

Bowling Green State University The Center for Family and Demographic Research

http://www.bgsu.edu/organizations/cfdr Phone: (419) 372-7279 cfdr@bgsu.edu

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MATERNAL EMPLOYMENT PATTERNS DURING THE FIRST SIX YEARS AND CHILD OUTCOMES AT AGE 15

Kei Nomaguchi and Marshal Neal Fettro

Department of Sociology Bowling Green State University Bowling Green, OH

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ABSTRACT

Much research has investigated the association between maternal employment and child outcomes. Although most studies examined maternal employment at one point in time, mothers' employment paths may not be static. Using data from the NICHD Study of Early Child Care and Youth Development (N = 712), we find that a majority of mothers change employment hours more than twice across the 16 waves from their children's infancy through kindergarten, supporting the notion that mothers typically take a "flexible" work pathway. Older age, fewer children, relationship dissolution, and work-orientation are related to a continuous full-time work pathway than a flexible work hours pathway, whereas more children, family-orientation, no professional occupation prior birth, higher family income, and lone parenthood at birth are related to a continuous nonwork pathway. More children and having a college degree are related to a continuous reduced work pathway. Controlling for these background characteristics, a continuous full-time work pathway is negatively related to children's academic ability and positively related to risk-taking behavior at age 15 compared to a flexible work pathway. A continuous reduced work pathway is positively related to children's outcomes at bivariate level, but the associations are not found after controlling for background characteristics.

Key words: Child outcomes, Gender, Life course, Maternal employment, Work-family

The labor force participation rate among mothers with children under age six increased from 39.0 % in 1975 to 65.3 % in 2000; with the peak in 2000, the increase has stabilized since then (Bureau of Labor Statistics 2009). As mothers are still expected to be the primary caregivers of children (Hays 1996), consequences of maternal employment for children's developmental outcomes have been debated among researchers as well as social critics, policy-makers, and the public. A large volume of studies have given a tentative conclusion that maternal employment is negatively related to children's cognitive and behavioral development when it is full-time and occurs during children's first year of life (Brooks-Gunn et al. 2010; Waldfogel et al. 2002). Findings as to how maternal employment that occurs after the first year influences children's developmental outcomes are less conclusive, but several studies suggest that children of mothers who are engaged in full-time employment show worse outcomes than children of mothers with reduced work hours or stay-at-home mothers (Milkie et al. 2015; Muller 1995). In short, prior research indicates that full-time maternal employment could be negatively related to children's developmental outcomes.

To what extent mothers continuously work full-time while their children are young is unclear. Work-family scholars have argued that women's paid work activities are often interrupted by family responsibilities (Bianchi 2011) and, thus, their employment paths must be dynamic and flexible (Moen 1985, 2005). Yet, surprisingly little empirical research has investigated maternal employment patterns across years following a birth. Many have estimated maternal employment patterns using cross-sectional data (e.g., Cohen and Bianchi 1999; Percheske 2008). Longitudinal studies typically examined the timing of mothers' returning to employment after a birth (e.g., Desai and Waite 1991; Joesch 1994; Klerman and Leibowitz 1994; Leibowitz and Klerman 1995), but not employment patterns across several years after a

birth. A handful of studies that identified mothers' long-term employment patterns have produced inconsistent findings. Some suggest considerable discontinuity in employment for a majority of mothers (Hynes and Clarkberg, 2005; Moen 1985; VandenHeuvel 1997). In contrast, a few studies have emphasized continuity in maternal employment pathways, especially among those with higher socioeconomic statues (SES) (Frech and Damaske 2012; Killewald and Zhuo 2015). Yet, most studies used mothers' retrospective reports of their paid work hours, which is a subject of recall bias (Dex and McCulloch, 1998).

Using data from the NICHD Study of Early Child Care and Youth Development (SECCYD), a unique panel study that provides prospective data on mothers' employment every three or four months from the month the focal child was born until the year when the child was in kindergarten, we first examine mothers' employment patterns during the first 6 years of children's lives with a specific focus on the extent to which mothers change their employment hours. We focus on the first 6 years because subsequent information in the SECCYD was collected only once a year. We then examine how mothers' sociodemographic characteristics, partnership status, attitudes toward paid work, and child care demands are linked to their employment patterns. Finally, we examine how mothers' employment patterns during the first 6 years are related to children's academic ability and behavioral adjustments at age 15. Findings of the present analyses have important implications for understanding how much actually mothers of young children work for pay and its link to child developmental outcomes.

