Early Maternal Employment and Children's Academic and Behavioral Skills: a Comparative Analysis

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BOSTON COLLEGE
Lynch School of Education

Department of Counseling, Developmental and Educational Psychology

Applied Developmental and Educational Psychology Program

EARLY MATERNAL EMPLOYMENT AND

CHILDREN'S ACADEMIC AND BEHAVIORAL SKILLS:

A COMPARATIVE ANALYSIS

Dissertation
By

CAITLIN MCPHERRAN LOMBARDI

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ABSTRACT

Early Maternal Employment and Children's Academic and Behavioral Skills:

A Comparative Analysis

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The goal of this dissertation was to delineate the repercussions of early maternal

employment for children's early developmental competencies in the U.S., Australia, and

the U.K. and to test economic and psychological theories regarding potential mechanisms

linking maternal employment with children's development, including time, money, and

stress. Prior research has focused on older, non-representative cohorts of American

children, with results suggesting full-time employment in the first year after childbirth is

linked with lower cognitive and behavioral skills. It is unclear if these same patterns exist

in more recent cohorts and in other countries with differing cultural expectations and

policy environments for families, most notably more comprehensive parental leave

policies.

Data came from representative samples of children born in each country between

2000 and 2004: (1) the U.S.'s *Early Childhood Longitudinal Study-Birth Cohort*

(*N*=10,100), (2) Australia's *Longitudinal Study of Australian Children-Birth Cohort*

(*N*=5,093), and (3) the U.K.'s *Millennium Cohort Study* (*N*= 18,497). In each dataset,

mother's employment data were coded to assess the month of entry into employment

following childbirth. Extensive, well-validated direct assessment, mother report, and

teacher report measures assessed children's cognitive and behavioral skills following entry into formal schooling.

Descriptive data showed very different patterns of entry into employment: American mothers entered employment the earliest and at the highest intensity with more gradual, lower intensity returns by Australian and British mothers. OLS regression models weighted with propensity scores and controlling for a rich array of child and maternal characteristics suggested that early movements into employment had few associations with children's cognitive or behavioral skills in any of the countries. These neutral associations were not differentiated by maternal time, stress, or wages. However, as non-maternal household income decreased, early employment was linked with higher cognitive skills in the U.S. while employment begun before two years was linked with higher behavioral skills in Australia. There was no evidence of moderation by non-maternal household income in the U.K. Findings are discussed in terms of their implications for work family policy.

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CHAPTER 1: PROBLEM STATEMENT

The increase in employment among mothers with young children over the past 40 years has been one of the most significant recent demographic shifts in family life. In the U.S., employment rates among women with newborns rapidly increased from 21% in the labor market in 1968 to over 50% in every year since 1986 (U.S. Bureau of the Census, 2001). Early maternal employment serves many different purposes for families, including supporting women's careers, encouraging more balanced gender roles within families, and increasing families' economic resources (Gornick & Meyers, 2003; Ray, Gornick & Schmitt, 2010; Waldfogel, 1998). Many families rely heavily, or even exclusively, on earnings from mothers' employment due, in part, to declines in male wages and increases in single-mother families (Haskins, 2006; Redd, Karver, Murphey, Moore & Knewstub, 2011). Yet concerns remain that early maternal employment might inhibit children's healthy development by decreasing mothers' time and energy to devote to parenting or increasing parental stress (Becker & Tomes, 1986; Bowlby, 1951; Teti, Gelfand, Messinger & Isabella, 1995). While most industrialized countries have responded to trends in early maternal employment with paid parental leave policies which provide income replacement and job protections while allowing new parents to focus full-time on parenting following childbirth, U.S. policy expansions have been significantly more limited with no federal paid parental leave and a limited federal unpaid parental leave policy (Waldfogel, 2001). Lacking paid leave and job protection options, many new mothers in the U.S. return to work soon after childbirth, juggling the demands of employment and parenthood.

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The goal of the current study is to delineate the repercussions of such choices for children's early developmental competencies, with particular attention to differences across diverse families and to potential mechanisms linking early maternal employment and children's academic and behavioral skills after entry into formal schooling. I focus on these skills due to their importance in setting children up for trajectories of success (Shonkoff & Phillips, 2000). Essential skills after entry into formal schooling include core early literacy and numeracy skills, as well as skills in regulating inappropriate behaviors, attending to learning opportunities, and positively engaging with peers (Entwisle & Alexander, 1993). Entering school with these early competencies supports the successful transition to schooling, heightens the likelihood of future educational success, and in turn supports positive economic and psychological functioning into adulthood (Heckman, 2000).

Much of the past research on early maternal employment has utilized longitudinal survey studies of American children born in the 1980's and early 1990's (e.g., the National Longitudinal Survey of Youth-Child Supplement, *NLSY-CS;* the NICHD Study of Early Child Care and Youth Development, *NICHD-SECCYD*). Overall, this research has found negative links between maternal employment begun in a child's first 9 or 12 months and children's cognitive and socio-emotional development, with neutral associations for maternal employment later in childhood (Baydar & Brooks-Gunn, 1991; Berger, Hill & Waldfogel, 2005; Blau & Grossberg, 1992; Brooks-Gunn, Han, & Waldfogel, 2002; 2010; Desai, Chase-Lansdale, & Michael, 1989; Han, Waldfogel & Brooks-Gunn, 2001; Hill, Waldfogel, Brooks-Gunn & Han, 2005; Ruhm, 2004). Little

research has assessed a nationally representative sample of children or examined more recent cohorts of American children, limiting the generalizability of past findings.

Based upon demographic shifts in the U.S. and theoretical models from developmental and economic perspectives, I hypothesize that maternal employment may have different implications for children currently than for past cohorts due to women's increased participation in the labor force and heightened responsibility for their families' financial security, more readily available and higher quality child care, changing cultural attitudes about women's work roles, and increased engagement among fathers in child rearing (Hofferth, 1996; Hoffman, 1989; Hoffman & Youngblade, 1999; Sayer, Bianchi & Robinson, 2004). In response to these cultural and family shifts, children born more recently may experience their mothers' employment differently than children born in earlier decades, with dissimilar repercussions for children's development.

While maternity leave is limited in the U.S. to 12 weeks of unpaid, job-protected leave for eligible workers, paid maternity leave has become the norm in nearly all other industrialized countries (Kamerman, 2000). Little research has examined the implications of early maternal employment for children's development in different policy contexts. Nearly all research on early maternal employment comes from samples of American children and there has been little replication in other data sets and other countries. Based upon policy differences providing greater financial support and job security to new mothers in countries with paid and longer unpaid maternity leave policy, I hypothesize that the theorized processes linking maternal employment and children's outcomes in U.S., namely time, stress, and money, will show weaker associations in other countries.

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While I expect these processes to mediate associations in the U.S., which offers mothers fewer options for returning to work and in which early, high intensity returns to work are normative, I expect these processes to be less important in countries that provide mothers with greater options for choosing when and how to return to work.

My focus on maternal rather than paternal employment in this dissertation is a reflection of the primary caregiving role of mothers, the high prevalence and relative stability over time of paternal employment (for families with a father in the household), which poses limitations for modeling paternal employment, as well as prior research showing limited associations between paternal employment and young children's well-being (Ziol-Guest, Dunifon & Kalil, 2012).

Using contemporary birth cohort studies from the U.S., Australia, and the UK, the broad goal of this dissertation is to explore the implications of early maternal employment for children's early developmental competencies with particular attention to selection factors and to potential mechanisms linking early maternal employment and children's long-term cognitive and behavioral skills, replicating analyses in countries with different policy contexts.

As new mothers are increasingly returning to the workplace early and at high intensity with limited state and federal parental leave policies, there are concerns about potential detrimental effects of early maternal employment for young children's development. The findings of this dissertation have important implications for researchers, policymakers, and employers. Understanding the repercussions of early maternal employment for children's early developmental competencies in three countries

with varying policy frameworks will inform our understanding about children's earliest developmental contexts. This work will also inform the development of future parental leave policies aimed at improving the well-being of children.

CHAPTER 2: LITERATURE REVIEW

Theoretical Perspectives

Social science theories suggest a variety of hypotheses regarding the potential repercussions of maternal employment for young children. Historically, developmental and economic perspectives have suggested that maternal employment may be harmful because it limits mothers' time and energy to devote to parenting, hampers child-parent attachment, increases parental stress, or leads to the use of alternate care settings less supportive for children's development (Becker & Tomes, 1986; Bowlby, 1951). Yet these models also suggest that maternal employment brings economic and social resources to the family, which should benefit children's development. Considering these theoretical frameworks with an eye toward demographic shifts, I argue that changing norms and family behaviors may alter the relative importance of these factors.

The first two mechanisms through which maternal employment is theorized to influence children's development are money and time. An economic viewpoint highlights that engagement in the labor market requires a trade-off between money and time. According to this model, parental employment will increase families' economic resources, which can purchase child development-enhancing assets and services, but will also decrease time and energy to devote to parenting (Becker & Tomes, 1986). Based on this model, one could expect that maternal employment will increase families' economic resources which may in turn have a positive impact on children's development, particularly during early childhood and in relation to cognitive skills which have been

most shown to be especially sensitive to environmental conditions affected by family income (Duncan & Brooks-Gunn, 1997; Shonkoff & Phillips, 2000).

Psychological models from developmental psychology such as attachment theory expand the other side of 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 attachments (Bowlby, 1951; Chase-Lansdale & Owen, 1987). Less secure child-parent attachments may inhibit exploration, learning, and emotional security which are critical to children's cognitive and socio-emotional development (Bowlby, 1951). If early employment results in less secure attachments, these models suggest that it may lead to lower long-term cognitive and socio-emotional skills.

Early maternal employment may also lead to the use of alternate care settings less supportive for young children's development, particularly during infancy. Child care for infants is limited, expensive, and often of inadequate quality, thus potentially posing a risk to children's development (NICHD ECCRN, 2001; Clifford et al., 2005; National Research Council Institute of Medicine, 2000). Research has also found that center-based child care (provided at preschools, daycare centers, and Head Start programs), particularly when full-time and begun early in life, may be detrimental for later behavioral functioning (e.g. Coley, Votruba-Drzal, Miller, & Koury, 2013; Magnuson, Ruhm, & Waldfogel, 2007; NICHD, 2003; Phillips, McCartney, & Sussman, 2006). Therefore, early maternal employment may have long-term effects on children's

behavioral skills through more extensive use of early nonparental child care arrangements.

In addition to reducing mothers' time with children, psychological theories and empirical research suggest that early maternal employment could be influential on children's development through the stress invoked in mothers struggling to balance work and family. This argument is particularly salient in the U.S. where many women have no option but to go back to work soon after childbearing due to limited paid and unpaid leave policies. The demands of balancing work and parenting may lead to heightened stress and depressive symptoms, negatively influencing the quality of parenting and parent-child relationships, and in turn inhibiting healthy child development, particularly children's behavioral functioning (Gershoff, 2002; Ispa et al., 2004; Lerner & Galambos, 1985; McLoyd & Smith, 2002; NICHD ECCRN, 1999; Petterson & Albers, 2001; Teti et al., 1995).

Taken together, these theoretical perspectives argue for counteracting mediational processes, suggesting that maternal employment will increase economic resources but also reduce mothers' time devoted to parenting and increase their stress as they balance competing demands. Infants, who have high care demands and who are still building secure child-parent attachments, may be most impacted by mothers' limited time, reduced energy, and increased stress due to employment, pushing the balance between these competing forces into a net negative effect. Other contextual factors may alter this balance. For example, paid maternal leave provides income replacement and job security following childbirth. Longer maternity leaves, both paid and unpaid, have been linked

with higher maternal mental and physical health (Chatterji & Markowitz, 2004). For mothers that do not have paid leave, the economic benefits of early work may be more important but stress may also be higher due to little choice and flexibility about when to return to work thus shifting the balance toward more detrimental implications for children.

Prior Research and the Role of Mediating and Moderating Processes

A sizable body of empirical evidence supports the supposition that maternal employment during infancy may have negative implications for children's development. A number of large, longitudinal survey studies of U.S. children have studied early maternal employment in the first 2, 3 or 4 years after childbirth (Baydar & Brooks-Gunn, 1991; Desai et al., 1989; Han et al., 2001; Hill, et al., 2005). Overall, this research has found negative links between maternal employment begun in a child's first 9 or 12 months and children's later cognitive and socio-emotional development, with neutral associations for maternal employment later in childhood (Baydar & Brooks-Gunn, 1991; Berger et al., 2005; Blau & Grossberg, 1992; Brooks-Gunn et al., 2002; 2010; Desai et al., 1989; Han et al., 2001; Hill et al., 2005; Ruhm, 2004). For example, assessing a sample of White children from the NICHD-SECC, Brooks-Gunn, Han, and Waldfogel (2002) found that maternal employment begun before the child's 9th month was linked to lower child cognitive skills at 36 months. This pattern continued into the first grade, extending to children's behavioral functioning as well (Brooks-Gunn et al., 2010). Research with a nationally representative sample of mothers, the *NLSY-CS,* has unearthed similar patterns (Han et al., 2001; Hill et al., 2005). Han and colleagues (2005) found that

maternal employment in the first year had significant negative associations with White children's cognitive skills at ages 7 or 8. When replicated using stronger statistical approaches, findings suggested that full-time employment in the first year was linked with lower cognitive outcomes in comparison to early part-time employment and later employment (Hill et al., 2005).

Less research has directly assessed whether the proposed mediating processes explain this association between early maternal employment and children's reduced cognitive and behavioral skills. Using nonparental childcare as a proxy for mothers' time away from parenting, 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 associations between early maternal employment and children's later functioning, but these studies did not specifically address the role of time in nonparental care settings. Even less research has directly assessed the role of stress or money in explaining associations between maternal employment and children's well-being. One recent study tested maternal depression as a mediator (Brooks-Gunn et al., 2010), finding that maternal depression at the time of children's assessment in the first grade did not explain associations between first-year maternal employment and children's later functioning. This study also tested money as a mediator, similarly finding that maternal income did not mediate associations between early maternal employment and children's functioning.

The theoretical models and empirical research discussed above have assessed whether time, stress, or money may mediate effects of early maternal employment,

finding very little evidence to support these hypotheses. I argue that this framework largely ignores the role of individual differences. That is, working mothers earn different salaries, spend differing amounts of time on work versus parenting, and experience this balance with diverse psychological repercussions (Coley, Lohman, Votruba-Drzal, Pittman, & Chase-Lansdale, 2007; Hoffman & Youngblade, 1999; Parcel & Menaghan, 1997; Raver, 2003). For example, work with low-income samples has found employment to be associated with improved rather than worsened maternal stress (Coley et al., 2007; Raver, 2003). This framework suggests that time, stress, and money may serve as important *moderators* of links between early maternal employment and child well-being. In families in which mothers return to work soon after childbirth but manage to protect their time with their child, gain a sense of satisfaction from combining work and parenting rather than increased stress, or who contribute more financially to their families, I hypothesize that early maternal employment may predict improved rather than diminished functioning among children. In contrast, early maternal employment that carries a greater time or stress cost, or which contributes less financial resources to the family, may be detrimental for children.

Much of the existing research supports this hypothesis with regards to time, finding that full-time maternal employment in the 9 to 12 months after childbirth is more strongly linked to decreased child cognitive and behavioral skills than part-time early employment (Brooks-Gunn et al., 2002). Early research in the field of maternal employment identified the moderating role of maternal preferences, finding that mothers' desire to work moderated links between employment and children's well-being (e.g.,

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DeMeis et al., 1986). I know of no recent research which has tested interactions between early maternal employment and mothers' stress. Similarly, research has not explicitly assessed the moderating role of earnings, although work with low-income samples provides some support. One recent study of poor and near-poor families found that maternal employment in the first 9 months after childbirth predicted enhanced socio-emotional functioning in children at age 7 (Coley & Lombardi, 2013; see also Berger et al., 2008). Although this work did not directly test the moderating role of maternal earnings, it suggests that early maternal employment may be more beneficial in families in which mothers' earnings contribute more to total family income.

Early Maternal Employment in Contemporary Families

In short, theoretical models and empirical results suggest that there may be both positive and negative influences for children emanating from early maternal employment. I also argue that the relative strength of these influences may have shifted over time as social norms and family behaviors changed. For example, research has shown that even with rising employment rates, women's time spent directly interacting with children has not shifted dramatically (Bianchi, 2000; Bianchi & Robinson, 1997), suggesting that working women are finding ways to limit the time tax of employment. There has been notable growth in the availability of childcare and greater attention to the quality of such care, and recent research suggests that nonparental care for infants and toddlers does not pose a substantial threat to healthy child development (Coley, Votruba-Drzal, Miller & Koury, 2013; Votruba-Drzal, Coley, Koury, & Miller, 2013). Similarly, married fathers are playing a larger role in caring for children (Sayer et al., 2004), and support for

maternal employment has grown, with companies gaining skills in accommodating the needs of new mothers (Cunningham, 2008). These shifts suggest that the stresses of balancing work and parenting for new mothers may have declined and the psychological benefits of employment increased (although there is little direct evidence of this).

There have also been economic forces at play. Declining male wage rates, decreases in the social safety net, and increasing proportions of single mother families have meant that more and more women are serving as primary wage earners and raising children with limited financial resources outside of what they earn themselves (Haskins, 2006; Redd et al., 2011). These shifts may have increased the relative benefits of women's wages to their family's financial stability and hence their children's development. Together, these arguments suggest that the forces leading to negative effects of early maternal employment may have declined, while the forces leading to beneficial effects may have risen, altering the balance in countervailing forces and ultimately limiting overall effects on children.

Existing empirical research that has found a negative link between early and high intensity maternal employment and children's later development has used limited statistical techniques to address selection bias. Selection factors are an important consideration, given that the same characteristics of mothers that may lead them into employment also may be related to their parenting skills and family contexts and thus to child outcomes (Berger et al., 2008; Heckman, 1978); failing to adequately attend to such factors will bias measured associations between maternal employment behaviors and child functioning. Furthermore, the majority of prior research has been drawn from two

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large-scale longitudinal surveys of U.S. children: the *NLSY-CS*, comprised of children

born between 1982 to 1993, and the NICHD-SECCYD, comprised of children born in

1991 (Baydar & Brooks-Gunn, 1991; Berger et al., 2005; Blau & Grossberg, 1992;

Brooks-Gunn et al., 2002; 2010; Desai et al., 1989; Han et al., 2001; Hill et al., 2005).

These samples are not representative of children in the U.S. today in that they contain

small percentages of the most rapidly growing populations in the U.S., such as Latinos

and Asians, exclude important sub-populations (such as non-English speakers), and focus

on children born two to three decades ago (Duncan & Gibson, 2000; Moore et al., 1999).

Differing Policy Contexts

Findings from these samples raise questions about the generalizability of past

research to current families and children in the U.S. and also to families and children in

other countries with different policy contexts and cultural norms around maternal

employment. While most industrialized countries have expanded parental leave laws and

public financing of child care in tandem with increasing numbers of new mothers in the

labor force, U.S. policy expansions have been significantly more limited with no federal

paid parental leave policy and a limited unpaid federal parental leave policy. The Family

and Medical Leave Act (FMLA) offers 12 weeks of unpaid, job-protected leave for

mothers who have worked an average of 25 hours a week for one year at an employer

with 50 or more employers. Due to these restrictions, less than half of working mothers

are eligible (Ruhm, 2011) and, of those eligible, many do not take it because they cannot

afford to go without pay (Commission on Family and Medical Leave, 1996; Waldfogel,

2001). Another point of contrast is that American parents of infants and toddlers rely

primarily on the private market for child care which research has found to be expensive, limited, and of lower quality than child care for older children (NICHD ECCRN, 2001; Clifford et al., 2005; National Research Council Institute of Medicine, 2000). Limited child care subsidies are available to low-income families (Layzer & Collins, 2000).

In contrast, two other countries similar to the U.S. in economic structure have greatly expanded parental leave laws and child care subsidies: Australia and the U.K. A comparison of the policy context in each of these three countries is presented in Table 1. Australia has long offered 12 months of unpaid parental leave for working mothers along with a generous cash payment to all families upon the birth of a child[1]. Child care is supplied by both public and private providers with the cost of center-based care subsidized by the federal government up to 50% and government quality controls (Australian Government Family Assistance Office, 2011).

The U.K. witnessed a dramatic expansion in services for families with young children starting in the early 2000's. Parents of young children benefited from expanded parental leave rights through the course of several policy changes. From 1999 through 2001, which covers the period of time in which children were born in this study, all mothers were eligible for 18 weeks of paid parental leave and women who had worked for the same employer for a year or longer were eligible for an additional period of 29 weeks of unpaid leave (Waldfogel, 2010).[2] These reforms also included an expansion of

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[1] Australia implemented a federal paid parental leave policy in January 2011, after the data used in the current study.

[2] Starting in 2002, all working mothers in the U.K. were given 12 months of job-protected maternity leave with 6 months paid after the birth of a child and the right to request part-time or flexible work until their youngest child was 6 years old, which increased to age 16 in 2004 (Waldfogel, 2010). Beginning in 2010,

affordable, quality child care options for parents through increasing the number of child

care providers and expanding child care tax credits (Bertram & Pascal, 2000; Waldfogel,

2010).

Table 1

Federal family policies in three countries at time of wave 1 data collection*

	U.S.	Australia	U.K.
Paid maternal leave	None	None	18 weeks paid leave; 6 wks at 90% of full pay, remainder at flat rate
Unpaid maternal leave	12 weeks if worked an avg of 25 hrs/wk for 12+ months for employer with 50+ employees	52 weeks unpaid leave for mothers who have worked 12+ months for employer	Mothers employed by same employer for year+ eligible for additional 29 weeks unpaid leave
Paternal leave	12 weeks if worked an avg of 25 hrs/wk for 12+ months for employer with 50+ employees	3 weeks of unpaid leave	None
Child care benefits	Some limited subsidies for low-income families; tax credits for low- and middle-income families	Child care benefit provides payment to help with costs; child care rebate covers up to 50% of costs	Provided to all low-income children < 3 years
Health insurance	Insurance for low-income families	Universal insurance	Universal insurance
Child cash payments	Child Tax credit provides $1000 annually to families with < $130,000 annual income	Baby Bonus provides $5000 one time payment; Family Tax Benefit offers annual support to low-income families	The Child Tax credit and a payment upon the birth of a child are available for low-income families
Minimum wage (annual wage in US $)	$15,080	$22,148	$13,658

*Within each country, wave 1 data collection occurred between: U.S. (01-12/2001), Australia (03/2003-02/2004), U.K. (09/2000-01/2002).
Sources: Australian Government Family Assistance Office, 2011; Early Childhood Development, 2011; OECD Family Database, 2011; U.K. Government, 2011; Waldfogel, 2010

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parental leave was further expanded to a full year of job-protected maternity leave with 9 months paid and then, in 2011, further flexibility was given to new parents by allowing fathers to use up to 26 of the total 52 weeks per family (U.K. Government, 2010).

Related in part to varying policy frameworks for working parents, the cultural norms for working mothers also vary slightly across countries, with the most notable differences occurring in the first year. In all of the countries, employment among fathers has always been common while there has been a rapid growth in the number of working mothers since the 1970's (Jaumotte, 2003). Prior research has identified that British[3] mothers return to work later and at a lower intensity in comparison to American mothers (Crosby & Hawkes, 2007). Similarly, during the first year, Australian mothers are less likely to work at all and to work full-time in relation to American mothers (Coley, Lombardi, Sims & Votruba-Drzal, in press).

Due to these differences in policy supports for parents with young children and cultural norms surrounding mothers' work, it is possible to hypothesize that the implications of early maternal employment may have both similarities and differences across countries. On one hand, the implications of the timing of entry into employment for children's long-term development may be very similar across countries. Based upon theoretical models of child development posited to operate universally across diverse families, mothers who return to work early will experience similar economic and psychological benefits and similar negative taxes on time and energy to devote to parenting, child-parent relationships, and stress across countries, leading to parallel null findings in which these processes cancel each other out (Becker & Tomes, 1986; Bowlby, 1951). Similarly, the moderating role of individual differences would be expected to

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[3] Due to the lack of a term that refers to all citizens of the United Kingdom, the term British is used here. In this paper, it refers to all citizens of the United Kingdom; specifically England, Scotland, Wales and Northern Ireland.

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operate in the same way across countries. That is, greater earnings, less of a time loss, and less stress from work should support child functioning across contexts. Replicating results in other countries would suggest that the implications of early maternal employment extend beyond American children and families.

In contrast, due to differences in policy supports and cultural norms, the counteracting meditational processes might differ across countries. Specifically, U.S. policies offer working mothers few options for when or how to return to work and early, high intensity returns to work are normative across families. A large population of mothers returns to work early and, with few other options, many mothers likely do so by necessity rather than choice. It is possible to hypothesize that early employment may be significantly linked with less time, greater money, and greater stress, but these effects may be counteracted by the importance of income thus potentially cancelling each other out. Conversely, in countries such as the U.K. and Australia that offer incentives and options for mothers to remain out of the labor force through paid and unpaid maternity leave and that have cultural norms promoting longer leaves, it could be hypothesized that mothers who return to work early do so because the economic and psychological benefits outweigh any negative repercussions of time and stress. Thus, in families from the U.K. and Australia, I expect lesser links between early employment and time and stress and hence more positive links between early maternal employment and children's long-term developmental outcomes.

Prior Research from the United Kingdom and Australia

There is relatively little research on early maternal employment from the U.K.; however the handful of existing studies have identified a similar pattern to that of the U.S. research, finding maternal employment to be harmful for infants but neutral for older children (Ermisch & Francesconi, 2000; Gregg, Washbrook, Propper & Burgess, 2005; Joshi & Verropoulou 2000). Joshi and Verropoulou (2000) examined two cohorts of children born in the 1970's and 1980's and found some evidence of small negative effects of maternal employment in the child's first year on children's later reading scores, although no associations were found with math or behavioral outcomes. Ermisch and Francesconi (2000) assessed the British Household Panel Survey of children born between 1970 and 1981 and found negative implications of more years of work before age 5 on children's later grades in school, particularly when this work was full-time. Finally, Gregg et al. (2005) analyzed longitudinal survey data of 12,000 children born in the Avon area of the U.K. in 1991 and 1992 with results suggesting that full-time employment in the first 18 months after birth combined with informal child care led to poorer long-term cognitive outcomes for children, particularly for children from more affluent families or whose mothers had higher educations. It is important to note that these studies all used data from children born prior to the family leave policy expansions in the U.K. when the policy context was more similar to the U.S. Little research on maternal employment in the U.K. has examined children born after the parental leave expansions began in 1999.

Research on maternal employment among Australian families is even sparser with no known studies examining the relationship between the timing of return to work and

later child outcomes. Research has examined the relationship between the timing of employment re-entry and breastfeeding, finding that Australian mothers who started working both full-time and part-time before their child was 6 months had a much lower likelihood of breastfeeding their child for at least 6 months than peers who delayed a return to work (Cooklin, Donath & Amir, 2008). Another study investigated the concurrent relationship between mother's work intensity later in childhood and children's overweight status, finding small short-term negative associations between higher work hours at ages 4 and 5 and higher likelihood to be overweight/obese at that age, but no long-term association with children's weight status two years later (Brown, Broom, Nicholson & Bittman, 2010).

In sum, there is little research on early maternal employment in contemporary British and Australian families. The research that does exist suffers from some of the same limitations as described earlier in relation to the U.S. literature, including reliance on older, non-representative samples of children and use of limited statistical techniques to address selection bias. Rarely have cross-national comparative methods been used to examine how maternal employment might operate differently across countries with varying early employment rates and greater access to paid and unpaid leave benefits. Cross-national comparative research seeks to observe a social phenomenon across countries, examine similarities and differences, and assess both the causes and consequences, making this type of research particularly well-suited for studying contextual factors that are influenced by policy, such as maternal employment (Hantrais, 1999).

Prior Cross-national Comparative Research

Cross-national comparative research examining children's outcomes has begun to emerge in numerous arenas of the family context. Several studies have examined differential associations between parental income and education with children's outcomes across countries with similar economic contexts. Waldfogel and Washbrook (2009, 2010) compared income-related gaps in cognitive and behavioral aspects of school readiness for preschoolers in the U.S. and U.K. and found that large gaps existed in both countries between children in the bottom and middle income quintiles and between children in the top and middle income quintiles. A separate study examined differences in school readiness of 5 year olds related to parental education and income in the U.S., U.K., Australia, and Canada. The authors found that significant inequalities relating to income and education emerged in all countries, but the disparities were far greater in the U.S. and U.K. than in Australia or Canada (Bradbury, Corak, Waldfogel & Waskbrook, 2010). The majority of the differences were due to the degree that the most advantaged children out-performed those in the middle of the income spectrum.

Comparative and non-comparative studies also have examined the impact of parental leave laws on maternal and child health. Using U.S. data, Chatterji and Markowitz (2004) found that longer maternity leaves, both paid and unpaid, were associated with declines in maternal depressive symptoms, a reduced likelihood of severe depression, and overall improved maternal health. Comparative research examining changes in parental leave policies over time across many countries has shown beneficial effects of longer leave policies, finding that longer maternal leave policies have resulted

in lower infant mortality rates, increased maternal mental health, and increased child preventative health measures such as well-baby visits and immunizations (Ruhm, 2000; Tanaka, 2005).

Maternal employment patterns and predictors have been examined using recent comparative birth cohorts studies from the U.S. and U.K. (the same datasets used in this study). Crosby and Hawkes (2007) found that mothers in the U.S. were found to engage in paid work much sooner after childbirth than British mothers. Greater financial and human capital predicted higher rates and earlier entries of employment after childbirth for mothers in both countries. This study used a single wave of data collection and did not link maternal employment with child outcomes over time.

A recent unpublished study examined the relationship between the timing of mother's return to work in the first year and later child outcomes across five countries: the U.S., U.K., Australia, Canada, and Denmark. Huerta and colleagues (2011) found that the relationship between the timing of maternal employment after birth and children's later outcomes varied across countries. Negative implications for children's cognitive outcomes were found for children in the U.K. and U.S. whose mothers returned to work within 6 months, particularly if these mothers worked full-time. Few associations were found for socioemotional outcomes in any of the countries or for cognitive outcomes in Australia, Canada, and Denmark.

This study offers an important starting point from which to consider how to assess the relationship between early maternal employment and child outcomes across countries while leaving several methodological and conceptual gaps to be filled. First, this study

only examined maternal employment begun in the child's first 11 months. With the exception of the U.S., each of these countries has a maternal leave policy that provide the majority of employed mothers with 11 or 12 months of unpaid or paid leave with high percentages of mothers utilizing this benefit, as described earlier. Thus findings may be biased by selection effects whereby the mothers who return to work before 11 months may differ in important ways from those who take advantage of their full parental leave. Second, the selection of datasets utilized raises questions about the temporality of variable selection. Specifically, the study measured the child, mother, and family characteristics used as controls concurrently with child outcomes thus inviting concerns about potential bidirectionality. Ideally, controls would be measured prior to or at the same time as mother's entry into employment in order to isolate the association between the maternal employment and child outcomes and avoid over controlling for potential mediators such as maternal depression or family income. Third, although the researchers attempted to address selection bias by including controls for child, mother, and family characteristics in the statistical models, they did not employ causal inference techniques such as propensity score matching to further adjust for selection bias, as has become common in maternal employment literature (Berger et al., 2008; Coley & Lombardi, 2013; Hill et al., 2005). Finally, the study did not impute missing data due to non-response or attrition, a common problem in child development research which relies on in-home child assessments often onerous for parent and child participants. As this study eliminated cases with missing values, samples may be been biased by deletion of cases with missing data.

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In sum, little cross-comparative research has examined the relationship between early maternal employment and child outcomes across countries. Findings of existing research suggest that links between the timing of maternal employment and child outcomes may indeed differ across countries, however the direction and magnitude of such effects are not clear. Thus, the goal of this study is to provide evidence regarding the implications of early maternal employment for children's cognitive and behavioral skills in three countries.

The Importance of Replication in Research

In addition to providing new evidence about maternal employment in three countries, this study also responds to mainstream calls for replication in scientific research (for example, see "How science goes wrong" in the October 19, 2013 edition of the Economist). More specifically, it answers calls for replication in research on child development (Duncan, Engel, Claessons & Dowsett, 2012). Duncan and colleagues (2012) argue for the value of external replication, meaning replicating or extending the results of others, as well as internal replication, in which researchers replicate results across multiple data sets or use multiple estimation techniques within the same manuscript. By estimating models with several different techniques across three different datasets, this dissertation aims to do both.

The Present Study

The present study assesses the associations between early maternal employment and children's later functioning in nationally representative birth cohort samples of

children born in the U.S., Australia, and U.K. between 2000 and 2004. This dissertation has several goals. Figure 1 presents the full conceptual model.

Figure 1: Conceptual Model

```
┌─────────────────────────┐
│ Mother and household    │
│ characteristics:        │        ┌──────────────────────┐
│ Age                     │        │ Mediators:           │
│ Education               │        │ Time (hours          │
│ Employed before birth   │        │ employed, hours      │
│ Married or cohabitating │        │ in child care)       │
│ Non-partner adults in   │        │  Stress (maternal    │
│   house                 │        │ depression)          │
│ Home language           │        │ Money (maternal      │
│ Number of children      │        │ employment           │
│ Low-income subsidy      │        │ income)              │
│ Working spouse          │        └──────────────────────┘
│ Employed at child       │
│   assessment            │                          ┌──────────────────────┐
│ Other household income  │                          │ Children's           │
└─────────────────────────┘                          │ Development:         │
┌─────────────────────────┐                          │ Cognitive and        │
│ Timing of               │ ───────────────────────▶ │ Behavioral Skills    │
│ mother's return         │                          └──────────────────────┘
│ to work after           │
│ childbirth              │
└─────────────────────────┘
┌─────────────────────────┐   ┌───────────────────────────────┐
│ Child characteristics:  │   │ Moderators:                   │
│ Gender                  │   │ Time (hours employed, hours in│
│ Age                     │   │ child care)                   │
│ Twin                    │   │  Stress (maternal depression) │
│ Low birthweight         │   │ Money (maternal employment    │
│ Race/ethnicity          │   │ income, other household       │
│ Functioning at wave 1   │   │ income)                       │
└─────────────────────────┘   └───────────────────────────────┘
```

My first goal is to describe the patterns of employment across countries and the characteristics of children and mothers linked to these patterns.

Research Question 1: What are the patterns of employment across countries and the characteristics of children and mothers associated with entry into the labor force in the two years following childbirth?

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Hypothesis 1: Based upon the policy differences between the three

countries, I expect that Australia will have the lowest rates of maternal

employment during infancy, followed by the U.K. In the U.S., where there

are the most limited leave options for new mothers, I expect to see the

highest rates of early maternal employment.

The second goal is to incorporate robust statistical methods to address selection

bias into analyses assessing associations between the timing of early maternal

employment after childbirth and children's cognitive and behavioral skills after entry into

formal schooling in each country (represented by the thick solid line in the figure).

Specifically,

Research Questions 2: What are the associations between the timing of entry into

employment after childbirth and children's cognitive and behavioral outcomes in

contemporary families from the U.S., Australia, and the U.K.?

Given significant recent demographic shifts, such as women's increased

participation in the labor force and heightened responsibility for their families' financial

security, more readily available and higher quality child care, changing cultural attitudes

about women's work roles, and increased engagement among fathers in child rearing

(Hofferth, 1996; Hoffman, 1989; Hoffman & Youngblade, 1999; Sayer et al., 2004) that

suggest that the forces leading to negative effects of early maternal employment may

have declined, while the forces leading to beneficial effects may have risen,

Hypothesis 2A: I hypothesize that early maternal employment may no

longer have negative implications for American children.

Based upon theoretical models of child development posited to operate

universally across diverse families (Becker & Tomes, 1986; Bowlby, 1951),

> *Hypothesis 2B:* I hypothesize that the results from the U.S. will replicate
>
> in Australia and the U.K. and there will be few implications of early
>
> maternal employment for Australian and British children.

The third goal of this dissertation is to examine how maternal time, stress, and

money may explain links between early maternal employment and children's outcomes in

each of the countries (represented by dotted lines in the figure). Specifically,

> *Research Questions 3:* How do maternal time, stress, and money explain links
>
> between early maternal employment and children's cognitive and behavioral
>
> skills after entry into formal schooling?

> > *Hypothesis 3:* I hypothesize that the meditational role of maternal time,
> >
> > stress, and money will differ across countries. Specifically, I expect these
> >
> > processes to mediate associations in the U.S., which offers mothers fewer
> >
> > options for returning to work and in which early, high intensity returns to
> >
> > work are normative. For these mothers, the benefits of money from
> >
> > employment may be counteracted by detriments to time and stress. I do
> >
> > not expect these processes to mediate associations in Australia and the
> >
> > U.K. due to policies and norms that provide mothers greater options for
> >
> > choosing when and how to return to work.

