants and more consistency for mothers (Belsky et al., 2007). It also is possible that the quality of care

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infants receive in nonmaternal care settings may be a more potent mediator or moderator of links between early maternal employment and children's functioning, a question for future research to address. Finally, it is important for future research to continue to carefully delineate the relative roles of maternal employment and nonparental childcare in infancy. Prior research on infant childcare has found conflicting results, with some studies finding negative links with children's later cognitive and behavioral functioning (Loeb, Bridges, Bassok, Fuller, & Rumberger, 2007; McCartney, et al., 2010; NICHD ECCRN, 2006), and others showing null results (Coley, Votruba-Drzal, Miller, & Koury, 2011; NICHD ECCRN and Duncan, 2003; Peisner-Fenberg et al., 2001; Votruba-Drzal, Coley, & Koury, 2011). Most previous research has focused primarily on one or the other of these issues (giving more cursory attention to the other), rather than treating employment and nonparental care as jointly determined and mutually influential systems.

Conclusions and Implications

In interpreting the significance and implications of results from this study, it is essential to first acknowledge the limitations. Our statistical models spanned more than 7 years and controlled for numerous measured characteristic of children, mothers, and families that might predispose women into employment patterns and also affect child functioning. Yet the models were nonetheless correlational, and thus we must be cautious in attributing causal interpretations. As well, the small sample size and targeted nature of the sample must be acknowledged. Our statistical power was limited, particularly in relation to assessing subgroups defined by the timing of employment and by race and ethnicity or childcare. Indeed, small sample sizes prohibited our use of propensity score matching models to replicate employment timing effects. Although our sample was representative of children in low-income families in low-income urban neighborhoods in three cities, results cannot necessarily be generalized to other demographic groups, contexts, or historical periods. Indeed, our results conflict with a body of previous literature on early maternal employment among predominantly middle class and white families, suggesting that different processes may indeed have occurred within this sample and time. In the context of these cautions, the findings from the present study suggest that early movements into employment following childbirth may be linked to healthy emotional and behavioral functioning in middle childhood for children in low-income families. Policies that seek to support low-income mothers' ability to re-enter the workforce while caring for their young children, such as expanded job-protected parental leave, may be beneficial to children's development. Further research identifying the mechanisms and contexts of this association will enable specific policy implications to be delineated, suggesting ways in which policy can encourage a beneficial relation between low-income women's employment and their children's long-term development.

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Table 1

Maternal Employment and Demographic Characteristics of the Sample (n=444)

	Full sample *n=444*	**Ever employed *n=325***	**Non-employment *n=119***	**First emp 0–8 mths *n=222***	**First emp 9–23 mths *n=103***
Employment[a]					
Never employed	20.98%	-	-	-	-
Ever employed	79.02%	-	-	-	-
First emp 0–8 Months	50.76%	64.23%	-	-	-
First emp 9–23 Months	28.26%	35.77%	-	-	-
Intensity of first employment					
Part Time	22.34%	25.66%	-	28.35%	28.13%
Full Time	55.98%	74.34%	-	71.50%	71.87%
Employment History Covariates					
Employed year before birth[a]	46.51%	55.57%*A*	12.36%*Aab*	68.80%*ac*	31.82%*bc*
Employed recently at W3[a]	59.03%	66.86%*A*	29.51%*Aab*	69.97%*a*	61.28%*b*
Child Characteristics					
Age of Child (in months)	12.64(6.78)	12.48(6.72)	13.22(6.98)	12.08(6.83)	13.20(6.46)
Boy[a]	48.14%	48.62%	46.35%	43.11%	58.51%
Race[a]					
African American	42.08%	43.69%	35.95%	41.65%	47.37%
Hispanic	54.98%	53.56%	60.35%	56.28%	48.68%
White	2.94%	2.75%	3.70%	2.07%	3.95%
Developmental delay at birth[a]	28.66%	27.46%	33.21%	28.71%	25.19%
Child was low birthweight[a]	5.46%	4.51%	9.07%	4.26%	4.95%
Child care[a]					
Formal Care	25.14%	28.15%*A*	13.82%*Aa*	29.21%*a*	26.23%
Informal Care	33.34%	38.28%*A*	14.72%*Aab*	35.08%*a*	44.03%*b*
Mother Care	41.52%	33.57%*A*	71.46%*Aab*	35.71%*a*	29.74%*b*
Maternal Characteristics					
Age of Mother (in years)	25.38(6.93)	24.84(5.93)	27.43(9.56)*a*	25.65(6.22)*b*	23.39(5.06)*ab*
Education[a]					