BACKGROUND

Mothers' Long-Term Employment Patterns

Work-family scholars have long acknowledged that employment paths over the course of U.S. adults' lives are highly gendered (Bianchi 2011; Moen 1985; Presser 1995). Moen (1985,

2005) argued that the norm of continuous full-time work makes sense only when individuals have another person at home who could deal with family responsibilities for them. Without effective work-family policies, working for pay and raising children are incompatible with each other for those who have the primary child care responsibility (Presser 1995). Despite the increases in women's educational attainment and occupational aspiration, mothers continue to shoulder more childcare responsibilities than fathers, adjusting their work activities around their children's needs by cutting back work hours (Bianchi 2011). As a result, mothers' employment pathways are "often a patchwork of self-orchestrated time outs to care for children" (Moen 2005: 200). Instability in mothers' employment pathways is conceptualized as an "adaptive" or "flexible" career pathway compared to the "male" norm of continuous full-time career (Aumann and Galinskey 2012; Moen and Sweet 2004), which we call *the adaptive strategy perspective* to understand mothers' employment patterns.

Some empirical studies provide support for this argument. Cross-sectional data show that, even just within one year, only one-third of mothers with children under age 6 worked full-time continuously in the 1998 Current Population Survey (Cohen and Bianchi 1999) as well as mothers born between 1966 and 1975 in the Integrated Public Use Microdata Series Census data and the American Community Survey (Percheske 2008). A few longitudinal analyses found that mothers typically change employment hours across several years after a birth of their child. Examining the 1972 to 1976 Panel Study of Income Dynamics, Moen (1985) reported that combinations of full-time and part-time work with periods of nonemployment characterize women's employment. Using data from the National Longitudinal Study of the High School Class of 1972, VandenHeuvel (1997) found that the majority of mothers were neither continuously in the labor force nor out of labor force during the eight to ten years following their

first birth. She argued that mothers' employment pathways cannot simply be categorized into a "(full-time) career" or a "homemaker" path, calling for recognition of the "mosaic" of employment sequences that mothers engage in following a birth. Similarly, using data from the National Longitudinal Survey of Youth (NLSY79), Hynes and Clarkberg (2005) examined changes in employment status every two months for three years from 12 months before to 24 months after a birth. The authors found that the majority (65 %) of mothers were in and out of the labor force, whereas only 22 % of mothers were continuously employed and only 13 % of mothers were continuously out of the labor force. Observing employment hours every three months following their first birth for mothers in the NLSY79, Greenstein (1995) reported that about a half (51 %) of mothers were employed intermittently, whereas only 9 % were continuously employed full-time, 19 % were continuously employed part-time, and 21 % were continuously not employed from the first quarter after the child's birth to the end of the child's 4th year. In sum, these findings support the notion that change rather than stability is the norm of women's employment patterns while raising children.

In contrast, estimates produced by recent studies suggest more continuity than change in maternal employment patterns. Using the NLSY79, Frech and Damaske (2012) examined annual maternal employment patterns from the year in which their children were 18 or 24 months old to the year in which their children were 12 years old. Their study identified four patterns, including steady part-time workers (44.2 %), steady full-time workers (30.8 %), interrupted workers (14.1 %), and steady stay-at-home mothers (10.9 %). In short, 85.9 % of mothers were in one of the three "steady" categories. Also using the NLSY79, Kilewald and Zhuo (2015) examined patterns of mothers' employment patterns from the birth of a child to the child's 18th birthday. Their results show four patterns, including continuous full-time employment (38 %), continuous

stay-at-home mothers (24 %), continuous part-time employment (20 %), and returners (18 %), which were defined as a long nonemployment followed by a transition to part-time employment and then steady full-time employment. There was no group that reflects flexible or interrupted work patterns. The interrupted workers in Frech and Damaske (2012) and the returners in Kilewald and Zhuo (2015) were disproportionally mothers with lower SES. Highlighting SES disparities, these authors argue that mothers with proper resources can follow a more stable work path, while mothers with lower SES who lack resources to stay in the labor force experience job disruptions, which we call the *job instability perspective*.