The final goal of this dissertation is to examine how maternal time, stress, and money might alter the directionality of the associations in each of the countries. (represented by dashed lines in the figure). Specifically,

Research Questions 4: How do maternal time, stress, and money alter the directionality of the associations between early maternal employment and children's cognitive and behavioral skills in each of the countries?

> *Hypothesis 4:* I hypothesize that maternal time, stress, and money will operate similarly across all countries. I expect that in families in which mothers return to work soon after childbirth but manage to protect their time with their child, gain a sense of satisfaction from combining work and parenting rather than increased stress, or who contribute more financially to their families, early maternal employment may predict improved rather than diminished functioning among children. In contrast, early maternal employment that carries a greater time or stress cost, or which contributes less financial resources to the family, may be detrimental for children.

CHAPTER 3: RESEARCH DESIGN

Sample

Data for this study came from three datasets: (1) the U.S.'s *Early Childhood Longitudinal Study-Birth Cohort* (ECSL-B), (2) Australia's *Longitudinal Study of Australian Children Birth Cohort* (LSAC-B), and (3) the U.K.'s *Millennium Cohort Study* (MCS). These datasets are unique in that they contain a breadth of information on a representative sample of children in each country with data measured across comparable time points; children in each dataset were an average age of 8-10 months at wave 1, 24-38 months at wave 2, and have all entered formal schooling by wave 4 (average age ranging from 6 years in the U.S. to 7.4 years in the U.K.).[4] Moreover, each sample is large and diverse, with children from families across the income distribution from very low-income to economically advantaged. Each wave includes detailed information provided by the most knowledgeable caregiver, nearly always the biological mother, on the child, caregiver, and household. In addition to the strengths of the sampling, each dataset contains very strong measurement. At wave 4, children's development was assessed using reliable and well-validated instruments. Helping to reduce analytic concerns over shared method variance, data were collected from direct assessments, parent reports, and teacher reports. The use of probability weights makes each of these samples nationally representative.

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[4] Despite children being slightly older in comparison to American children, assessment data were drawn from wave 4 for the Australian and U.K. datasets because the majority of children were not yet in formal schooling at wave 3 in both datasets. Wave 4 (or wave 4/5 in the U.S.) represents the first wave for all datasets in which children have entered formal schooling, have assessments of both reading and math skills, and have both teacher and parent reports of behavioral functioning.

Key features for each study are reported in Table 2 and described here.

Table 2
Overview of the datasets

	U.S.	Australia	U.K.
Survey name	Early Childhood Longitudinal Study Birth Cohort (ECLS-B)	Longitudinal Study of Australian Children Birth Cohort (LSAC)	Millenium Cohort Study (MCS)
Year of birth	01/2001 - 12/2001	03/2003 - 02/2004	09/2000 - 01/2002
Exclusions to sample	Children born to mothers < 15 yrs old; children adopted prior to 9 mths old	Non-permanent residents; children with same name as deceased children	Families ineligible for Child Benefit (mostly non-citizens)
Total N	10,700*	5,107	18,552
Analytic sample N	10,100*	5,093	18,497
Age (months) wave 1	10.47(3.01)	8.85(2.57)	9.22(0.53)
Age (months) wave 2	24.39(1.21)	34.04(2.93)	38.66(2.57)
Age (months) wave 4	75.08(9.19)	81.98(3.51)	89.17(3.06)

* Rounded to nearest 50 per NCES reporting requirements for ESCL-B data.

United States. The U.S.'s Early Childhood Longitudinal Study– Birth Cohort

(ECLS-B) is a longitudinal, multi-method study of a nationally representative cohort of

approximately 10,700[5] children born in the United States in the year 2001 (Flanagan &

West, 2004). Births were sampled from 96 core primary sampling units (PSU), which

were geographic regions consisting of counties or groups of counties. Children who died

or were adopted prior to the age of 9 months were excluded from the sample as were

children born to mothers younger than 15 years of age. The ECLS-B collected four waves

of data on the birth-cohort at 9 months (wave 1), 2 years (wave 2), 4 years (wave 3), and

at kindergarten entry (wave 4 or wave 5)[6]. Designed to provide information on how

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[5] ECLS-B secure data rules require that all Ns be rounded to the nearest 50.

[6] Not all children had entered kindergarten at the time of assessment at wave 4. Accordingly, the ECLS-B reassessed those children the following year to capture their development at the start of kindergarten.

children are prepared for school in the U.S. (Flanagan & West, 2004), the study collected data from in-home parent interviews, direct child assessments, teacher surveys, child care observations, and data records. See Burns, Wang and Henning (2011) for further details about the ECLS-B. The response rate for the initial 9-month wave of data was 74%; this is consistent with response rates from other large national surveys and an evaluation of respondents and nonresponents has found very small differences that would be unlikely to result in nonresponse bias (Bethel, Green, Nord, Kalton & West, 2005). From the baseline 9-month sample, the response rates for the 2 year, 4 year, and 5 year waves of data were 93%, 91%, and 92%, respectively. The analytic sample consisted of all children from the wave 1 sample with survey weights and whose biological mother was the survey respondent at wave 1 (94% of the sample), resulting in an analytic sample of 10,100 children.

Australia. The LSAC-B is a nationally representative study of a cohort of approximately 5,100 children born in Australia between March 2003 and February 2004. Births were sampled from the Medicare enrollment database with stratification used to ensure proportional geographic representation for each state and territory. The survey sample excluded non-permanent residents, children with the same name as deceased children, and only allowed for one child per household. For more information on LSAC-B, see Sanson et al. (2002) and Soloff et al. (2005). LSAC-B collected four waves of data with in-person interviews and direct assessments when children were on average 9

Depending on the wave of entry into kindergarten, wave 4 or 5 is used for all ECLS-B measures described as being measured at wave 4.

months (wave 1), 3 years (wave 2), 5 years (wave 3), and 7 years (wave 4) with response rates of 58%[7], 90%, 86%, and 84% respectively. The analytic sample consisted of all children from the wave 1 sample with survey weights and whose biological mother was the survey respondent at wave 1 (99% of the sample), resulting in an analytic sample of 5,093 children.

United Kingdom. The MCS is a nationally representative study of a cohort of approximately 18,552 children born in the U.K. between September 2000 and August 2001. Births were sampled from Child Benefit records thereby excluded families ineligible for the Child Benefit, which for the most part were non-citizens. For further details about the MCS see Shepherd, Smith, Joshi & Dex (2003). MCS collected four waves of data with in-person interviews and direct assessments when children were on average 9 months (wave 1), 3 years (wave 2), 5 years (wave 3), and 7 years (wave 4) with response rates of 68%, 84%, 82%, and 75% respectively. The analytic sample consisted of all children from the wave 1 sample with survey weights and whose biological mother was the survey respondent at wave 1 (99% of the sample), resulting in an analytic sample of 18,497 children.

Within each analytic sample, there were missing observations due to attrition over the waves and missing data on individual measures. Missing data were imputed in Stata 12 (Royston, 2004, 2005) using multiple imputation by chained equations to create 10 complete datasets. All analyses were weighted with sampling weights for each study,

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[7] Different response rates have been reported based on different calculations. This response rate includes nonresponse from all sources from the originally drawn sample (see Gray & Sanson, 2005).

which adjust for sampling procedures, nonresponse, and differential attrition and properly adjust standard errors. The use of these weights makes each sample representative of children born in each country in that particular year.

Measures

Across all constructs, measures were created in a parallel fashion for the three datasets, except as noted.

Maternal employment. In all studies, mothers reported on their employment status, history, and intensity at each wave of the study. These data were used to create three mutually exclusive categories: first entry into employment before 9 months, first entry into employment before 2 years, and nonemployed, that is no report of employment before 2 years. These categories capture employment during the first two years after childbirth, which is comparable to the time periods studied in prior literature which have varied from 9 or 12 months (Berger et al., 2008; Brooks-Gunn et al., 2002; Coley & Lombardi, 2013) to the first 2, 3 or 4 years (Baydar & Brooks-Gunn, 1991; Coley & Lombardi, 2013; Desai et al., 1989; Han et al., 2001; Hill, et al., 2005). A limitation of these measures is that mothers may have entered employment prior to 9 months or before 2 years and then quickly exited, not remaining stably employed.[8]

Children's cognitive skills: In the ECLS-B, children's cognitive skills were measured at age 5 using direct assessments to test children's reading and math skills. The reading and math skills assessments were comprised of items drawn from well-validated

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[8] An additional limitation of the ECLS-B employment measure is that it may be incorrectly classifying mothers who entered employment after 9 months and exited before 24 months as being nonemployed in the first two years.

standardized instruments including the PPVT-III (Dunn & Dunn, 1997), PreLAS 2000 (Duncan & De Avila, 1998), *Preschool Comprehensive Test of Phonological & Print Processing* (Lonigan, Wagner, Torgesen, & Rashotte, 2002), and *Test of Early Mathematics Ability* (3rd ed.; Ginsburg & Baroody, 2003). The early reading assessment (74 items, $\alpha = .92$) assessed letter knowledge, word recognition, print conventions, and phonological awareness. The math assessment (58 items, $\alpha = .92$) assessed number sense, properties, operations, and probability.

In the LSAC-B, measures of child cognitive skills were drawn from wave 4, when children averaged 7 years of age and were typically in year 1 (first grade) of primary school. Wave 4 was chosen because at wave 3 about 80% of children had not yet entered primary school. Three measures of children's cognitive skills were assessed at age 7 using direct assessments and teacher reports: academic skills, matrix reasoning, and vocabulary. Children's academic skills were assessed with teacher reports using the Language and Literacy and Mathematical Thinking subscales from the *Academic Rating Scale* (ARS; National Centre for Educational Statistics, 2002). The Language and Literacy Scale ($\alpha = .96$) had 9 items (e.g., conveys ideas when speaking, reads fluently), that rate a child's performance in oral and written language according to a 5-point scale (*not yet=1, beginning=2, in progress=3, intermediate=4, and proficient=5*). The Mathematical Thinking Scale ($\alpha = .94$) used the same scale to rate a child's performance on 9 spatial and math items (e.g., creates and extends patterns, recognizes shape properties and relationships). Due to the high correlation between the two scores ($r = 0.81$), the measures were averaged to create one composite assessing teacher-reported

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language, literacy and mathematical thinking, termed "academic skills." The second measure of children's cognitive skills was matrix reasoning, measured with the Matrix Reasoning (MR) test from the Wechsler Intelligence Scale for Children, 4th edition (WISC-IV). This test of non-verbal intelligence (35 items) presents the child with an incomplete set of diagrams and requires them to select the picture that completes the set from five different options. Finally, children's receptive vocabulary skills were directly assessed by field interviewers using a shortened version of the Peabody Picture Vocabulary Test, Third Ed. (PPVT-III; Australian Council for Educational Research, 2000; Dunn & Dunn, 1997).

In the MCS, three direct assessments of cognitive skills assessed children's skills in pattern construction, word reading, and number skills. The measures of pattern construction and word reading were taken from the British Ability Scales (BAS), a battery of individually administered tests of children's cognitive abilities and educational achievements (Elliott, Smith & McCulloch, 1996; 1997; Hansen, 2012). Pattern construction assessed children's spatial awareness by measuring the accuracy and speed at which each child constructed a design by putting together flat squares or solid cubes. Word reading assessed children's English reading ability, requiring students to read aloud a series of words presented on a card. Finally, the measure of number skills was adapted from the National Foundation for Educational Research (NFER) Progress in Maths test and assessed children's knowledge of numbers, shapes, and measurement (Hansen, 2012).

Children's behavioral skills: Behavioral functioning was assessed in the ECLS-B at kindergarten entry via parent and teacher reports on items drawn from the Preschool and Kindergarten Behavior Scales-Second Edition (PKBS-2; Merrell, 2003), the Social Skills Rating Scales (SSRS; Gresham, Elliott, & Black, 1987) and items created specifically for the ECLS-B and the Family and Child Experiences Study (FACES). Parents and teachers separately rated the frequency of the child's engagement in behaviors on 5-point scales ("never" to "very often"). Factor analyses of these reports, along with a desire to select parallel items to the other datasets, led to the construction of three measures for each reporter. A composite of conduct problems assessed children's impulsive, disruptive, and aggressive behaviors (parent report, 5 items, $\alpha_{4-5} = .78$; teacher report, 4 items, $\alpha_{4-5} = .84$). A composite of prosocial skills assessed children's ability to make friends, acceptance of others, and sharing behaviors (parent report, 6 items, $\alpha_{4-5} = .79$; teacher report, 4 items, $\alpha_{4-5} = .80$). A composite of attention skills assessed children's attention, independence, task completion, and eagerness to learn (parent report, 4 items, $\alpha_{4-5} = .64$; teacher report, 6 items, $\alpha_{4-5} = .88$).

In both the LSAC-B and MCS, children's behavioral functioning was reported by both parents and teachers using items from the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997). The SDQ rates children's skills on a 3-point scale (*not true=0, somewhat true=1, and certainly true=2*). Factor analyses run separately by reporter derived three subscales assessing approaches to learning, prosocial behaviors, and conduct problems. The conduct problems subscales (LSAC-B: $\alpha_p = .60$, $\alpha_t = .76$; MCS: $\alpha_p = .60$, $\alpha_t = .75$) included 5 items covering children's temper tantrums, obedience,

fighting, lying or cheating, and stealing behaviors. The prosocial behaviors subscales (LSAC-B: $\alpha_p = .70$, $\alpha_t = .83$; MCS: $\alpha_p = .70$, $\alpha_t = .84$) were composed of 5 items assessing children's considerate, sharing, helpful, kind, and volunteering behaviors. Also composed of 5 items, the attention skills subscales (LSAC-B: $\alpha_p = .78$, $\alpha_t = .88$; MCS: $\alpha_p = .79$, $\alpha_t = .88$) assessed children's ability to sit still, fidgeting, distractibility, thinking before acting, and attention span. Across all datasets, higher scores indicate greater conduct problems, greater prosocial behaviors, and greater attention skills.

To help control for the differences in measurement and child age at assessment across the datasets for all of the outcomes, all raw outcome variables were adjusted for age by taking the residuals from a regression of the outcome score on child age in months and then standardized to have a mean of 0 and a standard deviation of 1 so that a one-unit difference represented a one standard deviation (SD) shift, following prior comparative child development research (e.g. Bradbury et al., 2010; Coley et al., in press).

Child characteristics. Child characteristics included age at wave 1 and age at assessment (both in months) and gender. In the ECLS-B an indicator variable designated whether children entered kindergarten at wave 5. Child low birthweight status was represented with an indicator of whether the child was born with low (less than 2500 grams) birthweight. An indicator noted whether the focal child was from a multiple birth. Child race/ethnicity was categorized in the ECLS-B as non-Hispanic White (reference), non-Hispanic African American, Hispanic, Asian, American Indian, and multiracial. Native Hawaiian or other Pacific Islanders were combined with American Indian or Alaska natives. In the LSAC-B, race/ethnicity was indicated with two dummy variables

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indicating having a parent of Asian origin or having an Aboriginal parent; an additional

variable designated whether the child had an immigrant parent. Child race/ethnicity was

captured in the MCS with dummy variables indicating White (reference), Black, Indian,

Pakistani/Bangladeshi, multiracial, or other. An additional variable indicated having an

immigrant parent. In addition to the demographic characteristics, children's behavioral

functioning was measured at wave 1. In the ECLS-B, a measure of temperament was

used with mother and observer reports on items from the Infant/Toddler Symptom

Checklist (ITSC; DeGangi, Poisson, Sickel, & Wiener, 1995) and the Behavior Rating

Scale (BSID-II; Bayley, 1993). Fifteen items assessing children's self-regulation,

attention, adaptability, and social engagement were standardized and averaged (α = .70),

with higher scores indicating more adaptability, engagement, and regulation. In the

LSAC-B, child temperament was measured with a shortened version of the Australian

revision of the Toddler Temperament Scale (TTS; Fullard, McDevitt & Carey, 1984),

with 4 items, rated on a six-point scale, assessing children's abilities in each of three

domains: approach, persistence, and reactivity (α = 0.98−0.99). These three domains

were combined into a composite measure with higher scores indicating an easier

temperament with more approachability, persistence, and regulation. The MCS measure

of temperament came from 14 questions from the Carey Infant Temperament Scale used

to assess the child's regularity, approachability, adaptability, and mood (α = 0.65; Carey

& McDevitt, 1977; 1995).

Early cognitive ability was also assessed in each dataset at wave 1. The ECLS-B

used the *Bayley Short Form-Research Edition* (Bayley, 1993; Flanagan & West, 2004)

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measuring exploration of objects, babbling, early problem-solving, and preverbal communication (α = .80). In the LSAC-B, the *Communication and Symbolic Behavior Scales Developmental Profile: Infant-Toddler Checklist* (Wetherby & Prizant, 2001) was used, a 24-item parent report scale (α = .89) measuring children's early social, language and cognitive skills (Sanson, Misson, Hawkins, & Berthelsen, 2010). Finally, early cognitive ability was measured in the MCS with 8 items from the Denver Developmental Screening Test, assessing communication skills and fine and gross motor coordination, as well as 5 items from the MacArthur Communicative Development Inventories, identifying early communication gestures (α = .65; Fenson et al., 1993; Frankenburg, Dodds & Denver, 1967).

Maternal and household characteristics. Several maternal and household characteristics were also included as covariates, including wave 1 measures of maternal age and maternal education, categorized as less than high school, high school (omitted), some college, and a college or graduate degree. Two aspects of maternal employment status were included in the models: an indicator designating mothers that were employed during the year before the child was born and an indicator designating mothers' employment status at the wave of child assessments. A dichotomous variable indicated whether the primary language of the household was non-English at wave 1. Several time-varying characteristics were measured at each wave of data collection (waves 1, 2, 3, and 4) and aggregated over time by averaging for continuous variables and categorizing for categorical variables. Household income, excluding the mother's income from employment, was measured in units of 10,000 and averaged over all of the waves. Family

structure covariates included maternal marital status, measured with indicators of whether

respondent was consistently married over the study period or married at some waves

(versus never married across the waves); if the mother was cohabitating at any wave; the

number of non-partner adults in the household; and three measures of other children in

the household: the number of siblings at wave 1, an indicator for a new child born by

wave 2, and an indicator for a new child born between wave 2 and wave 4. Two

dichotomous variables indicated whether the mother received welfare some or all of the

study waves (versus at no waves). Finally, paternal employment was assessed with two

dichotomous variables indicating a working partner in the household at some or all of the

study waves (versus at no waves).

Process Variables. This study examined three constructs theorized to explain the

associations between early maternal employment and children's outcomes: time, stress,

and money.

Time was assessed with two sets of measures. First, mothers' time in employment

was categorized as part time ($<$ 30 hours) or full time ($\geq$ 30 hours per week) at the first

report of employment. Second, a continuous measure of children's weekly hours in child

care wave 2, measured in units of 10's, was used to assess parents' time away from

children.

Maternal stress was measured in all datasets with a measure of maternal depression

at wave 1 (maternal depression was not assessed in the ECLS-B at wave 2). For the

ECLS-B, a shortened version of the Center for Epidemiologic Study Depression Scale

(CES-D; Radloff, 1977) was used. This measure includes 12 items asking about mothers'

depression symptoms in past week (*0=rarely or never, 1=some or little, 2=occasionally or moderate, 3=most or all*) which were added to obtain a total scale of depression ranging from 0 to 36 ($\alpha = .89$). Scores of The Kessler-6 (K6) was used in the LSAC-B, which included 6 items scored from 1 to 5 (*1=all of the time, 2=most of the time, 3=some of the time, 4=a little of the time, 5=none of the time*). The 6 items ($\alpha = .83$) were recoded to a 0 to 4 scale and then reverse coded so that higher numbers indicated greater depressive symptoms and 0 indicated no depressive symptoms, mirroring the measures of the other datasets. The 6 items were then added to obtain a continuous measure ranging from 0 to 24 (Kessler et al., 2002). In the MCS, maternal depression was assessed using the Malaise Inventory, a shortened version of the Cornell Medical Index Questionnaire (Rutter, Tizard & Whitmore; 1970). Nine of the original 24 items used in studies of general population samples were used in the U.K. dataset (Sacker, Quigley, & Kelly, 2006). The 9 dichotomous items (*0=no, 1=yes*) were added to create a continuous measure ranging from 0 to 9 ($\alpha = .73$).

Finally, money also was measured in two ways. Mothers' employment wages, measured in 10,000 units per year, were assessed at wave 2. In addition, mothers' non-employment sources of income using the nonmaternal household income, averaged over waves 1 through 4, was considered.

CHAPTER 4: RESULTS

Characteristics of Children and Mothers Associated with Early Employment

Patterns in the U.S., Australia, and U.K.

United States. Table 3 presents descriptive statistics for the ECLS-B. The

majority of mothers in the U.S. reported early, full-time employment while later entry

into employment was relatively uncommon. Just under 1/3 (31%) of mothers reported no

employment in the 2 years following the focal child's birth, while 58% of mothers were

first employed prior to the child's 9th month, and 11% were first employed before 2 years.

Regarding employment intensity in the ECLS-B sample, 20% of mothers worked part-

time and 48% full-time. These prevalence rates are similar to those reported in national

employment statistics from the same year, supporting the validity of these measures: in

2001, the Bureau of Labor Statistics (BLS) found that 55% of mothers with a child under

the age of 1 were employed, 66% of mothers with a child under the age of 2 were

employed while 34% of mothers with children under the age of 2 were not employed

(BLS, 2003).

The second through fourth columns of Table 3 present the sample descriptives for

the different employment patterns: non-employed, first employed before 9 months after

childbirth, and first employed before 2 years after childbirth. Significant differences

between the employment groups are designated with matched superscripts. Numerous

differences in mother and family characteristics emerged between employment groups.

Several patterns were most prominent. First, earlier re-entry into employment was

predictive of later engagement in the labor market; five years later, 63% of mothers

employed by 9 months were working, 53% of mothers who entered employment later but before 2 years were working, and only 32% of the mothers who were non-employed for the first 2 years had entered employment. Second, children of mothers who entered employment before 9 months were generally healthier with fewer born low birthweight and higher early cognitive and behavioral scores, though no differences emerged in child age or gender. Employment patterns differed across racial/ethnic groups: early employment was more common among White and African American children with non-employment being more common among Hispanic children. There were also notable differences when looking at maternal characteristics. Mothers who were employed before 9 months generally were more educated, had the lowest rates of welfare receipt, fewer children, and were less likely to live with additional adults. Those who started employment between 9 months and 2 years were the least likely to be married and have a working spouse at all waves of the data collection while they were the most likely to be cohabitating with a partner. In contrast, non-employed mothers were the most likely to be married and have a working spouse over the entire study as well as having, on average, more children at wave 1 and the highest likelihood of having another child by wave 2. In sum, these patterns generally suggest that U.S. mothers who entered employment soon after childbirth, before 9 months, were more advantaged with healthier children and more human and financial capital, while those employed after 9 months had the fewest additional sources of support. This highlights the importance of selection factors in understanding early maternal employment.

Differences on the process variables between each of the employment groups also suggested that these constructs may be important in understanding the implications of early maternal employment for children and families, although not all of these patterns support the theoretical models discussed above. As suggested, children of employed mothers spent more hours in child care than children of non-employed mothers. Contrary to theoretical arguments, maternal depression was lowest among children of mothers employed before 9 months. Income from maternal employment was higher among both groups of employed mothers while household income from non-maternal work sources was lower in both employed groups than among families with non-employed mothers. Approximately 3% of non-employed mothers had some income from employment at wave 2, presumably due to paid maternal leave or residual income from prior employment.

Table 3
United States: Maternal Employment and Demographic Characteristics of the Sample (n=10,100)

	Full sample n=10,100	Non-employment, n=3,200	First emp before 9 mths, n=5,850	First emp before 2 yrs, n=1,050
Employment Timing[a]				
Never employed	31.63	-	-	-
First emp before 9 mths	57.83	-	-	-
First emp before 2 yrs	10.54	-	-	-
Employment History Covariates				
Employed year before birth[a]	73.30	41.96*ab*	89.50*ac*	59.53*bc*
Employed at W4/5[a]	52.06	31.95*ab*	62.93*ac*	52.76*bc*
Child Characteristics				
Age of child W1 (in months)	10.47(3.01)	10.45(3.06)	10.46(2.93)	10.59(3.20)
Age of child W4/5 (in months)	75.08(9.19)	75.16(9.35)	74.91(9.11)	75.73(9.11)
Kindergarten assessment W5[a]	37.15	37.22	37.02	37.72
Boy[a]	51.14	50.86	50.93	53.11
Child was low birthweight[a]	1.28	1.57*a*	1.00*ab*	1.94*b*
Twin[a]	2.92	3.58*a*	2.46*ab*	3.46*b*
Race[a]				
White	53.54	50.89*a*	54.83*a*	51.78
Hispanic	25.51	30.64*ab*	22.62*a*	25.90*b*
African American	13.73	10.67*ab*	16.00*a*	15.42*b*
Asian	2.76	3.69*ab*	2.24*a*	2.79*b*
Native American	0.64	0.65	0.62	0.73
Multi-race	3.82	3.15*a*	4.32*a*	3.15
Adaptive temperament W1	0.06(0.49)	0.03(0.51)*a*	.08(0.48)*ab*	0.02(0.51)*b*
BSF-R mental score W1	50.23(14.96)	49.74*a*	50.60*ab*	49.66*b*
Maternal Characteristics				
Age of mother (in years)	28.21(6.39)	28.29(6.55)*a*	28.35(6.25)*b*	27.18(6.50)*ab*
Education[a]				
Less than high school	19.58	28.29*a*	13.99*ab*	24.08*b*
High school graduate or GED	29.59	27.50*a*	29.59*b*	35.94*ab*
Some college or Associate degree	26.55	22.51*a*	29.38*ab*	23.14*b*
Bachelor's or graduate degree	24.28	21.70*ab*	27.04*ac*	16.84*bc*
Non-English speaking household[a]	36.37	44.61*ab*	31.83*a*	36.52*b*
Married all waves[a]	58.77	64.61*ab*	56.78*ac*	52.11*bc*
Married some waves[a]	17.34	13.48*ab*	18.91*a*	20.34*b*
Never married[a]	23.89	21.91*a*	24.31	27.56*a*
Cohab any waves[a]	5.36	4.43*a*	5.40*b*	7.92*ab*
Number of non-parter adults in hh W1-4/5	0.41(0.77)	0.40(0.75)*a*	0.41(0.72)*b*	0.49(0.76)*ab*
Number of siblings W1	0.99(1.15)	1.17(1.22)*ab*	0.88(1.07)*ac*	1.05(1.25)*bc*
New sibling W2[a]	19.52	23.87*ab*	17.65*b*	16.70*a*
New sibling W3-W4/5[a]	49.27	49.04	49.46	48.95
Welfare all waves[a]	1.17	2.12*a*	0.62*a*	1.40
Welfare some waves[a]	15.65	18.35*a*	13.28*ab*	20.53*b*
No welfare[a]	83.18	79.53*a*	86.09*ab*	78.07*b*
Working parter all waves[a]	52.37	57.69*ab*	51.16*ac*	42.97*bc*
Working parter some waves[a]	35.44	32.04*ab*	36.08*bc*	42.19*ac*
No working partner[a]	12.19	10.27*ab*	12.76*a*	14.84*b*
Process Variables				
Intensity of first employment[a]				
Part time	20.18	-	79.88	20.12
Full time	48.18	-	86.55	13.45
Child care hours W2 (10s/wk)	2.58(4.16)	1.45(4.21)*ab*	3.08(3.89)*a*	3.25(4.52)*b*
Maternal depression W1	7.75(11.11)	8.21(11.06)*a*	7.32(10.80)*ab*	8.74(11.60)*b*
Maternal wages W2 (10,000s/yr)	3.23(6.15)	1.60(5.52)*ab*	3.89(6.07)*a*	4.49(7.05)*b*
Non-mother hh inc avg W1-4/5 (10,000s/yr)	3.24(3.27)	4.00(3.85)*ab*	2.92(3.44)*a*	2.68(2.84)*b*
Child Characteristics W4/5				
Reading Skills	0.00(1.00)	-0.08(1.03)*a*	0.07(0.97)*ab*	-0.09(1.00)*b*
Math Skills	0.04(1.00)	-0.03(1.03)*a*	0.10(0.97)*ab*	-0.07(1.02)*b*
Conduct Problems, Parent report	-0.03(1.00)	-0.05(1.02)	-0.03(0.99)	0.03(1.02)
Prosocial Skills, Parent report	0.07(1.00)	0.00(1.02)*a*	0.11(0.98)*a*	0.03(1.02)
Attention Skills, Parent report	0.03(1.00)	0.10(1.01)*ab*	0.01(0.99)*a*	-0.05(1.03)*b*
Conduct Problems, Teacher report	-0.01(1.00)	-0.07(0.99)*ab*	0.02(1.00)*a*	0.08(1.04)*b*
Prosocial Skills, Teacher report	0.06(1.00)	0.05(1.01)	0.07(0.99)	0.01(1.01)
Attention Skills, Teacher report	0.03(1.00)	0.08(0.99)*a*	0.03(0.99)*b*	-0.10(1.04)*ab*

[a]Proportions

Note: Within each row, lowercase letters denote differences between never employed, first employed before 9 months, and first employed before 2 years at the p<.05 level. Percentages may not add up to 100 due to rounding.

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Australia. Table 4 presents descriptive statistics for the LSAC-B. In contrast to the U.S., the majority of Australian mothers did not report any employment in the 2 years after childbirth while those that did enter, entered later and with fewer hours. Almost 2/3s (61%) of mothers reported no employment in the two years following the focal child's birth, while 18% of mothers were first employed prior to the child's 9th month, and 20% were first employed before 2 years. Regarding employment intensity in the LSAC-B, 29% of mothers worked part-time and 9% full-time.

Similar to the previous table, the second through fourth columns of Table 4 present the sample descriptives for the different employment patterns with significant differences between the employment groups designated with matched superscripts. There was a slightly different pattern of results for Australian families. First, while fewer Australian mothers entered the labor force by two years, more were employed five years later (63% in total) and those who had entered in the first two years were even more likely to be employed long-term. Second, children looked very similar across the three employment groups at wave 1, although children with more adaptable temperaments had mothers who were employed earlier while children with higher early cognitive scores had mothers more likely to be non-employed by 2 years. Finally, mothers in the two employment groups looked very similar and, on average, were older, less likely to be Asian, Aboriginal, immigrant, or non-English speaking, and had greater levels of education, higher marital rates and presence of a working spouse, fewer children, and lower welfare use than non-employed mothers. In sum, these patterns generally suggest that Australian mothers who entered employment anytime in the first two years after

childbirth were more advantaged with healthier children and more human and financial capital.

Overall, the differences on the process variables also indicate a pattern whereby Australian mothers employed anytime in the first two years were more advantaged than those non-employed with little difference between the employed groups. As expected, children of employed mothers spent more hours in child care than children of non-employed mothers. Income from maternal employment was also higher among both groups of employed mothers. Contrary to expectations, maternal depression was highest among non-employed mothers while non-maternal household income was lowest among these mothers.

Table 4
Australia: Maternal Employment and Demographic Characteristics of the Sample (n=5,093)

	Full sample n=5,093	Non-employment, n=2,101	First emp before 9 mths n=1,912	First emp before 2 yrs n=1,080
Employment Timing[a]				
Never employed	61.89	-	-	-
First emp before 9 mths	17.83	-	-	-
First emp before 2 yrs	20.28	-	-	-
Employment History Covariates				
Employed year before birth[a]	61.64	45.95ab	91.32ab	83.41bc
Employed at W4[a]	63.05	54.09ab	79.99ab	75.51bc
Child Characteristics				
Age of Child at W1 (in months)	8.85(2.57)	8.87(2.60)a	8.64(2.44)ab	8.96(2.58)b
Age of Child at W4 (in months)	81.98(3.51)	82.05(3.54)a	81.58(3.40)ab	82.12(3.51)b
Boy[a]	51.17	51.50	52.91a	48.63a
Child was low birthweight[a]	5.95	6.57	5.19	4.76
Twin[a]	3.13	3.19	2.59	3.41
Adaptive temperament W1	4.45(0.62)	4.43(0.63)a	4.53(0.59)ab	4.45(0.61)b
Child CSBS score W1	25.87(9.70)	26.12(9.99)a	25.17(9.02)a	25.69(9.46)
Maternal Characteristics				
Age of Mother (in years)	30.89(5.41)	30.21(5.81)ab	31.93(4.62)a	32.06(4.53)b
Education[a]				
Less than high school	21.30	28.23ab	9.03a	10.92b
High school graduate or GED	12.46	5.52a	2.97b	4.03
Some college or Associate degree	37.07	37.74	38.27	33.98
Bachelor's or graduate degree	29.17	20.50ab	43.03a	43.43b
Parent Asian[a]	8.52	9.88ab	5.63a	6.91b
Parent Indigenous[a]	4.50	6.37ab	2.08a	0.92b
Immigrant household[a]	31.49	33.01a	28.85a	29.17
Non-English speaking household[a]	15.62	18.14ab	9.65ac	13.20bc
Married all waves[a]	62.15	55.40ab	71.20a	74.78b
Married some waves[a]	17.14	18.85ab	16.12a	12.82b
Never married[a]	20.71	25.75ab	12.67a	12.39b
Cohab any waves[a]	22.19	25.55ab	18.01a	15.61b
Number of non-parter adults in hh W1-4	0.16(0.42)	0.18(0.50)ab	0.12(0.36)a	0.13(0.40)b
Number of siblings W1	0.99(1.07)	1.13(1.17)ab	0.75(0.89)a	0.76(0.81)b
New sibling W2[a]	35.01	36.81a	34.38b	30.05ab
New sibling W3-W4[a]	38.52	41.16ab	35.77a	32.90b
Welfare all waves[a]	7.86	11.61ab	1.36a	2.14b
Welfare some waves[a]	44.88	52.52ab	32.69a	32.29b
No welfare[a]	47.26	35.87ab	65.95a	65.57b
Working parter all waves[a]	57.91	54.07ab	65.53a	62.94b
Working parter some waves[a]	35.19	37.00ab	31.35a	33.02b
No working partner[a]	6.90	11.78ab	3.33a	4.74b
Process Variables				
Intensity of first employment[a]				
Part time	29.04	-	44.97	55.03
Full time	9.06	-	52.54	47.46
Child care hours W2 (10s/wk)	1.34(1.39)	1.04(1.27)ab	1.87(1.49)a	1.77(1.40)b
Maternal depression W1	0.62(0.58)	0.67(0.61)ab	0.53(0.52)a	0.58(0.53)b
Maternal wages W2 (10,000s/yr)	2.24(2.21)	1.75(1.70)ab	3.35(2.76)ac	2.79(2.45)bc
Non-mother hh inc avg W1-4/5 (10,000s/yr)	5.69(3.68)	5.31(3.70)ab	6.22(3.58)a	6.39(3.60)b
Child Characteristics W4				
Teacher Academic	-0.03(1.00)	-0.13(1.00)ab	0.13(1.00)a	0.16(0.92)b
Matrix Reasoning	-0.02(1.00)	-0.10(1.01)ab	0.15(0.98)a	0.10(0.97)b
Vocabulary	-0.01(1.00)	-0.16(1.01)ab	0.15(0.99)a	0.15(0.94)b
Conduct Problems, Parent report	-0.00(1.00)	0.10(1.03)ab	-0.12(0.94)a	-0.04(0.94)b
Prosocial Skills, Parent report	-0.00(1.00)	-0.03(1.02)	-0.02(0.99)	0.03(0.97)
Attention Skills, Parent report	-0.00(1.00)	-0.07(1.00)ab	0.02(1.01)a	0.05(0.98)b
Conduct Problems, Teacher report	0.00(1.00)	0.06(1.04)a	-0.01(0.98)	-0.09(0.90)a
Prosocial Skills, Teacher report	0.00(0.99)	-0.05(0.99)a	0.01(1.00)	0.06(0.97)a
Attention Skills, Teacher report	0.00(1.00)	-0.07(1.02)a	0.01(0.99)	0.09(0.95)a

[a]Proportions

Note: Within each row, lowercase letters denote differences between never employed, first employed before 9 months, and first employed before 2 years at the p<.05 level. Percentages may not add up to 100 due to rounding.

United Kingdom. Table 5 presents descriptive statistics for the MCS. Mothers in the U.K. were most likely to either enter employment early or remain out of the labor force for the first two years. Equal proportions of mothers reported entry into employment by 9 months (42%) as did those who reported no employment during the first two years (42%) with the remaining 1/6 of the sample (16%) entered employment between 9 months and 2 years. While early employment rates were relatively high, the majority of early work was of low intensity; 42% of mothers worked part-time and 19% full-time.