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	Full sample *n=444*	Ever employed *n=325*	Non-employment *n=119*	First emp 0–8 mths *n=222*	First emp 9–23 mths *n=103*
Less than high school	35.01%	30.86%*A*	50.66%*Aa*	19.60%*ab*	51.08%*b*
High school graduate or GED	27.66%	27.72%	27.43%	28.61%	26.13%
Greater than high school	37.33%	41.42%*A*	21.91%*Aa*	51.79%*ab*	22.79%*b*
Mother cognitive skills	89.65(16.67)	91.24(14.76)*A*	83.65(21.42)*Aa*	93.39(14.33)*ab*	87.35(14.75)*b*
Fluent in English[a]	90.79%	94.28%*A*	77.67%*Aab*	95.33%*a*	92.39%*b*
Married[a]	26.25%	25.77%	28.05%	28.32%	21.19%
Number of Children in Household	2.63(1.57)	2.58(1.62)	2.81(1.35)	2.35(1.38)	2.98(1.91)
Welfare in last 2 years[a]	51.71%	51.83%	51.25%*a*	40.26%*b*	72.62%*ab*
Working spouse[a]	18.32%	16.03%	26.92%	15.23%	17.47%
Income-to-Needs W1	0.88(0.57)	0.92(0.57)*A*	0.72(0.53)*Aa*	0.99(0.59)*ab*	0.79(0.53)*b*
Child Characteristics W3					
Reading Skills	103.60(19.49)	103.78(18.86)	102.95(21.70)	105.32(19.64)	101.00(17.05)
Math Skills	97.73(20.08)	98.44(20.10)	95.07(19.83)	98.72(19.91)	97.93(20.43)
Affective Problems	55.12(7.20)	54.80(7.09)	55.82(56.34)	54.60(7.06)	55.15(7.13)
Anxiety Problems	55.06(6.38)	54.50(6.07)*A*	57.17(7.06)*Aa*	54.24(5.78)*a*	54.98(6.53)
Somatic Problems	55.47(7.06)	55.01(6.80)	57.22(7.72)*a*	55.53(7.12)	54.07(6.09)*a*
Hyperactivity Problems	56.56(7.16)	55.24(6.99)	56.80(7.64)	54.82(6.37)	55.99(7.93)
Oppositional Problems	56.46(7.13)	55.16(6.92)	56.59(7.78)	54.54(6.51)	56.27(7.46)
Conduct Problems	55.81(8.03)	54.93(7.32)*A*	59.15(9.56)*Aa*	54.51(7.18)*a*	55.68(7.51)

[a]Proportions

Note: Within each row, groups sharing superscript letters are different from each other at the p<.05 level. Uppercase letters denote differences between ever employed and never employed. Lowercase letters denote differences between never employed, first emp 0–8 months, and first emp 9–23 months.

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Table 2

Main Effects Models Examining the Influence of Employment After Birth on the Development of Cognitive Skills and Behavior Problems at Age 7