We suspect that the measures and the statistical techniques used in these recent studies might have made the results prone to higher estimates of continuity in mothers' employment patterns. Frech and Damaske (2012) defined full-time steady workers as those who averaged 35 or more hours of work per week during employed weeks, allowing for two, one or zero bouts of unemployment. Thus, mothers who worked 40 hours per week for 26 weeks and dropped out for the rest of the year and mothers who worked 20 hours per week for 52 weeks would be conceptualized within the same group. Moreover, their research did not include the first 17 months following the birth, despite the majority mothers return to work 6 to 9 months after childbirth (Han et al. 2008). Kilewald and Zhuo (2015) used optimal matching analysis, which utilizes a measure of dissimilarity in mothers' employment hours from one month to another in order to create clusters of sequences that follow similar patterns. Optimal matching analysis relies on a researcher's subjective choice in setting the various distance matrices (Wu 2000). The omission of a flexible or interrupted employment category in their findings is perplexing, given that most prior research has shown this pattern, as we mentioned earlier.

This study examines mothers' employment patterns during the first 6 years of their children's lives, using the prospective data from the SECCYD. Although NLSY79 may seem fitting as past research have primarily used data from this survey, accounts of maternal employment history is hindered by retrospective reports that asked mothers to recall their employment characteristics for the previous twelve months. Estimates that used prospective data, rather than retrospective, on maternal employment are more ideal.

Characteristics Related to Maternal Employment Patterns

The second goal of this paper is to examine how mothers' and children's characteristics are related to maternal employment patterns. Guided by prior research, we focus on mothers' SES, partnership status, race-ethnicity, child demands, and attitudes toward paid work:

SES. SES has a strong influence on maternal employment patterns primarily for two reasons. First, as the classic economic theory (Becker 1981) contends, women with higher human capital—higher education, more job skills, and higher wages—are more likely to be employed full-time continuously as the opportunity costs of not working are higher (Desai and Waite 1991; Frech and Damaske, 2012; Hynes and Clarkberg 2005; Killewald and Zhuo, 2015; Leibowitz and Klerman, 1995). Second, SES is related to higher levels of resources available for mothers to use to combine paid work with childrearing. Economically disadvantaged mothers are less likely than affluent mothers to secure quality child care and, thus, may drop out or reduce work hours (Budig and Hodges 2010; Williams 2010). In addition, higher SES mothers are more likely than lower SES mothers to have resources and benefits at work—e.g., more flexibility, supportive co-workers and supervisors, and better prospects of promotions—that help or encourage them to endure the stressfulness of juggling paid work with raising young children (Blair-Loy 2003; Damaske 2011).

In contrast, other evidence suggests that mothers in all social class reduce, more or less, their work activities during childrearing years. Moen (1985) found that, although more educated women are always more likely than less educated women to work full-time, compared to their male counterparts, more educated women, too, are likely to reduce their work hours during their children's preschool years (Becker and Moen 1999; Kurz 2000). Focusing on four occupations in the health care industry, Gerstel and Clawson (2015) found that mothers, including both professional and non-professional, change their paid work activities around children's needs, albeit in different ways.

Race and ethnicity. Prior research has shown that there are racial-ethnic differences in mothers' employment patterns. Black mothers are more likely than White mothers to be continuously in the labor force (England et al. 2004; VanderHeuvel 1997). White mothers are more likely than nonwhite (largely black and Hispanic) mothers to work part-time (Frech and Damaske, 2012; Killewald and Zhuo, 2015).

Partnership status. How having a husband or partner at home influences mothers' employment pattern is complex. A husband or partner could share child care responsibilities, allowing women to go to work, but also may provide sufficient income that encourages women to reduce work hours. Some studies show that married or partnered mothers with young children are more likely than single mothers to be employed (Frech and Damaske, 2012; Killewald and Zhuo, 2015), but are less likely to work full-time (Budig, 2003; Drobnič 2000). Other studies have shown that married mothers are more likely to exit when their husbands worked long hours and earned significantly more than themselves (Cha 2010; Shafer 2011).