As with the other two countries, numerous differences in mother and family characteristics emerged between employment groups. Regarding later employment patterns, earlier re-entry into employment was most predictive of later engagement in the labor market; five years later, 83% of mothers employed by 9 months were working, 76% of mothers who entered employment later but before two years were working, and only 46% of the mothers who were non-employed for the first two years had entered employment. Like the U.S., children of mothers who entered employment before 9 months were generally healthier with fewer born with low birthweight. There were also differences across race/ethnic groups with mothers of White children most likely to be employed before 9 months, while racial/ethnic minorities were more likely to be non-employed with the exception of mothers of Indian children who started employment with the greatest frequency between 9 months and 2 years. Turning to maternal characteristics, similar to the U.S., British mothers who were employed before 9 months generally were older and more educated. However, there were also some similarities to Australian

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mothers in that British mothers in both employment groups were more likely to be married and have a working spouse in comparison to non-employed mothers. Non-employed mothers were more likely to be cohabitating, had more non-partner adults living in their household, and were more likely to be receiving welfare. Non-employed mothers also had more children than employed mothers at each time point. In sum, these patterns generally suggest that British mothers who entered employment soon after childbirth, before 9 months, were the most advantaged with healthier children and more human and financial capital. Mothers who entered employment between 9 months and two years were more advantaged in comparison to non-employed mothers.

Turning to differences in the process variables, children of mothers employed before 9 months spent the highest number of hours each week in child care and these mothers had the highest wages and lowest levels of depression. Interestingly, household income excluding mothers' income was higher among both employed groups in comparison to the nonemployed group.

Table 5

United Kingdom: Maternal Employment and Demographic Characteristics of the Sample (n=18,497)

	Full sample n=18,497	Non-employment n=7,748	First emp before 9 mths n=7,813	First emp before 2 yrs n=2,936
Employment Timing[a]				
Never employed	41.89	-	-	-
First emp before 9 mths	42.24	-	-	-
First emp before 2 yrs	15.87	-	-	-
Employment History Covariates				
Employed year before birth[a]	66.64	47.10*ab*	89.94*ac*	76.55*bc*
Employed at W4[a]	66.82	46.46*ab*	83.37*ac*	76.48*bc*
Child Characteristics				
Age of Child at W1 (in months)	9.22(0.53)	9.21(0.53)	9.23(0.54)	9.21(0.53)
Age of Child at W4 (in months)	89.17(3.06)	89.25(3.06)	89.10(3.01)	89.14(3.14)
Boy[a]	51.29	51.66	51.71	49.19
Child was low birthweight[a]	6.78	7.85*a*	5.17*ab*	8.23*b*
Twin[a]	1.44	1.59*a*	0.97*ab*	2.31*b*
Race/ethnicity[a]				
White	87.08	81.24*ab*	92.29*ac*	88.70*bc*
Black	2.50	2.90*a*	2.00*ab*	2.77*b*
Indian	1.81	1.81*a*	1.45*b*	2.75*ab*
Pakistani/Bangladeshi	4.14	8.34*ab*	0.92*ac*	1.62*bc*
Multiracial	3.15	3.67*a*	2.73*a*	2.84
Other	1.32	2.03*ab*	0.61*ac*	1.32*bc*
Adaptive temperament W1	0.03(0.48)	-0.05(0.51)*ab*	0.08(0.44)*ac*	0.06(0.47)*bc*
Social & communication skills W1	-0.01(0.21)	-0.01(0.23)*a*	-0.00(0.20)*ab*	-0.01(0.21)*b*
Maternal Characteristics				
Age of Mother (in years)	29.60(5.96)	28.30(6.22)*ab*	30.70(5.32)*ac*	30.09(5.93)*bc*
Education[a]				
Less than high school	9.95	15.22*ab*	5.48*ac*	7.94*bc*
High school graduate	37.62	44.04*ab*	31.94*ac*	35.78*bc*
Some college or Associate degree	12.87	12.15*a*	13.53*a*	13.04
Bachelor's or graduate degree	39.56	28.60*ab*	49.05*ac*	43.24*bc*
Immigrant household[a]	14.21	18.57*ab*	10.25*ac*	13.24*bc*
Non-English speaking household[a]	10.36	15.59*ab*	5.93*ac*	8.38*bc*
Married all waves[a]	49.51	40.49*ab*	57.23*ac*	52.76*bc*
Married some waves[a]	22.60	23.29	22.33	21.51
Never married[a]	27.89	36.22*ab*	20.43*ac*	25.73*bc*
Cohab any waves[a]	30.89	33.13*a*	28.65*a*	30.92
Number of non-parter adults in hh W1-4	0.14(0.47)	0.19(0.54)*ab*	0.11(0.39)*ac*	0.13(1.63)*bc*
Number of siblings W1	0.92(1.09)	1.12(1.24)*ab*	0.71(0.87)*ac*	0.90(0.99)*bc*
New sibling W2[a]	34.33	41.23*ab*	32.30*ac*	21.78*bc*
New sibling W3-W4[a]	46.09	53.01*ab*	41.96*ac*	38.80*bc*
Welfare all waves[a]	2.74	5.85*ab*	0.38*ac*	0.79*bc*
Welfare some waves[a]	27.39	47.05*ab*	9.68*ac*	22.66*bc*
No welfare[a]	69.87	47.10*ab*	89.94*bc*	76.55*bc*
Working parter all waves[a]	58.13	43.23*ab*	71.20*ac*	62.69*bc*
Working parter some waves[a]	30.90	36.84*ab*	25.03*ac*	30.83*bc*
No working partner[a]	10.97	19.93*ab*	3.78*ac*	6.48*bc*
Process Variables				
Intensity of first employment[a]				
Part time	41.78	-	68.02	31.98
Full time	19.05	-	70.13	29.87
Child care hours W2 (10s/wk)	1.12(1.66)	0.30(1.05)*ab*	2.00(1.75)*ac*	0.95(1.58)*bc*
Maternal depression W1	1.63(1.79)	1.80(1.94)*ab*	1.46(1.60)*ac*	1.60(1.74)*bc*
Maternal wages W2 (10,000s/yr)	2.21(2.54)	1.54(2.57)*ab*	2.77(2.37)*ac*	2.48(2.45)*bc*
Non-mother hh inc avg W1-4/5 (10,000s/yr)	2.26(1.55)	2.13(1.52)*ab*	2.36(1.55)*a*	2.36(1.63)*b*
Child Characteristics W4				
Pattern Construction	-0.06(0.84)	-0.17(0.87)*ab*	0.04(.80)*ac*	-0.00(0.83)*bc*
Word Reading	-0.04(0.85)	-0.18(0.87)*ab*	0.08(0.80)*a*	0.04(0.81)*b*
Number Skills	-0.05(0.85)	-0.19(0.87)*ab*	0.06(0.81)*a*	0.01(0.83)*b*
Conduct Problems, Parent report	-0.11(0.84)	0.01(0.89)*ab*	-0.22(0.77)*a*	-0.18(0.81)*b*
Prosocial Skills, Parent report	-0.09(0.84)	-0.15(0.87)*ab*	-0.04(0.81)*a*	-0.04(0.82)*b*
Attention Skills, Parent report	-0.07(0.84)	-0.17(0.86)*ab*	0.00(0.81)*a*	-0.02(0.84)*b*
Conduct Problems, Teacher report	-0.17(0.76)	-0.10(0.80)*ab*	-0.23(0.71)*a*	-0.23(0.73)*b*
Prosocial Skills, Teacher report	-0.14(0.76)	-0.21(0.78)*ab*	-0.09(0.74)*a*	-0.08(0.75)*b*
Attention Skills, Teacher report	-0.13(0.77)	-0.20(0.78)*ab*	-0.08(0.75)*a*	-0.10(0.76)*b*

[a]Proportions

Note: Within each row, lowercase letters denote differences between never employed, first employed before 9 months, and first employed before 2 years at the p<.05 level. Percentages may not add up to 100 due to rounding.

Maternal Employment Timing: Predicting Child Functioning with Bivariate Models

Bivariate associations between early maternal employment timing and children's cognitive and behavioral skills are presented in the bottom panels of the prior tables. Across all of the countries, there were many patterns to suggest that maternal employment was significantly associated with children's cognitive and behavioral skills. Results from the U.S., presented in the bottom panel of Table 3, suggested some positive benefits of both very early employment and non-employment for children. Specifically, children of mothers employed before 9 months had higher reading and math skills than children of later- and non-employed mothers. These children also had higher parent-reported prosocial skills in comparison to non-employed mothers. Children of non-employed mothers had, on average, higher behavioral skills in comparison to mothers in the two employed groups with higher parent and teacher reported attention skills and lower teacher reported conduct problems. As a whole, these results suggest a pattern where employment before 9 months was generally associated with higher cognitive skills for American children while non-employment had several positive links with behavioral skills. Cognitive and behavioral skills after school entry were the lowest among children of mothers employed between 9 months and 2 years.

Findings from Australia, presented in the bottom panel of Table 4, suggested a different pattern of links between early employment and later cognitive and behavioral skills. While there was no significant difference in the cognitive skills of children of mothers in the two employed groups, both groups had significantly higher teacher reported academic, matrix reasoning, and vocabulary skills in comparison to the non-

employed group. There were also no differences in the behavioral skills of children between the two employed groups. Across all of the measures except for one, children of mothers employed between 9 months and two years had higher behavioral skills than children of non-employed mothers. Children of mothers employed before 9 months also had lower conduct problems and higher attention skills, both parent reported, in comparison to their peers with non-employed mothers. There were no differences in parent-reported prosocial skills across the groups. In sum, any employment in the first two years was associated with higher cognitive and behavioral skills after school entry for Australian children with employment beginning after 9 months having particularly positive associations with behavioral skills. These findings contrast with the results from the U.S. that has found employment after 9 months linked with lower cognitive and behavioral skills.

Findings from the U.K., presented in the bottom panel of Table 5, suggest a pattern in which any employment in the first two years was associated with higher cognitive and behavioral skills after school entry. This pattern was even more pronounced than it was for Australian children, extending across every outcome with only one significant difference between the two employed groups (pattern construction skills were highest among children of mothers employed before 9 months).

Overall, these bivariate results suggest that there are significant bivariate associations between mothers' employment timing and children's cognitive and behavioral skills after school entry in all three of the countries. These results also suggest that the links between employment timing and later outcomes may vary across the

countries. Specifically, any employment before two years was associated with positive

outcomes for Australian and British children in comparison to non-employment during

the first two years. This pattern was particularly strong across all of the outcomes for

British children. Later employment, that is after 9 months and before 2 years, was

generally associated with best outcomes for Australian children's behavioral skills. For

American children, employment before 9 months was associated with higher cognitive

skills while non-employment had several positive links with behavioral skills. Cognitive

and behavioral skills after school entry were the lowest among American children of

mothers employed between 9 months and 2 years.

Maternal Employment Timing: Predicting Child Functioning while Addressing Potential Selection Bias Using a Limited Selection of Covariates

Given the notable differences between employed and non-employed mothers and

their children observed earlier, a concern for these bivariate results is that selection

factors rather than maternal employment per se may explain the associations with

children's cognitive and behavioral skills. To address this significant concern, three sets

of models were conducted incorporating numerous techniques to address potential

selection bias.

The first sets of models (seen in Tables 6, 7, and 8) were estimated using ordinary

least squares (OLS) regression with a limited selection of covariates known to be

associated with selection into employment from prior research (e.g. Hill et al., 2005) and

seen as exogenous to post-childbirth maternal employment. These included the wave 1

measures of child age, gender, low-birthweight status, and twin status; race/immigrant

status, non-English speaking household, and number of siblings; child age and kindergarten status at the outcome wave; mother's age, education, and work status in the year prior to the child's birth; as well as time-varying measures of mothers' marital status, cohabitation status, and the number of non-partner adults in the household from waves 1 through 4, as shown in Equation 1.

1. Child Outcomes$_{4i}$ = B_0 + B_1Maternal Employment$_1$ + B_2Maternal$_{1-4i}$ + B_3Child$_{1-4i}$ + ε_i

United States. With covariates included, results in Table 6 indicate that early maternal employment showed few significant associations with American children's functioning after kindergarten entry with the exception of attention skills. Children of mothers who entered employment before 9 months had lower reports of attention skills from parents than their peers whose mothers did not enter employment in the first two years. Children of mothers who entered employment later but before 2 years, in contrast, had lower reports of attention skills according to teacher reports in relation to their peers with non-employed mothers during this timeframe. Both of these differences were very small in size, representing .10 and .11 standard deviation (SD) units respectively. No significant associations emerged in relation to children's reading, math, conduct problems or prosocial skills.

Australia. Turning to the LSAC-B, results in Table 7 indicate that early maternal employment also showed few significant associations with Australian children's functioning with the exception of matrix reasoning skills. Children of mothers who entered employment before 9 months had higher matrix reasoning skills than their peers whose mothers did not enter employment in the first two years (.10 SDs). No significant

associations emerged in relation to children's academic or vocabulary skills or in relation to either parent or teacher reports of children's behavioral skills.

United Kingdom. There was more evidence of links between maternal employment timing and children's cognitive and behavioral skills after school entry in the MCS when a limited selection of covariates were included in the model. Results in Table 8 indicate that employment begun after 9 months and before 2 years was linked with higher assessed pattern construction (.05 SDs), word reading (.06 SDs), and number skills (.06 SDs) in comparison to non-employment before 2 years. Entry into employment during this time period was also associated with lower parent reports of conduct problems (.07 SDs) in relation to non-employment before 2 years. No significant associations emerged in relation to children's prosocial or attention skills or any teacher reports of behavioral skills.

Table 6

United States: Influence of the Timing of Employment after Birth on the Development of Children's Cognitive and Behavioral Skills, n=10,100

Independent Variables	Cognitive Skills		Behavioral Skills, Parent Report			Behavioral Skills, Teacher Report		
	Reading	Math	Conduct	Prosocial	Attention	Conduct	Prosocial	Attention
Timing of first employment								
First emp before 9 mths	0.03(0.04)	0.02(0.03)	0.06(0.04)	0.01(0.04)	-0.10(0.03)**	0.06(0.04)	-0.03(0.04)	-0.04(0.04)
First emp before 2 yrs	0.02(0.05)	-0.00(0.05)	0.05(0.05)	0.00(0.06)	-0.10(0.05)+	0.08(0.05)+	-0.02(0.06)	-0.11(0.05)*
Employment History Covariates								
Mother emp before birth	0.04(0.04)	0.04(0.04)	-0.07(0.04)+	0.05(0.04)	-0.01(0.04)	0.01(0.05)	0.05(0.04)	0.00(0.04)
Child Covariates								
Age W1	0.02(0.03)	0.01(0.02)	-0.04(0.02)+	0.04(0.02)	0.01(0.03)	-0.03(0.03)	0.02(0.03)	-0.00(0.03)
Age W4/5	0.01(0.02)	0.00(0.02)	0.01(0.02)	0.01(0.02)	0.01(0.02)	-0.01(0.02)	0.00(0.02)	0.01(0.02)
Boy	-0.14(0.03)**	-0.05(0.03)	0.36(0.03)**	-0.34(0.03)**	-0.38(0.03)**	0.47(0.03)**	-0.41(0.03)**	-0.53(0.03)**
Low birthweight	-0.29(0.05)**	-0.48(0.04)**	0.15(0.04)**	-0.25(0.05)**	-0.34(0.04)**	0.07(0.06)	-0.24(0.05)**	-0.36(0.06)**
Twin	-0.05(0.03)	-0.14(0.03)**	0.03(0.04)	-0.03(0.04)	0.04(0.03)	0.03(0.05)	-0.07(0.05)	-0.04(0.04)
Black	0.01(0.04)	-0.25(0.05)**	-0.04(0.05)	0.04(0.05)	0.10(0.04)*	0.13(0.07)+	-0.00(0.06)	-0.06(0.06)
Hispanic	-0.09(0.05)+	-0.23(0.05)**	-0.07(0.05)	0.07(0.05)	0.09(0.04)*	-0.10(0.06)+	-0.03(0.05)	0.04(0.05)
Asian	0.39(0.06)**	0.24(0.05)**	-0.07(0.05)	-0.16(0.06)**	0.10(0.06)	-0.16(0.08)*	-0.19(0.07)**	0.15(0.07)*
Native American	-0.20(0.09)*	-0.31(0.08)**	0.07(0.09)	0.07(0.10)	-0.02(0.09)	0.01(0.11)	-0.04(0.12)	0.04(0.09)
Multi-race	0.05(0.08)	-0.03(0.06)	-0.09(0.07)	-0.04(0.07)	-0.07(0.08)	0.01(0.09)	-0.01(0.10)	-0.03(0.07)
Kind assessment W5	0.16(0.04)**	0.15(0.04)**	-0.02(0.04)	0.03(0.04)	0.03(0.04)	-0.03(0.04)	0.06(0.04)	0.06(0.04)
Mother/Family Covariates								
Age of mother	0.05(0.02)**	0.05(0.02)**	-0.05(0.02)*	-0.08(0.02)**	0.02(0.02)	-0.02(0.02)	-0.00(0.02)	0.05(0.02)*
Less than high school	-0.22(0.04)**	-0.24(0.04)***	0.10(0.05)+	-0.11(0.05)*	-0.06(0.05)	0.06(0.06)	-0.06(0.04)	-0.05(0.05)
Some college	0.22(0.04)**	0.21(0.04)**	-0.01(0.04)	0.16(0.04)**	0.10(0.04)**	-0.03(0.05)	0.08(0.05)	0.03(0.05)
College/grad degree	0.48(0.04)**	0.50(0.04)**	-0.04(0.05)	0.22(0.05)**	0.27(0.05)**	-0.14(0.05)**	0.15(0.05)**	0.12(0.05)*
Non-english speaking household	-0.09(0.05)+	-0.07(0.04)	-0.08(0.06)	-0.17(0.06)**	-0.02(0.06)	-0.06(0.06)	-0.00(0.06)	0.06(0.05)
Number of siblings W1	-0.11(0.02)**	-0.05(0.01)**	0.06(0.02)**	-0.05(0.02)**	0.01(0.02)	-0.03(0.02)	-0.03(0.02)	-0.00(0.02)
Married all waves	0.23(0.05)**	0.17(0.05)**	-0.17(0.06)**	-0.06(0.05)	0.18(0.06)**	-0.29(0.06)**	0.22(0.06)**	0.27(0.05)**
Married some waves	0.10(0.05)*	0.05(0.05)	-0.05(0.05)	-0.03(0.05)	0.06(0.05)	-0.12(0.05)**	0.09(0.05)*	0.10(0.05)*
Cohab any waves	0.01(0.06)	-0.02(0.05)	0.24(0.07)**	-0.01(0.07)	-0.23(0.07)**	0.15(0.07)*	-0.05(0.08)	-0.14(0.07)*
Number of non-parter adults in hh W1-4/5	-0.01(0.02)	-0.01(0.02)	-0.01(0.02)	-0.03(0.02)	0.02(0.02)	-0.02(0.02)	-0.01(0.02)	0.01(0.02)
F of model	43.26**	54.60**	11.58**	12.36**	17.15**	14.86**	11.13**	23.56**
R²	0.18	0.20	0.06	0.06	0.08	0.10	0.07	0.12

Note: +p<.10, *p<.05, **p<.01. Employed groups are compared to the omitted category of no employment.

Table 7

Australia: Influence of the Timing of Employment after Birth on the Development of Children's Cognitive and Behavioral Skills, n=5,093

	Academic Skills			Behavioral Skills, Parent Report			Behavioral Skills, Teacher Report		
Independent Variables	Teacher Academic	Matrix Reasoning	Vocabulary	Conduct	Prosocial	Attention	Conduct	Prosocial	Attention
Timing of first employment									
First emp before 9 mths	0.04(0.04)	0.10(0.04)*	0.03(0.04)	-0.09(0.04)+	-0.09(0.05)+	-0.02(0.04)	0.00(0.05)	-0.01(0.05)	-0.02(0.05)
First emp before 2 yrs	0.07(0.04)	0.06(0.04)	0.05(0.04)	-0.00(0.05)	-0.05(0.04)	-0.00(0.04)	-0.06(0.05)	0.02(0.04)	0.04(0.04)
Employment History Covariates									
Mother emp before birth	0.08(0.04)*	0.03(0.04)	0.06(0.04)	-0.04(0.05)	0.07(0.04)+	0.05(0.04)	0.00(0.05)	0.03(0.04)	0.05(0.05)
Child Covariates									
Age W1	0.03(0.02)	-0.03(0.02)	0.00(0.03)	0.04(0.02)	-0.03(0.02)	0.02(0.02)	-0.05(0.02)+	0.04(0.03)	0.05(0.03)+
Age W4	-0.02(0.02)	0.02(0.03)	0.01(0.02)	-0.02(0.02)	0.01(0.02)	-0.01(0.02)	0.04(0.03)	-0.03(0.03)	-0.04(0.02)+
Boy	-0.17(0.03)**	-0.04(0.03)	0.10(0.03)**	0.22(0.03)**	-0.43(0.03)**	-0.4(0.03)**	0.32(0.04)**	-0.55(0.04)**	-0.61(0.03)**
Low birthweight	-0.30(0.08)**	-0.17(0.08)*	-0.07(0.07)	0.03(0.08)	-0.01(0.07)	-0.13(0.08)	0.00(0.07)	0.00(0.08)	-0.12(0.09)
Twin	0.06(0.10)	0.07(0.09)	0.06(0.09)	-0.16(0.09)+	0.04(0.09)	0.102(0.10)	-0.20(0.08)*	0.11(0.09)	0.10(0.09)
Mother/Family Covariates									
Age of mother	0.04(0.02)+	0.08(0.02)**	0.15(0.02)**	-0.04(0.02)*	0.01(0.02)	0.04(0.02)+	-0.04(0.02)+	0.03(0.02)	0.03(0.02)
Less than high school	-0.24(0.11)*	-0.22(0.10)*	-0.22(0.09)*	0.09(0.09)	-0.22(0.10)*	-0.04(0.10)	-0.05(0.09)	0.01(0.08)	-0.02(0.09)
Some college	0.09(0.04)*	0.06(0.05)	0.11(0.04)*	-0.05(0.04)	0.07(0.04)+	0.06(0.04)	0.01(0.05)	-0.00(0.04)	0.01(0.05)
College/grad degree	0.33(0.05)**	0.24(0.05)**	0.36(0.05)**	-0.18(0.04)**	0.03(0.04)	0.21(0.05)**	-0.07(0.05)	0.03(0.04)	0.14(0.05)**
Parent Asian	0.10(0.08)	0.12(0.08)	-0.17(0.08)*	-0.10(0.07)	-0.09(0.09)	0.03(0.08)	-0.12(0.09)	-0.06(0.08)	0.16(0.09)+
Parent Indigenous	-0.14(0.10)	-0.03(0.09)	-0.16(0.09)+	0.101(0.10)	-0.09(0.09)	-0.04(0.09)	0.35(0.12)**	-0.24(0.09)**	-0.26(0.11)*
Immigrant household	0.02(0.04)	0.10(0.04)*	0.02(0.04)	-0.09(0.04)*	-0.07(0.04)	0.03(0.04)	0.03(0.04)	-0.01(0.04)	0.02(0.04)
Non-english speaking household	-0.01(0.06)	-0.09(0.07)	-0.34(0.07)**	0.15(0.06)*	-0.06(0.07)	-0.02(0.06)	0.04(0.07)	-0.10(0.07)	-0.10(0.08)
Number of siblings W1	-0.10(0.02)**	-0.09(0.02)**	-0.17(0.02)**	0.02(0.02)	-0.05(0.02)*	0.03(0.02)+	0.01(0.02)	-0.01(0.02)	-0.01(0.02)
Married all waves	0.29(0.07)**	0.08(0.08)	0.06(0.07)	-0.3(0.08)**	0.12(0.07)+	0.35(0.06)**	-0.29(0.08)**	0.25(0.07)**	0.27(0.07)**
Married some waves	0.13(0.07)+	0.05(0.07)	0.02(0.06)	-0.06(0.07)	0.01(0.08)	0.08(0.06)	-0.10(0.09)	0.09(0.06)	0.09(0.07)
Cohab any waves	0.08(0.06)	-0.01(0.07)	0.03(0.06)	-0.14(0.07)*	0.06(0.07)	0.20(0.06)**	-0.12(0.07)+	0.17(0.07)*	0.12(0.07)+
Number of non-parter adults in hh W1-4	-0.03(0.02)+	-0.00(0.02)	-0.05(0.02)**	-0.00(0.02)	-0.00(0.02)	-0.00(0.02)	0.01(0.02)	-0.01(0.02)	-0.01(0.02)
F of model	15.83**	8.15**	19.89**	7.73**	10.84**	13.78**	7.56**	16.55**	19.38**
R^2	0.10	0.05	0.13	0.05	0.06	0.07	0.05	0.09	0.12

Note: +p<.10, *p<.05, **p<.01. Employed groups are compared to the omitted category of no employment.

Table 8

United Kingdom: Influence of the Timing of Employment after Birth on the Development of Children's Cognitive and Behavioral Skills, n=18,497

	Academic Skills			Behavioral Skills, Parent Report			Behavioral Skills, Teacher Report		
Independent Variables	Pattern Constr.	Word Reading	Number Skills	Conduct	Prosocial	Attention	Conduct	Prosocial	Attention
Timing of first employment									
First emp before 9 mths	0.04(0.02)+	0.02(0.02)	0.04(0.03)	-0.05(0.02)+	0.05(0.03)+	0.01(0.02)	-0.01(0.03)	0.02(0.02)	0.00(0.02)
First emp before 2 yrs	0.05(0.02)*	0.06(0.03)*	0.06(0.03)*	-0.07(0.03)*	0.06(0.03)+	0.04(0.03)	-0.05(0.03)	0.05(0.03)+	0.01(0.03)
Employment History Covariates									
Mother emp before birth	0.04(0.02)+	0.12(0.02)**	0.09(0.03)**	-0.09(0.03)**	0.03(0.03)	0.06(0.02)*	-0.06(0.02)**	0.04(0.03)	0.02(0.02)
Child Covariates									
Age W1	0.00(0.01)	-0.00(0.01)	0.00(0.01)	-0.00(0.01)	-0.01(0.01)	-0.00(0.01)	0.01(0.01)	-0.01(0.01)	-0.00(0.01)
Age W4	0.02(0.01)+	-0.00(0.01)	0.02(0.01)+	-0.01(0.01)	0.00(0.01)	0.02(0.01)+	-0.01(0.01)	0.01(0.01)	0.01(0.01)
Boy	-0.06(0.02)**	-0.14(0.01)**	0.01(0.02)	0.16(0.01)**	-0.29(0.02)**	-0.30(0.02)**	0.24(0.02)**	-0.40(0.02)**	-0.43(0.02)**
Low birthweight	-0.25(0.04)**	-0.18(0.04)**	-0.23(0.03)**	0.11(0.03)**	-0.05(0.04)	-0.24(0.03)**	-0.00(0.03)	-0.03(0.03)	-0.14(0.04)**
Twin	0.09(0.08)	0.03(0.07)	0.05(0.07)	0.04(0.07)	-0.06(0.08)	0.01(0.08)	0.06(0.07)	0.04(0.06)	0.09(0.07)
Black	-0.54(0.05)**	0.09(0.05)	-0.17(0.07)*	-0.14(0.05)**	0.10(0.05)+	0.04(0.05)	0.19(0.06)**	-0.18(0.06)**	-0.11(0.06)+
Indian	-0.13(0.07)+	0.23(0.06)**	0.05(0.07)	0.03(0.06)	0.03(0.07)	-0.08(0.07)	-0.08(0.08)	0.01(0.06)	0.13(0.06)+
Pakistani/Bangladeshi	-0.40(0.06)**	0.17(0.06)**	-0.31(0.06)**	-0.06(0.05)	-0.09(0.06)	-0.13(0.06)*	0.00(0.06)	-0.17(0.05)**	-0.02(0.05)
Multiracial	-0.12(0.06)*	0.12(0.05)*	0.01(0.06)	-0.02(0.05)	0.00(0.05)	-0.00(0.04)	0.01(0.05)	-0.02(0.05)	0.03(0.05)
Other	-0.18(0.07)*	0.02(0.08)	-0.06(0.07)	-0.02(0.07)	0.02(0.09)	-0.08(0.07)	0.00(0.12)	-0.07(0.10)	0.04(0.09)
Mother/Family Covariates									
Age of mother	0.05(0.01)**	0.11(0.01)**	0.05(0.01)**	-0.09(0.01)**	0.00(0.01)	0.08(0.01)**	-0.06(0.01)**	0.02(0.01)+	0.05(0.01)**
Less than high school	-0.02(0.03)	-0.05(0.03)+	-0.03(0.03)	0.09(0.03)**	-0.03(0.03)	-0.06(0.03)+	0.01(0.03)	0.01(0.03)	-0.02(0.03)
Some college	0.06(0.02)*	0.08(0.03)**	0.07(0.03)**	-0.02(0.03)	-0.01(0.03)	0.05(0.02)*	-0.03(0.02)	0.03(0.02)	0.04(0.02)+
College/grad degree	0.21(0.02)**	0.24(0.02)**	0.22(0.02)**	-0.11(0.02)**	0.03(0.02)	0.15(0.02)**	-0.06(0.02)*	0.06(0.02)*	0.11(0.02)**
Immigrant household	0.06(0.03)	0.13(0.03)**	0.05(0.04)	0.02(0.03)	-0.04(0.04)	0.00(0.03)	0.04(0.03)	-0.07(0.05)	0.01(0.03)
Non-english speaking household	-0.08(0.05)	-0.07(0.04)+	-0.10(0.05)*	0.02(0.04)	-0.01(0.05)	0.00(0.04)	0.00(0.05)	-0.01(0.05)	-0.05(0.04)
Number of siblings W1	-0.04(0.01)**	-0.14(0.01)**	-0.06(0.01)**	0.05(0.01)**	-0.02(0.01)*	-0.01(0.01)	0.02(0.01)+	-0.01(0.01)	-0.03(0.01)**
Married all waves	0.17(0.03)**	0.20(0.03)**	0.16(0.03)**	-0.25(0.03)**	0.12(0.03)**	0.22(0.03)**	-0.25(0.04)**	0.21(0.03)**	0.24(0.03)**
Married some waves	0.08(0.02)**	0.08(0.02)**	0.05(0.03)*	-0.08(0.03)**	0.08(0.02)**	0.10(0.03)**	-0.11(0.03)**	0.09(0.03)**	0.09(0.02)**
Cohab any waves	0.06(0.02)*	0.06(0.02)*	0.03(0.02)	-0.04(0.03)+	0.01(0.03)	0.01(0.02)	-0.09(0.02)**	0.09(0.03)**	0.08(0.02)**
Number of non-parter adults in hh W1-4	-0.01(0.01)	-0.00(0.01)	0.00(0.01)	0.01(0.02)	-0.01(0.01)	-0.02(0.01)	-0.01(0.01)	0.01(0.02)	-0.00(0.01)
F of model	29.76**	43.44**	26.77**	37.61**	19.79**	42.23**	22.07**	28.00**	47.01**
R^2	0.08	0.13	0.08	0.08	0.04	0.09	0.07	0.09	0.12

Note: +p<.10, *p<.05, **p<.01. Employed groups are compared to the omitted category of no employment.

Maternal Employment Timing: Predicting Child Functioning while Addressing

Potential Selection Bias Using a Comprehensive Selection of Covariates

Due to the potential influence of selection bias from child and parent characteristics that were measured concurrently or following the time of employment, a larger set of child and parent characteristics were included in the next sets of analytic models (seen in Tables 9, 10, and 11). These included additional parent characteristics (employment status at wave 4) and time-varying variables assessing parent and family characteristics from waves 1 through 4 (additional childbearing, non-maternal household income, partner employment status, and welfare receipt). In addition, the second set of models included lags for child functioning, incorporating the measures of child infant cognitive skills (for cognitive outcomes) or temperament (for behavioral outcomes), helping to control for unmeasured, time-invariant factors that had a consistent effect on children's functioning (Cain, 1975), thus further reducing concerns of omitted variable bias.

United States. The additional covariates very slightly weakened the overall pattern of results in the ECLS-B. Results, shown in Table 9, indicate that there were no significant associations between early maternal employment and children's later reading, math, conduct problems or prosocial skills. The relationship between early employment before 9 months and children's later parent-reported attention skills was slightly weakened (.08 SDs) while the relationship between employment beginning before 2 years and children's later teacher-reported attention skills became nonsignificant.

Australia. In the LSAC-B, the additional covariates very slightly strengthened the pattern of results. The relationship between early maternal employment timing and children's later academic skills, vocabulary, conduct skills, and attention skills remained neutral (see results in Table 10). However, employment entry before 9 months was predictive of higher matrix reasoning skills as well as lower prosocial skills (both 0.11 SDs) in comparison to non-employment.

United Kingdom. Whereas the additional covariates only slightly weakened the ECLS-B results and actually slightly strengthened the LSAC-B results, they had a stronger influence on the results from the MCS (shown in Table 11). The pattern of findings from the first model, which linked employment begun after 9 months and before 2 years with higher pattern construction, word reading, and number skills as well as lower parent-reported conduct problems, was eliminated with the additional covariates. These models found that there were no significant associations between maternal employment in the first two years and children's later functioning across any of the outcome measures.