Independent Variables	WJ Letter Word	WJ Applied Problems	Affective Problems	Anxiety Problems	Somatic Problems	Atten. Deficit/Hyperactivity	Opp. Defiant Problems	Conduct Problems
Ever Employed OLS Model (*n=444*)								
Employment								
Ever employed	−3.43(3.53)	3.66(3.96)	−0.68(0.98)	−2.53(1.16)*	−3.14(1.33)*	−2.17(1.38)	−2.18(1.33)	−4.48(1.56)**
Employment History Covariates								
Mother emp before birth	−0.70(3.32)	−1.01(3.11)	−0.45(0.97)	−0.43(0.85)	1.99(1.13)+	−0.67(1.1)	−0.29(1.12)	0.05(1.06)
Mother emp at wave 3	−1.24(2.82)	−2.17(3.70)	−0.09(0.95)	−0.44(0.94)	−0.88(0.97)	−0.18(1.12)	0.51(1.10)	0.73(1.12)
Child Covariates								
Age of child	0.13(0.21)	0.24(0.24)	0.16(0.08)*	0.06(0.06)	0.07(0.07)	0.03(0.07)	0.09(0.08)	0.04(0.08)
Boy	−5.06(2.34)*	0.35(2.97)	−0.34(0.79)	−0.13(0.78)	−0.77(0.80)	1.46(0.92)	0.96(0.84)	0.00(0.85)
Hispanic	1.41(2.65)	−0.65(3.33)	0.34(0.90)	1.39(0.91)	−0.81(1.09)	1.53(1.01)	1.16(1.03)	0.75(1.11)
White	−12.66(4.29)**	−10.28(7.73)	1.48(2.12)	−1.08(1.61)	0.57(2.29)	−0.22(1.74)	1.72(2.26)	−1.70(1.91)
Developmental delay	−6.03(2.50)*	−8.08(3.49)*	2.50(0.92)**	1.71(0.91)+	1.53(1.03)	1.57(0.99)	1.22(0.97)	0.74(0.99)
Low birthweight	−5.50(6.59)	−11.51(4.16)**	1.06(2.77)	0.65(1.95)	−1.42(2.11)	1.35(2.29)	1.56(2.14)	0.40(2.73)
Formal child care	5.88(3.50)+	−1.70(4.07)	0.99(1.14)	0.91(0.98)	1.04(1.34)	2.07(1.06)+	2.45(1.39)+	1.48(1.42)
Informal child care	5.32(2.83)+	1.33(4.19)	1.72(1.09)	1.47(1.11)	1.90(1.11)+	2.93(1.24)*	2.27(1.27)+	1.84(1.28)
Mother/Family Covariates								
Age of mother	0.28(0.20)	−0.03(0.20)	0.03(0.07)	0.04(0.06)	−0.07(0.06)	−0.05(0.06)	0.01(0.08)	0.02(0.08)
Less than high school	−4.22(3.25)	−4.80(4.44)	1.26(1.07)	−0.41(1.04)	−1.47(1.04)	−0.65(1.12)	0.29(1.08)	0.19(1.24)
More than high school	1.43(3.15)	0.00(3.85)	1.34(0.96)	−0.28(0.98)	−0.31(1.03)	0.44(1.06)	0.86(1.05)	−1.20(1.15)
Mother cognitive skills	0.12(0.09)	0.10(0.08)	−0.03(0.02)	0.03(0.02)	0.01(0.03)	0.01(0.03)	0.00(0.03)	0.00(0.02)
Fluent in English	7.44(4.63)	0.13(5.79)	−1.01(1.28)	2.18(1.42)	−0.21(1.55)	1.58(1.64)	0.43(1.60)	0.57(1.96)
Married	5.86(5.96)	−9.14(6.89)	−0.40(1.94)	−1.64(1.33)	−0.51(1.88)	−1.11(1.41)	1.19(2.84)	−1.48(2.15)
# of children	−0.10(0.96)	0.11(1.15)	0.29(0.27)	0.02(0.29)	0.15(0.34)	0.08(0.28)	0.19(0.29)	−0.06(0.28)
Welfare	−1.65(2.94)	−1.96(3.75)	−0.25(0.91)	0.89(0.87)	−1.40(1.03)	0.93(0.94)	2.27(1.06)*	1.91(1.03)+
Working spouse	−0.96(6.75)	15.29(7.45)*	−0.12(1.98)	1.62(1.59)	−0.33(1.94)	1.44(2.07)	−1.62(3.28)	1.07(2.62)
Income-to-Needs	3.11(2.60)	−0.65(3.00)	−0.03(0.90)	−0.79(0.82)	−1.86(0.98)	−0.49(0.78)	0.37(0.89)	0.33(1.00)