Child care demands. Some children's characteristics reflect greater childrening demands, which influences mothers' employment patterns. Mothers with more children are less

likely to be employed (Fox et al. 2013; Hynes and Clarkberg 2005). Children with poorer health or difficult temperament hinder mothers' ability to go to work (Coley et al. 2011; Richard et al., 2014). Some research has found that fathers with boys are more likely than fathers with girls to work longer hours (Lundberg and Rose, 2002), which may suggest that mothers with boys may be less likely to work continuously.

Attitudes toward paid work. Prior research has shown that women's attitudes toward work play a role in shaping their employment pathways while facing demands of childrearing (Blair-Loy 2003; Desai and Waite 1991; Hakim 2003). With other characteristics equal, such as SES and childrearing demands, career-oriented women are more likely than family-oriented women to stay in the labor force and continue to work full-time.

These characteristics—especially mothers' SES, partnership status, and child characteristics—are also related to child developmental outcomes (e.g., Augustine and Crosnoe, 2010; Blau, 1999; McLanahan, 2004; Waldfogel et al. 2002). Thus, these are important control variables in our third research goal, which we will discuss in the next section.

Mothers' Employment Patterns and Child Outcomes

The third purpose of the present study is to examine the association between mothers' employment patterns during the first six years of children's lives and later children's developmental outcomes. Although some positive effects of maternal employment on children are discussed in the literature, such as increases in mothers' income, much research has focused on the negative effects of maternal employment on children either through reducing the amount of time mothers spend with their children or reducing the quality of mothers' interactions with their children due to increased exhaustion or stress (Baum, 2003; Desai et al. 1989; Nomaguchi, 2006). Researchers have emphasized that these associations are dependent on intensity of

employment. Focusing on infancy and early childhood, Waldfogel (2002) concluded that full-time maternal employment during the first year of children's lives is related to poorer child developmental outcomes at age 4 or in early elementary school years. Similarly, studies found that mothers' current full-time employment was negatively related to school-aged or adolescent children's math scores (Milkie et al. 2015; Muller, 1995). Other studies found that reduced work hours are beneficial for child cognitive and academic outcomes in elementary school or adolescence years (Goldberg et al. 2008; Killeward and Harvey, 2016).

How continuity and change in a long-term maternal employment pattern is related to child developmental outcomes is relatively unclear. From the adaptive strategies perspective, changing employment hours during childrearing years may be related to better child outcomes. In contrast, from the job instability perspective, instability in maternal employment may be detrimental for their children, because it may reduce economic resources that mothers need to pay for necessities (e.g., food, housing, and books) and extracurricular activities, increase mothers' psychological stress to find and start a new job, and cause instability in daily routines. Prior empirical studies investigated the job instability perspective only, exclusively focusing on low-income, often single, mothers (Hill et al. 2011; Johnson et al. 2012; Kalil and Ziol-Guest, 2005). In addition, these studies defined job instability as mothers who were laid off or fired or those who quit a job due to dissatisfaction of their job conditions, while excluding those who made a voluntary job change (Johnson et al. 2012). Thus, the focus of these prior studies was different from that of the present analysis.

THE PRESENT STUDY

Using data from the SECCYD, the present analysis investigates mothers' employment pathways during the first six years of their children's lives and their links to children's academic

and behavioral outcomes at age 15. We have three research questions. We first ask, (1) what are patterns of continuity and change in maternal employment during the first six years of children's lives? We focus on four groups including continuous full-time work hours, continuous reduced work hours, continuous no work hours, and varied work hours (or flexible work hours) across the six years. Second, we ask, (2) how are mothers' and children's characteristics related to patterns of continuity and change in maternal employment in early childhood? We examine how mothers' SES, partnership status, childcare demands, and work preference are related to their employment patterns, largely because these characteristics are important control variables in our third research question. Thus we do not aim to address the issue of selection into certain employment patterns. Third, (3) how are the patterns of continuity and change in maternal employment during the first six years related to children's achievement and behavioral outcomes at age 15? We assess the association between mothers' long-term employment patterns and child developmental outcomes controlling for the background characteristics examined in the second research goal. In addition, because prior research has shown that nonstandard work schedules—i.e., evening, night, or rotating shifts—are related to children's poorer cognitive and behavioral outcomes (Han 2005; Strazdins 2006), we control for nonstandard work schedule in our analyses on the association between maternal employment and child developmental outcomes.