Table 9

United States: Influence of Employment After Birth on the Development of Children's Cognitive and Behavioral Skills with Comprehensive Covariates, n=10,100

Independent Variables	Cognitive Skills		Behavioral Skills, Parent Report			Behavioral Skills, Teacher Report		
	Reading	Math	Conduct	Prosocial	Attention	Conduct	Prosocial	Attention
Timing of first employment								
First emp before 9 mths	0.05(0.04)	0.03(0.04)	0.08(0.04)+	0.02(0.04)	-0.08(0.04)*	0.04(0.04)	-0.02(0.05)	-0.02(0.04)
First emp before 2 yrs	0.03(0.05)	0.01(0.05)	0.06(0.05)	0.02(0.06)	-0.07(0.05)	0.06(0.05)	-0.01(0.06)	-0.09(0.05)
Employment History Covariates								
Mother emp before birth	0.05(0.04)	0.06(0.03)+	-0.08(0.04)*	0.06(0.04)	0.00(0.04)	0.00(0.05)	0.05(0.04)	0.01(0.04)
Mother employed W4/5	0.07(0.03)+	0.09(0.03)*	-0.02(0.03)	-0.03(0.03)	0.01(0.03)	0.03(0.04)	0.01(0.03)	0.00(0.04)
Child Covariates								
Age of child W1 (in months)	0.02(0.03)	-0.00(0.02)	-0.02(0.02)	0.03(0.02)	0.00(0.03)	-0.03(0.03)	0.02(0.03)	-0.00(0.03)
Age of child W4/5 (in months)	0.07(0.02)**	0.08(0.02)**	-0.03(0.02)	0.03(0.02)	0.03(0.02)	-0.00(0.02)	0.01(0.02)	0.02(0.02)
Boy	-0.14(0.03)**	-0.04(0.03)	0.35(0.03)**	-0.33(0.03)**	-0.37(0.03)**	0.47(0.03)**	-0.41(0.03)**	-0.53(0.03)**
Low birthweight	-0.26(0.05)**	-0.43(0.04)**	0.11(0.04)**	-0.22(0.05)**	-0.31(0.04)**	0.06(0.06)	-0.23(0.05)**	-0.34(0.06)**
Twin	-0.04(0.03)	-0.12(0.03)**	0.02(0.04)	-0.02(0.04)	0.05(0.03)	0.02(0.05)	-0.07(0.05)	-0.04(0.04)
Black	0.09(0.04)*	-0.17(0.04)**	-0.12(0.05)*	0.08(0.05)	0.16(0.04)**	0.05(0.07)	0.05(0.06)	0.01(0.06)
Hispanic	-0.07(0.05)	-0.20(0.05)**	-0.09(0.05)+	0.08(0.05)+	0.11(0.04)*	-0.12(0.06)*	-0.01(0.05)	0.07(0.05)
Asian	0.42(0.06)**	0.28(0.05)**	-0.13(0.05)*	-0.13(0.06)*	0.15(0.06)*	-0.20(0.08)*	-0.16(0.07)*	0.19(0.07)*
Native American	-0.12(0.09)	-0.21(0.08)**	-0.01(0.09)	0.11(0.10)	0.04(0.09)	-0.04(0.11)	0.00(0.12)	0.10(0.10)
Multi-race	0.09(0.07)	0.01(0.06)	-0.12(0.07)+	-0.03(0.07)	-0.04(0.08)	-0.03(0.09)	0.01(0.10)	0.00(0.07)
Temperament	-	-	-0.12(0.02)**	0.09(0.02)**	0.10(0.02)**	-0.03(0.02)	0.04(0.02)+	0.03(0.02)
BSF-R mental score	0.09(0.02)**	0.13(0.02)**	-	-	-	-	-	-
Kind assessment W5	0.14(0.04)**	0.13(0.04)**	-0.00(0.04)	0.02(0.04)	0.03(0.04)	-0.04(0.04)	0.05(0.04)	0.05(0.04)
Mother/Family Covariates								
Age of mother	0.02(0.02)	0.01(0.02)	-0.03(0.02)	-0.09(0.02)**	0.01(0.02)	-0.02(0.02)	-0.01(0.02)	0.03(0.02)
Less than high school	-0.18(0.04)**	-0.19(0.04)**	0.06(0.05)	-0.09(0.05)*	-0.04(0.05)	0.04(0.06)	-0.05(0.05)	-0.03(0.05)
Some college	0.18(0.04)**	0.17(0.04)**	0.02(0.04)	0.14(0.04)**	0.07(0.04)+	-0.01(0.05)	0.06(0.05)	0.01(0.05)
College/grad degree	0.37(0.04)**	0.37(0.04)**	0.01(0.05)	0.19(0.05)**	0.19(0.05)**	-0.08(0.05)+	0.11(0.06)+	0.05(0.06)
Non-english speaking household	-0.06(0.05)	-0.03(0.04)	-0.08(0.06)	-0.16(0.06)*	-0.01(0.06)	-0.05(0.06)	-0.00(0.06)	0.07(0.06)
Non-mother income (in 10,000s) avg W1-4/5	0.14(0.02)**	0.16(0.02)**	-0.04(0.02)+	0.05(0.02)*	0.08(0.02)**	-0.05(0.02)*	0.04(0.03)	0.07(0.02)**
Married all waves	0.14(0.05)*	0.07(0.06)	-0.06(0.06)	-0.09(0.06)	0.08(0.08)	-0.12(0.07)+	0.13(0.07)+	0.13(0.07)+
Married some waves	0.07(0.05)	0.02(0.06)	-0.01(0.06)	-0.05(0.05)	0.02(0.06)	-0.03(0.05)	0.05(0.05)	0.04(0.05)
Cohab any waves	0.01(0.07)	-0.01(0.06)	0.23(0.07)**	-0.02(0.06)	-0.24(0.07)**	0.17(0.07)*	-0.05(0.08)	-0.15(0.07)*
Number of non-parter adults in hh W1-4/5	-0.02(0.02)	-0.02(0.02)	-0.01(0.02)	-0.03(0.02)	0.01(0.02)	-0.01(0.02)	-0.01(0.02)	0.00(0.02)
Number of siblings W1	-0.11(0.02)**	-0.05(0.02)**	0.06(0.02)**	-0.06(0.02)**	0.01(0.02)	-0.04(0.02)+	-0.03(0.02)	0.01(0.02)
New sibling W2	-0.09(0.03)**	-0.12(0.04)**	0.12(0.04)**	-0.05(0.04)	0.02(0.04)	-0.04(0.05)	-0.01(0.06)	0.01(0.05)
New sibling W3-W4/5	-0.11(0.03)**	-0.13(0.03)**	0.08(0.03)**	-0.07(0.04)+	-0.01(0.03)	-0.05(0.04)	-0.01(0.04)	0.02(0.04)
Welfare all waves	-0.15(0.14)	-0.06(0.12)	0.32(0.14)*	-0.09(0.14)	-0.04(0.13)	0.27(0.15)+	-0.13(0.15)	-0.18(0.15)
Welfare some waves	-0.12(0.05)*	-0.12(0.05)*	0.18(0.05)**	-0.04(0.05)	-0.06(0.05)	0.13(0.06)*	-0.08(0.05)+	-0.13(0.05)**
Working parter all waves	0.03(0.06)	0.04(0.06)	-0.11(0.06)+	0.04(0.07)	0.10(0.08)	-0.22(0.07)**	0.11(0.10)	0.15(0.08)+
Working parter some waves	0.02(0.05)	0.03(0.05)	-0.04(0.06)	0.04(0.07)	0.06(0.06)	-0.17(0.06)**	0.07(0.07)	0.08(0.07)
F of model	35.50**	46.13**	11.50**	10.54**	14.36**	12.49**	8.53**	18.74**
R²	0.20	0.23	0.08	0.07	0.09	0.11	0.08	0.13

Note: +p<.10, *p<.05, **p<.01. Employed groups are compared to the omitted category of no employment.

Table 10

Australia: Influence of the Timing of Employment after Birth on the Development of Children's Cognitive and Behavioral Skills with comprehensive covariates, n=5,093

Independent Variables	Academic Skills			Behavioral Skills, Parent Report			Behavioral Skills, Teacher Report		
	Academic	Reasoning	Vocabulary	Conduct	Prosocial	Attention	Conduct	Prosocial	Attention
Timing of first employment									
First emp before 9 mths	0.04(0.05)	0.11(0.05)*	0.03(0.04)	-0.07(0.05)	-0.11(0.05)*	-0.01(0.04)	-0.00(0.05)	0.01(0.05)	0.01(0.05)
First emp before 2 yrs	0.08(0.04)+	0.06(0.04)	0.05(0.04)	0.01(0.05)	-0.06(0.04)	0.01(0.04)	-0.07(0.05)	0.04(0.05)	0.04(0.05)
Employment History Covariates									
Mother emp before birth	0.06(0.04)	0.03(0.04)	0.05(0.04)	-0.02(0.05)	0.06(0.04)	0.04(0.04)	0.02(0.05)	0.02(0.04)	0.02(0.04)
Mother employed W4/5	0.02(0.04)	-0.01(0.04)	-0.01(0.04)	-0.07(0.04)+	0.02(0.04)	-0.01(0.03)	-0.04(0.04)	-0.01(0.04)	-0.01(0.04)
Child Covariates									
Age W1	-0.05(0.03)	-0.08(0.03)*	-0.07(0.03)*	0.02(0.02)	-0.01(0.02)	0.02(0.02)	-0.04(0.02)	0.03(0.03)	0.03(0.03)
Age W4	-0.03(0.02)	0.02(0.03)	0.00(0.02)	-0.02(0.02)	0.01(0.02)	-0.01(0.02)	0.04(0.03)	-0.03(0.03)	-0.03(0.03)
Boy	-0.17(0.03)**	-0.03(0.03)	0.11(0.03)**	0.22(0.03)**	-0.43(0.03)**	-0.41(0.03)**	0.32(0.04)**	-0.56(0.04)**	-0.56(0.04)**
Low birthweight	-0.26(0.08)**	-0.13(0.08)	-0.03(0.07)	0.03(0.08)	-0.01(0.07)	-0.13(0.08)	0.00(0.07)	0.01(0.08)	0.01(0.08)
Twin	0.06(0.10)	0.06(0.09)	0.05(0.09)	-0.16(0.09)+	0.03(0.09)	0.13(0.10)	-0.19(0.09)*	0.10(0.09)	0.10(0.09)
Temperament	-	-	-	-0.11(0.02)**	0.11(0.02)**	0.08(0.02)**	0.03(0.02)	-0.02(0.02)	-0.02(0.02)
CSBS score	0.12(0.02)**	0.08(0.03)**	0.11(0.03)	-	-	-	-	-	-
Mother/Family Covariates									
Age of mother	0.04(0.02)	0.08(0.02)**	0.13(0.02)	-0.02(0.02)	-0.00(0.02)	0.04(0.02)+	-0.04(0.02)	0.03(0.02)	0.03(0.02)
Less than high school	-0.20(0.11)+	-0.2(0.09)*	-0.19(0.09)*	0.07(0.10)	-0.20(0.10)*	-0.03(0.10)	-0.06(0.09)	0.02(0.08)	0.02(0.08)
Some college	0.08(0.04)+	0.05(0.05)	0.10(0.04)*	-0.04(0.04)	0.02(0.04)	0.06(0.04)	0.01(0.05)	-0.01(0.04)	-0.01(0.04)
College/grad degree	0.29(0.05)**	0.21(0.05)**	0.33(0.05)**	-0.14(0.05)**	0.02(0.05)	0.17(0.05)**	-0.03(0.05)	-0.01(0.05)	-0.01(0.05)
Parent Asian	0.11(0.08)	0.13(0.08)	-0.16(0.08)*	-0.14(0.07)+	-0.06(0.09)	0.07(0.08)	-0.12(0.09)	-0.05(0.08)	-0.05(0.08)
Parent Indigenous	-0.12(0.10)	-0.03(0.09)	-0.15(0.09)	0.07(0.10)	-0.05(0.09)	-0.03(0.09)	0.34(0.12)**	-0.24(0.09)**	-0.24(0.09)**
Immigrant household	0.01(0.04)	0.09(0.04)*	0.02(0.04)	-0.09(0.04)*	-0.06(0.04)	0.03(0.04)	0.04(0.04)	-0.02(0.04)	-0.02(0.04)
Non-english speaking household	-0.01(0.06)	-0.08(0.06)	-0.33(0.07)**	0.11(0.06)+	-0.04(0.07)	0.01(0.07)	0.03(0.07)	-0.08(0.07)	-0.08(0.07)
Non-mother income (in 10,000s) avg W1-4	0.07(0.02)**	0.09(0.02)**	0.08(0.02)**	-0.06(0.02)**	0.01(0.02)	0.07(0.02)**	-0.04(0.02)+	0.06(0.02)**	0.06(0.02)**
Married all waves	0.15(0.08)+	0.01(0.09)	-0.04(0.08)	-0.18(0.12)	0.03(0.08)	0.22(0.08)**	-0.16(0.10)	0.13(0.08)	0.13(0.08)
Married some waves	0.07(0.07)	0.01(0.07)	-0.02(0.06)	-0.00(0.08)	-0.04(0.08)	0.03(0.06)	-0.05(0.09)	0.05(0.06)	0.05(0.06)
Cohab any waves	-0.01(0.07)	-0.06(0.08)	-0.03(0.06)	-0.09(0.09)	0.01(0.07)	0.14(0.07)*	-0.05(0.08)	0.11(0.07)	0.11(0.07)
Number of non-parter adults in hh W1-4	-0.03(0.02)	-0.00(0.02)	-0.05(0.02)**	-0.00(0.02)	0.00(0.02)	-0.00(0.02)	0.00(0.02)	-0.01(0.02)	-0.01(0.02)
Number of siblings W1	-0.08(0.02)**	-0.08(0.02)**	-0.16(0.02)**	0.02(0.02)	-0.05(0.02)*	0.05(0.02)*	-0.00(0.02)	0.01(0.02)	0.01(0.02)
New sibling W2	0.01(0.04)	-0.06(0.04)	-0.04(0.03)	-0.02(0.04)	-0.02(0.04)	0.11(0.04)**	-0.13(0.05)*	0.09(0.04)*	0.09(0.04)*
New sibling W3-W4	0.01(0.04)	0.03(0.04)	-0.02(0.04)	0.07(0.04)	-0.07(0.04)+	0.00(0.04)	0.01(0.04)	0.01(0.04)	0.01(0.04)
Welfare all waves	-0.08(0.11)	0.01(0.11)	-0.13(0.08)	0.08(0.11)	-0.08(0.09)	-0.04(0.09)	0.04(0.11)	-0.01(0.09)	-0.01(0.09)
Welfare some waves	-0.03(0.04)	0.01(0.05)	-0.01(0.04)	0.01(0.04)	-0.03(0.04)	0.01(0.04)	0.03(0.05)	-0.01(0.04)	-0.01(0.04)
Working parter all waves	0.14(0.08)+	0.04(0.08)	0.02(0.08)	-0.07(0.11)	0.09(0.09)	0.07(0.11)	-0.15(0.11)	0.10(0.09)	0.10(0.09)
Working parter some waves	0.13(0.08)+	0.06(0.08)	-0.00(0.07)	-0.06(0.10)	0.07(0.08)	0.04(0.10)	-0.08(0.10)	0.06(0.08)	0.06(0.08)
F of model	11.82**	6.70**	17.27**	7.64**	9.45**	11.23**	5.84**	11.91**	14.47**
R^2	0.11	0.06	0.14	0.06	0.07	0.09	0.06	0.10	0.13

Note: +p<.10, *p<.05, **p<.01. Employed groups are compared to the omitted category of no employment.

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Table 11

United Kingdom: Influence of the Timing of Employment after Birth on the Development of Children's Cognitive and Behavioral Skills with comprehensive covariates, n=18,497

	Academic Skills			Behavioral Skills, Parent Report			Behavioral Skills, Teacher Report		
Independent Variables	Pattern Constr.	Word Reading	Number Skills	Conduct	Prosocial	Attention	Conduct	Prosocial	Attention
Timing of first employment									
First emp before 9 mths	-0.00(0.02)	-0.00(0.02)	-0.00(0.02)	0.02(0.02)	0.00(0.03)	-0.04(0.03)	0.03(0.03)	-0.01(0.02)	-0.03(0.03)
First emp before 2 yrs	0.02(0.02)	0.02(0.02)	0.02(0.02)	-0.00(0.03)	0.01(0.03)	0.00(0.03)	-0.01(0.03)	0.03(0.03)	-0.02(0.03)
Employment History Covariates									
Mother emp before birth	0.01(0.02)	0.01(0.02)	0.01(0.02)	-0.06(0.03)+	-0.00(0.03)	0.02(0.02)	-0.04(0.02)	0.02(0.02)	-0.00(0.02)
Mother employed W4/5	0.02(0.02)	0.02(0.02)	0.02(0.02)	-0.08(0.02)**	0.02(0.02)	0.08(0.02)**	-0.03(0.02)	0.01(0.02)	0.03(0.02)
Child Covariates									
Age W1	0.01(0.01)	0.01(0.01)	0.01(0.01)	-0.00(0.01)	-0.01(0.01)	-0.00(0.01)	0.01(0.01)	-0.01(0.01)	-0.01(0.01)
Age W4	0.01(0.01)	0.01(0.01)	0.01(0.01)	-0.01(0.01)	0.00(0.01)	0.01(0.01)+	-0.01(0.01)	0.01(0.01)	0.01(0.01)
Boy	-0.04(0.02)*	-0.04(0.02)*	-0.04(0.02)*	0.17(0.01)**	-0.29(0.02)**	-0.3(0.02)**	0.24(0.02)**	-0.40(0.02)**	-0.42(0.02)**
Low birthweight	-0.17(0.04)**	-0.17(0.04)**	-0.17(0.04)**	0.09(0.03)**	-0.04(0.03)	-0.22(0.03)**	-0.02(0.03)	-0.01(0.03)	-0.13(0.04)**
Twin	0.11(0.08)	0.11(0.08)	0.11(0.08)	0.06(0.06)	-0.08(0.08)	0.00(0.08)	0.07(0.07)	0.04(0.06)	0.08(0.07)
Black	-0.51(0.05)**	-0.51(0.05)**	-0.51(0.05)**	-0.24(0.05)**	0.20(0.05)**	0.12(0.05)*	0.15(0.06)*	-0.15(0.06)*	-0.09(0.06)
Indian	-0.15(0.07)+	-0.15(0.07)+	-0.15(0.07)+	0.00(0.06)	0.06(0.07)	-0.05(0.07)	-0.07(0.08)	0.01(0.06)	0.12(0.06)+
Pakistani/Bangladeshi	-0.39(0.06)**	-0.39(0.06)**	-0.39(0.06)**	-0.11(0.05)*	-0.05(0.05)	-0.09(0.06)	0.00(0.06)	-0.17(0.05)**	-0.02(0.05)
Multiracial	-0.11(0.06)+	-0.11(0.06)+	-0.11(0.06)+	-0.06(0.04)	0.04(0.05)	0.02(0.04)	-0.01(0.05)	-0.01(0.05)	0.04(0.05)
Other	-0.16(0.07)*	-0.16(0.07)*	-0.16(0.07)*	-0.07(0.06)	0.06(0.09)	-0.04(0.07)	-0.01(0.12)	-0.06(0.09)	0.05(0.09)
Temperament	-	-	-	-0.08(0.01)**	0.10(0.01)**	0.05(0.01)**	0.01(0.01)	0.01(0.01)	-0.01(0.01)
S&C skills	0.08(0.01)**	0.08(0.01)**	0.08(0.01)**	-	-	-	-	-	-
Mother/Family Covariates									
Age of mother	0.03(0.01)**	0.03(0.01)**	0.03(0.01)**	-0.06(0.01)**	-0.02(0.01)*	0.05(0.01)**	-0.05(0.01)**	0.01(0.01)	0.04(0.01)**
Less than high school	-0.01(0.03)	-0.01(0.03)	-0.01(0.03)	0.06(0.03)*	-0.01(0.03)	-0.04(0.03)	-0.00(0.03)	0.02(0.03)	-0.01(0.03)
Some college	0.05(0.03)*	0.05(0.03)*	0.05(0.03)*	-0.00(0.03)	-0.02(0.03)	0.04(0.02)	-0.02(0.02)	0.03(0.02)	0.03(0.02)
College/grad degree	0.18(0.02)**	0.18(0.02)**	0.18(0.02)**	-0.08(0.02)**	0.02(0.02)	0.11(0.02)**	-0.04(0.02)	0.04(0.02)+	0.09(0.02)**
Immigrant household	0.04(0.03)	0.04(0.03)	0.04(0.03)	0.02(0.03)	-0.03(0.04)	-0.00(0.03)	0.05(0.03)	-0.08(0.05)	-0.00(0.03)
Non-english speaking household	-0.06(0.05)	-0.06(0.05)	-0.06(0.05)	-0.01(0.04)	0.01(0.05)	0.02(0.04)	-0.01(0.05)	-0.01(0.06)	-0.05(0.04)
Non-mother income (in 10,000s) avg W1-4	0.07(0.01)**	0.07(0.01)**	0.07(0.01)**	-0.06(0.01)**	0.01(0.01)	0.07(0.01)**	-0.01(0.01)	0.01(0.01)	0.02(0.02)
Married all waves	0.04(0.03)	0.04(0.03)	0.04(0.03)	-0.09(0.04)*	0.03(0.04)	0.08(0.04)*	-0.10(0.04)*	0.09(0.04)*	0.11(0.03)**
Married some waves	0.02(0.03)	0.02(0.03)	0.02(0.03)	-0.02(0.03)	0.05(0.03)+	0.04(0.03)	-0.05(0.03)+	0.04(0.03)	0.04(0.02)
Cohab any waves	0.00(0.03)	0.00(0.03)	0.00(0.03)	0.02(0.03)	-0.03(0.03)	-0.04(0.03)	-0.02(0.03)	0.04(0.03)	0.03(0.02)
Number of non-parter adults in hhW1-4	-0.01(0.01)	-0.01(0.01)	-0.01(0.01)	-0.00(0.02)	-0.00(0.01)	-0.01(0.01)	-0.01(0.01)	0.01(0.02)	0.00(0.01)
Number of siblings W1	-0.03(0.01)*	-0.03(0.01)*	-0.03(0.01)*	0.03(0.01)**	0.01(0.01)	0.01(0.01)	0.01(0.01)	0.00(0.01)	-0.02(0.01)+
New sibling W2	0.02(0.02)	0.02(0.02)	0.02(0.02)	0.01(0.02)	-0.04(0.02)+	0.08(0.02)**	-0.02(0.02)	0.05(0.02)**	0.04(0.02)**
New sibling W3-W4	-0.03(0.02)+	-0.03(0.02)+	-0.03(0.02)+	0.06(0.02)**	-0.05(0.02)**	-0.03(0.02)	0.01(0.02)	0.00(0.02)	0.01(0.02)
Welfare all waves	-0.23(0.06)**	-0.23(0.06)**	-0.23(0.06)**	0.25(0.05)**	-0.12(0.05)*	-0.25(0.06)**	0.14(0.07)+	-0.15(0.07)*	-0.18(0.06)**
Welfare some waves	-0.15(0.03)**	-0.15(0.03)**	-0.15(0.03)**	0.12(0.02)**	-0.09(0.03)**	-0.15(0.02)**	0.13(0.03)**	-0.11(0.03)**	-0.13(0.02)**
Working parter all waves	0.04(0.04)	0.04(0.04)	0.04(0.04)	-0.12(0.04)**	0.08(0.05)	0.02(0.04)	-0.14(0.04)**	0.10(0.04)*	0.08(0.04)+
Working parter some waves	0.04(0.03)	0.04(0.03)	0.04(0.03)	-0.06(0.03)+	0.02(0.04)	0.02(0.03)	-0.06(0.04)	0.04(0.03)	0.02(0.04)
F of model	27.63**	37.82**	25.80**	33.91**	20.02**	37.23**	18.61**	21.93**	35.98**
R^2	0.10	0.15	0.10	0.10	0.06	0.11	0.08	0.10	0.13

Note: +p<.10, *p<.05, **p<.01. Employed groups are compared to the omitted category of no employment. Model 3 includes all of the same covariates as denoted in Model 2.

Maternal Employment Timing: Predicting Child Functioning while Addressing

Potential Selection Bias Including Propensity Scores

While the covariates included in the second model represent a more thorough set of factors shown in prior research to be associated with selection into or decisions regarding employment (e.g., Hill et al., 2005), even the most comprehensive set of covariates leaves open the potential for omitted variable bias (Duncan, Magnuson, & Ludwig, 2004). As a final modeling technique to address selection bias I incorporated propensity score weighting (PSW) in the third set of models (Imbens, 2000; Rosenbaum & Rubin, 1984). Propensity score (PS) techniques restructure correlational data to mimic randomized experimental data where a treatment group and control group are equated on observed, pre-existing characteristics (Rosenbaum & Rubin, 1983). Adjusting for the propensity to be in the "treatment" group has been shown to remove a substantial portion of selection bias in nonexperimental research (for example, in a simulation study, Leon and Hedeker (2006) found that adjusting for the propensity of receiving varying doses of a time-varying treatment on a continuous outcome removed as much as 90% of bias when treatment dosage was stratified into quintiles, and up to 45% of bias when treatment dosage was delineated by a median split), although it is important to note that PS techniques cannot control for unobserved factors, the influence of which may even be magnified by matching on observables (Pearl, 2009).

PSW techniques were incorporated using the three step procedure described by Imbens (2000) and implemented separately in each dataset. The first step involved estimating the propensity of mothers to be in each employment group, conducted using

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multinomial logistic regression models as a function of all observed pretreatment covariates (including the wave 1 measures of child gender, race, number of siblings, low-birthweight status, and twin status as well as non-English speaking household and mother's age, education, and work status in the year prior to the child's birth). Second, propensity score weights were created by taking the inverse of the child's conditional probability of receiving the early maternal employment treatment that the child actually received (Imbens, 2000). Third, regression models predicting cognitive and behavioral skills were run, weighted with the early maternal employment treatment-specific propensity score weights multiplied by the sample weights, to generate the average treatment effect of maternal employment. As an added protection against bias, the full set of covariates included in the second set of models were included here as well.

United States. In the ECLS-B, these models (presented in Table 12) were nearly identical to the previous model, indicating that early maternal employment had few significant associations with children's functioning after school entry. As before, no significant associations emerged in relation to children's reading and math skills or conduct problems and prosocial skills. Children whose mothers were employed before 9 months received lower reports of attention skills from parents in comparison to their peers with non-employed mothers, although the difference was very small in size (.08 SDs).

Australia. In the LSAC-B, the addition of the propensity score weights slightly weakened the limited results for cognitive skills while suggesting both small positive and negative links with behavioral skills in (see Table 13). Maternal employment begun

before 9 months was predictive of lower parent reported prosocial skills while maternal employment begun after 9 months but before two years was linked with lower teacher reported conduct problems. The effect sizes for these findings were small; 0.13 SDs and 0.12 SDs respectively. However, while employment before 9 months was previously predictive of higher matrix reasoning skills, the relationship was neutral in the propensity score weighted models. There continued to be no significant links between early maternal employment and children's academic skills, vocabulary, and other behavioral outcomes.

U.K. There were no significant links between early maternal employment timing and children's later cognitive and behavioral skills in the MCS, which replicated the neutral findings from the previous models that included a comprehensive list of covariates without the propensity score weights. Results are presented in Table 14.

Due to the similarity of the first three sets of models assessing the timing of mothers' entry into employment across all datasets, all subsequent models shown and described here were estimated including the full set of covariates, lagged child functioning variables, and propensity score weights. Models including the full set of covariates and lagged child functioning variables but not weighted with propensity score weights can be found in Appendix 1.

Table 12

United States: Influence of Employment After Birth on the Development of Children's Cognitive and Behavioral Skills with Propensity Score Weights, n=10,100

Independent Variables	Cognitive Skills		Behavioral Skills, Parent Report			Behavioral Skills, Teacher Report		
	Reading	Math	Conduct	Prosocial	Attention	Conduct	Prosocial	Attention
Timing of first employment								
First emp before 9 mths	0.05(0.04)	0.04(0.04)	0.08(0.05)+	0.02(0.05)	-0.08(0.04)*	0.03(0.04)	-0.02(0.05)	-0.01(0.04)
First emp before 2 yrs	0.03(0.05)	0.01(0.05)	0.05(0.06)	0.01(0.06)	-0.07(0.06)	0.04(0.06)	-0.01(0.07)	-0.08(0.06)
Employment History Covariates								
Mother emp before birth	0.03(0.04)	0.06(0.04)	-0.06(0.04)	0.03(0.04)	-0.00(0.04)	-0.02(0.05)	0.04(0.05)	0.02(0.04)
Mother employed W4/5	0.05(0.05)	0.06(0.05)	-0.03(0.05)	-0.05(0.04)	-0.01(0.06)	0.01(0.06)	0.03(0.05)	0.01(0.05)
Child Covariates								
Age of child W1 (in months)	0.04(0.03)	0.03(0.03)	-0.04(0.03)	0.05(0.03)	0.02(0.03)	-0.04(0.03)	0.03(0.04)	0.02(0.04)
Age of child W4/5 (in months)	0.07(0.03)*	0.08(0.03)**	-0.01(0.03)	0.04(0.03)	0.01(0.02)	0.01(0.03)	0.02(0.03)	0.01(0.03)
Boy	-0.16(0.04)**	-0.06(0.05)	0.36(0.04)**	-0.32(0.04)**	-0.37(0.04)**	0.51(0.04)**	-0.41(0.04)**	-0.56(0.04)**
Low birthweight	-0.27(0.06)**	-0.42(0.05)**	0.09(0.05)+	-0.21(0.06)**	-0.32(0.06)**	0.08(0.06)	-0.24(0.06)**	-0.36(0.06)**
Twin	-0.04(0.05)	-0.11(0.04)*	0.05(0.05)	-0.03(0.05)	0.04(0.05)	0.01(0.06)	-0.09(0.06)	-0.03(0.05)
Black	0.06(0.06)	-0.16(0.06)*	-0.09(0.06)	0.08(0.06)	0.14(0.06)*	0.06(0.09)	0.02(0.09)	0.00(0.08)
Hispanic	-0.06(0.07)	-0.20(0.06)**	-0.04(0.06)	0.05(0.07)	0.07(0.07)	-0.14(0.08)+	-0.03(0.06)	0.06(0.08)
Asian	0.43(0.08)**	0.28(0.07)**	-0.08(0.07)	-0.13(0.08)	0.12(0.09)	-0.20(0.11)+	-0.22(0.08)**	0.17(0.10)+
Native American	-0.10(0.08)	-0.18(0.10)+	-0.09(0.11)	0.18(0.15)	0.16(0.13)	-0.15(0.13)	0.03(0.13)	0.18(0.14)
Multi-race	0.13(0.10)	0.04(0.08)	-0.04(0.12)	-0.05(0.10)	-0.11(0.13)	-0.03(0.12)	0.07(0.14)	-0.02(0.10)
Temperament	-	-	-0.11(0.03)**	0.10(0.02)**	0.07(0.03)**	-0.02(0.02)	0.02(0.03)	0.01(0.02)
BSF-R mental score	0.09(0.03)**	0.15(0.03)**	-	-	-	-	-	-
Kind assessment W5	0.17(0.06)**	0.15(0.06)*	-0.00(0.05)	0.00(0.05)	0.06(0.05)	-0.05(0.05)	0.08(0.05)	0.08(0.06)
Mother/Family Covariates								
Age of mother	0.00(0.03)	-0.00(0.03)	-0.02(0.03)	-0.10(0.03)**	-0.02(0.03)	-0.02(0.03)	-0.02(0.03)	0.03(0.03)
Less than high school	-0.18(0.05)**	-0.18(0.05)**	0.05(0.06)	-0.11(0.06)*	-0.05(0.06)	0.05(0.07)	-0.05(0.05)	-0.04(0.07)
Some college	0.18(0.05)**	0.18(0.05)**	0.00(0.06)	0.15(0.06)**	0.06(0.06)	0.03(0.07)	0.11(0.07)	-0.00(0.06)
College/grad degree	0.40(0.07)**	0.36(0.07)**	-0.03(0.07)	0.22(0.07)**	0.24(0.07)**	-0.04(0.09)	0.12(0.09)	0.05(0.07)
Non-english speaking household	-0.05(0.06)	-0.01(0.06)	-0.11(0.07)	-0.15(0.08)+	0.01(0.08)	-0.06(0.08)	0.03(0.07)	0.11(0.09)
Non-mother income (in 10,000s) avg W1-4/5	0.17(0.03)**	0.18(0.03)**	-0.04(0.03)	0.04(0.03)	0.07(0.03)*	-0.07(0.03)*	0.05(0.04)	0.09(0.03)**
Married all waves	0.13(0.07)+	0.04(0.08)	-0.01(0.09)	-0.15(0.07)*	0.03(0.09)	-0.10(0.09)	0.11(0.09)	0.09(0.11)
Married some waves	0.03(0.07)	-0.05(0.07)	-0.02(0.08)	-0.09(0.07)	0.00(0.07)	-0.03(0.08)	0.01(0.07)	0.02(0.07)
Cohab any waves	0.01(0.08)	-0.04(0.08)	0.37(0.10)**	-0.04(0.08)	-0.41(0.10)**	0.28(0.10)**	-0.09(0.11)	-0.16(0.09)+
Number of non-parter adults in hh W1-4/5	-0.03(0.03)	-0.03(0.03)	-0.01(0.03)	-0.04(0.03)	0.01(0.03)	-0.01(0.03)	-0.02(0.03)	0.00(0.03)
Number of siblings W1	-0.10(0.02)**	-0.04(0.02)*	0.05(0.03)*	-0.06(0.03)*	0.03(0.02)	-0.05(0.03)	-0.03(0.03)	0.02(0.03)
New sibling W2	-0.10(0.05)+	-0.12(0.05)**	0.11(0.06)+	-0.05(0.06)	0.02(0.05)	-0.10(0.06)	0.04(0.07)	0.07(0.06)
New sibling W3-W4/5	-0.13(0.04)**	-0.15(0.04)**	0.07(0.05)	-0.10(0.05)+	-0.02(0.04)	-0.09(0.05)+	-0.02(0.06)	0.06(0.05)
Welfare all waves	-0.25(0.19)	-0.11(0.15)	0.28(0.20)	-0.07(0.21)	-0.09(0.18)	0.29(0.22)	-0.18(0.21)	-0.25(0.20)
Welfare some waves	-0.14(0.06)*	-0.14(0.07)*	0.21(0.07)**	-0.03(0.06)	-0.07(0.06)	0.11(0.07)	-0.09(0.07)	-0.16(0.07)*
Working parter all waves	0.00(0.08)	0.01(0.08)	-0.2(0.09)*	0.05(0.08)	0.16(0.09)+	-0.23(0.09)*	0.15(0.10)	0.13(0.10)
Working parter some waves	0.04(0.07)	0.04(0.07)	-0.08(0.08)	0.03(0.07)	0.11(0.07)	-0.17(0.08)*	0.08(0.08)	0.06(0.09)
F of model	22.91**	27.77**	7.28**	6.09**	8.12**	8.68**	5.65**	11.71**
R^2	0.21	0.23	0.10	0.07	0.10	0.13	0.09	0.14

Note: +p<.10, *p<.05, **p<.01. Employed groups are compared to the omitted category of no employment. All models were estimated using OLS regression and weighted with propensity score weights.

Table 13

Australia: Influence of the Timing of Employment after Birth on the Development of Children's Cognitive and Behavioral Skills with Propensity Score Weights, n=5,093

	Academic Skills			Behavioral Skills, Parent Report			Behavioral Skills, Teacher Report		
Independent Variables	Teacher Academic	Matrix Reasoning	Vocabulary	Conduct	Prosocial	Attention	Conduct	Prosocial	Attention
Timing of first employment									
First emp before 9 mths	0.02(0.07)	0.09(0.06)	0.03(0.06)	-0.01(0.06)	-0.13(0.06)*	-0.08(0.06)	-0.03(0.06)	-0.02(0.07)	-0.00(0.06)
First emp before 2 yrs	0.07(0.05)	0.09(0.05)+	0.02(0.05)	-0.02(0.06)	-0.03(0.05)	0.04(0.05)	-0.12(0.06)*	0.07(0.05)	0.10(0.05)+
Employment History Covariates									
Mother emp before birth	0.06(0.06)	0.01(0.06)	0.06(0.06)	-0.08(0.06)	0.06(0.07)	0.10(0.06)+	0.03(0.07)	0.04(0.07)	0.04(0.07)
Mother employed W4/5	0.06(0.06)	0.05(0.06)	-0.01(0.05)	-0.05(0.06)	-0.02(0.06)	-0.05(0.05)	-0.04(0.06)	0.03(0.06)	0.01(0.05)
Child Covariates									
Age W1	-0.00(0.05)	-0.03(0.05)	-0.00(0.05)	0.01(0.04)	-0.03(0.04)	0.02(0.04)	-0.06(0.03)	0.03(0.04)	0.07(0.04)+
Age W4	-0.02(0.04)	-0.01(0.03)	-0.03(0.04)	-0.04(0.04)	0.03(0.04)	0.01(0.04)	0.06(0.04)	-0.02(0.04)	-0.05(0.03)
Boy	-0.18(0.05)**	-0.03(0.04)	0.11(0.05)*	0.27(0.05)**	-0.42(0.05)**	-0.41(0.04)**	0.33(0.05)**	-0.57(0.06)**	-0.63(0.05)**
Low birthweight	-0.25(0.13)+	-0.08(0.10)	-0.03(0.10)	0.09(0.13)	-0.06(0.12)	-0.11(0.13)	0.02(0.15)	0.07(0.13)	-0.08(0.12)
Twin	0.14(0.13)	0.23(0.14)+	0.19(0.13)	-0.25(0.11)*	0.13(0.10)	0.09(0.13)	-0.23(0.12)+	0.04(0.12)	0.13(0.12)
Temperament	-	-	-	-0.12(0.02)**	0.13(0.02)**	0.08(0.02)**	0.03(0.03)	-0.01(0.03)	-0.05(0.02)*
CSBS score	0.07(0.04)+	0.06(0.04)	0.08(0.04)*	-	-	-	-	-	-
Mother/Family Covariates									
Age of mother	0.03(0.03)	0.07(0.03)**	0.16(0.03)**	0.00(0.03)	-0.02(0.03)	0.00(0.03)	-0.00(0.03)	0.02(0.03)	-0.03(0.03)
Less than high school	-0.18(0.16)	-0.05(0.17)	-0.27(0.14)+	0.01(0.16)	-0.16(0.15)	-0.10(0.14)	-0.05(0.15)	0.05(0.17)	0.07(0.18)
Some college	0.07(0.07)	0.04(0.06)	0.14(0.06)*	0.06(0.06)	-0.01(0.08)	0.00(0.07)	0.05(0.07)	-0.02(0.07)	0.02(0.07)
College/grad degree	0.24(0.06)**	0.18(0.07)*	0.27(0.06)**	-0.08(0.06)	-0.04(0.07)	0.12(0.06)+	0.01(0.08)	-0.02(0.06)	0.11(0.07)
Parent Asian	0.10(0.14)	0.23(0.12)+	-0.24(0.12)+	-0.17(0.12)	-0.05(0.12)	0.05(0.11)	-0.09(0.14)	0.01(0.12)	0.11(0.14)
Parent Indigenous	-0.20(0.16)	0.01(0.16)	-0.27(0.25)	-0.02(0.19)	0.08(0.20)	0.11(0.17)	0.01(0.22)	-0.24(0.18)	0.05(0.19)
Immigrant household	0.01(0.06)	0.04(0.06)	-0.02(0.06)	-0.10(0.06)	-0.04(0.06)	0.08(0.05)	-0.01(0.06)	-0.01(0.07)	0.07(0.06)
Non-english speaking household	0.08(0.10)	-0.04(0.09)	-0.15(0.09)	0.14(0.09)	-0.03(0.08)	-0.03(0.08)	0.08(0.09)	-0.09(0.10)	-0.10(0.09)
Non-mother income (in 10,000s) avg W1-4	0.06(0.03)*	0.09(0.03)**	0.07(0.03)**	-0.03(0.03)	-0.01(0.03)	0.03(0.02)	-0.03(0.03)	0.07(0.03)*	0.03(0.02)
Married all waves	0.19(0.14)	0.07(0.13)	-0.02(0.13)	-0.09(0.15)	-0.09(0.13)	0.19(0.13)	-0.16(0.15)	0.13(0.13)	0.14(0.14)
Married some waves	0.02(0.11)	-0.00(0.12)	-0.04(0.11)	0.07(0.12)	-0.10(0.11)	-0.02(0.11)	-0.04(0.14)	0.03(0.12)	0.01(0.10)
Cohab any waves	0.05(0.13)	-0.02(0.11)	0.00(0.12)	0.02(0.13)	-0.16(0.12)	0.08(0.11)	0.02(0.13)	0.13(0.12)	0.05(0.13)
Number of non-parter adults in hh W1-4	-0.04(0.03)	-0.01(0.03)	-0.06(0.03)	0.02(0.03)	-0.01(0.03)	-0.01(0.03)	0.02(0.03)	0.04(0.03)	0.00(0.03)
Number of siblings W1	-0.10(0.04)**	-0.10(0.03)**	-0.17(0.03)**	0.01(0.03)	-0.05(0.03)	0.07(0.03)*	-0.04(0.04)	0.01(0.03)	0.03(0.04)
New sibling W2	0.01(0.05)	-0.09(0.05)	-0.03(0.05)	-0.05(0.06)	-0.03(0.05)	0.13(0.05)*	-0.14(0.06)*	0.09(0.05)	0.09(0.07)
New sibling W3-W4	-0.02(0.06)	0.02(0.06)	-0.02(0.06)	0.09(0.06)	-0.08(0.06)	-0.05(0.06)	-0.00(0.06)	-0.02(0.06)	-0.00(0.05)
Welfare all waves	-0.16(0.16)	-0.02(0.17)	-0.21(0.18)	0.25(0.17)	-0.30(0.16)+	-0.21(0.15)	-0.01(0.15)	-0.00(0.17)	-0.02(0.15)
Welfare some waves	-0.03(0.07)	0.02(0.07)	-0.04(0.05)	0.05(0.06)	-0.06(0.06)	-0.04(0.05)	0.05(0.06)	-0.00(0.06)	-0.04(0.06)
Working parter all waves	0.06(0.12)	-0.06(0.14)	-0.04(0.14)	-0.04(0.18)	0.16(0.12)	0.14(0.18)	-0.04(0.19)	-0.04(0.16)	0.09(0.14)
Working parter some waves	0.08(0.11)	0.03(0.11)	-0.02(0.13)	-0.04(0.16)	0.14(0.12)	0.09(0.17)	0.03(0.18)	-0.04(0.15)	0.00(0.13)
F of model	6.75**	3.87**	8.61**	4.72**	4.88**	6.04**	3.38**	6.43**	7.71**
R^2	0.11	0.06	0.15	0.07	0.08	0.10	0.06	0.10	0.13

Note: +$p<.10$, *$p<.05$, **$p<.01$. Employed groups are compared to the omitted category of no employment. All models were estimated using OLS regression and weighted with propensity score weights.