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Independent Variables	WJ Letter Word	WJ Applied Problems	Affective Problems	Anxiety Problems	Somatic Problems	Atten. Deficit/Hyperactivity	Opp. Defiant Problems	Conduct Problems
F of model	2.47 **–3.76 **	2.35 **–3.04 **	1.98 **–3.12 **	1.57 *–2.07 **	1.98 **–2.95 **	1.23–1.80 *	1.66 $^{+}$–2.09 **	1.33 $^{+}$–2.39 **
R^2	0.20–0.25	0.14–0.18	0.15–0.19	0.10–0.14	0.12–0.19	0.10–0.13	0.12–0.14	0.12–0.14
Ever Employed Propensity Score Model (*n=238*)								
Ever employed	−2.39(3.91)	1.86(3.80)	minus;0.73(1.04)	minus;2.62(1.25) *	minus;3.15(1.33) *	minus;2.49(1.38) $^{+}$	minus;2.11(1.37)	minus;5.07(1.58) **
F of model	2.44 **–3.47 **	3.13 **–3.80 **	3.44 **–5.57 **	2.87 **–3.46 **	2.78 **–5.32 **	2.50 **–3.05 **	1.77 *–2.33 **	2.83 **–3.92 **
R^2	0.26–0.30	0.25–0.30	0.28–0.29	0.24–0.53	0.17–0.25	0.20–0.24	0.17–0.21	0.20–0.24
Timing of Employment OLS Model (*n=444*)								
First emp 0–8 mths	−4.49(4.42)	3.85(4.75)	−0.76(1.11)	−2.91(1.29) *	−2.70(1.48) $^{+}$	−2.58(1.49) $^{+}$	−2.97(1.39) *	−4.78(1.61) **
First emp 9–23 mths	2.46(3.50)	3.49(3.98)	−0.61(1.12)	−2.18(1.25) $^{+}$	−3.54(1.42) *	−1.79(1.50)	−1.45(1.50)	−4.20(1.71) *
F of model	2.41 **–3.66 **	2.24 **–2.91 **	2.51 **–2.95 **	1.50 $^{+}$–2.10 **	1.94 **–2.81 **	1.18–1.73 *	1.72 *–2.07 **	1.27–2.47 **
R^2	0.21–0.26	0.14–0.18	0.15–0.19	0.10–0.14	0.13–0.19	0.10–0.13	0.13–0.15	0.12–0.14

Note:

$^{+}$p<.10,

*p<.05,

**p<.01.

Employed groups are compared to the omitted category of no employment. Within each column, groups shared superscript letters are different from each other at the p <.05 level. All models include the covariates denoted in the Ever Employed OLS model.

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Table 3

Main Effects Models Examining the Influence of Timing and Intensity of Employment After Birth on the Development of Cognitive Skills and Behavior Problems at Age 7

Independent Variables	WJ Letter Word	WJ Applied Problems	Affective Problems	Anxiety Problems	Somatic Problems	Atten. Deficit/Hyperactivity	Opp. Defiant Problems	Conduct Problems
Ever Employed OLS Model (*n=444*)								
Ever employed part time	−3.38(3.99)	4.26(4.63)	−1.35(1.28)	−1.49(1.33)	−2.99(1.56)$^{+}$	−1.83(1.50)	−1.60(1.56)	−4.03(1.71)*
Ever employed full time	−4.01(3.99)	2.13(4.34)	−0.36(1.06)	−1.71(1.16)	−2.76(1.52)$^{+}$	−1.90(1.52)	−1.94(1.46)	−4.27(1.67)*
F of model	2.38**–3.58**	2.20**–2.94**	1.98**–3.23**	1.28–1.85*	1.73*–2.64**	1.09–1.60*	1.77*–2.02**	1.19–2.29**
R^2	0.21–0.25	0.14–0.18	0.15–0.19	0.09–0.13	0.12–0.18	0.10–0.12	0.12–0.12	0.11–0.13
Ever Employed Propensity Score Model (*n=238*)								
Ever employed part time	−1.11(4.33)	3.91(5.00)	−0.55(1.48)	−2.09(1.69)	−2.37(1.73)	−2.82(1.81)	−2.24(1.84)	−4.19(2.04)*
Ever employed full time	−3.21(4.83)	−0.01(4.64)	−0.62(1.25)	−1.47(1.40)	−3.42(1.65)*	−1.77(1.65)	−1.36(1.62)	−4.61(1.88)*
F of model	2.22**–3.35**	3.02**–3.57**	3.30**–5.58**	2.55**–3.13**	3.04**–4.71**	2.18**–2.89**	1.64*–1.87*	2.10**–3.13**
R^2	0.25–0.30	0.25–0.30	0.28–0.30	0.23–0.25	0.17–0.30	0.20–0.23	0.17–20	0.18–0.22
Timing of Employment OLS Model (*n=444*)								
First emp 0–8 months part time	−3.70(5.90)	7.42(5.66)	−1.87(1.29)	−2.19(1.62)	−3.97(1.80)*	−3.21(1.45)*	−3.64(1.52)*	−5.02(1.70)**
First emp 0–8 months full time	−4.71(4.20)	1.56(5.03)	0.03(1.22)	−3.14(1.27)*	−1.37(1.55)	−2.09(1.63)	−2.78(1.46)$^{+}$	−4.93(1.66)**
First emp 9–23 months part time	−6.59(5.48)	1.92(5.22)	−0.40(1.89)	−1.95(1.58)	−2.11(2.13)	−0.66(2.06)	0.14(2.20)	−3.70(2.10)$^{+}$
First emp 9–23 months full time	−1.81(3.81)	2.64(4.80)	−0.61(1.21)	−1.73(1.37)	−3.99(1.59)*	−1.69(1.74)	−1.33(1.71)	−3.89(1.89)*
F of model	2.36**–3.56**	2.26**–3.34**	2.06**–2.86**	1.42^{+}–1.92**	1.90**–2.81**	1.24–1.93**	1.50^{+}–1.91**	1.17–2.38**
R^2	0.21–0.26	0.15–0.19	0.15–0.18	0.10–0.14	0.14–0.19	0.11–0.13	0.11–0.13	0.11–0.13