Mothers in the SECCYD are relatively more economically advantaged than those in the general population (NICHD Early Child Care Research Network, or NICHD ECCRN, 2005).

Some research has shown that maternal employment may be less beneficial for children in higher SES families than those in lower SES families, perhaps because higher SES mothers tend to be partnered with higher SES fathers, which reduces the financial benefits of maternal employment (Desai 1989; Goldberg et al. 2008; Ruhm, 2008). These past findings suggest a merit of

investigating maternal employment patterns and their influences on child outcomes focusing on relatively more advantaged mothers. To show the extent to which background characteristics and employment patterns of mothers in the SECCYD sample differ from those of mothers in the general population, we use the 2001 Early Childhood Longitudinal Study, Birth Cohort (ECLS-B) for supplemental analyses.

METHOD

Data

The SECCYD is a longitudinal study of 1,364 children and their families that was originally designed to examine the link between non-maternal child care and child developmental outcomes. This study began in 1991 when families of newborns were recruited from hospitals in 10 cities in 9 states in the United States (see NICHD ECCRN, 2005 for detailed information about the data). The SECCYD collected information about the child's primary parent's (who was the child's mother in almost all cases) employment 26 times—at 1, 3, and every three months until 36 months, every four months between 42 and 60 months, and 66 months, Kindergarten, 1st, 3rd, 4th, 5th, 6th, 7th, 8th grades, and age 15.

For the present analysis, we began observation at 6 months as a majority of mothers did not work during 1 month (89 %) and 3 months (46 %). By 6 months, the percentage of mothers who did not work declined to about one-third (34 %) and did not decline in subsequent waves. We ended our observation in fall of kindergarten because, as mentioned earlier, employment information was gathered only once a year after that. The number of families who were reinterviewed declined to 1,046 in fall kindergarten. In the interviews during the first year, almost all "primary parents" who answered the survey were biological mothers. In later interviews, a small % of primary parents included mothers' spouse or partner, grandmother, and

other adults. We dropped cases where primary parents were not biological mothers in any of the 16 waves (n = 823). Finally, we dropped cases that did not participate in the age 15 interview at which we measured child outcomes. This resulted in the sample size of N = 721. Variables in analyses had a small percentage of missing cases. We used multiple imputation methods using *ice* (Royston 2014) in Stata with five iterations described by Allison (2001). As Stata does not produce estimates for \mathbb{R}^2 when using multiply imputed data, we used *mibeta* option *fisherz* (Marchenko 2011) to produce estimates.

For a comparison purpose, we used data from the 2001 ECLS-B. The 2001 ECLS-B is a longitudinal study of a nationally representative sample of children born in 2001 conducted by the National Center for Education Statistics (https://nces.ed.gov/ecls/birth.asp). The information was collected when children were about 9 months old (2001 - 2002), 2 years old (2003 – 2004), preschool age (2005 – 2006), and in kindergarten (fall 2006 and spring 2007). Of the approximately 10,700 families who participated in all four waves, 6,450 children were selected for the present analysis after dropping about 4,250 children because their "primary" parent who participated in the survey was not a biological mother or there was missing data on the responding parent. Because the ECLS-B included oversamples of Asian and Pacific Islander children, Native American children, twins, and children from low-SES families, the analyses presented in this paper were all weighted to adjust the sample to be nationally representative.

Dependent Measures

Academic ability. We examined three aspects of adolescents' academic ability including picture vocabulary score, math score (applied problems), and reading score (passage scores)

¹ Following ECLS-B guidelines, all sample size figures are rounded to the nearest 50 and therefore do not produce precise counts.

which were measured by the Woodcock-Johnson Psycho-Educational Battery-Revised (WJ-R) (Vandell et al., 2010). In the present analysis, we used a percentile rank that ranged from 1 to 99, which is useful for describing a child's relative standing in the population.