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Table 14

United Kingdom: Influence of the Timing of Employment after Birth on the Development of Children's Cognitive and Behavioral Skills with Propensity Score Weights, n=18,497

Independent Variables	Academic Skills			Behavioral Skills, Parent Report			Behavioral Skills, Teacher Report		
	Pattern Constr.	Word Reading	Number Skills	Conduct	Prosocial	Attention	Conduct	Prosocial	Attention
Timing of first employment									
First emp before 9 mths	-0.01(0.03)	-0.03(0.03)	-0.03(0.03)	0.02(0.03)	-0.01(0.04)	-0.04(0.03)	0.03(0.04)	-0.00(0.03)	-0.04(0.03)
First emp before 2 yrs	0.02(0.03)	0.02(0.03)	0.03(0.03)	-0.01(0.03)	0.01(0.03)	-0.00(0.03)	-0.01(0.03)	0.03(0.03)	-0.02(0.03)
Employment History Covariates									
Mother emp before birth	0.02(0.03)	0.09(0.03)**	0.07(0.03)*	-0.07(0.04)*	0.00(0.04)	0.02(0.03)	-0.03(0.03)	0.02(0.03)	-0.01(0.03)
Mother employed W4/5	0.05(0.03)+	0.03(0.03)	0.06(0.03)*	-0.09(0.03)**	0.02(0.03)	0.10(0.03)**	-0.04(0.03)	0.02(0.03)	0.05(0.03)+
Child Covariates									
Age W1	0.00(0.01)	-0.01(0.01)	-0.01(0.01)	-0.00(0.01)	-0.01(0.01)	0.01(0.01)	0.00(0.01)	-0.01(0.01)	0.00(0.01)
Age W4	0.01(0.01)	-0.00(0.01)	0.01(0.01)	-0.03(0.01)*	0.03(0.01)+	0.02(0.01)+	-0.01(0.01)	0.02(0.01)	0.01(0.01)
Boy	-0.02(0.02)	-0.13(0.02)**	0.04(0.02)+	0.16(0.02)**	-0.28(0.02)**	-0.29(0.02)**	0.23(0.03)**	-0.40(0.03)**	-0.42(0.03)**
Low birthweight	-0.14(0.06)*	-0.09(0.05)+	-0.10(0.05)*	0.08(0.05)+	-0.04(0.06)	-0.21(0.05)**	-0.02(0.05)	-0.02(0.05)	-0.14(0.05)*
Twin	0.11(0.09)	-0.02(0.07)	0.07(0.09)	0.03(0.08)	0.02(0.09)	0.03(0.11)	0.00(0.08)	0.08(0.09)	0.14(0.09)
Black	-0.54(0.06)**	0.14(0.07)+	-0.13(0.07)+	-0.25(0.07)**	0.22(0.06)**	0.10(0.06)+	0.15(0.07)*	-0.11(0.06)+	-0.10(0.06)
Indian	-0.07(0.09)	0.31(0.08)**	0.17(0.09)*	-0.12(0.08)	0.16(0.10)	-0.03(0.08)	-0.05(0.09)	0.03(0.08)	0.14(0.07)+
Pakistani/Bangladeshi	-0.34(0.09)**	0.21(0.09)*	-0.31(0.11)**	-0.26(0.09)**	0.00(0.13)	-0.10(0.11)	0.07(0.11)	-0.13(0.09)	-0.05(0.1)
Multiracial	-0.08(0.08)	0.17(0.06)**	0.07(0.08)	-0.11(0.07)	0.12(0.07)	0.03(0.07)	-0.05(0.06)	0.01(0.06)	0.08(0.07)
Other	-0.13(0.11)	0.13(0.14)	-0.07(0.15)	-0.17(0.11)	0.13(0.15)	0.03(0.10)	-0.01(0.16)	0.04(0.14)	0.09(0.15)
Temperament	-	-	-	-0.08(0.01)**	0.10(0.01)**	0.05(0.01)**	0.01(0.02)	0.00(0.01)	-0.01(0.02)
S&C skills	0.08(0.01)**	0.02(0.01)	0.08(0.01)**	-	-	-	-	-	-
Mother/Family Covariates									
Age of mother	0.03(0.01)*	0.08(0.02)**	0.04(0.02)*	-0.06(0.02)**	-0.02(0.02)	0.05(0.01)**	-0.04(0.01)*	0.01(0.02)	0.04(0.02)*
Less than high school	0.00(0.05)	-0.06(0.05)	-0.05(0.05)	0.14(0.05)**	-0.05(0.05)	-0.05(0.04)	-0.01(0.05)	0.02(0.06)	0.01(0.05)
Some college	0.05(0.04)	0.09(0.04)*	0.07(0.04)+	-0.04(0.04)	0.02(0.04)	0.04(0.03)	-0.03(0.03)	0.04(0.03)	0.04(0.03)
College/grad degree	0.20(0.03)**	0.21(0.03)**	0.21(0.03)**	-0.08(0.03)**	0.04(0.03)	0.10(0.03)**	-0.04(0.03)	0.03(0.03)	0.08(0.03)**
Immigrant household	0.03(0.05)	0.11(0.04)*	0.05(0.06)	0.04(0.05)	-0.05(0.05)	-0.02(0.05)	0.05(0.04)	-0.07(0.06)	-0.01(0.05)
Non-english speaking household	-0.08(0.06)	-0.06(0.05)	-0.12(0.06)*	0.05(0.06)	-0.09(0.08)	0.04(0.05)	-0.02(0.06)	-0.04(0.07)	-0.04(0.06)
Non-mother income (in 10,000s) avg W1-4	0.08(0.02)**	0.11(0.02)**	0.10(0.02)**	-0.06(0.02)**	0.00(0.02)	0.07(0.02)**	-0.01(0.02)	0.01(0.02)	0.01(0.02)
Married all waves	0.04(0.05)	0.05(0.05)	0.05(0.05)	-0.09(0.06)	0.03(0.06)	0.10(0.05)+	-0.09(0.07)	0.10(0.06)	0.12(0.06)*
Married some waves	0.05(0.04)	0.03(0.04)	0.01(0.04)	-0.03(0.05)	0.04(0.04)	0.04(0.04)	-0.05(0.04)	0.05(0.04)	0.04(0.04)
Cohab any waves	-0.01(0.04)	-0.00(0.04)	0.00(0.04)	0.03(0.04)	-0.05(0.04)	-0.03(0.04)	-0.01(0.04)	0.04(0.04)	0.04(0.05)
Number of non-parter adults in hhW1-4	-0.00(0.03)	-0.00(0.02)	0.02(0.03)	-0.02(0.03)	0.01(0.03)	0.00(0.03)	-0.03(0.02)	0.02(0.02)	0.02(0.02)
Number of siblings W1	-0.04(0.02)*	-0.14(0.02)**	-0.06(0.02)**	0.04(0.02)*	-0.01(0.02)	0.01(0.01)	0.01(0.02)	0.00(0.02)	-0.01(0.01)
New sibling W2	0.02(0.03)	-0.04(0.03)	0.01(0.03)	0.02(0.02)	-0.04(0.03)	0.07(0.03)*	-0.01(0.02)	0.04(0.03)	0.04(0.02)+
New sibling W3-W4	-0.03(0.02)	-0.03(0.02)	-0.04(0.03)	0.04(0.03)	-0.04(0.03)	-0.01(0.03)	-0.02(0.03)	0.02(0.03)	0.03(0.03)
Welfare all waves	-0.20(0.09)*	-0.17(0.07)*	-0.13(0.07)+	0.22(0.07)**	-0.07(0.07)	-0.27(0.09)**	0.15(0.08)+	-0.14(0.08)+	-0.17(0.06)**
Welfare some waves	-0.13(0.04)**	-0.11(0.03)**	-0.11(0.04)**	0.12(0.04)**	-0.06(0.04)	-0.15(0.04)**	0.14(0.04)**	-0.11(0.05)*	-0.14(0.04)**
Working parter all waves	0.02(0.08)	0.05(0.06)	-0.01(0.07)	-0.08(0.06)	0.15(0.07)*	0.01(0.06)	-0.16(0.07)*	0.11(0.07)	0.09(0.07)
Working parter some waves	0.02(0.06)	0.03(0.05)	-0.00(0.06)	-0.04(0.05)	0.07(0.06)	0.01(0.05)	-0.07(0.06)	0.06(0.06)	0.03(0.05)
F of model	14.63**	14.32**	17.14**	18.33**	10.18**	17.89**	9.27**	11.76**	18.30**
R²	0.09	0.14	0.10	0.10	0.06	0.10	0.07	0.10	0.13

Note: +p<.10, *p<.05, **p<.01. Employed groups are compared to the omitted category of no employment. All models were estimated using OLS regression and weighted with propensity score weights.

Moderation by Race/Ethnicity

Prior to turning to the main mediating and moderating models of interest across all three countries, I paused to examine whether the present U.S. results differed from past findings from other U.S. large-scale survey datasets due to differences in the makeup of the sample. Much of the past research in the U.S. has studied samples of only or primarily European American ancestry (Baydar & Brooks-Gunn, 1991; Berger et al., 2005; Blau & Grossberg, 1992; Brooks-Gunn et al., 2002; 2010; Desai et al., 1989; Han et al., 2001; Hill et al., 2005; Ruhm, 2004), with some indication that prior negative associations between early maternal employment and child functioning were not shared by other racial/ethnic groups such as African Americans (Berger et al., 2008; Coley & Lombardi, 2013). Thus, in supplemental analyses, I assessed whether links between maternal employment and child functioning in the U.S. data differed for children across racial and ethnic groups. Due to the small sample sizes of the Asian, Native American, and multiracial groups, they were combined into one group denoted as "other". Interactions between employment groups and race/ethnic groups (African American, Hispanic, and other, with whites as the referent) were entered into the main regression models. Results (see Table 15) showed no significant patterns to suggest that early maternal employment was differentially associated with children's cognitive and behavioral skills across racial/ethnic groups in the U.S.

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Table 15

United States: Models Testing Moderation by Race/Ethnicity, n=10,1000

Independent Variables	Cognitive Skills		Behavioral Skills, Parent Report			Behavioral Skills, Teacher Report		
	Reading	Math	Conduct	Prosocial	Attention	Conduct	Prosocial	Attention
Main effects								
First emp before 9 mths	-0.05(0.05)	-0.06(0.05)	0.16(0.05)**	-0.01(0.06)	-0.18(0.05)**	0.08(0.06)	-0.10(0.07)	-0.08(0.06)
First emp before 2 yrs	-0.02(0.08)	-0.08(0.08)	0.09(0.07)	-0.05(0.08)	-0.14(0.09)	0.11(0.08)	-0.09(0.10)	-0.12(0.08)
African American	-0.04(0.09)	-0.28(0.10)**	0.01(0.10)	-0.05(0.10)	-0.01(0.10)	0.12(0.14)	-0.09(0.11)	-0.06(0.14)
Hispanic	-0.11(0.09)	-0.28(0.09)**	0.03(0.08)	0.05(0.09)	-0.01(0.08)	-0.05(0.10)	-0.12(0.09)	-0.00(0.08)
Other	0.11(0.10)	-0.05(0.09)	-0.06(0.11)	-0.12(0.12)	-0.09(0.12)	-0.07(0.13)	-0.09(0.14)	-0.01(0.10)
Interactions								
First emp before 9 mths * African American	0.15(0.10)	0.11(0.10)	-0.14(0.12)	0.13(0.12)	0.20(0.11)+	-0.05(0.13)	0.20(0.11)+	0.08(0.13)
First emp before 9 mths * Hispanic	0.07(0.09)	0.06(0.08)	-0.13(0.11)	-0.03(0.10)	0.15(0.09)+	-0.09(0.14)	0.15(0.12)	0.07(0.10)
First emp before 9 mths * Other	0.05(0.12)	0.13(0.10)	-0.04(0.13)	0.02(0.12)	0.14(0.14)	0.00(0.14)	-0.01(0.16)	0.07(0.11)
First emp before 2 yrs * African American	0.02(0.15)	0.09(0.16)	-0.12(0.15)	0.22(0.17)	0.19(0.16)	-0.08(0.18)	0.09(0.19)	0.01(0.19)
First emp before 2 yrs * Hispanic	-0.06(0.14)	0.03(0.13)	-0.06(0.15)	0.02(0.16)	0.03(0.13)	-0.11(0.16)	0.16(0.17)	0.02(0.15)
First emp before 2 yrs * Other	0.19(0.17)	0.26(0.16)	0.06(0.22)	0.13(0.19)	0.08(0.20)	-0.08(0.19)	0.16(0.22)	0.12(0.18)
F of model	16.77**	22.52**	6.29**	5.27**	7.27**	7.46**	5.24**	9.98**
R^2	0.20	0.21	0.10	0.07	0.09	0.13	0.09	0.14

Note: +p<.10, *p<.05, **p<.01. Employed groups are compared to the omitted category of no employment. All models were estimated using OLS regression and weighted with propensty score weights. All analyses controlled for the W1 value of child age, gender, race, low-birthweight status, lag of the DV, number of siblings and twin status as well as new siblings W2, new siblings W3-4/5, entering kindergarten at W5 and child age at assessment. All models also controlled for the W1 value of mother age, education, and English speaking household as well as averages over W1-4/5 of the average number of non-partner adults living in the household, cohabitation, marital status, welfare recipient status, working partner, and household annual income not including mother's income.

Maternal Time, Stress, and Money as Mediating Processes

The next set of models assessed support for the theoretical suppositions that maternal time, stress, and money would serve as mediating processes linking early maternal employment to child functioning. First, models for each country were run to predict the measures of time (children's weekly hours in nonparental care), stress (maternal depressive symptoms), and money (maternal earnings). Results for all three countries are shown in Table 16. Employment in the first 9 months and the first two years were predictive of higher child care hours at wave 2 in all three countries. Employment before 9 months predicted higher child care hours in the U.K. in comparison to employment after 9 months, while there were no significant differences between the employment groups for the U.S. and Australia. Not surprisingly, employment was also predictive of higher maternal employment income for all three countries. Income from employment at wave 2 was higher for Australian and British mothers employed in the first 9 months in comparison to later employment while American mothers employed after 9 months had higher income than earlier employed mothers.

While results from models predicting time and income from all countries aligned with hypotheses about how maternal employment would be related to these processes, results from the models predicting maternal depression did not for two of the countries. Early maternal employment was not predictive of maternal depression for American and Australian mothers and, in fact, coefficients for the earliest employed group, which was hypothesized to experience the highest level of stress, were negative. Results for the U.K. fell more into hypothesized patterns. British mothers employed before 9 months

experienced higher levels of depression at wave 2 in comparison to non-employed

mothers (0.07 SDs). British mothers employed later did not differ from non-employed

mothers. Results for all models were similar when including the other process variables

as covariates in the models (e.g., including maternal employment income and maternal

depression as covariates in models predicting child care hours; data not shown).

Table 16

Models Predicting Child Care Hours, Maternal Employment Income, and Maternal Depression

Independent Variables	Child care hours	Maternal emp income	Maternal depression
Model 1: United States, n=10,100			
First emp before 9 mths	0.35(0.03)**	0.33(0.03)**a	-0.02(0.04)
First emp before 2 yrs	0.40(0.04)**	0.47(0.05)**a	0.03(0.05)
F of model	36.80**	36.51**	5.92**
R^2	0.41	0.37	0.06
Model 2: Australia, n=5,093			
First emp before 9 mths	0.33(0.06)**	0.44(0.05)**a	-0.11(0.06)
First emp before 2 yrs	0.27(0.05)**	0.25(0.04)**a	0.01(0.08)
F of model	20.47**	16.97**	3.34**
R^2	0.16	0.17	0.07
Model 3: United Kingdom, n=18,497			
First emp before 9 mths	0.88(0.03)**a	0.63(0.03)**a	0.07(0.03)*
First emp before 2 yrs	0.36(0.03)**a	0.55(0.03)**a	0.03(0.03)
F of model	70.14**	47.96**	9.90**
R^2	0.21	0.28	0.05

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 were estimated using OLS regression and weighted with propensty score weights. All analyses controlled for the W1 value of child age, gender, race, low-birthweight status, lag of the DV, number of siblings and twin status as well as new siblings W2, new siblings W3-4/5, entering kindergarten at W5 (for U.S. models only) and child age at assessment. All models also controlled for the W1 value of mother age, education, and English speaking household as well as averages over W1-4/5 of the average number of non-partner adults living in the household, cohabitation, marital status, welfare recipient status, working partner, and household annual income not including mother's income.

Next, models were re-run to predict child functioning including the measures of time, stress, and money. As expected, these processes might cancel each other out in predicting child outcomes.

United States. Results are shown in Table 17. Only one of these variables was a significant predictor of children's cognitive or behavioral skills; higher maternal depression at wave 1 was linked with higher parent-reported conduct problems, however it was not linked with teacher's reports of conduct problems. Furthermore, their inclusion did not significantly alter the limited associations between early maternal employment and child functioning, indicating a lack of mediation (results were similar when mediators were included one at a time). Indirect effects were calculated and all were non-significant.

Table 17

United States: Models Testing Mediation by Child Care Hours, Maternal Employment Income, and Maternal Depression, n=10,100

	Cognitive Skills		Behavioral Skills, Parent Report			Behavioral Skills, Teacher Report		
Independent Variables	Reading	Math	Conduct	Prosocial	Attention	Conduct	Prosocial	Attention
Timing of first employment								
First emp before 9 mths	0.05(0.04)	0.03(0.04)	0.09(0.05)+	0.01(0.05)	-0.08(0.04)+	0.02(0.04)	-0.02(0.05)	-0.01(0.04)
First emp before 2 yrs	0.02(0.05)	-0.01(0.05)	0.05(0.06)	-0.01(0.07)	-0.08(0.06)	0.04(0.06)	-0.02(0.07)	-0.09(0.06)
Mediators								
Child care hours W2	-0.01(0.04)	0.01(0.04)	0.01(0.04)	0.00(0.04)	-0.06(0.04)	0.05(0.05)	-0.01(0.04)	-0.03(0.04)
Maternal emp income W2	0.03(0.04)	0.01(0.04)	-0.02(0.04)	0.04(0.03)	0.05(0.04)	-0.04(0.04)	0.02(0.04)	0.04(0.03)
Maternal depression W1	0.00(0.02)	0.01(0.02)	0.04(0.02)*	-0.02(0.02)	-0.04(0.02)+	0.03(0.03)	-0.01(0.03)	-0.01(0.03)
F of model	21.10**	25.49**	6.71**	5.70**	7.8**	8.02**	5.17**	10.72**
R^2	0.21	0.23	0.10	0.07	0.10	0.13	0.09	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 were estimated using OLS regression and weighted with propensty score weights. All analyses controlled for the W1 value of child age, gender, race, low-birthweight status, lag of the DV, number of siblings and twin status as well as new siblings W2, new siblings W3-4/5, entering kindergarten at W5 and child age at assessment. All models also controlled for the W1 value of mother age, education, and English speaking household as well as averages over W1-4/5 of the average number of non-partner adults living in the household, cohabitation, marital status, welfare recipient status, working partner, and household annual income not including mother's income.

Australia. Results are shown in Table 18. There were more links between the hypothesized mediators and child outcomes in the LSAC-B than in the ECLS-B. Child

care hours were linked with higher parent and teacher reported conduct problems (.08 and .10 SDs), lower teacher reported prosocial skills (.06 SDs), and lower parent and teacher reported attention skills (.10 and .09 SDs). Maternal depression was predictive of worse parent reported behavioral skills; specifically, higher parent reported conduct skills (.11 SDs) and lower parent reported prosocial and attention skills (.08 and .07 SDs respectively). Interestingly, there were no links with mothers' employment income. While the addition of these hypothesized mediators revealed some intriguing associations between the mediators and child functioning, their inclusion did not significantly alter the pattern of associations between early maternal employment and child functioning, indicating a lack of mediation. Results were similar when mediators were included one at a time. Testing for indirect effects suggested that there may have been significant indirect effects of child care hours on parent and teacher reported conduct problems.

Table 18

Australia: Models Testing Mediation by Child Care Hours, Maternal Employment Income, and Maternal Depression, n=5,093

	Academic Skills			Behavioral Skills, Parent Report			Behavioral Skills, Teacher Report		
Independent Variables	Teacher Academic	Matrix Reasoning	Vocabulary	Conduct	Prosocial	Attention	Conduct	Prosocial	Attention
Timing of first employment									
First emp before 9 mths	0.03(0.07)	0.08(0.06)	0.04(0.06)	-0.01(0.06)	-0.12(0.06)+	-0.07(0.06)a	-0.06(0.06)	-0.00(0.07)	0.03(0.06)
First emp before 2 yrs	0.07(0.05)	0.08(0.05)	0.03(0.05)	-0.04(0.06)	-0.01(0.05)	0.06(0.05)a	-0.15(0.06)*	0.08(0.05)	0.13(0.05)*
Mediators									
Child care hours W2	-0.00(0.03)	0.02(0.02)	-0.05(0.03)+	0.08(0.03)**	-0.05(0.03)+	-0.1(0.03)**	0.10(0.03)**	-0.06(0.03)*	-0.09(0.03)*
Maternal emp income W2	-0.03(0.03)	0.00(0.02)	0.03(0.02)	-0.04(0.02)	-0.01(0.03)	0.04(0.03)	-0.01(0.03)	-0.01(0.03)	-0.01(0.02)
Maternal depression W1	-0.02(0.03)	-0.01(0.03)	0.00(0.03)	0.11(0.03)**	-0.08(0.02)**	-0.07(0.03)**	0.03(0.03)	-0.05(0.03)	-0.04(0.03)
F of model	6.68**	3.67**	8.57**	5.40**	5.19**	6.51**	3.75**	6.33**	8.04**
R^2	0.11	0.05	0.16	0.09	0.09	0.11	0.07	0.11	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 were estimated using OLS regression and weighted with propensity score weights. All analyses controlled for the W1 value of child age, gender, low-birthweight status, lag of the DV, number of siblings and twin status as well as new siblings W2, new siblings W3-4, and child age at assessment. All models also controlled for the W1 value of mother age, education, asian, indigenous, immigrant household and English speaking household as well as averages over W1-4 of the average number of non-partner adults living in the household, cohabitation, marital status, welfare recipient status, working partner, and household annual income not including mother's income.

United Kingdom. Like the other two countries, results from the MCS provided little evidence that child care hours, maternal employment income, or maternal depression were mediators of the relationship between early maternal employment and

children's cognitive and behavioral skills (results presented in Table 19). Child care

hours at wave 2 were predictive of higher number skills and lower parent reported

attention skills with very small effect sizes (.04 and .03 SDs respectively). Like the other

two countries, maternal employment income was not associated with children's cognitive

and behavioral outcomes. However, maternal depression at wave 1 had consistentlinks

with children's behavioral outcomes including higher parent and teacher reported conduct

problems (.12 and .04 SDs), lower parent reported prosocial skills (.04 SDs), and lower

parent and teacher reported attention skills (.11 and .03 SDs). Similar to the other two

datasets, the inclusion of these hypothesized mediators did not significantly alter the

pattern of associations between early maternal employment and child functioning,

indicating a lack of mediation. Results were similar when mediators were included one at

a time. There was indication of some significant indirect effects of child care hours and

maternal employment income on cognitive skills.

Table 19

United Kingdom: Models Testing Mediation by Child Care Hours, Maternal Employment Income, and Maternal Depression, n=18,497

	Academic Skills			Behavioral Skills, Parent Report			Behavioral Skills, Teacher Report		
Independent Variables	Pattern Constr.	Word Reading	Number Skills	Conduct	Prosocial	Attention	Conduct	Prosocial	Attention
Timing of first employment									
First emp before 9 mths	-0.05(0.03)	-0.05(0.04)*a*	-0.08(0.04)**a*	0.01(0.04)	-0.00(0.04)	0.01(0.03)	0.00(0.04)	0.03(0.04)	-0.01(0.04)
First emp before 2 yrs	-0.01(0.03)	0.00(0.03)*a*	0.00(0.03)*a*	-0.01(0.03)	0.01(0.03)	0.02(0.03)	-0.03(0.03)	0.05(0.03)	0.00(0.03)
Mediators									
Child care hours W2	0.02(0.01)	0.02(0.01)	0.04(0.01)*	0.01(0.01)	0.01(0.01)	-0.03(0.01)*	0.02(0.01)	-0.02(0.01)	-0.02(0.01)
Maternal emp income W2	0.03(0.02)	0.02(0.02)	0.03(0.02)	-0.02(0.02)	-0.02(0.02)	-0.01(0.02)	0.02(0.02)	-0.02(0.02)	-0.02(0.02)
Maternal depression W1	-0.01(0.01)	-0.00(0.01)	-0.01(0.01)	0.12(0.01)**	-0.04(0.01)*	-0.11(0.01)**	0.04(0.01)*	-0.03(0.02)+	-0.03(0.01)*
F of model	13.66**	22.41**	16.05**	20.32**	9.39**	20.24**	8.78**	10.64**	16.79**
R^2	0.09	0.15	0.10	0.12	0.06	0.12	0.08	0.10	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 models were estimated using OLS regression and weighted with propensity score weights. All analyses controlled for the W1 value of child age, gender, low-birthweight status, race/ethnicity, lag of the DV, number of siblings and twin status as well as new siblings W2, new siblings W3-4, and child age at assessment. All models also controlled for the W1 value of mother age, education, and English speaking household as well as averages over W1-4 of the average number of non-partner adults living in the household, cohabitation, marital status, welfare recipient status, working partner, and household annual income not including mother's income.

Maternal Time as a Moderator of Early Employment

The next sets of models assessed whether maternal time, stress, and money acted as moderators rather than mediators of early maternal employment, altering the directionality or strength of associations with children's cognitive and behavioral skills. The first of these models assessed the role of time by delineating hours of employment, with the argument that full-time employment demands more time away from parenting than part-time employment. Each early employed group was further delineated into part-time or full-time employment, and the resultant 5 categories of employment were analyzed using the three-step PSW technique described above. Post hoc analyses tested for significant differences between groups. A second way of measuring mothers' time away from children is the number of hours per week spent in child care. Thus, a second set of moderation models tested interactions between maternal employment and children's hours in nonparental childcare, centering hours and all other continuous variables in the model.

United States. Results, presented in the top panel of Table 20 (Model 1), show a limited role of time, with little evidence that early maternal employment with greater hours is detrimental to child functioning. Results found that full-time employment begun before 9 months after childbirth drove the association with children's attention skills, with children of such mothers receiving lower mother reports of attention skills than children of non-employed mothers (.10 SDs), but this coefficient was not significantly different from that of mothers employed part-time prior to 9 months.

A second set of moderation models tested interactions between maternal employment and children's hours in nonparental childcare. Results, seen in the bottom

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panel of Table 20 (Model 2), found no significant interactions. Together, these results provide no evidence that greater time devoted to employment or away from childrearing strengthens negative associations with children's functioning for children in the United States.

Table 20

United States: Models Testing Moderation by Employment Intensity, n=10,100

Independent Variables	Cognitive Skills		Behavioral Skills, Parent Report			Behavioral Skills, Teacher Report		
	Reading	Math	Conduct	Prosocial	Attention	Conduct	Prosocial	Attention
Model 1: Intensity of maternal employment								
First emp before 9 mths part time	-0.00(0.05)	-0.03(0.05)	0.08(0.05)	-0.02(0.06)	-0.05(0.05)	0.03(0.05)	-0.07(0.07)	0.02(0.06)
First emp before 9 mths full time	0.06(0.04)	0.07(0.04)+	0.08(0.05)	0.04(0.05)	-0.10(0.04)*	0.03(0.04)	0.01(0.06)	-0.02(0.05)
First emp before 2 yrs part time	0.03(0.08)	-0.01(0.08)	-0.02(0.08)	0.07(0.08)	-0.05(0.09)	0.06(0.10)	-0.01(0.10)	-0.12(0.09)
First emp before 2 yrs full time	0.05(0.07)	0.03(0.06)	0.07(0.08)	-0.01(0.08)	-0.08(0.08)	0.04(0.07)	-0.02(0.08)	-0.07(0.07)
F of model	16.91**	20.73**	5.89**	5.44**	6.20**	7.10**	4.73**	8.84**
R^2	0.21	0.23	0.10	0.09	0.10	0.14	0.10	0.15
Model 2: Intensity of nonparental child care								
Main effects								
First emp before 9 mths	0.05(0.04)	0.04(0.04)	0.09(0.05)+	0.01(0.05)	-0.07(0.04)+	0.02(0.04)	-0.02(0.05)	-0.01(0.04)
First emp before 2 yrs	0.03(0.05)	0.00(0.05)	0.05(0.06)	-0.00(0.07)	-0.07(0.06)	0.03(0.06)	-0.01(0.07)	-0.08(0.06)
Child care hours W2	0.00(0.04)	0.01(0.04)	-0.02(0.05)	0.03(0.04)	-0.01(0.04)	0.04(0.05)	-0.01(0.04)	-0.02(0.04)
Interactions								
First emp before 9 mths*Child care hours W2	0.01(0.04)	0.01(0.04)	0.01(0.06)	-0.02(0.04)	-0.02(0.04)	0.00(0.05)	0.01(0.04)	-0.01(0.06)
First emp before 2 yrs*Child care hours W2	0.00(0.06)	0.03(0.05)	0.04(0.07)	0.00(0.07)	-0.01(0.06)	-0.02(0.06)	0.03(0.05)	0.04(0.06)
F of model	21.04**	25.05**	6.57**	5.60**	7.37**	7.87**	5.22**	10.32**
R^2	0.21	0.23	0.10	0.07	0.10	0.13	0.09	0.14

Note: +p<.10, *p<.05, **p<.01. Employed groups are compared to the omitted category of no employment. All models were estimated using OLS regression and weighted with propensty score weights. All analyses controlled for the W1 value of child age, gender, race, low-birthweight status, lag of the DV, number of siblings and twin status as well as new siblings W2, new siblings W3-4/5, entering kindergarten at W5 and child age at assessment. All models also controlled for the W1 value of mother age, education, and English speaking household as well as averages over W1-4/5 of the average number of non-partner adults living in the household, cohabitation, marital status, welfare recipient status, working partner, and household annual income not including mother's income.

Australia. Results from the LSAC-B, which are presented in the top panel of Table 21 (Model 1), showed a limited contradictory role of time. The association between employment before 9 months and parent reported prosocial skills was not found to be driven by full-time employment. However, there was a link between full-time employment before 9 months and children's parent-reported attention skills with children of mother's employed full-time during this timeframe having lower attention skills in the first grade in comparison to children with non-employed mothers (.24 SDs) and children of mothers' first employed part-time between 9 months and two years (0.21 SDs). Part-time employment in the second year was also linked with teacher reports of children's

lower conduct problems (.16 SDs) and higher attention skills (.12 SDs) in comparison to non-employment.

The second set of moderation models testing interactions between maternal employment and children's hours in nonparental childcare found no significant interactions (see Model 2 of Table 21). Together, these results suggest that greater time devoted to employment before 9 months may drive the negative associations with children's attention skills and also suggest some positive benefits of part-time employment begun between 9 months and two years.

United Kingdom. Results from the MCS are presented in Table 22. Similar to the U.S. results, these results show a limited role of time, with scant evidence that early maternal employment with greater hours is detrimental to child functioning (see Model 1). One significant finding indicated that full-time employment begun after 9 months and before 2 years was predictive of lower teacher reported attention skills in comparison to non-employment during the first two years (.08 SDs) and of lower teacher-reported prosocial skills in comparison to part-time employment (.11 SDs). The second set of moderation models which tested interactions between maternal employment and children's hours in nonparental childcare found no significant interactions (see Model 2 of Table 22). Overall, results from the three countries indicated little support for the moderational role of time. Although a handful of significant results emerged mostly consistent with the hypotheses, the limited number of significant results in comparison to the number of comparisons tested leaves open the possibility that they may have been due to pure chance.

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Table 21

Australia: Models Testing Moderation by Employment Intensity, n=5,093

Independent Variables	Academic Skills			Behavioral Skills, Parent Report			Behavioral Skills, Teacher Report		
	Teacher Academic	Matrix Reasoning	Vocabulary	Conduct	Prosocial	Attention	Conduct	Prosocial	Attention
Model 1: Intensity of maternal employment									
First emp before 9 mths part time	-0.02(0.07)	0.10(0.08)	0.05(0.07)	-0.04(0.06)	-0.14(0.07)+	-0.05(0.07)	-0.05(0.06)	-0.06(0.08)	-0.02(0.07)
First emp before 9 mths full time	-0.04(0.12)	0.13(0.10)	-0.01(0.10)	0.18(0.15)	-0.18(0.11)+	-0.24(0.12)*a	0.07(0.13)	0.00(0.15)	-0.03(0.13)
First emp before 2 yrs part time	0.08(0.06)	0.07(0.06)	0.01(0.07)	0.00(0.07)	-0.05(0.06)	0.03(0.06)a	-0.16(0.06)**	0.07(0.07)	0.12(0.06)*
First emp before 2 yrs full time	-0.10(0.10)	0.14(0.09)	0.01(0.09)	0.02(0.13)	-0.06(0.10)	-0.04(0.10)	0.08(0.12)	-0.09(0.11)	-0.05(0.09)
F of model	4.67**	3.01**	5.33**	2.70**	2.55**	3.17**	2.13**	3.30**	5.27**
R^2	0.16	0.08	0.19	0.13	0.11	0.14	0.11	0.13	0.17
Model 2: Intensity of nonparental child care									
Main effects									
First emp before 9 mths	0.03(0.07)	0.08(0.06)	0.04(0.06)	-0.05(0.06)	-0.11(0.07)	-0.04(0.06)	-0.08(0.06)	0.01(0.08)	0.03(0.06)
First emp before 2 yrs	0.07(0.05)	0.09(0.05)	0.04(0.05)	-0.04(0.06)	-0.02(0.06)	0.06(0.05)	-0.14(0.06)*	0.08(0.05)	0.13(0.05)*
Child care hours W2	-0.04(0.03)	0.01(0.02)	-0.07(0.03)*	0.10(0.03)**	-0.02(0.03)	-0.13(0.03)**	0.08(0.03)**	-0.1(0.03)**	-0.12(0.03)**
Interactions									
First emp before 9 mths*Child care hours W2	0.02(0.05)	0.02(0.05)	0.04(0.05)	0.00(0.06)	-0.07(0.06)	0.02(0.06)	0.06(0.06)	0.03(0.06)	0.03(0.05)
First emp before 2 yrs*Child care hours W2	0.04(0.04)	0.01(0.05)	0.03(0.05)	-0.06(0.05)	-0.01(0.05)	0.07(0.05)	-0.02(0.05)	0.06(0.05)	0.03(0.05)
F of model	6.78**	3.71**	8.30**	4.60**	4.74**	6.33**	3.69**	6.34**	7.98**
R^2	0.11	0.06	0.16	0.08	0.09	0.11	0.08	0.11	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 were estimated using OLS regression and weighted with propensity score weights. All analyses controlled for the W1 value of child age, gender, low-birthweight status, lag of the DV, number of siblings and twin status as well as new siblings W2, new siblings W3-4, and child age at assessment. All models also controlled for the W1 value of mother age, education, asian, indigenous, immigrant household and English speaking household as well as averages over W1-4 of the average number of non-partner adults living in the household, cohabitation, marital status, welfare recipient status, working partner, and household annual income not including mother's income.