Note:

$^{+}$p<.10,

*p<.05,

**p<.01.

Employed groups are compared to the omitted category of no employment. Within each column, groups shared superscript letters are different from each other at the p <.05 level. All analyses controlled for the wave 1 value of the mother age, mother education, mother english fluency, mother marital status, number of minors in the household, if mother had a working spouse, mother employed in year prior to birth, mother received welfare in last 2 years, child gender, child age, child race/ethnicity, child low birthweight, child developmental delay at birth, child in formal child care, child in informal child care, household income-to-needs, mother cognitive ability at Wave 2, and mother employed recently at Wave 3.

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Table 4

Interaction Models Examining the Influence of Timing of Employment After Birth and Race/Ethnicity on the Development of Cognitive Skills and Behavior Problems at Age 7

Independent Variables	WJ Letter Word	WJ Applied Problems	Affective Problems	Anxiety Problems	Somatic Problems	Atten. Deficit/Hyperactivity	Opp. Defiant Problems	Conduct Problems
Ever Employed OLS Model (*n=420*)								
Main Effects								
Ever employed	−1.82(4.20)	7.95(4.82)	−1.74(1.40)	−5.07(1.45)**	−3.53(2.10)+	−3.49(1.62)*	−3.51(1.95)+	−7.29(1.98)**
Hispanic main effect	3.73(5.28)	5.46(5.48)	−1.09(1.58)	−2.05(1.79)	−1.50(2.20)	−0.26(2.08)	−0.65(2.34)	−3.05(2.38)
Interactions								
Ever employed × Hispanic	−2.80(5.89)	−7.88(6.25)	1.84(1.70)	4.19(1.89)*	0.99(2.59)	2.18(2.10)	2.29(2.56)	4.61(2.56)+
F of model	2.35**–3.66**	2.55**–3.22**	2.15**–3.32**	2.29**–2.86**	1.86*–3.11**	1.30–1.83*	1.54+–2.04**	1.68*–2.65**
R^2	0.21–0.25	0.15–0.20	0.16–0.20	0.12–0.16	0.12–0.18	0.11–0.13	0.13–0.15	0.14–0.16
Ever Employed Propensity Score Model (*n=227*)								
Main Effects								
Ever employed	−2.61(4.91)	4.07(6.04)	−2.42(1.59)	−5.96(1.66)**	−4.57(2.19)*	−4.01(1.78)*	−5.09(1.93)**	−9.05(2.14)**
Hispanic main effect	4.36(5.32)	4.82(5.19)	−0.27(1.61)	−1.33(1.77)	−2.36(2.33)	−0.21(1.98)	−0.77(2.09)	−3.10(2.31)
Interactions								
Ever employed × Hispanic	0.18(7.21)	−3.04(8.53)	2.92(2.00)	5.60(2.13)**	2.32(2.72)	2.58(2.29)	5.01(2.28)*	6.59(2.61)*
F of model	2.31**–3.56**	3.12**–3.80**	3.98**–7.53**	2.51**–3.59**	2.70**–5.68**	2.18**–2.87**	1.90*–2.97**	3.14**–6.42**
R^2	0.26–0.31	0.27–0.30	0.28–0.32	0.28–0.29	0.19–0.29	0.20–0.24	0.19–0.25	0.22–0.26
Timing of Employment OLS Model (*n=420*)								
Main Effects								
First emp 0–8 months	−3.40(4.81)	6.67(5.37)	−0.88(1.53)	−5.26(1.59)**	−2.90(2.24)	−3.74(1.70)*	−3.56(2.07)+	−6.88(2.07)**
First emp 9–23 months	0.04(4.78)	10.33(6.02)+	−3.21(1.62)*	−5.06(1.63)**	−4.21(2.19)+	−3.46(1.88)+	−4.07(2.06)*	−8.22(2.12)**
Hispanic main effect	3.66(5.27)	5.59(5.53)	−1.15(1.56)	−2.11(1.79)	−1.46(2.20)	−0.33(2.09)	−0.78(2.32)	−3.12(2.38)
Interactions								
First emp 0–8 months × Hispanic	−1.59(6.55)	−4.62(6.89)	−0.02(1.87)	3.78(2.05)+	0.63(2.80)	1.71(2.17)	0.67(2.60)	3.12(2.65)
First emp 9–23 months × Hispanic	−4.77(6.89)	−13.45(8.04)+	5.01(2.21)*	4.91(2.30)*	1.54(2.75)	3.04(2.80)	5.12(2.94)+	7.17(2.95)*
F of model	2.17**–3.57**	2.30**–2.96**	2.54**–3.55**	2.10**–2.72**	1.70*–2.80**	1.29–1.76*	1.94**–2.04**	1.76*–2.78**