Behavioral adjustment. We examined three aspects of adolescents' behavioral adjustment including externalizing problems, risk-taking behavior, mother-child relationship conflict (Trentacosta et al. 2011; Vandell et al. 2010). The externalizing problem score was measured using the Youth Self-Report (YSR; Achenbach and Rescorla, 2001), which asked the study child to determine how well each of the 30 questions ($\alpha = .83$) regarding delinquent or aggressive behavior described him or her currently or within the last six months. The range of scores was from 25 to 86. The risk-taking behavior score was measured on the basis of items that were used in the Fact Track project and the New Hope project by Conger and Elder (1994). The focal child was asked how many times in the previous year they engaged in 53 different risky behaviors ($\alpha =$.89). The score ranges from 0 to 53. The mother-child relationship conflict scale was created using 7 item questions ($\alpha = .78$) from the Adult-Child Relationship Scale (ACRS), which was adapted from the Student-Teacher Relationship Scale (STRS; Pianta, 2001). Mothers were asked: (a) My child and I always seem to be struggling with each other; (b) My child easily becomes angry at me; (c) My child remains angry or is resistant after being disciplined; (d) Dealing with my child drains my energy; (e) When my child is in a bad mood, I know we're in for a long and difficult day; (f) My child's feelings toward me can be unpredictable or can change suddenly; and (g) My child is sneaky or manipulative with me. Response categories include 1 = definitely does not apply, 2 = not really, 3 = neutral, 4 = applies somewhat, 5 =definitely applies.

Independent Measures

Maternal employment paths. In the SECCYD, either in-home interviews or telephone interviews depending on the wave, mothers were asked whether they were currently working for pay and how many hours per week they were usually working. We excluded the 60 and 66 months interviews because information on maternal employment hours had many missing cases. We thus examined mothers' employment patterns from their children's infancy to early childhood using 16 waves of the data. We divided employment hours into three categories, including not working for pay (0 hours of work), working reduced hours (1 to 34 hours per week), and working full-time (35 hours or more per week). Note that those who were employed but on leave were coded as not working (0 hour per week), only a very small % of mothers were on leave after 3 months. Then, we examined the percentage distribution of four employment patterns, including (a) continuous full-time hours (worked 35 hours or more in all 16 waves), (b) continuous reduced hours (worked less than 35 hours in all 16 waves), (c) continuous nonwork (did not work in all 16 waves), and (d) flexible hours (all others). As we will show below, the distribution was skewed when we used this exact definition of continuous employment. Thus, for multivariate analyses, we used a *loose definition* of continuity in that working full-time across 14 waves or more, instead of all 16 waves, was considered as a pathway of continuous full-time hours, working reduced work hours across 14 waves or more was considered as a pathway of continuous reduced hours, and not working across 14 waves or more was considered as a pathway of continuous nonwork.

Control Measures

Control variables were mostly measured at 1 month. Mother's *education* was measured as three dummy variables including less than college degree, college degree (reference), and advanced degree. *Family income-to-poverty* ratio was a composed variable by NICHD ECCRN.

Mothers' professional occupation prior to birth was a dichotomous variable where managerial or professional occupations were coded 1 and others were coded 0. Mother's age at birth was measured in years. Mother's race-ethnicity was measured as a dichotomous variable where nonwhites were assigned 1 and whites were assigned 0. We examined four dummy variables including white, black, Hispanic, and other race, but the sample size for Hispanic and other race became too small for multivariate analyses. Mother's partnership status at birth was measured as a dichotomous variable where married or cohabiting mothers were assigned 0 and lone mothers were assigned 1. We examined three dummy variables including married, cohabiting, and single, but the sample size for cohabiting mothers was too small. Relationship dissolution was measured as a dichotomous variable where mothers who were married or cohabiting at birth but became single by the child's kindergarten year were coded 1 and others were coded 0. Child's gender was a dichotomous variable where girls were coded 1 and boys were coded 0. Child's birth order was an ordered variable. Child's *health* at 1 month was measured by the question asking mothers about the baby's general health ranging from 1 = poor to 4 = excellent. Child's temperament at 1 month was a scale measured as the mean of 38 items ($\alpha = .67$) ($1 = almost\ never$ to 6 = almostalways) which was adapted from the Carey & McDevitt (1978) Infant Temperament Questionnaire (ITQ). The number of additional children by the child's kindergarten year was measured as a continuous variable. Because some occupations, such as teachers, may work less during the summer, we included the number of summer interviews (June to August) as a control. We included ratio of non-standard work schedules as a control. Mothers who reported working for pay were asked what times of day—daytime (7 am to 5 pm), evening (3pm to midnight), night (11pm to 7 am), and varying times—they work for pay. Ratio of waves worked nonstandard work schedules (i.e., evening, night, and varying times) was calculated as the number of