Table 22

United Kingdom: Models Testing Moderation by Employment Intensity, n=18,497

	Academic Skills			Behavioral Skills, Parent Report			Behavioral Skills, Teacher Report		
Independent Variables	Pattern Constr.	Word Reading	Number Skills	Conduct	Prosocial	Attention	Conduct	Prosocial	Attention
Model 1: Intensity of maternal employment									
First emp before 9 mths part time	-0.01(0.03)	0.04(0.05)	-0.03(0.03)	0.01(0.04)	-0.01(0.04)	-0.00(0.04)	0.04(0.04)	-0.02(0.04)	-0.02(0.04)
First emp before 9 mths full time	-0.06(0.08)	-0.02(0.07)	-0.07(0.06)	-0.02(0.07)	-0.04(0.08)	-0.06(0.07)	0.04(0.07)	-0.05(0.07)	-0.07(0.07)
First emp before 2 yrs part time	0.02(0.03)	0.05(0.03)	0.02(0.03)	-0.01(0.03)	0.01(0.04)	0.02(0.04)	-0.02(0.04)	0.05(0.04)*a*	0.01(0.04)
First emp before 2 yrs full time	-0.02(0.04)	0.01(0.04)	0.01(0.04)	-0.03(0.04)	-0.01(0.04)	-0.03(0.04)	0.06(0.04)	-0.06(0.04)*a*	-0.08(0.04)*
F of model	9.05**	13.87**	9.33**	10.26**	5.63**	11.23**	5.24**	7.78**	11.48**
R^2	0.09	0.15	0.10	0.10	0.06	0.11	0.07	0.10	0.13
Model 2: Intensity of nonparental child care									
Main effects									
First emp before 9 mths	-0.02(0.03)	-0.04(0.04)	-0.06(0.04)	0.00(0.03)	-0.01(0.04)	-0.01(0.03)	0.01(0.04)	0.02(0.04)	-0.01(0.03)
First emp before 2 yrs	0.02(0.03)	0.02(0.03)	0.02(0.03)	-0.02(0.03)	0.01(0.04)	0.01(0.03)	-0.02(0.03)	0.05(0.03)	-0.00(0.03)
Child care hours W2	0.00(0.03)	0.00(0.02)	0.03(0.03)	0.03(0.02)	-0.01(0.03)	-0.03(0.03)	0.02(0.02)	-0.04(0.02)+	-0.04(0.02)+
Interactions									
First emp before 9 mths*Child care hours W2	0.01(0.04)	0.02(0.04)	0.02(0.04)	-0.03(0.03)	0.03(0.04)	-0.00(0.03)	-0.00(0.03)	0.03(0.03)	0.02(0.03)
First emp before 2 yrs*Child care hours W2	0.04(0.03)	0.03(0.03)	0.01(0.04)	-0.00(0.03)	0.00(0.03)	-0.02(0.03)	0.00(0.03)	0.01(0.03)	0.01(0.03)
F of model	13.95**	22.34**	15.94**	17.80**	10.37**	16.98**	8.78**	11.18**	17.56**
R^2	0.09	0.14	0.10	0.10	0.06	0.11	0.07	0.10	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. Employed groups are compared to the omitted category of no employment. All models were estimated using OLS regression and weighted with propensity score weights. All analyses controlled for the W1 value of child age, gender, low-birthweight status, race/ethnicity, lag of the DV, number of siblings and twin status as well as new siblings W2, new siblings W3-4, and child age at assessment. All models also controlled for the W1 value of mother age, education, and English speaking household as well as averages over W1-4 of the average number of non-partner adults living in the household, cohabitation, marital status, welfare recipient status, working partner, and household annual income not including mother's income.

Maternal Stress as a Moderator of Early Employment

An additional set of models tested the role of maternal stress by including interactions between maternal employment timing and mothers' depressive symptoms. Results for all countries (Tables 23, 24, and 25) indicated that there were no significant interactions, suggesting that even when mothers reported significant distress, early maternal employment was not associated with poorer cognitive and behavioral skills for children any of the countries.

Table 23
United States: Models Testing Moderation by Maternal Depression, n=10,100

Independent Variables	Cognitive Skills		Behavioral Skills, Parent Report			Behavioral Skills, Teacher Report		
	Reading	Math	Conduct	Prosocial	Attention	Conduct	Prosocial	Attention
Main effects								
First emp before 9 mths	0.05(0.04)	0.04(0.04)	0.08(0.05)+	0.02(0.05)	-0.08(0.04)*	0.03(0.04)	-0.02(0.05)	-0.01(0.04)
First emp before 2 yrs	0.03(0.05)	0.01(0.05)	0.04(0.06)	0.01(0.06)	-0.07(0.06)	0.04(0.06)	-0.01(0.07)	-0.08(0.06)
Maternal depression W1	-0.01(0.03)	0.00(0.03)	0.06(0.03)	0.01(0.04)	-0.04(0.03)	0.05(0.04)	-0.02(0.04)	-0.02(0.04)
Interactions								
First emp before 9 mths*Maternal depression W1	0.02(0.04)	0.01(0.04)	-0.03(0.05)	-0.01(0.04)	0.00(0.04)	-0.05(0.05)	0.00(0.05)	0.04(0.04)
First emp before 2 yrs*Maternal depression W1	0.03(0.05)	0.03(0.05)	-0.01(0.06)	-0.05(0.05)	-0.02(0.06)	-0.01(0.06)	0.02(0.07)	-0.01(0.06)
F of model	21.34**	25.71**	6.75**	5.70**	7.83**	7.96**	5.29**	10.77**
R^2	0.21	0.23	0.10	0.07	0.10	0.13	0.09	0.14

Note: +$p<.10$, *$p<.05$, **$p<.01$. Employed groups are compared to the omitted category of no employment. All models were estimated using OLS regression and weighted with propensty score weights. All analyses controlled for the W1 value of child age, gender, race, low-birthweight status, lag of the DV, number of siblings and twin status as well as new siblings W2, new siblings W3-4/5, entering kindergarten at W5 and child age at assessment. All models also controlled for the W1 value of mother age, education, and English speaking household as well as averages over W1-4/5 of the average number of non-partner adults living in the household, cohabitation, marital status, welfare recipient status, working partner, and household annual income not including mother's income.

Table 24

Australia: Models Testing Moderation by Maternal Depression, n=5,093

	Academic Skills			Behavioral Skills, Parent Report			Behavioral Skills, Teacher Report		
Independent Variables	Teacher Academic	Matrix Reasoning	Vocabulary	Conduct	Prosocial	Attention	Conduct	Prosocial	Attention
Main effects									
First emp before 9 mths	0.01(0.06)	0.09(0.06)	0.03(0.06)	0.01(0.06)	-0.14(0.06)*	-0.09(0.06)	-0.03(0.06)	-0.03(0.07)	-0.01(0.07)
First emp before 2 yrs	0.07(0.05)	0.09(0.05)+	0.02(0.05)	-0.02(0.06)	-0.03(0.05)	0.04(0.05)	-0.12(0.06)*	0.07(0.05)	0.1(0.05)+
Maternal depression W1	-0.03(0.02)	-0.03(0.02)	-0.03(0.02)	0.12(0.03)**	-0.09(0.02)**	-0.08(0.02)**	0.05(0.02)+	-0.06(0.02)*	-0.05(0.02)*
Interactions									
First emp before 9 mths*Maternal depression W1	-0.01(0.07)	0.08(0.05)	0.08(0.06)	0.02(0.07)	0.01(0.06)	-0.00(0.07)	-0.00(0.07)	-0.01(0.07)	-0.03(0.07)
First emp before 2 yrs*Maternal depression W1	0.02(0.07)	0.02(0.05)	0.02(0.05)	-0.04(0.05)	0.00(0.05)	0.02(0.04)	-0.03(0.06)	0.02(0.07)	0.01(0.07)
F of model	6.70**	3.79**	8.67**	5.67**	5.42**	6.21**	3.32**	6.01**	7.48**
R^2	0.11	0.06	0.15	0.08	0.09	0.10	0.06	0.10	0.13

Note: +$p<.10$, *$p<.05$, **$p<.01$. Employed groups are compared to the omitted category of no employment. All models were estimated using OLS regression and weighted with propensity score weights. All analyses controlled for the W1 value of child age, gender, low-birthweight status, lag of the DV, number of siblings and twin status as well as new siblings W2, new siblings W3-4, and child age at assessment. All models also controlled for the W1 value of mother age, education, asian, indigenous, immigrant household and English speaking household as well as averages over W1-4 of the average number of non-partner adults living in the household, cohabitation, marital status, welfare recipient status, working partner, and household annual income not including mother's income.

Table 25

United Kingdom: Models Testing Moderation by Maternal Depression, n=18,497

	Academic Skills			Behavioral Skills, Parent Report			Behavioral Skills, Teacher Report		
Independent Variables	Pattern Constr.	Word Reading	Number Skills	Conduct	Prosocial	Attention	Conduct	Prosocial	Attention
Main effects									
First emp before 9 mths	-0.01(0.03)	-0.03(0.03)	-0.03(0.03)	0.01(0.03)	-0.01(0.04)	-0.03(0.03)	0.03(0.04)	-0.00(0.03)	-0.04(0.03)
First emp before 2 yrs	0.02(0.03)	0.02(0.03)	0.03(0.03)	-0.02(0.03)	0.01(0.03)	0.00(0.03)	-0.01(0.03)	0.03(0.03)	-0.02(0.03)
Maternal depression W1	-0.01(0.02)	-0.00(0.01)	-0.00(0.01)	0.13(0.02)**	-0.03(0.02)+	-0.10(0.01)**	0.02(0.02)	-0.01(0.02)	-0.02(0.02)
Interactions									
First emp before 9 mths*Maternal depression W1	0.01(0.03)	0.01(0.03)	-0.00(0.03)	-0.02(0.03)	-0.02(0.03)	-0.01(0.03)	0.01(0.03)	-0.04(0.04)	-0.00(0.03)
First emp before 2 yrs*Maternal depression W1	-0.01(0.02)	-0.00(0.02)	-0.00(0.02)	0.02(0.03)	-0.01(0.03)	-0.02(0.03)	0.03(0.03)	-0.02(0.02)	-0.03(0.03)
F of model	13.83**	22.43**	15.82**	21.16**	9.84**	20.11**	8.71**	10.96**	17.00**
R^2	0.09	0.14	0.10	0.12	0.06	0.12	0.08	0.10	0.13

Note: +$p<.10$, *$p<.05$, **$p<.01$. Employed groups are compared to the omitted category of no employment. All models were estimated using OLS regression and weighted with propensity score weights. All analyses controlled for the W1 value of child age, gender, low-birthweight status, race/ethnicity, lag of the DV, number of siblings and twin status as well as new siblings W2, new siblings W3-4, and child age at assessment. All models also controlled for the W1 value of mother age, education, and English speaking household as well as averages over W1-4 of the average number of non-partner adults living in the household, cohabitation, marital status, welfare recipient status, working partner, and household annual income not including mother's income.

Maternal Income as a Moderator of Early Employment

The final sets of moderation models assessed the role of money. First, interactions between maternal employment and mothers' wages were assessed. Results for the U.S. and U.K., presented in Tables 26 and 28, found no significant moderation role for mothers' wages in the ECLS-B and MCS.

Australia. One pattern emerged in the results in the LSAC-B results which are presented in Table 27. In relation to children's vocabulary skills, a significant interaction indicated that maternal employment before 9 months was more advantageous for children's vocabulary skills as mothers' employment income increased. The association between early maternal employment and children's cognitive skills was neutral at the mean level of income (shown by the main effect of employment prior to 9 months), suggesting a positive association for children of higher wage earning mothers and a negative association for children of lower wage earning mothers. As can be seen in Figure 2, children of mothers employed before 9 months who earned more had, on average, higher vocabulary skills while children of mothers who were employed in this same time period but earned less had lower vocabulary skills. This was not true for employment that begun after 9 months and there were no significant interactions for any of the other cognitive outcomes or for children's behavioral skills.

Table 26

United States: Models Testing Moderation by Maternal Employment Income, n=10,100

Independent Variables	Cognitive Skills		Behavioral Skills, Parent Report			Behavioral Skills, Teacher Report		
	Reading	Math	Conduct	Prosocial	Attention	Conduct	Prosocial	Attention
Main effects								
First emp before 9 mths	0.05(0.04)	0.04(0.04)	0.09(0.05)+	0.01(0.05)	-0.08(0.04)+	0.03(0.04)	-0.02(0.05)	-0.01(0.04)
First emp before 2 yrs	0.02(0.05)	0.00(0.05)	0.06(0.06)	-0.01(0.07)	-0.08(0.06)	0.04(0.06)	-0.02(0.07)	-0.09(0.06)
Mother employment income W2	0.01(0.04)	0.00(0.04)	-0.03(0.05)	0.03(0.05)	0.01(0.05)	0.01(0.05)	0.00(0.05)	0.00(0.05)
Interactions								
First emp before 9 mths x Mother emp income W2	-0.00(0.05)	0.02(0.04)	0.00(0.06)	-0.02(0.04)	-0.01(0.05)	0.00(0.05)	-0.02(0.04)	-0.01(0.06)
First emp before 2 yrs x Mother emp income W2	0.02(0.05)	0.02(0.05)	0.03(0.07)	0.02(0.07)	0.02(0.07)	-0.04(0.06)	0.04(0.05)	0.04(0.06)
F of model	21.17**	25.62**	6.45**	5.62**	7.26**	7.95**	5.25**	10.51**
R^2	0.21	0.23	0.10	0.07	0.10	0.13	0.09	0.14

Note: +p<.10, *p<.05, **p<.01. Employed groups are compared to the omitted category of no employment. All models were estimated using OLS regression and weighted with propensty score weights. All analyses controlled for the W1 value of child age, gender, race, low-birthweight status, lag of the DV, number of siblings and twin status as well as new siblings W2, new siblings W3-4/5, entering kindergarten at W5 and child age at assessment. All models also controlled for the W1 value of mother age, education, and English speaking household as well as averages over W1-4/5 of the average number of non-partner adults living in the household, cohabitation, marital status, welfare recipient status, working partner, and household annual income not including mother's income.

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Table 27

Australia: Models Testing Moderation by Maternal Employment Income, n=5,093

Independent Variables	Academic Skills			Behavioral Skills, Parent Report			Behavioral Skills, Teacher Report		
	Teacher Academic	Matrix Reasoning	Vocabulary	Conduct	Prosocial	Attention	Conduct	Prosocial	Attention
Main effects									
First emp before 9 mths	0.04(0.07)	0.08(0.06)	0.01(0.06)	-0.01(0.07)	-0.12(0.07)+	-0.08(0.06)	-0.05(0.07)	0.00(0.08)	0.02(0.06)
First emp before 2 yrs	0.08(0.05)	0.09(0.05)+	0.04(0.05)	-0.02(0.06)	-0.03(0.05)	0.04(0.05)	-0.13(0.06)*	0.07(0.05)	0.12(0.05)*
Mother employment income W2	-0.06(0.03)*	-0.02(0.03)	-0.04(0.03)	0.02(0.03)	0.01(0.03)	-0.04(0.03)	0.05(0.03)	-0.06(0.04)+	-0.09(0.03)**
Interactions									
First emp before 9 mths x Mother emp income W2	0.04(0.05)	0.05(0.05)	0.11(0.05)*	-0.03(0.04)	-0.06(0.06)	0.06(0.05)	-0.02(0.05)	0.02(0.05)	0.06(0.05)
First emp before 2 yrs x Mother emp income W2	0.06(0.05)	0.03(0.05)	-0.01(0.04)	-0.05(0.05)	-0.01(0.05)	0.05(0.05)	-0.03(0.05)	0.08(0.05)	0.06(0.05)
F of model	6.75**	3.69**	8.37**	4.30**	4.74**	5.60**	3.18**	6.07**	7.24**
R^2	0.11	0.05	0.16	0.07	0.08	0.10	0.06	0.10	0.13

Note: +$p<.10$, *$p<.05$, **$p<.01$. Employed groups are compared to the omitted category of no employment. All models were estimated using OLS regression and weighted with propensity score weights. All analyses controlled for the W1 value of child age, gender, low-birthweight status, lag of the DV, number of siblings and twin status as well as new siblings W2, new siblings W3-4, and child age at assessment. All models also controlled for the W1 value of mother age, education, asian, indigenous, immigrant household and English speaking household as well as averages over W1-4 of the average number of non-partner adults living in the household, cohabitation, marital status, welfare recipient status, working partner, and household annual income not including mother's income.

Figure 2. Mothers' Employment Income as a Moderator of the Relationship between Maternal Employment after Childbirth and Children's Vocabulary Skills in Australia
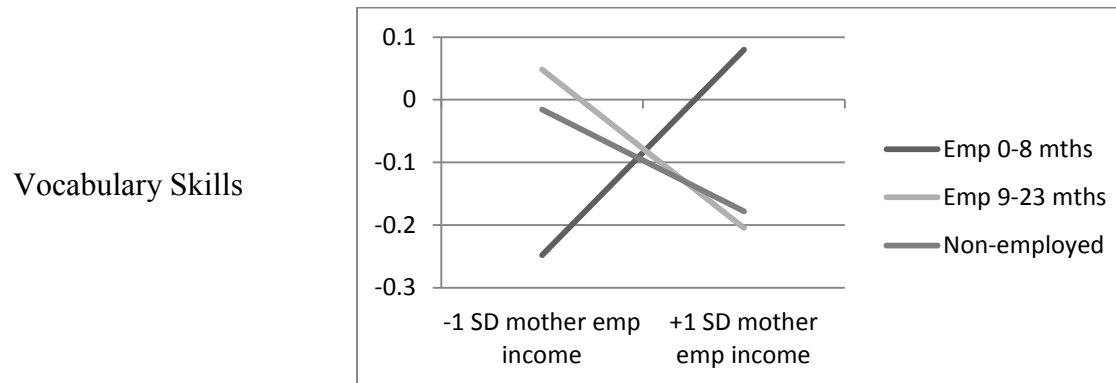
Table 28

United Kingdom: Models Testing Moderation by Maternal Employment Income, n=18,497

Independent Variables	Academic Skills			Behavioral Skills, Parent Report			Behavioral Skills, Teacher Report		
	Pattern Constr.	Word Reading	Number Skills	Conduct	Prosocial	Attention	Conduct	Prosocial	Attention
Main effects									
First emp before 9 mths	-0.02(0.04)	-0.05(0.05)	-0.05(0.05)	0.02(0.04)	0.02(0.06)	-0.01(0.04)	0.01(0.05)	0.03(0.04)	-0.00(0.04)
First emp before 2 yrs	0.01(0.04)	0.00(0.05)	0.01(0.04)	-0.01(0.04)	0.03(0.06)	0.02(0.04)	-0.04(0.04)	0.06(0.04)	0.02(0.04)
Mother employment income W2	0.02(0.06)	0.03(0.06)	0.04(0.05)	0.00(0.05)	-0.05(0.06)	-0.05(0.06)	0.05(0.05)	-0.05(0.05)	-0.06(0.05)
Interactions									
First emp before 9 mths x Mother emp income W2	0.00(0.06)	-0.01(0.06)	0.01(0.06)	-0.03(0.06)	0.05(0.07)	0.03(0.07)	-0.03(0.06)	0.05(0.06)	0.04(0.05)
First emp before 2 yrs x Mother emp income W2	0.05(0.07)	-0.02(0.07)	-0.01(0.06)	-0.01(0.07)	0.01(0.07)	0.02(0.07)	-0.03(0.06)	0.02(0.06)	0.03(0.06)
F of model	13.47**	22.29**	15.56**	16.60**	9.38**	16.30**	8.66**	9.68**	16.85**
R^2	0.09	0.14	0.10	0.10	0.06	0.10	0.07	0.10	0.13

Note: $+p<.10$, $*p<.05$, $**p<.01$. Employed groups are compared to the omitted category of no employment. All models were estimated using OLS regression and weighted with propensity score weights. All analyses controlled for the W1 value of child age, gender, low-birthweight status, race/ethnicity, lag of the DV, number of siblings and twin status as well as new siblings W2, new siblings W3-4, and child age at assessment. All models also controlled for the W1 value of mother age, education, and English speaking household as well as averages over W1-4 of the average number of non-partner adults living in the household, cohabitation, marital status, welfare recipient status, working partner, and household annual income not including mother's income.

Household Income as a Moderator of Early Employment

Another way to test the role of money is to ask whether maternal employment is differentially associated with children's functioning depending upon the other monetary resources available in the household. To address this issue, a final set of interactions used the measure of non-maternal household income in interaction with early maternal employment.

United States. One pattern emerged in the results from the ECLS-B, presented in Table 29. In relation to children's cognitive skills, significant interactions indicated that maternal employment before 9 months was less advantageous for children's reading and math skills as household income increased. The association between early maternal employment and children's cognitive skills, shown in Figures 3 and 4, suggested a positive association for lower income families and a negative association for upper income families. There were no significant interactions for children's behavioral skills.

Table 29

United States: Models Testing Moderation by Non-mother Household Income, n=10,1000

	Cognitive Skills		Behavioral Skills, Parent Report			Behavioral Skills, Teacher Report		
Independent Variables	Reading	Math	Conduct	Prosocial	Attention	Conduct	Prosocial	Attention
Main effects								
First emp before 9 mths	0.04(0.04)	0.04(0.04)	0.09(0.05)+	0.02(0.05)	-0.08(0.04)*	0.03(0.04)	-0.02(0.05)	-0.01(0.04)
First emp before 2 yrs	0.03(0.05)	0.01(0.05)	0.04(0.06)	0.01(0.07)	-0.07(0.06)	0.04(0.06)	-0.01(0.07)	-0.08(0.06)
Non-mother hh income W1-4/5	0.19(0.03)**	0.21(0.03)**	-0.05(0.03)	0.03(0.03)	0.08(0.03)**	-0.07(0.03)*	0.06(0.04)	0.10(0.03)**
Interactions								
First emp before 9 mths x Non-mother hh income W1-4/5	-0.09(0.04)*	-0.07(0.03)*	0.06(0.04)	0.01(0.04)	-0.03(0.03)	0.03(0.04)	-0.04(0.04)	-0.03(0.03)
First emp before 2 yrs x Non-mother hh income W1-4/5	0.00(0.06)	-0.04(0.06)	-0.04(0.05)	0.02(0.05)	-0.01(0.06)	-0.01(0.07)	-0.01(0.06)	-0.01(0.07)
F of model	24.09**	30.63**	6.95**	5.91**	8.64**	8.48**	5.77**	11.96**
R^2	0.21	0.23	0.10	0.07	0.10	0.13	0.09	0.14

Note: +$p<.10$, *$p<.05$, **$p<.01$. Employed groups are compared to the omitted category of no employment. All models were estimated using OLS regression and weighted with propensty score weights. All analyses controlled for the W1 value of child age, gender, race, low-birthweight status, lag of the DV, number of siblings and twin status as well as new siblings W2, new siblings W3-4/5, entering kindergarten at W5 and child age at assessment. All models also controlled for the W1 value of mother age, education, and English speaking household as well as averages over W1-4/5 of the average number of non-partner adults living in the household, cohabitation, marital status, welfare recipient status, working partner, and household annual income not including mother's income.

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Figure 3. Non-maternal Household Income as a Moderator of the Relationship between Maternal Employment after Childbirth and Children's Reading Skills in the United States
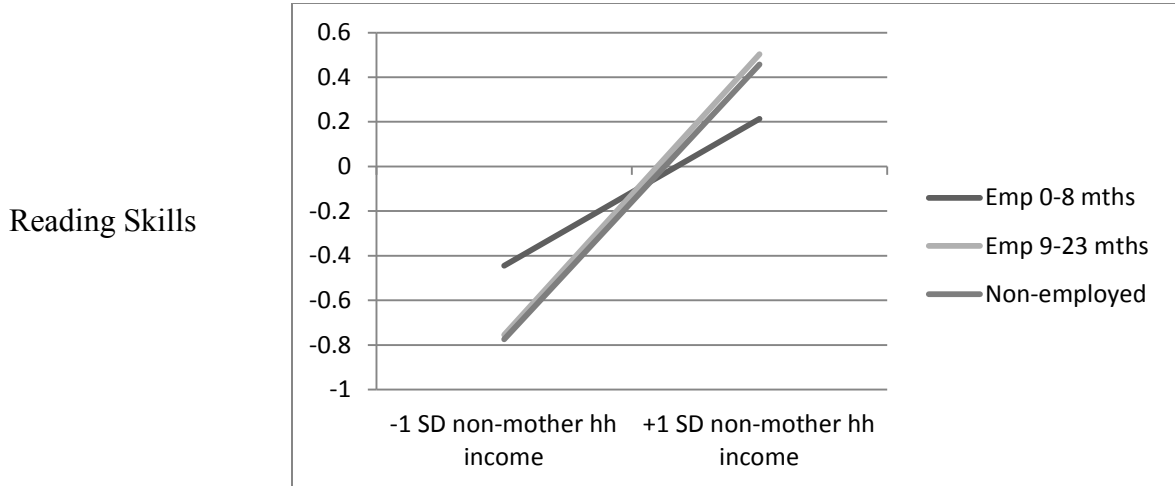
Reading Skills

Figure 4. Non-maternal Household Income as a Moderator of the Relationship between Maternal Employment after Childbirth and Children's Math Skills in the United States

Math Skills

Australia. A similar pattern with some key differences emerged in the LSAC-B, presented in Table 30. Unlike the U.S., there was no evidence of moderation for children's cognitive skills. However, significant interactions indicated that maternal employment begun after 9 months and before 2 years was less advantageous for children's behavioral skills as household income increased. This pattern was true for parent and teacher reports of children's conduct problems and attention skills as well as teacher reports of children's prosocial skills. As can be seen in Figures 5, 6, 7, 8, and 9 there was a positive association between employment during this time period and behavioral skills for children from lower income families and a negative association for children from upper income families. These results suggest employment initiated after 9 months and before two years may benefit children from families with lower household incomes while being detrimental to children from families with higher incomes from non-maternal work sources.

Table 30

Australia: Models Testing Moderation by Non-mother Household Income, n=5,093

Independent Variables	Academic Skills			Behavioral Skills, Parent Report			Behavioral Skills, Teacher Report		
	Teacher Academic	Matrix Reasoning	Vocabulary	Conduct	Prosocial	Attention	Conduct	Prosocial	Attention
Main effects									
First emp before 9 mths	0.02(0.06)	0.08(0.06)	0.03(0.06)	-0.01(0.06)	-0.13(0.06)*	-0.08(0.05)	-0.03(0.06)	-0.02(0.07)	-0.02(0.07)
First emp before 2 yrs	0.07(0.05)	0.09(0.05)+	0.02(0.05)	-0.02(0.06)	-0.03(0.05)	0.03(0.05)	-0.12(0.06)	0.06(0.05)	0.06(0.05)
Non-mother hh income W1-4/5	0.09(0.03)**	0.14(0.03)**	0.08(0.03)*	-0.07(0.03)**	0.01(0.03)	0.07(0.03)*	-0.09(0.03)**	0.12(0.03)**	0.12(0.03)**
Interactions									
First emp before 9 mths x Non-mother hh income W1-4/5	-0.05(0.06)	-0.07(0.06)	0.00(0.06)	-0.00(0.06)	-0.02(0.07)	0.01(0.06)	0.10(0.06)	-0.02(0.06)	-0.02(0.06)
First emp before 2 yrs x Non-mother hh income W1-4/5	-0.03(0.05)	-0.08(0.05)	-0.01(0.05)	0.14(0.05)**	-0.05(0.05)	-0.14(0.05)**	0.12(0.05)*	-0.14(0.05)**	-0.14(0.05)**
F of model	7.71**	4.90**	9.60**	5.53**	4.77**	6.92**	3.80**	6.94**	8.37**
R^2	0.11	0.06	0.15	0.07	0.08	0.10	0.06	0.10	0.13

Note: +$p<.10$, *$p<.05$, **$p<.01$. Employed groups are compared to the omitted category of no employment. All models were estimated using OLS regression and weighted with propensity score weights. All analyses controlled for the W1 value of child age, gender, low-birthweight status, lag of the DV, number of siblings and twin status as well as new siblings W2, new siblings W3-4, and child age at assessment. All models also controlled for the W1 value of mother age, education, asian, indigenous, immigrant household and English speaking household as well as averages over W1-4 of the average number of non-partner adults living in the household, cohabitation, marital status, welfare recipient status, working partner, and household annual income not including mother's income.

Figure 5. Non-maternal Household Income as a Moderator of the Relationship between Maternal Employment after Childbirth and Children's Parent-reported Conduct Problems in Australia

Conduct Problems

Figure 6. Non-maternal Household Income as a Moderator of the Relationship between Maternal Employment after Childbirth and Children's Parent-reported Attention Skills in Australia

Attention Skills

Figure 7. Non-maternal Household Income as a Moderator of the Relationship between Maternal Employment after Childbirth and Children's Teacher-reported Conduct Problems in Australia
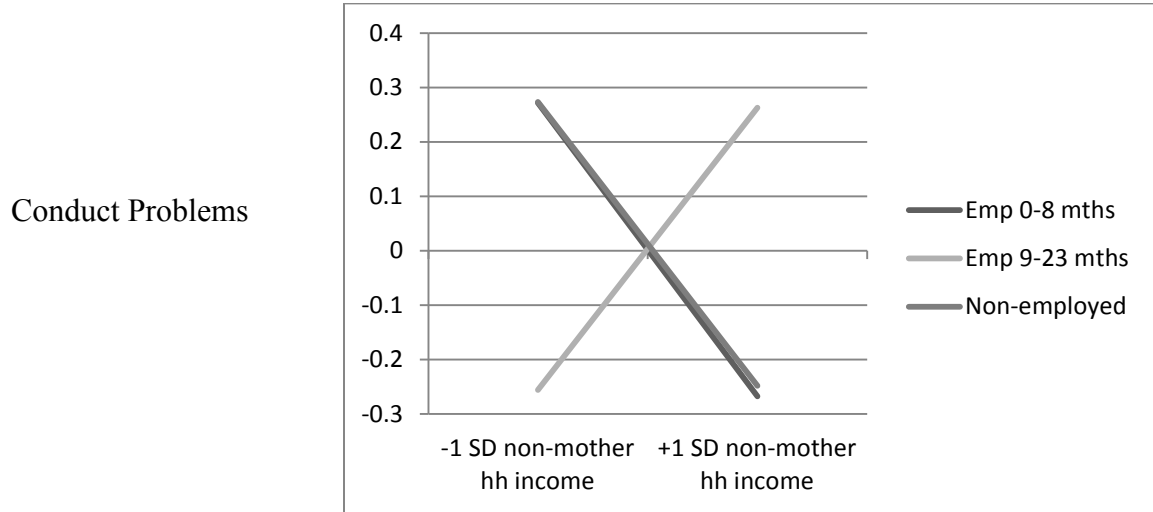
Conduct Problems

Figure 8. Non-maternal Household Income as a Moderator of the Relationship between Maternal Employment after Childbirth and Children's Teacher-reported Prosocial Skills in Australia
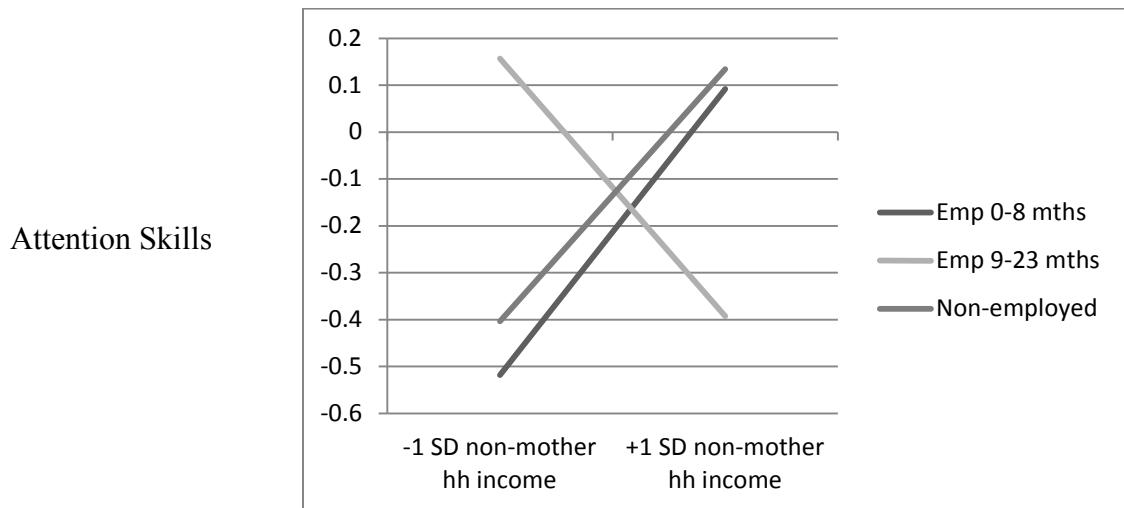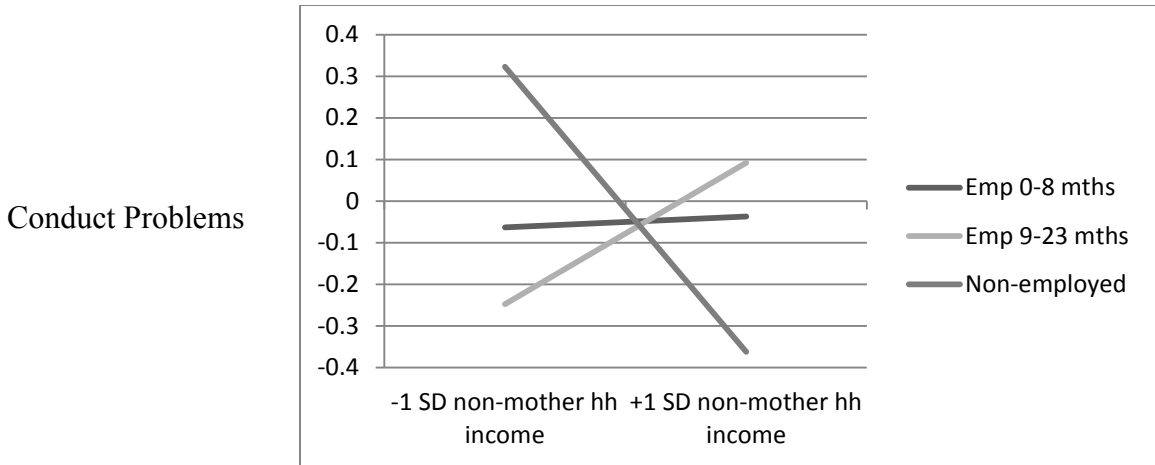
Prosocial Skills
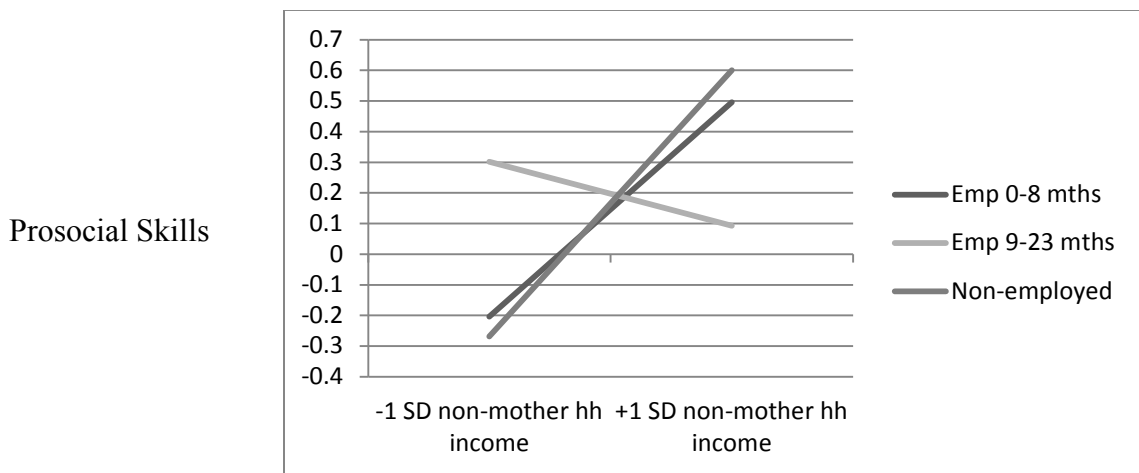
Figure 9. Non-maternal Household Income as a Moderator of the Relationship between Maternal Employment after Childbirth and Children's Teacher-reported Attention Skills in Australia
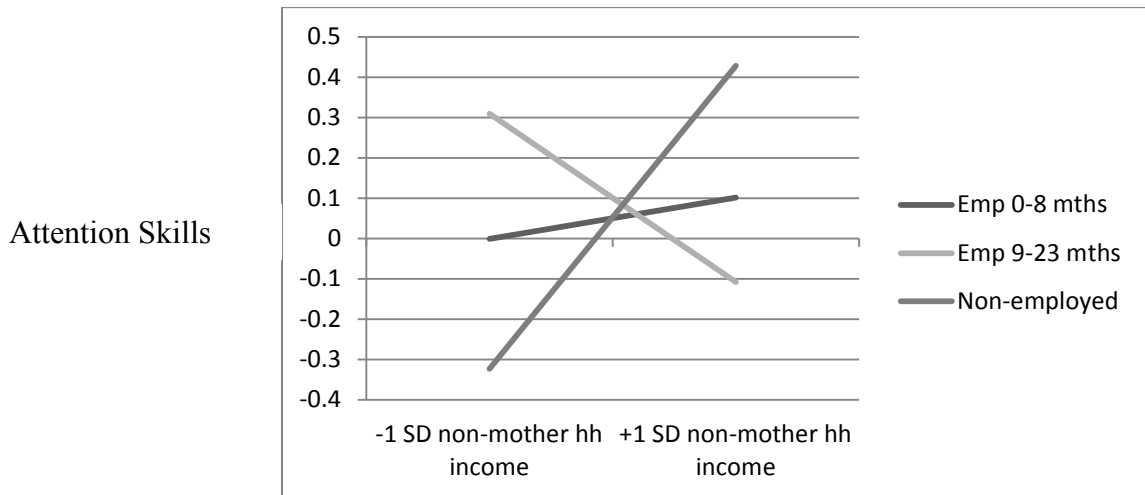
United Kingdom. In contrast to the findings from the other two countries suggesting a role of non-maternal household income in understanding the relationship between early maternal employment and children's cognitive and behavioral skills, results from the MCS found no significant moderation in the U.K. (results presented in Table 31).