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Independent Variables	WJ Letter Word	WJ Applied Problems	Affective Problems	Anxiety Problems	Somatic Problems	Atten. Deficit/Hyperactivity	Opp. Defiant Problems	Conduct Problems
R^2	0.21–0.26	0.15–0.21	0.19^{**}–0.23^{**}	0.13^{**}–0.17^{**}	0.13–0.19	0.11–0.14	0.16–0.18	0.16–0.18

Note:

$^{+}$p<.10,

*p<.05,

**p<.01.

Employed groups are compared to the omitted category of no employment. Whites are removed from the sample for this analysis. All models controlled for the wave 1 value of the mother age, mother education, mother english fluency, mother marital status, number of minors in the household, if mother had a working spouse, mother employed in year prior to birth, mother received welfare in last 2 years, child gender, child age, child race/ethnicity, child low birthweight, child developmental delay at birth, child in formal child care, child in informal child care, household income-to-needs, mother cognitive ability at Wave 2, and mother employed recently at Wave 3.

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Table 5

Interaction Models Examining the Influence of Timing of Employment After Birth and Child Care on the Development of Cognitive Skills and Behavior Problems at Age 7

Independent Variables	WJ Letter Word	WJ Applied Problems	Affective Problems	Anxiety Problems	Somatic Problems	Atten. Deficit/Hyperactivity	Opp. Defiant Problems	Conduct Problems
Ever Employed OLS Model (*n=444*)								
Main Effects								
Ever employed	−3.41(4.73)	2.65(5.21)	−0.63(1.15)	−1.43(1.51)	−2.39(1.46)	−1.07(1.49)	−1.33(1.27)	−2.89(1.59)+
Formal care main effect	9.82(11.20)	−3.38(9.39)	1.10(2.38)	2.56(2.30)	2.86(3.99)	1.00(3.26)	1.29(3.35)	1.39(4.28)
Informal care main effect	1.75(7.45)	−1.51(5.30)	1.84(1.88)	4.68(2.70)+	3.44(2.68)	8.67(2.52)**	7.02(4.02)+	8.78(3.77)*
Interactions								
Ever employed × Formal	−4.52(11.87)	2.19(10.66)	−0.14(2.48)	−2.17(2.61)	−2.27(4.06)	0.96(3.71)	1.12(3.34)	−0.31(4.34)
Ever employed × Informal	3.83(8.28)	3.39(6.60)	−0.15(2.20)	−3.81(2.75)	−1.90(2.85)	−6.52(2.77)*	−5.37(4.13)	−7.98(4.00)*
F of model	2.29**–3.93**	2.64**–3.32**	2.38**–4.58**	1.51+–2.84**	1.77*–2.73**	1.51+–2.02**	2.05**–2.36**	1.56*–2.73**
R^2	0.20–0.27	0.15–0.18	0.15–0.19	0.11–0.15	0.13–0.19	0.12–0.15	0.14–0.16	0.14–0.18
Ever Employed Propensity Score Model (*n=238*)								
Main Effects								
Ever employed	−0.19(5.93)	2.72(5.78)	−1.13(1.48)	−1.46(1.81)	−1.72(1.56)	−1.62(1.67)	−0.79(1.41)	−3.16(1.71)+
Formal care main effect	11.61(9.62)	−1.27(9.49)	1.57(2.43)	2.59(2.52)	2.81(3.82)	0.87(2.93)	1.28(2.97)	1.60(4.07)
Informal care main effect	2.16(7.44)	−3.61(5.76)	1.95(2.28)	5.56(2.76)+	4.22(2.43)+	9.12(2.66)**	7.51(3.59)*	9.41(3.77)*