waves worked divided by the number of waves worked non-standard work schedules. Those who did not work at all waves were assigned 0.

Descriptive statistics for child outcomes at age 15 and mothers' and children's background characteristics are shown in Table 1. We also presented those for mothers in the ECLS-B in Appendix Table to show how characteristics of mothers in the present sample differed from those in the general population. The average age of mothers during the first year of the child's life was very similar in both samples. Other characteristics suggest that mothers in the present sample were more economically advantaged than mothers in the general population. In the present sample, 44 % had a 4-year college degree or more, whereas only 25 % of ECLS-B mothers did. Only 15% of mothers in the present sample were non-white, compared to 43% of ECLS-B were. More than 90% of mothers in the present sample were partnered at birth, compared to 82% of mothers in the ECLS-B sample.

[Table 1 about here]

Analytical Plan

First, we described distributions of mothers by the four long-term employment patterns during the focal child's first six years. Next, using the multinominal regression models, we examined whether mothers' and children's characteristics were related to mothers' employment patterns. Finally using the ordinary-least-squared (OLS) regression models, we examined how mothers' employment patterns were related to each of the child outcomes at age 15 with or without controlling for mothers' and children's characteristics.

RESULTS

Maternal Employment Patterns

Table 2 presents descriptive statistics for mothers' long-term employment patterns during the child's early childhood. The first column shows that in each wave, a majority of mothers, ranging from 66.7 % (at 6 months) to 75.2 % (at kindergarten), reported that they were currently working at least 1 hour per week. The prevalence of employment among mothers in the sample was higher than that among mothers in the general population. This makes sense because mothers in the sample were more advantaged than those in the general population. Further analyses show that a vast majority of mothers changed their work hours throughout the 16 waves. Only 30.2 % of mothers reported working continuously across all the 16 waves. When we used the four-category pattern variable, only 13.2 % of mothers worked full-time across all the 16 waves, 3.7 % of mothers worked reduced hours, and 6.9 % of mothers did not work. The vast majority—76.3 %—varied their work hours across the 16 waves. To better understand maternal employment patterns during a child's first six years, we examined several additional measures. On average, mothers changed work hours 2.6 times. They worked 11.34 waves on average. They worked about 7 waves full-time, 4.4 waves reduced hours, and did not work 4.7 waves on average. It appears that although mothers were more likely to work full-time than working reduced hours or not working, changing employment hours and status is the norm among mothers with children.²

[Table 2 about here]

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² We conducted several sets of supplemental analyses changing the window of observations of maternal employment, extending our analyses to Grade 6 or starting our analyses from 9 months rather than 6 months. The distribution of mothers by the four employment paths was very similar. Some of the interruptions of employment may reflect taking maternity leave for additional children. We examined how employment patterns look like for those who had subsequent births or not. It turned out that a majority of mothers without subsequent births changed their work hours at least once and more than 40 % of them changed more than twice.