Table 31

United Kingdom: Models Testing Moderation by Non-mother Household Income, n=18,497

	Academic Skills			Behavioral Skills, Parent Report			Behavioral Skills, Teacher Report		
Independent Variables	Pattern Constr.	Word Reading	Number Skills	Conduct	Prosocial	Attn to Learning	Conduct	Prosocial	Attn to Learning
Main effects									
First emp before 9 mths	-0.02(0.03)	-0.03(0.03)	-0.03(0.03)	0.01(0.03)	-0.01(0.04)	-0.04(0.03)	0.03(0.04)	-0.00(0.03)	-0.04(0.03)
First emp before 2 yrs	0.02(0.03)	0.02(0.03)	0.03(0.03)	-0.01(0.03)	0.01(0.03)	0.00(0.03)	-0.01(0.03)	0.03(0.03)	-0.02(0.03)
Non-mother hh income W1-4/5	0.10(0.02)**	0.12(0.02)**	0.13(0.02)**	-0.05(0.02)**	-0.01(0.02)	0.06(0.02)**	-0.00(0.02)	0.00(0.02)	0.01(0.02)
Interactions									
First emp before 9 mths x Non-mother hh income W1-4/5	-0.06(0.04)	-0.01(0.03)	-0.05(0.03)	-0.04(0.04)	0.02(0.03)	-0.00(0.04)	-0.03(0.04)	0.01(0.04)	-0.00(0.03)
First emp before 2 yrs x Non-mother hh income W1-4/5	-0.01(0.03)	-0.01(0.03)	-0.02(0.03)	0.01(0.03)	0.01(0.03)	0.03(0.02)	-0.00(0.03)	0.01(0.03)	-0.01(0.03)
F of model	14.01**	23.90**	16.31**	17.26**	9.68**	17.39**	9.13**	11.20**	17.66**
R^2	0.09	0.14	0.10	0.10	0.06	0.11	0.07	0.10	0.13

Note: +p<.10, *p<.05, **p<.01. Employed groups are compared to the omitted category of no employment. All models were estimated using OLS regression and weighted with propensity score weights. All analyses controlled for the W1 value of child age, gender, low-birthweight status, race/ethnicity, lag of the DV, number of siblings and twin status as well as new siblings W2, new siblings W3-4, and child age at assessment. All models also controlled for the W1 value of mother age, education, and English speaking household as well as averages over W1-4 of the average number of non-partner adults living in the household, cohabitation, marital status, welfare recipient status, working partner, and household annual income not including mother's income.

CHAPTER 5: DISCUSSION

Mothers returning to work soon after childbirth is the norm in modern families, serving to sustain women's career trajectories, encourage more balanced gender roles within families, and increase families' economic resources (Gornick & Meyers, 2003; Ray et al., 2010; Waldfogel, 1998). Recognizing this, nearly all industrialized countries have implemented parental leave policies to provide income replacement and job protections for mothers after childbirth (Kamerman, 2000; Ray et al., 2010). These policies have been found to support mothers' employment continuity after childbearing and thus, while encouraging some time off, promote maternal employment rates among mothers with young children (Pettit & Hook, 2005; Ruhm, 1998; Waldfogel, 1998). In the U.S., policy expansions have been significantly more limited with no federal paid parental leave and a limited federal unpaid parental leave policy (Ruhm, 2011; Waldfogel, 2001). Lacking paid leave and job protection options, many new mothers in the U.S. return to work soon after childbirth, juggling the demands of employment and parenthood.

This trend has spurred a substantial body of research on mothers' labor force participation and its associations with children's well-being which has pointed to one relatively consistent finding: that maternal employment begun early in infancy appears to pose a small but statistically significant threat to children's development (Baydar & Brooks-Gunn, 1991; Berger et al., 2005; Blau & Grossberg, 1992; Brooks-Gunn et al., 2002; 2010; Desai et al., 1989; Han et al., 2001; Hill et al., 2005; Ruhm, 2004). Little research has addressed this question within more recent cohorts of children, in a

nationally representative dataset, or in other countries. This gap is notable given that

recent decades have seen dramatic increases in maternal employment among mothers

with young children worldwide coupled with more readily available and higher quality

child care, increased engagement of fathers in child rearing, changing cultural attitudes

about women's work roles, heightened importance for women's wages in family

economic stability, and the implementation of a range of unpaid and paid maternal leave

policies (Australian Government Department of Education, Employment and Workplace

Relations, 2013; Jaumotte, 2003; Gauthier et al., 2004; Hofferth, 1996; Hoffman, 1989;

Hoffman & Youngblade, 1999; Ray et al., 2010; Kamerman, 2000; Sayer et al., 2004;

Smith et al., 2010).

Using nationally representative samples of children born between 2000 and 2004

from three countries, the broad goal of this dissertation was to examine associations

between early maternal employment and children's cognitive and behavioral skills,

incorporating rigorous statistical methods to help adjust for selection bias, exploring how

maternal time, stress, and money may explain links or alter the directionality of

associations, and replicating analyses across countries.

Selection into Early Maternal Employment

My first goal was to describe the patterns of employment across countries and the

characteristics of children and mothers linked to these patterns. I expected that Australia

would have the lowest rates of maternal employment during infancy due to a 12-month

unpaid maternal leave policy, a "baby bonus" paid to all families, and cultural norms

promoting later returns to work and part-time work. I expected the U.K. to follow close

behind Australia, because of paid (18 weeks) and additional unpaid (29 weeks) leave for eligible working mothers coupled with stronger cultural norms surrounding maternal work. In the U.S., where there are the most limited leave options for new mothers, I expected to see the highest rates of early maternal employment.

Results suggested that patterns of employment across countries largely mapped onto the policy and cultural norm differences between countries. Early returns to employment were most common by American mothers with nearly 60% employed within the first 9 months; not until 2 years after childbirth were that proportion of British mothers back at work. Early employment was less common among Australian mothers although almost 40% were employed by two years after childbirth. The intensity of work also varied dramatically. Full-time re-entry was the overwhelming majority in the U.S. while part-time work was reported 2 to 1 by British mothers and 3 to 1 by Australian mothers. Interestingly, the pattern shifts over early childhood; about 2/3s of British mothers (67%) and Australian mothers (63%) were employed after their children entered formal schooling while only 52% of American mothers were in the labor force at this time. Although, it is important to note that the American data were collected nearly a year before the Australian and British data and employment rates may have risen slightly in the year after children entered kindergarten. Overall, these results replicate prior comparative literature (Huerta et al., 2011; Coley et al., in press; Crosby & Hawkes, 2007) and suggest that policy differences and cultural norms between the three countries may promote very different decisions about the timing and intensity of when to return to work after childbirth.

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Associations between child characteristics and the timing of mothers' post-birth employment revealed few characteristics of children that selected mothers in employment differentially across the three countries. Children of mothers employed in the first 9 months had the most adaptive temperaments across all of the countries in comparison to later employment or non-employment. Among children from the U.S. and U.K., children of mothers employed in this early time period were the healthiest and had the highest early cognitive skills whereas children of non-employed mothers in Australia had the highest early cognitive skills and there was no difference across low birthweight status. Overall, results appear to say that mothers with healthier children return to work earlier in all three countries.

Turning to characteristics of mothers, there was more evidence of differences across the countries. Mothers across all countries who returned to work in the first 9 months were generally the most advantaged with the highest rates of pre-birth employment, highest levels of education, and lowest use of welfare. However, there were few differences between mothers employed before and after 9 months in Australia and the U.K. while American mothers employed after 9 months had the lowest levels of education, marital rates, and presence of a working partner. This suggests that paid and unpaid leave policies in Australia and the U.K. may allow for more gradual returns to work over the first two years resulting in few demographic differences between mothers employed earlier versus later. American mothers who enter employment later appeared to be doing so out of necessity because of lack of other household resources, a spouse, or a working partner.

Non-employed mothers also looked very different across the three countries. Non-employed American mothers had the highest rates of marriage and other household income. It is possible to hypothesize that with little or no maternity leave, American mothers with greater economic supports may choose non-employment while similar mothers in Australia and the U.K. with the benefit of long paid and unpaid leave policies may choose to re-enter the labor force at some point during the first two years. Indeed, other research has found that maternal leave policies promote job continuity, the likelihood that a woman returns to her pre-birth job, and women's labor market success (Hofferth, 1996; Glass & Riley, 1998; Pettit & Hook, 2005; Ruhm, 1998; Waldfogel, 1998).

Meanwhile, non-employed British and Australian mothers were the most disadvantaged with the lowest rates of marriage and other household resources. These differences may be due in part to welfare policy differences which require American mothers to work immediately or within months of childbirth (policies vary by state but generally ranged from 3 to 12 months during the study period) while Australian and British mothers have much longer (until their youngest child is 6 years old in Australia and 7 years old in the U.K.) Further, welfare benefits are time-limited in the U.S. (Australian Government Department of Families, Housing, Community Services, and Indigenous Affairs, Programs and Services, 2011; Waldfogel, 2008; 2010). Greater proportions of mothers in Australia, and to a lesser extent the U.K., reported receiving welfare benefits during the study; limited benefits in the U.S. may have pushed some economically disadvantaged mothers into the labor force in the second year while similar

mothers in Australia and the U.K. continued to receive benefits supporting them and their children. Evidence from experimental welfare programs has found that the welfare work requirements in the U.S. increase employment rates particularly for mothers of young children (Michalopoulos, Schwartz & Adams-Ciardullo 2000; Grogger & Michalopoulos 2003).

Timing of Early Maternal Employment

My second goal was to incorporate robust statistical methods to address selection bias in analyses assessing associations between the timing of early maternal employment after childbirth and children's cognitive and behavioral skills after entry into formal schooling and replicate these analyses across three countries. Given significant recent demographic shifts, such as women's increased participation in the labor force and heightened responsibility for their families' financial security, more readily available and higher quality child care, changing cultural attitudes about women's work roles, and increased engagement among fathers in child rearing (Hofferth, 1996; Hoffman, 1989; Hoffman & Youngblade, 1999; Sayer et al., 2004) that suggest that the forces leading to negative effects of early maternal employment may have declined while the forces leading to beneficial effects may have risen, I hypothesized that early maternal employment would no longer have negative implications for American children.

The current study found few associations between maternal employment begun in the first two years after childbirth and American children's cognitive or behavioral skills after entry into formal schooling. No significant associations emerged in relation to children's reading and math skills and, in fact, the coefficients for both employment

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groups were positive, further strengthening the conclusion that early employment poses no risks for children's cognitive skills development. The findings for behavioral skills similarly showed limited results. One significant pattern found children of mothers entering employment very shortly after childbirth exhibiting lower parent reported attention skills than peers of non-employed mothers, however this difference was very small and overall the results showed a pattern of significance not above that expected by chance. These findings largely replicated across models with limited covariates, a larger comprehensive set of covariates, and models with propensity score weights, providing internal replication across multiple estimation techniques.

Because these findings differed from those in prior literature and the present sample is more diverse than some of the samples used in earlier literature, I tested whether associations varied across racial and ethnic groups. I found no pattern of significant differences to suggest this to be the case; however, the direction of coefficients did support research that has found negative associations for White children and positive associations for Black and Hispanic children (Berger et al., 2008; Coley & Lombardi, 2013; Brooks-Gunn et al., 2002; 2010; Han et al., 2001; Hill et al., 2005).

In addition to providing new evidence about maternal employment in contemporary American families, this dissertation also sought to replicate results in two other contemporary birth cohort studies, providing external replication across multiple datasets and examining whether results differed across policy contexts. Based upon theoretical models of child development posited to operate universally across diverse families (Becker & Tomes, 1986; Bowlby, 1951), I also hypothesized that the results

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from the U.S. would replicate to the Australia and the U.K. and there would be few implications of early maternal employment for Australian and British children.

Findings suggested that maternal employment in the first two years after childbirth also had few links with the cognitive and behavioral skills of Australian and British children following entry into formal schooling. No significant associations emerged in relation to children's reading and math skills in either country. The findings for behavioral skills were also nearly all neutral, although there was one finding that suggested employment before 9 months was linked to slightly lower parent reported prosocial skills for Australian children. Like the U.S., this suggests a pattern of significant results that could be expected simply by chance. The overall pattern of results found replication across the U.S., Australia, and the U.K., suggesting that early maternal employment had limited discernible links with children's long-term development across all three countries. These results contradict results from the prior study by Huerta and colleagues (2011) that found negative associations between early maternal work and children's cognitive outcomes in the U.S. and U.K. while corresponding to their results that found few associations with behavioral outcomes across all three countries. There are numerous differences between this study and their work that could explain the discrepancy including my measure of early maternal work (I used before 9 months and between 9 months and two years while Huerta and colleagues used before 6 months and between 6 and 11 months), the timing of the outcome variables (after school entry versus age 4) and the steps that I took to attend to selection bias, specifically imputing missing

data, measuring covariates prior to with child outcomes, and using causal inference techniques.

The results also differ from prior literature which has found a fairly consistent negative link between maternal employment begun in a child's first year of life and later child cognitive and socio-emotional development, particularly for middle-class and White children in the U.S. (Baydar & Brooks-Gunn, 1991; Berger et al., 2005; Blau & Grossberg, 1992; Brooks-Gunn et al., 2002; 2010; Desai et al., 1989; Han et al., 2001; Hill et al., 2005; Ruhm, 2004). These results have held even for studies that have used similarly rigorous methods with correlational data, such as structural equation modeling (Brooks-Gunn et al., 2010) or propensity score matching (Hill et al., 2005). One possible explanation for the neutral findings of the current study is that the implications of early maternal employment for children have changed, driven by greater public acceptance of mothers' work, greater paternal engagement in caregiving, and other unmeasured factors. It is also possible the statistical techniques used in this study did a more thorough job of reducing the role of selection factors. Although it was not possible to control for all possible biasing factors, these analyses included a rich array of child, maternal and family characteristics that might predispose mothers into employment patterns, including low-birth weight; mothers' education and previous employment; and the availability of alternate sources of support from other sources of household income and welfare. Furthermore, these analyses were weighted by mothers' propensity to be employed, further reducing the role of selection factors.

Another possible explanation is that earlier findings may have been particular to the samples from which they were drawn, which were not representative of children in the U.S. For example, the *NICHD-SECCYD* had a number of exclusion criteria to the original sample (e.g. mothers under 18, families who anticipated moving, infants who were multiple births or had health problems or disabilities, mothers who did not speak English, mothers with medical problems or substance-abuse problems, or families living in a dangerous neighborhood) and the *NLSY-CS* has been criticized for having insufficient numbers of middle-class African American, Hispanic, Latino, Asian, and Native American families (Duncan & Gibson, 2000; Moore et al., 1999). Indeed, prior research using low-income and minority samples of children has linked early maternal employment with enhanced cognitive and behavioral skills within these demographic groups (Berger et al., 2008; Coley & Lombardi, 2013) which suggests the representativeness of the ECLS-B sample may provide more generalizable estimates of the true relationship between early maternal employment and children's development. However, my analyses also found that links between maternal employment and child functioning did not differ significantly between White, African American, Hispanic, and other racial/ethnic groups of children in the ECLS-B.

Maternal Time, Stress, and Income as Mediators

The third goal of this dissertation was to examine how maternal time, stress, and money explained links between early maternal employment and children's outcomes in each of the countries. Theoretical perspectives argue for counteracting mediational processes, suggesting that maternal employment will increase economic resources but

also reduce mothers' time devoted to parenting and increase their stress as they balance competing demands (Becker & Tomes, 1986; Bowlby, 1951; Gershoff, 2002; Ispa et al., 2004; McLoyd & Smith, 2002; NICHD ECCRN, 1999; Petterson & Albers, 2001; Teti, Gelfand, Messinger & Isabella, 1995). I hypothesized that the meditational role of maternal time, stress, and money would differ across countries. Specifically, I expected these processes to mediate associations in the U.S., which offers mothers fewer options for returning to work and in which early, high intensity returns to work are normative, but to cancel each other out, leading to null effects on children's functioning. I did not expect these processes to mediate associations in Australia and the U.K. due to policies and norms that provide mothers greater options for choosing when and how to return to work.

I first ran models predicting intensity (child care hours), money (maternal employment income), and stress (maternal depression). As expected, early maternal employment was predictive of higher child care hours and greater maternal employment income in all three countries. Early employment, that is employment before 9 months, was also predictive of higher depressive symptoms among British mothers. Contrary to hypothesized expectations, early maternal employment did not predict maternal depression in the U.S. and Australia and, in fact, the coefficients were positive suggesting some potential psychological benefits of early work in these countries. These results are supported by theory from vocational and industrial/organizational psychology suggesting that work can be beneficial for psychological health, providing connection to others and individual satisfaction and accomplishment, thereby enhancing maternal well-being (Betz & Fitzgerald, 1987; Blustein, 2006; Blustein, 2008; Spector, 2005). Given that the U.K.

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had the most comprehensive maternity leave policy of the three countries, it may be that mothers who returned early in the U.K. had, on average, more stressful careers compelling them to return to work despite paid, job-protected leave. In contrast, there may have been greater variability in the stress level of mothers who returned to work early in the U.S. and Australia because there was no paid leave encouraging mothers to stay out of the labor force longer.

To test the hypothesis that these mechanisms might mediate the association between early maternal employment and children's outcomes in the U.S. but not in Australia and the U.K., I re-ran models predicting child functioning. None of the processes were linked with child functioning in the U.S. while child care hours were linked with higher behavioral problems in Australia and the U.K. (to a lesser extent) and maternal depression was linked with more behavioral problems in both Australia and the U.K. Despite these links, there was no evidence that these processes mediated associations between early maternal employment and children's outcomes in any of the countries. This may be because there were no direct links to mediate. There was some indication of indirect effects of child care hours on parent and teacher reported conduct problems in Australia and of child care hours and maternal employment income on cognitive skills in the U.K. This suggests that an unmeasured mediator may have been masking the association between employment and these outcomes, although given the number of large models tested, this may have also been due to chance. Little past research has directly assessed these mediating processes, with the two existing studies

supporting the current results finding no mediation through maternal depression or income (Brooks-Gunn et al., 2010).

Maternal Time, Stress, and Income as Moderators

The final goal of this dissertation was to examine how maternal time, stress, and money might alter the directionality of the associations in each of the countries. I hypothesized that maternal time, stress, and money would operate similarly across all countries because it would be expected that mothers in all countries would earn different salaries, spend differing amounts of time on work versus parenting, and experience this balance with diverse psychological repercussions, similar repercussions for children (Coley et al., 2007; Hoffman & Youngblade, 1999; Parcel & Menaghan, 1997; Raver, 2003).

Contrary to hypotheses, I did not find consistent or reliable evidence of moderation for maternal time, stress, or money (measured as mothers' earnings). That is, these three processes did not alter associations between early maternal employment and children's cognitive and behavioral skills as hypothesized. There were a few exceptions. First, in relation to time, early full-time employment before nine months was linked with lower parent-reported attention skills in both the U.S. and Australia. Part-time employment begun after 9 months also had some links with improved behavioral functioning for Australian children and British children as rated by teachers. Given the number of models and comparisons assessed, these limited results occurred at about the level expected by chance, and thus do not provide enough evidence to suggest a moderational role of maternal time in any of the countries.

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Another finding suggested a moderational role of maternal income in Australia. Maternal employment before 9 months was more advantageous for Australian children's later vocabulary skills when mothers had higher income from work and less advantageous when mothers had less income, with neutral associations at the mean level of income. Again, this pattern, occurring at chance levels, provides limited evidence for the importance of maternal income as a moderator in Australia. While no known research has tested the moderational role of maternal employment income, research on low-income samples from the U.S. has provided evidence to suggest that early maternal employment is beneficial in families in which mothers' earnings contribute more to total family income (Berger et al., 2008; Coley & Lombardi, 2013).

A final set of models examined the availability of sources of household income beyond maternal wages as a moderator. A pattern emerged in the U.S. and Australia supporting the hypothesis regarding the role of money. In the U.S. results revealed that maternal employment before 9 months was more advantageous for children's later reading and math skills in families with limited alternate income sources, and less advantageous in families with greater alternate resources, with neutral associations at the mean level of income. Similarly, in Australia, employment before 2 years was associated with enhanced behavioral functioning (lower parent and teacher reported conduct problems, higher parent and teacher reported attention skills, and higher teacher reported prosocial skills) as family income decreased. There was no evidence to suggest that non-maternal household income was a moderator in the U.K. It is possible that paid maternal leave buffered the role of non-maternal household income in the U.K., making the timing

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of entry into work less consequential for lower- and upper-income families, although this is impossible to determine in the framework of my current models.

In sum, these results provide some limited evidence for the importance of non-maternal household resources as a moderator in the U.S. and Australia, suggesting that early maternal employment is associated with enhanced child functioning when fewer alternate monetary resources are available in the family and with decreased child functioning in the opposing scenario. These results support theories from economics which posit that maternal employment brings economic resources to the family which may enhance children's well-being in some families (Becker & Tomes, 1986; Bowlby, 1951). For families with little household income from non-maternal sources, such as paternal income or cash benefits, the added income benefits may out-weigh any detrimental aspects of maternal work. But for families with greater economic resources, the added income from maternal work may give children little added benefits. This finding was not true for the U.K. and, while the analytic models could not test this, it is possible to hypothesize that this could be due to their paid maternal leave policies.

Implications

The findings from this dissertation make important contributions to the literature, informing developmental methodology and theory, as well as having policy implications. First, this dissertation used multiple survey studies in tandem to understand contextual influences on the well-being of children and families. The use of multiple studies provided both the opportunity to replicate findings within the same project as well as examine whether findings would differ across countries with varying public policies and

cultural norms. Demonstrating both the possibilities and potential issues of this type of methodology, this study informs future efforts to apply comparative research methods and replication procedures to developmental science.

Second, these findings have implications for developmental and economic theories that have historically suggested maternal employment may be harmful to children (Becker & Tomes, 1986; Bowlby, 1951). In this study, early employment was found to increase children's time in nonparental care settings and increase income, as is suggested by theoretical models, but was not found to be related to parental stress (measured by depression) except in one circumstance where employment before 9 months was linked with higher depressive symptoms at wave 1 for British mothers. Furthermore, the results found little evidence of harm (or benefits) posed to children from early maternal employment. These findings suggest that the negative implications of maternal employment posed by theoretical models should be reconsidered. Specifically, shifting social norms, family behaviors, and economic forces may have reduced the negative effects of increased time in nonparental care settings and increased the positive effects of increased income from maternal employment for children's development. The few associations between early maternal employment and depression imply that the stresses of balancing work and parenting for new mothers may have declined and the psychological benefits of employment have increased as married fathers have played a larger role in caregiving (Sayer et al., 2004) and support for working mothers in workplaces has grown (Cunningham, 2008). Future work should do more to test these hypothesized explanations for the neutral findings unearthed in this study.

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Finally, the results of this dissertation have policy implications. Findings suggesting that early maternal employment poses no risks for children's long-term development are good news. The majority of mothers are in the labor force and it appears, from this study, that most children are not being harmed by this work. Families and societies benefit from mothers' work; it supports women's careers, encourages balanced gender roles, and increases families' economic resources (Gornick & Meyers, 2003; Ray et al., 2010; Waldfogel, 1998). Furthermore, many families rely heavily, or even exclusively, on earnings from mothers' employment due, in part, declining male wages and increasing single-mother families (Haskins, 2006; Redd et al., 2011). Given this and given the lack of associations between employment and children's development unearthed in this study, public policies should seek to encourage maternal employment, particularly around the time of childbirth when women make decisions about whether and how to stay engaged in the labor market. Prior research from the U.S. and other countries have shown that paid and unpaid leave maternal leave policies promote job continuity, the likelihood women return to their pre-birth job, and women's long-term labor market success (Hofferth, 1996; Glass & Riley, 1998; Pettit & Hook, 2005; Ruhm, 1998; Waldfogel, 1998). In this study, descriptive results indicated that while American mothers returned to the labor force quickly after childbirth, higher numbers of British and Australian mothers were working long-term. Thus, this study suggests that paid and unpaid leave policies may benefit mothers, families, and society by promoting maternal employment with the understanding that it has few implications children's development.

Limitations

In interpreting the significance and implications of the results from this study, it is essential to first acknowledge the limitations. It is important to note that the employment variables only measured mothers' first job following childbirth and did not address mothers' full employment histories and the consistency of mothers' employment over the course of the study. Descriptive results suggest that the consistency of mothers' employment varied between countries, with more Australian and British mothers staying in the labor force than American mothers. These models also did little to address other factors such as employment satisfaction or quality. In relation to testing the theoretical models, the measure of maternal stress was particularly weak, measuring symptoms of depression rather than work-family strain, and it was not measured at wave 2. This, in part, reflects a desire to use comparable measures across datasets which may have sometimes resulted in choosing weaker measures that show strong similarities in measurement across the studies over a stronger measure that was only available in one or two of the studies. More globally, although the variables in this study are fairly objective (e.g. demographic characteristics and the timing of employment after birth) and all of the studies used well-validated direct assessments with reports of children's behavioral skills from multiple reporters, there may still be issues of equivalency and measurement bias across the datasets due to cultural norms and expectations. Finally, although the statistical models controlled for a range of measured characteristic of children, mothers, and families that might predispose women into employment patterns and also affect child functioning, the models were nonetheless correlational.

Future Directions

There are several other topics stemming from this dissertation that may be pursued. First, while the ECLS-B did not have any measures of maternal work satisfaction or maternal work stress, these measures exist in the Australian and U.K. datasets. Early research in the field of maternal employment identified the moderating role of maternal preferences, finding that mothers' desire to work moderated links between employment and children's well-being (e.g., DeMeis et al., 1986). This research should be replicated in the LSAC-B and MCS which offer contemporary data in which to understand the role of maternal role satisfaction. Second, this research focused on the timing of mothers' entry into work and did not examine parental leave benefits. Future research should continue to seek to understand the implications of parental leave benefits for children's development. In particular, due to the high percentage of mothers not covered by parental leave in the U.S., future work could examine how parental leave is associated with children's cognitive and behavioral skills by comparing mothers with parental leave benefits with those who are not eligible for benefits but are otherwise very similar across child, maternal, and family characteristics. Finally, I justified the focus of this dissertation on maternal employment in the introduction, however that is not to say that paternal employment has no importance in family life. Future research should do more to understand the implications of paternal employment, paternal leave, and paternal unemployment on the lives of fathers, mothers, and children.

Conclusions

The findings from the present study suggest that early movements into employment following childbirth may not be associated with developmental risks or

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benefits for most modern children in the U.S., Australia, and U.K. These results were replicated across multiple statistical models and in contemporary birth cohort studies from three countries. However, they also found that American and Australian children from families with limited income from non-maternal work sources may achieve slight benefits from early maternal employment, whereas children from higher income families may suffer small detriments. For these children, the added benefit of mothers' work income may not outweigh other psychological or social costs of early maternal employment. Findings suggested that there were no benefits or drawbacks of early maternal employment for British children at both the low and upper end of the income spectrum.

As seen in the descriptive findings from this study, early maternal employment is a norm in all three countries and an important contributor to both families' economies and national economies. The majority of contemporary mothers in the U.S. (nearly 70%) and U.K. (nearly 60%) return to work within the first two years after childbirth and, while a smaller percentage, more than 1/3 of Australian mothers are working by the time their child is two years old. These early employed mothers are the most likely to remain in the labor market five years later, suggesting that employment decisions made in the time period immediately after childbirth are pivotal to determining mothers' long-term employment trajectories.

While caution is warranted when drawing policy implications from these findings due to their correlational nature, the results from this study suggest that paid maternity leave in the U.K. may be shielding British children from any potential negative

repercussions from early maternal employment by encouraging mothers with greater

sources of other household resources to remain out of the labor force longer. Meanwhile,

American and Australian children, particularly those from families with limited

nonmaternal economic resources, may benefit from paid maternal leave policies which

have been found to encourage mothers' employment continuity after childbearing (Pettit

& Hook, 2005; Ruhm, 1998; Waldfogel, 1998) while also providing income replacement.

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APPENDIX A: ADDITIONAL RESULTS

The following models present results from models assessing mediation and moderation without propensity score weights. All models were estimated using OLS regression and included the full set of child and mother characteristics as covariates. Models are presented in the order in which they are described in the Results section.

Table A.1
United States: Models Testing Moderation by Race/Ethnicity, n=10,1000

	Cognitive Skills		Behavioral Skills, Parent Report			Behavioral Skills, Teacher Report		
Independent Variables	Reading	Math	Conduct	Prosocial	Attention	Conduct	Prosocial	Attention
Main effects								
First emp before 9 mths	-0.06(0.05)	-0.07(0.05)	0.15(0.05)**	0.02(0.05)	-0.16(0.05)**	0.08(0.06)	-0.08(0.07)	-0.07(0.05)
First emp before 2 yrs	-0.01(0.07)	-0.07(0.07)	0.10(0.08)	-0.01(0.08)	-0.14(0.08)+	0.12(0.08)	-0.07(0.09)	-0.12(0.07)
African American	-0.07(0.07)	-0.30(0.09)**	-0.01(0.09)	-0.01(0.09)	-0.01(0.08)	0.08(0.11)	-0.05(0.09)	-0.06(0.10)
Hispanic	-0.19(0.08)*	-0.31(0.07)**	0.00(0.08)	0.12(0.08)	0.03(0.07)	-0.05(0.08)	-0.06(0.08)	0.01(0.07)
Other	0.12(0.08)	-0.03(0.07)	-0.08(0.08)	-0.02(0.08)	-0.02(0.08)	-0.05(0.10)	-0.11(0.10)	0.02(0.08)
Interactions								
First emp before 9 mths * African American	0.18(0.08)*	0.14(0.09)	-0.13(0.10)	0.09(0.1)	0.18(0.10)+	-0.02(0.11)	0.13(0.11)	0.08(0.10)
First emp before 9 mths * Hispanic	0.14(0.08)+	0.10(0.08)	-0.14(0.10)	-0.06(0.08)	0.10(0.08)	-0.06(0.11)	0.07(0.12)	0.05(0.09)
First emp before 9 mths * Other	0.06(0.09)	0.12(0.08)	-0.05(0.10)	-0.08(0.09)	0.05(0.11)	-0.02(0.12)	0.05(0.12)	0.06(0.10)
First emp before 2 yrs * African American	0.05(0.13)	0.11(0.15)	-0.15(0.14)	0.12(0.15)	0.25(0.14)+	-0.07(0.17)	0.04(0.16)	0.02(0.16)
First emp before 2 yrs * Hispanic	-0.04(0.13)	0.03(0.12)	-0.05(0.14)	-0.03(0.14)	0.04(0.13)	-0.10(0.15)	0.09(0.14)	0.01(0.14)
First emp before 2 yrs * Other	0.14(0.15)	0.19(0.14)	0.02(0.19)	0.08(0.16)	0.06(0.16)	-0.13(0.17)	0.21(0.18)	0.12(0.17)
F of model	27.69**	36.21**	9.99**	9.08**	12.69**	10.83**	7.76**	15.96**
R^2	0.19	0.21	0.08	0.07	0.09	0.11	0.08	0.13

Note: +p<.10, *p<.05, **p<.01. Employed groups are compared to the omitted category of no employment. All models were estimated using OLS regression. All analyses controlled for the W1 value of child age, gender, race, low-birthweight status, lag of the DV, number of siblings and twin status as well as new siblings W2, new siblings W3-4/5, entering kindergarten at W5 and child age at assessment. All models also controlled for the W1 value of mother age, education, and English speaking household as well as averages over W1-4/5 of the average number of non-partner adults living in the household, cohabitation, marital status, welfare recipient status, working partner, and household annual income not including mother's income.

Table A.2

Models Predicting Child Care Hours, Maternal Employment Income, and Maternal Depression

Independent Variables	Child care hours	Maternal emp income	Maternal depression
Model 1: United States, n=10,100			
First emp before 9 mths	0.36(0.03)**	0.32(0.03)***a*	-0.02(0.03)
First emp before 2 yrs	0.40(0.04)**	0.45(0.05)***a*	0.04(0.05)
F of model	59.20**	60.98**	11.99**
R^2	0.4	0.36	0.07
Model 2: Australia, n=5,093			
First emp before 9 mths	0.36(0.05)**	0.52(0.05)***a*	-0.09(0.04)*
First emp before 2 yrs	0.30(0.04)**	0.29(0.04)***a*	-0.02(0.05)
F of model	31.70**	18.93**	5.62**
R^2	0.18	0.18	0.05
Model 3: United Kingdom, n=18,497			
First emp before 9 mths	0.92(0.02)***a*	0.70(0.02)***a*	0.03(0.02)
First emp before 2 yrs	0.32(0.03)***a*	0.49(0.02)***a*	0.03(0.03)
F of model	87.40**	62.86**	20.73**
R^2	0.28	0.34	0.05

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 were estimated using OLS regression. All analyses controlled for the W1 value of child age, gender, race, low-birthweight status, lag of the DV, number of siblings and twin status as well as new siblings W2, new siblings W3-4/5, entering kindergarten at W5 (for U.S. models only) and child age at assessment. All models also controlled for the W1 value of mother age, education, and English speaking household as well as averages over W1-4/5 of the average number of non-partner adults living in the household, cohabitation, marital status, welfare recipient status, working partner, and household annual income not including mother's income.