Interactions								
Ever employed × Formal	−6.60(11.75)	0.28(12.01)	0.61(3.29)	−2.30(3.04)	−3.38(4.08)	1.10(3.57)	0.83(3.35)	−1.19(4.44)
Ever employed × Informal	−4.06(10.10)	−4.16(8.64)	1.22(3.17)	−3.09(3.14)	−3.35(3.01)	−4.75(3.19)	−6.49(3.98)	−7.35(4.36)+
F of model	2.13**–3.33**	2.99**–3.98**	3.93**–5.89**	2.61**–3.72**	3.33**–4.54**	2.71**–4.15**	1.83*–1.96*	2.67**–3.74**
R^2	0.25–0.32	0.25–0.30	0.28–0.30	0.25–0.27	0.19–0.31	0.23–0.25	0.21–0.24	0.23–0.27
Timing of Employment OLS Model (*n=444*)								
Main Effects								
First emp 0–8 months	−6.48(6.05)	0.84(6.09)	−0.10(1.36)	−0.92(1.70)	−2.12(1.75)	−0.51(1.71)	−2.00(1.36)	−2.90(1.73)+
First emp 9–23 months	1.86(4.45)	6.42(7.09)	−1.75(1.39)	−2.84(1.55)+	−2.57(1.76)	−2.61(1.55)+	−0.66(1.55)	−3.24(1.85)+
Formal care main effect	9.92(11.15)	−3.34(9.39)	1.09(2.36)	2.49(2.35)	2.91(4.00)	0.93(3.23)	1.28(3.35)	1.31(4.25)
Informal care main effect	1.98(7.48)	−1.31(5.30)	1.78(1.91)	4.53(2.69)+	3.50(2.69)	8.51(2.55)**	6.98(4.03)+	8.66(3.78)*

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Independent Variables	WJ Letter Word	WJ Applied Problems	Affective Problems	Anxiety Problems	Somatic Problems	Atten. Deficit/Hyperactivity	Opp. Defiant Problems	Conduct Problems
Interactions								
First emp 0–8 months × Formal	−1.60(12.51)	5.79(11.80)	−1.27(2.51)	−3.38(3.03)	−2.45(4.02)	−0.44(3.81)	0.91(3.35)	−0.29(4.28)
First emp 0–8 months × Informal	7.30(8.91)	6.70(7.53)	−1.08(2.18)	−5.84(2.93)*	−1.23(3.01)	−8.61(2.89)**	−5.84(4.19)	−9.25(4.04)*
First emp 9–23 months × Formal	−10.44(11.97)	−3.90(11.53)	1.78(3.15)	−0.52(2.62)	−1.56(4.69)	2.94(4.06)	0.78(3.92)	−0.80(4.96)
First emp 9–23 months × Informal	−2.72(8.67)	−2.09(9.38)	1.41(2.94)	−0.69(2.96)	−2.74(3.16)	−3.27(3.25)	−5.11(4.46)	−6.12(4.42)
F of model	2.38**–3.76**	2.38**–3.07**	2.29**–4.29**	1.96**–3.25**	1.91**–2.47**	1.55*–2.10**	1.90**–2.14**	1.42+–2.80**
R^2	0.22–0.28	0.16–0.19	0.15–0.20	0.13–0.19	0.14–0.19	0.15–0.17	0.15–0.17	0.16–0.19

Note:

+ p<.10,

* p<.05,

** p<.01.

Employed groups are compared to the omitted category of no employment. All analyses controlled for the wave 1 value of the mother age, mother education, mother english fluency, mother marital status, number of minors in the household, if mother had a working spouse, mother employed in year prior to birth, mother received welfare in last 2 years, child gender, child age, child race/ethnicity, child low birthweight, child developmental delay at birth, child in formal child care, child in informal child care, household income-to-needs, mother cognitive ability at Wave 2, and mother employed recently at Wave 3.