Table A.3

United States: Models Testing Mediation by Child Care Hours, Maternal Employment Income, and Maternal Depression, n=10,100

Independent Variables	Cognitive Skills		Behavioral Skills, Parent Report			Behavioral Skills, Teacher Report		
	Reading	Math	Conduct	Prosocial	Attention	Conduct	Prosocial	Attention
Timing of first employment								
First emp before 9 mths	0.05(0.04)	0.02(0.04)	0.09(0.04)*	0.01(0.05)	-0.08(0.04)*	0.03(0.04)	-0.03(0.05)	-0.01(0.04)
First emp before 2 yrs	0.03(0.05)	-0.00(0.05)	0.06(0.06)	0.01(0.06)	-0.07(0.06)	0.05(0.05)	-0.02(0.06)	-0.08(0.05)
Mediators								
Child care hours W2	-0.01(0.03)	-0.00(0.03)	0.01(0.03)	0.02(0.03)	-0.06(0.03)*	0.05(0.03)	0.00(0.04)	-0.04(0.03)
Maternal emp income W2	0.02(0.03)	0.03(0.02)	-0.03(0.02)	0.01(0.03)	0.05(0.02)*	-0.03(0.03)	0.01(0.03)	0.03(0.03)
Maternal depression W1	-0.01(0.02)	-0.00(0.01)	0.03(0.02)+	-0.01(0.02)	-0.04(0.02)*	0.01(0.02)	-0.01(0.02)	0.00(0.02)
F of model	32.18**	42.37**	10.65**	9.71**	13.74**	11.48**	7.80**	17.10**
R^2	0.20	0.23	0.08	0.07	0.09	0.11	0.08	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 models were estimated using OLS regression. All analyses controlled for the W1 value of child age, gender, race, low-birthweight status, lag of the DV, number of siblings and twin status as well as new siblings W2, new siblings W3-4/5, entering kindergarten at W5 and child age at assessment. All models also controlled for the W1 value of mother age, education, and English speaking household as well as averages over W1-4/5 of the average number of non-partner adults living in the household, cohabitation, marital status, welfare recipient status, working partner, and household annual income not including mother's income.

Table A.4

Australia: Models Testing Mediation by Child Care Hours, Maternal Employment Income, and Maternal Depression, n=5,093

Independent Variables	Academic Skills			Behavioral Skills, Parent Report			Behavioral Skills, Teacher Report		
	Teacher Academic	Matrix Reasoning	Vocabulary	Conduct	Prosocial	Attention	Conduct	Prosocial	Attention
Timing of first employment									
First emp before 9 mths	0.05(0.05)	0.10(0.05)*	0.03(0.04)	-0.08(0.05)	-0.11(0.05)*	0.01(0.04)	-0.04(0.05)	0.03(0.05)	0.03(0.05)
First emp before 2 yrs	0.08(0.04)+	0.05(0.04)	0.06(0.04)	-0.01(0.05)	-0.05(0.04)	0.04(0.04)	-0.1(0.05)+	0.06(0.05)	0.09(0.05)+
Mediators									
Child care hours W2	0.00(0.02)	0.03(0.02)	-0.04(0.02)*	0.07(0.02)**	-0.03(0.02)	-0.11(0.02)**	0.09(0.02)**	-0.06(0.02)**	-0.08(0.02)**
Maternal emp income W2	-0.02(0.02)	0.01(0.02)	0.01(0.02)	-0.01(0.02)	-0.00(0.02)	0.02(0.02)	0.02(0.02)	-0.02(0.02)	-0.02(0.02)
Maternal depression W1	-0.01(0.02)	-0.02(0.02)	-0.02(0.02)	0.12(0.02)**	-0.09(0.02)**	-0.09(0.02)**	0.04(0.02)+	-0.05(0.02)*	-0.03(0.02)*
F of model	10.97**	6.64**	16.12**	8.25**	9.27**	11.59**	6.26**	11.47**	14.27**
R^2	0.11	0.06	0.15	0.08	0.08	0.10	0.07	0.10	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 were estimated using OLS regression. All analyses controlled for the W1 value of child age, gender, low-birthweight status, lag of the DV, number of siblings and twin status as well as new siblings W2, new siblings W3-4, and child age at assessment. All models also controlled for the W1 value of mother age, education, asian, indigenous, immigrant household and English speaking household as well as averages over W1-4 of the average number of non-partner adults living in the household, cohabitation, marital status, welfare recipient status, working partner, and household annual income not including mother's income.

Table A.5

United Kingdom: Models Testing Mediation by Child Care Hours, Maternal Employment Income, and Maternal Depression, n=18,497

Independent Variables	Academic Skills			Behavioral Skills, Parent Report			Behavioral Skills, Teacher Report		
	Pattern Constr.	Word Reading	Number Skills	Conduct	Prosocial	Attention	Conduct	Prosocial	Attention
Timing of first employment									
First emp before 9 mths	-0.03(0.03)	-0.05(0.03)+a	-0.04(0.03)	0.02(0.03)	0.01(0.03)	-0.01(0.03)	-0.00(0.03)	0.03(0.03)	-0.00(0.03)
First emp before 2 yrs	-0.00(0.02)	0.01(0.03)a	0.01(0.03)	-0.00(0.03)	0.02(0.03)	0.01(0.02)	-0.03(0.03)	0.05(0.03)	-0.00(0.03)
Mediators									
Child care hours W2	0.00(0.01)	0.01(0.01)	0.02(0.01)+	0.02(0.01)*	-0.00(0.01)	-0.03(0.01)**	0.02(0.01)**	-0.03(0.01)**	-0.03(0.01)**
Maternal emp income W2	0.04(0.01)**	0.03(0.01)**	0.04(0.01)**	-0.03(0.01)*	-0.00(0.01)	0.01(0.01)	0.02(0.02)	-0.01(0.02)	-0.01(0.01)
Maternal depression W1	-0.01(0.01)	-0.00(0.01)	-0.00(0.01)	0.13(0.01)**	-0.04(0.01)**	-0.11(0.01)**	0.03(0.01)**	-0.03(0.01)*	-0.03(0.01)**
F of model	26.28**	35.91**	25.14**	38.68**	19.36**	39.89**	17.27**	20.03**	33.07**
R^2	0.10	0.15	0.10	0.12	0.06	0.13	0.08	0.10	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 models were estimated using OLS regression. All analyses controlled for the W1 value of child age, gender, low-birthweight status, race/ethnicity, lag of the DV, number of siblings and twin status as well as new siblings W2, new siblings W3-4, and child age at assessment. All models also controlled for the W1 value of mother age, education, and English speaking household as well as averages over W1-4 of the average number of non-partner adults living in the household, cohabitation, marital status, welfare recipient status, working partner, and household annual income not including mother's income.

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Table A.6

United States: Models Testing Moderation by Employment Intensity, n=10,100

Independent Variables	Cognitive Skills		Behavioral Skills, Parent Report			Behavioral Skills, Teacher Report		
	Reading	Math	Conduct	Prosocial	Attention	Conduct	Prosocial	Attention
Model 1: Intensity of maternal employment								
First emp before 9 mths part time	0.00(0.05)	-0.02(0.05)	0.10(0.05)*	-0.00(0.05)	-0.06(0.05)	0.03(0.05)	-0.07(0.06)	0.02(0.05)
First emp before 9 mths full time	0.07(0.04)+	0.06(0.04)	0.08(0.04)+	0.03(0.04)	-0.10(0.04)*	0.05(0.04)	-0.00(0.05)	-0.04(0.05)
First emp before 2 yrs part time	0.04(0.08)	-0.00(0.07)	0.01(0.07)	0.04(0.08)	-0.07(0.09)	0.07(0.08)	0.02(0.09)	-0.11(0.08)
First emp before 2 yrs full time	0.03(0.06)	0.02(0.05)	0.08(0.07)	0.00(0.07)	-0.08(0.07)	0.05(0.06)	-0.03(0.07)	-0.08(0.06)
F of model	33.71**	44.03**	10.96**	10.06**	13.69**	11.88**	8.19**	17.82**
R^2	0.20	0.23	0.08	0.07	0.09	0.11	0.08	0.13
Model 2: Intensity of nonparental child care								
Main effects								
First emp before 9 mths	0.05(0.04)	0.03(0.04)	0.09(0.05)+	0.01(0.05)	-0.08(0.04)*	0.03(0.04)	-0.03(0.05)	-0.01(0.04)
First emp before 2 yrs	0.03(0.05)	0.00(0.05)	0.06(0.06)	0.00(0.06)	-0.07(0.06)	0.05(0.05)	-0.02(0.06)	-0.08(0.05)+
Child care hours W2	-0.00(0.03)	0.00(0.03)	-0.01(0.04)	0.03(0.03)	-0.01(0.03)	0.03(0.03)	0.00(0.03)	-0.02(0.03)
Interactions								
First emp before 9 mths*Child care hours W2	0.01(0.04)	0.02(0.03)	-0.00(0.04)	-0.02(0.04)	-0.02(0.04)	0.00(0.04)	0.01(0.04)	-0.01(0.04)
First emp before 2 yrs*Child care hours W2	0.01(0.06)	0.02(0.05)	0.02(0.06)	0.00(0.06)	0.00(0.06)	-0.01(0.05)	0.01(0.05)	0.04(0.06)
F of model	31.96**	41.75**	10.33**	9.70**	13.17**	11.48**	7.85**	16.81**
R^2	0.20	0.23	0.08	0.07	0.09	0.11	0.08	0.13

Note: +p<.10, *p<.05, **p<.01. Employed groups are compared to the omitted category of no employment. All models were estimated using OLS regression and weighted with propensty score weights. All analyses controlled for the W1 value of child age, gender, race, low-birthweight status, lag of the DV, number of siblings and twin status as well as new siblings W2, new siblings W3-4/5, entering kindergarten at W5 and child age at assessment. All models also controlled for the W1 value of mother age, education, and English speaking household as well as averages over W1-4/5 of the average number of non-partner adults living in the household, cohabitation, marital status, welfare recipient status, working partner, and household annual income not including mother's income.

Table A.7

Australia: Models Testing Moderation by Employment Intensity, n=5,093

Independent Variables	Academic Skills			Behavioral Skills, Parent Report			Behavioral Skills, Teacher Report		
	Teacher Academic	Matrix Reasoning	Vocabulary	Conduct	Prosocial	Attention	Conduct	Prosocial	Attention
Model 1: Intensity of maternal employment									
First emp before 9 mths part time	0.03(0.05)	0.10(0.05)*	0.02(0.05)	-0.08(0.05)+	-0.12(0.05)*	-0.00(0.05)	-0.03(0.06)	0.00(0.05)	-0.01(0.06)
First emp before 9 mths full time	0.08(0.08)	0.14(0.07)*	0.05(0.08)	-0.02(0.09)	-0.07(0.09)	-0.03(0.08)	0.07(0.08)a	0.02(0.09)	0.01(0.09)
First emp before 2 yrs part time	0.10(0.04)*	0.05(0.04)	0.05(0.04)	0.01(0.05)	-0.07(0.05)	0.03(0.05)	-0.10(0.05)+a	0.04(0.04)	0.08(0.05)
First emp before 2 yrs full time	-0.01(0.08)	0.13(0.07)+	0.05(0.08)	-0.00(0.09)	-0.03(0.09)	-0.04(0.08)	0.06(0.09)	0.00(0.09)	-0.03(0.08)
F of model	11.11**	6.94**	16.32**	7.29**	8.94**	10.88**	5.87**	11.32**	13.75**
R²	0.11	0.06	0.14	0.06	0.07	0.09	0.06	0.10	0.13
Model 2: Intensity of nonparental child care									
Main effects									
First emp before 9 mths	0.04(0.05)	0.10(0.05)*	0.03(0.05)	-0.10(0.05)*	-0.10(0.05)*	0.02(0.05)	-0.05(0.05)	0.03(0.05)	0.02(0.05)
First emp before 2 yrs	0.08(0.04)+	0.06(0.04)	0.06(0.04)	-0.01(0.05)	-0.04(0.04)	0.04(0.04)	-0.09(0.05)+	0.05(0.04)	0.09(0.05)+
Child care hours W2	-0.02(0.02)	0.03(0.02)	-0.05(0.03)+	0.08(0.03)**	-0.03(0.03)	-0.13(0.03)**	0.08(0.03)**	-0.07(0.03)**	-0.11(0.03)**
Interactions									
First emp before 9 mths*Child care hours W2	0.03(0.04)	0.02(0.04)	0.04(0.04)	0.01(0.04)	-0.01(0.04)	0.04(0.05)	0.05(0.05)	0.01(0.05)	0.03(0.04)
First emp before 2 yrs*Child care hours W2	0.02(0.04)	-0.01(0.04)	0.01(0.04)	-0.03(0.05)	-0.02(0.05)	0.05(0.04)	-0.00(0.05)	0.02(0.04)	0.02(0.04)
F of model	11.04**	6.61**	15.93**	7.63**	8.92**	11.34**	6.37**	11.51**	14.13**
R²	0.11	0.06	0.15	0.07	0.07	0.09	0.07	0.10	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 were estimated using OLS regression. All analyses controlled for the W1 value of child age, gender, low-birthweight status, lag of the DV, number of siblings and twin status as well as new siblings W2, new siblings W3-4, and child age at assessment. All models also controlled for the W1 value of mother age, education, asian, indigenous, immigrant household and English speaking household as well as averages over W1-4 of the average number of non-partner adults living in the household, cohabitation, marital status, welfare recipient status, working partner, and household annual income not including mother's income.

Table A.8

United Kingdom: Models Testing Moderation by Employment Intensity, n=18,497

Independent Variables	Academic Skills			Behavioral Skills, Parent Report			Behavioral Skills, Teacher Report		
	Pattern Constr.	Word Reading	Number Skills	Conduct	Prosocial	Attention	Conduct	Prosocial	Attention
Model 1: Intensity of maternal employment									
First emp before 9 mths part time	-0.01(0.02)	-0.01(0.02)	-0.00(0.03)	0.04(0.03)a	-0.00(0.03)	-0.04(0.03)	0.03(0.03)a	-0.00(0.02)	-0.03(0.03)
First emp before 9 mths full time	0.00(0.03)	-0.03(0.03)a	0.03(0.03)	-0.01(0.03)a	0.02(0.03)	-0.04(0.03)	0.05(0.03)b	-0.03(0.03)a	-0.05(0.03)
First emp before 2 yrs part time	0.02(0.02)	0.03(0.03)a	0.03(0.02)	0(0.03)	0.02(0.03)	0.02(0.03)	-0.03(0.03)abc	0.05(0.03)a	0.01(0.03)
First emp before 2 yrs full time	-0.01(0.04)	-0.01(0.04)	0.01(0.04)	-0.01(0.04)	-0.01(0.04)	-0.04(0.04)	0.06(0.04)c	-0.05(0.04)	-0.08(0.03)*
F of model	26.34**	36.05**	25.12**	32.66**	18.87**	34.83**	17.71**	21.02**	34.14**
R^2	0.10	0.15	0.10	0.10	0.06	0.11	0.08	0.10	0.13
Model 2: Intensity of nonparental child care									
Main effects									
First emp before 9 mths	-0.01(0.03)	-0.03(0.03)	-0.01(0.03)	-0.00(0.03)	0.00(0.03)	-0.01(0.03)	0.00(0.03)	0.03(0.03)	-0.00(0.03)
First emp before 2 yrs	0.02(0.03)	0.03(0.03)	0.03(0.03)	-0.01(0.03)	0.01(0.03)	0.01(0.03)	-0.03(0.03)	0.05(0.03)	0.00(0.03)
Child care hours W2	0.01(0.02)	0.01(0.02)	0.03(0.03)	0.03(0.02)	-0.01(0.02)	-0.03(0.02)	0.04(0.02)+	-0.05(0.02)*	-0.05(0.02)*
Interactions									
First emp before 9 mths*Child care hours W2	-0.01(0.03)	0.01(0.03)	-0.01(0.03)	-0.02(0.02)	0.01(0.02)	0.01(0.03)	-0.01(0.02)	0.02(0.02)	0.02(0.02)
First emp before 2 yrs*Child care hours W2	0.04(0.03)	0.02(0.03)	0.01(0.03)	-0.01(0.03)	-0.01(0.03)	-0.02(0.03)	-0.01(0.03)	0.02(0.03)	0.02(0.03)
F of model	26.38**	35.25**	24.45**	32.10**	18.98**	34.27**	17.81**	20.77**	33.49**
R^2	0.10	0.15	0.10	0.10	0.06	0.11	0.08	0.10	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. Employed groups are compared to the omitted category of no employment. All models were estimated using OLS regression. All analyses controlled for the W1 value of child age, gender, low-birthweight status, race/ethnicity, lag of the DV, number of siblings and twin status as well as new siblings W2, new siblings W3-4, and child age at assessment. All models also controlled for the W1 value of mother age, education, and English speaking household as well as averages over W1-4 of the average number of non-partner adults living in the household, cohabitation, marital status, welfare recipient status, working partner, and household annual income not including mother's income.

Table A.9
United States: Models Testing Moderation by Maternal Depression, n=10,100

Independent Variables	Cognitive Skills		Behavioral Skills, Parent Report			Behavioral Skills, Teacher Report		
	Reading	Math	Conduct	Prosocial	Attention	Conduct	Prosocial	Attention
Main effects								
First emp before 9 mths	0.05(0.04)	0.03(0.04)	0.08(0.04)+	0.02(0.04)	-0.09(0.04)*	0.04(0.04)	-0.03(0.05)	-0.02(0.04)
First emp before 2 yrs	0.03(0.05)	0.01(0.05)	0.06(0.05)	0.02(0.06)	-0.07(0.06)	0.06(0.05)	-0.01(0.06)	-0.09(0.05)
Maternal depression W1	-0.03(0.03)	0.00(0.02)	0.05(0.03)+	-0.01(0.03)	-0.03(0.03)	0.02(0.03)	-0.00(0.03)	-0.01(0.03)
Interactions								
First emp before 9 mths*Maternal depression W1	0.02(0.03)	-0.01(0.03)	-0.02(0.04)	0.00(0.03)	-0.02(0.03)	-0.03(0.04)	-0.01(0.04)	0.03(0.04)
First emp before 2 yrs*Maternal depression W1	0.03(0.05)	0.02(0.04)	-0.02(0.05)	-0.03(0.05)	-0.01(0.05)	-0.00(0.05)	0.01(0.06)	-0.01(0.05)
F of model	32.76**	42.91**	10.70**	9.79**	13.64**	11.49**	7.89**	17.25**
R^2	0.20	0.23	0.08	0.07	0.09	0.11	0.08	0.13

Note: +$p<.10$, *$p<.05$, **$p<.01$. Employed groups are compared to the omitted category of no employment. All models were estimated using OLS regression. All analyses controlled for the W1 value of child age, gender, race, low-birthweight status, lag of the DV, number of siblings and twin status as well as new siblings W2, new siblings W3-4/5, entering kindergarten at W5 and child age at assessment. All models also controlled for the W1 value of mother age, education, and English speaking household as well as averages over W1-4/5 of the average number of non-partner adults living in the household, cohabitation, marital status, welfare recipient status, working partner, and household annual income not including mother's income.

Table A.10

Australia: Models Testing Moderation by Maternal Depression, n=5,093

Independent Variables	Academic Skills			Behavioral Skills, Parent Report			Behavioral Skills, Teacher Report		
	Teacher Academic	Matrix Reasoning	Vocabulary	Conduct	Prosocial	Attention	Conduct	Prosocial	Attention
Main effects									
First emp before 9 mths	0.05(0.05)	0.12(0.05)*	0.03(0.04)	-0.05(0.05)	-0.12(0.05)*	-0.02(0.04)	0.00(0.05)	-0.00(0.05)	-0.01(0.05)
First emp before 2 yrs	0.07(0.04)+	0.06(0.04)	0.05(0.04)	0.01(0.05)	-0.06(0.04)	0.01(0.04)	-0.07(0.05)	0.03(0.04)	0.06(0.05)
Maternal depression W1	-0.02(0.02)	-0.02(0.02)	-0.04(0.02)	0.12(0.02)**	-0.09(0.03)**	-0.09(0.02)**	0.04(0.02)	-0.04(0.02)*	-0.03(0.02)
Interactions									
First emp before 9 mths*Maternal depression W1	0.03(0.05)	0.07(0.04)+	0.07(0.04)	0.06(0.05)	-0.02(0.05)	-0.03(0.04)	0.03(0.05)	-0.04(0.05)	-0.03(0.04)
First emp before 2 yrs*Maternal depression W1	-0.01(0.04)	-0.00(0.04)	0.01(0.04)	-0.03(0.04)	0.01(0.04)	-0.01(0.04)	-0.01(0.04)	-0.01(0.04)	-0.01(0.04)
F of model	10.88**	6.22**	16.09**	8.78**	9.35**	10.76**	5.56**	11.12**	13.52**
R^2	0.11	0.06	0.15	0.08	0.08	0.09	0.06	0.10	0.13

Note: $+p<.10$, $*p<.05$, $**p<.01$. Employed groups are compared to the omitted category of no employment. All models were estimated using OLS regression. All analyses controlled for the W1 value of child age, gender, low-birthweight status, lag of the DV, number of siblings and twin status as well as new siblings W2, new siblings W3-4, and child age at assessment. All models also controlled for the W1 value of mother age, education, asian, indigenous, immigrant household and English speaking household as well as averages over W1-4 of the average number of non-partner adults living in the household, cohabitation, marital status, welfare recipient status, working partner, and household annual income not including mother's income.

Table A.11

United Kingdom: Models Testing Moderation by Maternal Depression, n=18,497

Independent Variables	Academic Skills			Behavioral Skills, Parent Report			Behavioral Skills, Teacher Report		
	Pattern Constr.	Word Reading	Number Skills	Conduct	Prosocial	Attention	Conduct	Prosocial	Attention
Main effects									
First emp before 9 mths	-0.00(0.02)	-0.01(0.03)	0.01(0.03)	0.01(0.03)	0.00(0.03)	-0.03(0.03)	0.03(0.03)	-0.01(0.02)	-0.03(0.03)
First emp before 2 yrs	0.02(0.02)	0.03(0.03)	0.04(0.03)	-0.01(0.03)	0.01(0.03)	0.01(0.03)	-0.02(0.03)	0.03(0.03)	-0.02(0.03)
Maternal depression W1	-0.01(0.01)	-0.01(0.01)	-0.01(0.01)	0.13(0.01)**	-0.04(0.01)*	-0.1(0.01)**	0.04(0.01)**	-0.03(0.01)+	-0.03(0.01)*
Interactions									
First emp before 9 mths*Maternal depression W1	0.00(0.02)	0.02(0.02)	0.02(0.02)	-0.02(0.02)	-0.01(0.02)	0.00(0.02)	-0.01(0.02)	-0.01(0.02)	0.01(0.02)
First emp before 2 yrs*Maternal depression W1	-0.00(0.02)	0.00(0.02)	0.00(0.02)	0.01(0.02)	-0.01(0.02)	-0.03(0.02)	-0.00(0.02)	0.00(0.02)	-0.01(0.02)
F of model	25.77**	35.49**	25.16**	38.61**	19.66**	39.24**	17.64**	20.40**	33.92**
R^2	0.10	0.15	0.10	0.12	0.06	0.12	0.08	0.10	0.13

Note: +p<.10, *p<.05, **p<.01. Employed groups are compared to the omitted category of no employment. All models were estimated using OLS regression. All analyses controlled for the W1 value of child age, gender, low-birthweight status, race/ethnicity, lag of the DV, number of siblings and twin status as well as new siblings W2, new siblings W3-4, and child age at assessment. All models also controlled for the W1 value of mother age, education, and English speaking household as well as averages over W1-4 of the average number of non-partner adults living in the household, cohabitation, marital status, welfare recipient status, working partner, and household annual income not including mother's income.

Table A.12

United States: Models Testing Moderation by Maternal Employment Income, n=10,100

Independent Variables	Cognitive Skills		Behavioral Skills, Parent Report			Behavioral Skills, Teacher Report		
	Reading	Math	Conduct	Prosocial	Attention	Conduct	Prosocial	Attention
Main effects								
First emp before 9 mths	0.05(0.04)	0.03(0.04)	0.09(0.05)+	0.01(0.05)	-0.09(0.04)*	0.04(0.04)	-0.03(0.05)	-0.02(0.04)
First emp before 2 yrs	0.02(0.05)	0.00(0.05)	0.07(0.06)	-0.00(0.06)	-0.08(0.06)	0.06(0.05)	-0.02(0.06)	-0.10(0.05)+
Mother employment income W2	0.00(0.04)	0.01(0.03)	-0.02(0.04)	0.03(0.04)	0.01(0.04)	0.01(0.04)	0.01(0.04)	0.00(0.04)
Interactions								
First emp before 9 mths x Mother emp income W2	0.01(0.04)	0.02(0.03)	-0.00(0.05)	-0.03(0.04)	-0.00(0.04)	0.00(0.04)	-0.01(0.04)	-0.01(0.04)
First emp before 2 yrs x Mother emp income W2	0.02(0.06)	0.02(0.05)	0.01(0.06)	0.02(0.05)	0.03(0.06)	-0.04(0.05)	0.03(0.05)	0.05(0.05)
F of model	32.18**	42.54**	10.29**	9.70**	13.13**	11.61**	8.00**	17.10**
R^2	0.20	0.23	0.08	0.07	0.09	0.11	0.08	0.13

Note: +$p<.10$, *$p<.05$, **$p<.01$. Employed groups are compared to the omitted category of no employment. All models were estimated using OLS regression. All analyses controlled for the W1 value of child age, gender, race, low-birthweight status, lag of the DV, number of siblings and twin status as well as new siblings W2, new siblings W3-4/5, entering kindergarten at W5 and child age at assessment. All models also controlled for the W1 value of mother age, education, and English speaking household as well as averages over W1-4/5 of the average number of non-partner adults living in the household, cohabitation, marital status, welfare recipient status, working partner, and household annual income not including mother's income.

Table A.13
Australia: Models Testing Moderation by Maternal Employment Income, n=5,093

Independent Variables	Academic Skills			Behavioral Skills, Parent Report			Behavioral Skills, Teacher Report		
	Teacher Academic	Matrix Reasoning	Vocabulary	Conduct	Prosocial	Attention	Conduct	Prosocial	Attention
Main effects									
First emp before 9 mths	0.05(0.05)	0.10(0.05)*	0.00(0.05)	-0.08(0.05)+	-0.11(0.05)*	-0.00(0.05)	-0.03(0.05)	0.04(0.05)	0.02(0.05)
First emp before 2 yrs	0.08(0.04)+	0.06(0.04)	0.07(0.04)+	0.01(0.05)	-0.05(0.04)	0.02(0.05)	-0.08(0.05)	0.04(0.05)	0.08(0.05)
Mother employment income W2	-0.06(0.03)+	-0.01(0.03)	-0.04(0.03)	0.03(0.03)	-0.01(0.03)	-0.05(0.03)+	0.06(0.03)*	-0.06(0.03)*	-0.09(0.03)**
Interactions									
First emp before 9 mths x Mother emp income W2	0.06(0.05)	0.05(0.04)	0.11(0.04)*	-0.01(0.04)	0.00(0.05)	0.06(0.04)	-0.01(0.05)	0.01(0.04)	0.06(0.04)
First emp before 2 yrs x Mother emp income W2	0.06(0.04)	0.03(0.05)	0.01(0.04)	-0.05(0.04)	0.00(0.05)	0.05(0.04)	-0.02(0.04)	0.06(0.04)	0.07(0.04)
F of model	11.30**	6.44**	16.02**	7.06**	8.66**	10.61**	5.56**	11.07**	13.90**
R^2	0.11	0.06	0.15	0.06	0.07	0.09	0.06	0.10	0.13

Note: $+p<.10$, $*p<.05$, $**p<.01$. Employed groups are compared to the omitted category of no employment. All models were estimated using OLS regression. All analyses controlled for the W1 value of child age, gender, low-birthweight status, lag of the DV, number of siblings and twin status as well as new siblings W2, new siblings W3-4, and child age at assessment. All models also controlled for the W1 value of mother age, education, asian, indigenous, immigrant household and English speaking household as well as averages over W1-4 of the average number of non-partner adults living in the household, cohabitation, marital status, welfare recipient status, working partner, and household annual income not including mother's income.

Table A.14

United Kingdom: Models Testing Moderation by Maternal Employment Income, n=18,497

Independent Variables	Academic Skills			Behavioral Skills, Parent Report			Behavioral Skills, Teacher Report		
	Pattern Constr.	Word Reading	Number Skills	Conduct	Prosocial	Attention	Conduct	Prosocial	Attention
Main effects									
First emp before 9 mths	-0.01(0.04)	-0.04(0.04)	-0.04(0.04)	0.03(0.04)	0.01(0.04)	-0.03(0.04)	0.01(0.04)	0.02(0.03)	-0.01(0.03)
First emp before 2 yrs	0.02(0.04)	0.01(0.04)	0.01(0.04)	-0.00(0.04)	0.02(0.05)	0.02(0.04)	-0.04(0.04)	0.05(0.04)	0.01(0.03)
Mother employment income W2	0.00(0.05)	0.03(0.04)	0.03(0.04)	-0.00(0.05)	-0.02(0.05)	-0.02(0.05)	0.04(0.04)	-0.04(0.04)	-0.04(0.04)
Interactions									
First emp before 9 mths x Mother emp income W2	0.04(0.05)	0.01(0.05)	0.01(0.05)	-0.03(0.05)	0.03(0.05)	0.04(0.05)	-0.02(0.04)	0.03(0.04)	0.03(0.04)
First emp before 2 yrs x Mother emp income W2	0.06(0.06)	-0.01(0.06)	-0.01(0.06)	-0.00(0.06)	-0.01(0.06)	0.00(0.06)	-0.02(0.05)	0.01(0.05)	0.01(0.06)
F of model	25.63**	35.29**	23.71**	31.41**	18.68**	33.89**	17.25**	20.05**	33.21**
R^2	0.10	0.15	0.10	0.10	0.06	0.11	0.08	0.10	0.13

Note: $+p<.10$, $*p<.05$, $**p<.01$. Employed groups are compared to the omitted category of no employment. All models were estimated using OLS regression. All analyses controlled for the W1 value of child age, gender, low-birthweight status, race/ethnicity, lag of the DV, number of siblings and twin status as well as new siblings W2, new siblings W3-4, and child age at assessment. All models also controlled for the W1 value of mother age, education, and English speaking household as well as averages over W1-4 of the average number of non-partner adults living in the household, cohabitation, marital status, welfare recipient status, working partner, and household annual income not including mother's income.

Table A.15

United States: Models Testing Moderation by Non-mother Household Income, n=10,1000

	Cognitive Skills		Behavioral Skills, Parent Report			Behavioral Skills, Teacher Report		
Independent Variables	Reading	Math	Conduct	Prosocial	Attention	Conduct	Prosocial	Attention
Main effects								
First emp before 9 mths	0.05(0.04)	0.04(0.04)	0.08(0.04)+	0.02(0.04)	-0.08(0.04)*	0.04(0.04)	-0.02(0.05)	-0.02(0.04)
First emp before 2 yrs	0.05(0.05)	0.02(0.05)	0.04(0.05)	0.02(0.06)	-0.07(0.06)	0.05(0.05)	-0.01(0.06)	-0.08(0.05)
Non-mother hh income W1-4/5	0.18(0.03)**	0.19(0.02)**	-0.05(0.02)*	0.04(0.02)	0.09(0.02)**	-0.05(0.02)*	0.05(0.03)	0.09(0.03)**
Interactions								
First emp before 9 mths x Non-mother hh income W1-4/5	-0.09(0.03)**	-0.07(0.03)**	0.05(0.03)+	0.01(0.03)	-0.02(0.03)	0.02(0.03)	-0.03(0.03)	-0.03(0.03)
First emp before 2 yrs x Non-mother hh income W1-4/5	0.01(0.06)	-0.04(0.05)	-0.05(0.05)	0.02(0.05)	0.00(0.05)	-0.02(0.06)	0.01(0.06)	0.00(0.06)
F of model	33.98**	44.02**	11.10**	10.04**	14.03**	11.96**	8.14**	17.94**
R^2	0.20	0.23	0.08	0.07	0.09	0.11	0.08	0.13

Note: $+p<.10$, $*p<.05$, $**p<.01$. Employed groups are compared to the omitted category of no employment. All models were estimated using OLS regression. All analyses controlled for the W1 value of child age, gender, race, low-birthweight status, lag of the DV, number of siblings and twin status as well as new siblings W2, new siblings W3-4/5, entering kindergarten at W5 and child age at assessment. All models also controlled for the W1 value of mother age, education, and English speaking household as well as averages over W1-4/5 of the average number of non-partner adults living in the household, cohabitation, marital status, welfare recipient status, working partner, and household annual income not including mother's income.

Table A.16

Australia: Models Testing Moderation by Non-mother Household Income, n=5,093

Independent Variables	Academic Skills			Behavioral Skills, Parent Report			Behavioral Skills, Teacher Report		
	Teacher Academic	Matrix Reasoning	Vocabulary	Conduct	Prosocial	Attention	Conduct	Prosocial	Attention
Main effects									
First emp before 9 mths	0.05(0.05)	0.11(0.04)*	0.03(0.04)	-0.07(0.05)	-0.11(0.05)*	-0.01(0.04)	-0.01(0.05)	0.01(0.05)	-0.00(0.05)
First emp before 2 yrs	0.08(0.04)+	0.07(0.04)+	0.05(0.04)	-0.00(0.05)	-0.06(0.04)	0.03(0.04)	-0.07(0.05)	0.05(0.04)	0.07(0.05)
Non-mother hh income W1-4/5	0.09(0.02)**	0.12(0.03)**	0.08(0.03)**	-0.10(0.02)**	0.03(0.03)	0.1(0.03)**	-0.08(0.03)**	0.1(0.02)**	0.09(0.03)**
Interactions									
First emp before 9 mths x Non-mother hh income W1-4/5	-0.03(0.04)	-0.06(0.04)	0.01(0.04)	0.06(0.05)	-0.04(0.05)	-0.01(0.04)	0.09(0.06)	-0.04(0.04)	-0.07(0.05)
First emp before 2 yrs x Non-mother hh income W1-4/5	-0.06(0.04)	-0.10(0.05)*	-0.02(0.04)	0.10(0.04)*	-0.05(0.04)	-0.14(0.04)**	0.10(0.05)*	-0.12(0.04)**	-0.14(0.05)**
F of model	11.23**	6.54**	16.27**	7.23**	8.94**	11.21**	5.60**	11.64**	14.48**
R^2	0.11	0.06	0.14	0.06	0.07	0.09	0.06	0.10	0.14

Note: +p<.10, *p<.05, **p<.01. Employed groups are compared to the omitted category of no employment. All models were estimated using OLS regression. All analyses controlled for the W1 value of child age, gender, low-birthweight status, lag of the DV, number of siblings and twin status as well as new siblings W2, new siblings W3-4, and child age at assessment. All models also controlled for the W1 value of mother age, education, asian, indigenous, immigrant household and English speaking household as well as averages over W1-4 of the average number of non-partner adults living in the household, cohabitation, marital status, welfare recipient status, working partner, and household annual income not including mother's income.

Table A.17

United Kingdom: Models Testing Moderation by Non-mother Household Income, n=18,497

	Academic Skills			Behavioral Skills, Parent Report			Behavioral Skills, Teacher Report		
Independent Variables	Pattern Constr.	Word Reading	Number Skills	Conduct	Prosocial	Attn to Learning	Conduct	Prosocial	Attn to Learning
Main effects									
First emp before 9 mths	-0.00(0.02)	-0.02(0.03)	0.01(0.03)	0.02(0.02)	0.00(0.03)	-0.04(0.03)	0.03(0.03)	-0.01(0.02)	-0.03(0.03)
First emp before 2 yrs	0.02(0.02)	0.03(0.03)	0.04(0.03)	-0.00(0.03)	0.01(0.03)	0.01(0.03)	-0.01(0.03)	0.03(0.03)	-0.02(0.03)
Non-mother hh income W1-4/5	0.09(0.02)**	0.14(0.02)**	0.13(0.02)**	-0.06(0.02)**	0.01(0.02)	0.07(0.02)**	-0.02(0.02)	0.01(0.02)	0.02(0.02)
Interactions									
First emp before 9 mths x Non-mother hh income W1-4/5	-0.04(0.02)+	-0.04(0.02)+	-0.05(0.02)*	-0.00(0.02)	0.00(0.02)	0.01(0.02)	-0.00(0.02)	-0.01(0.02)	-0.01(0.02)
First emp before 2 yrs x Non-mother hh income W1-4/5	-0.01(0.03)	-0.03(0.03)	-0.03(0.03)	0.03(0.03)	0.00(0.03)	0.02(0.02)	0.02(0.02)	-0.01(0.03)	-0.02(0.02)
F of model	26.12**	35.91**	24.07**	32.92**	19.09**	35.41**	18.01**	21.09**	34.76**
R^2	0.10	0.15	0.10	0.10	0.06	0.11	0.08	0.10	0.13

Note: $+p<.10$, $*p<.05$, $**p<.01$. Employed groups are compared to the omitted category of no employment. All models were estimated using OLS regression. All analyses controlled for the W1 value of child age, gender, low-birthweight status, race/ethnicity, lag of the DV, number of siblings and twin status as well as new siblings W2, new siblings W3-4, and child age at assessment. All models also controlled for the W1 value of mother age, education, and English speaking household as well as averages over W1-4 of the average number of non-partner adults living in the household, cohabitation, marital status, welfare recipient status, working partner, and household annual income not including mother's income.