We compared maternal employment patterns in the present sample with those in the 2001 ECLS-B (Table 3). Because the ECLS-B provides information about maternal employment in four waves only, at 9 months, 24 months, preschool, and kindergarten, we also created comparable employment information in the SECCYD. Specifically, employment hours in 9 months was created by averaging employment hours in 9 and 12 months. Employment hours in 24 months was measured by employment hours in 24, 27, and 30 months. And employment hours in preschool was measured as the average employment hours in 46, 50, and 54 months. As shown in Table 3, in any of the four waves, the percentage of mothers who were employed was higher in the SECCYD than in the ECLS-B. This is not surprising because mothers in the SECCYD were more economically advantaged than mothers in the ECLS-B. Breaking the employed category into reduced or full-time hours revealed that the SECCYD mothers were more likely than the ECLS-B mothers to be employed, but not more likely to be employed fulltime. This is also not surprising because the SECCYD mothers were more likely to be white and be married, both of which are related to the odds of working reduced hours (Frech and Damaske 2012; Killewald and Zhuo 2015). The focus of this paper is on patterns of change and stability across the four waves. The SECCYD mothers show very similar patterns with the ECLS-B mothers in distributions of the number of changes in employment hours across the four waves: about 40 to 43 % did not change while about 29 % changed once, 22 to 25 % changed twice, and 5 to 6 % changed three times in both samples. In terms of the four-category employment pattern, in both samples, a majority changed hours and only about 20 % worked full-time hours in all four waves. In sum, the prevalence of change in employment hours among mothers in the present sample was very similar to that among mothers in the general population.

[Table 3 about here]

Characteristics Associated with Maternal Employment Patterns

Our second goal was to examine how mothers' and children's characteristics would be related to mothers' employment patterns. Table 4 presents results from multinominal regression models that examined this question. We used the loose definition of continuity (14 waves or more), because of the skewed distribution of mothers when the exact definition (all 16 waves) was used. We used a flexible work pathway as the reference group because this was the modal group. Mothers' age at birth and union dissolution between the child's birth and kindergarten year were positively related to a continuous full-time hours pathway compared to a flexible work pathway. In contrast, the focal child's birth order and having an additional child were negatively related to a continuous full-time work pathway than a flexible work pathway. Turning to a continuous non-work pathway, family income, the focal child's birth order, and single parents at 1st month were positively related to it compared to a flexible work pathway. In contrast, holding a professional job prior birth and positive attitudes toward work were negatively related to a continuous non-work pathway. There seem to be distinctly different groups of mothers in this group: those who can afford staying home perhaps because their husbands earn enough money and those who are unable to go to work because having no partner who could watch their children. Finally, with regard to a continuous reduced work pathway, the smallest group, the focal child's birth order was positively related to it, whereas having no college degree was negatively related to it, suggesting that mothers with higher human capital or those who have higher child demands tend to work reduced hours continuously.

[Table 4 about here]

Maternal Employment Patterns and Child Outcomes

The third goal was to examine the association between maternal employment patterns during the first six years and child outcomes at age 15, including academic ability (picture vocabulary, reading, and math scores) and behavioral adjustment (externalizing problems, risktaking, and mother-child relationship conflict). Again, we used the loose definition of continuity (i.e., 14 waves or more rather than all 16 waves) and used a flexible work pathway as the reference group. Two models were conducted for each child outcome with and without control variables. For academic ability (Table 5), without control variables (Model 1), a continuous reduced work pathway was positively related to picture vocabulary and reading scores compared to a flexible work pathway. These associations were no longer significant when background characteristics were controlled for (Model 2). As we saw in Table 3, Mothers who took a continuous reduced work pathway were more likely to have college degrees or above, which explained the positive association between this employment path and children's achievement scores. When background characteristics were controlled for, a continuous full-time work pathway was negatively related to picture vocabulary, reading, and math scores compared to a flexible work pathway. A continuous non-work pathway was negatively related to picture vocabulary score compared to a flexible work pathway without control variables, but the association was not significant when control variables were included in the model. This makes sense because mothers who did not have a college degree were more likely to be in the continuous non-work group. We tested differences in the coefficients across the three groups by running the same models but switching the reference group (data not shown). The results suggest that, with control variables, differences among a continuous reduced work pathway, a continuous non-work pathway, and a continuous full-time work pathway were not significant. One exception was that a continuous full-time work pathway was negatively related to reading scores compared

to a continuous non-work pathway. A continuous reduced-hours pathway was positively related to picture vocabulary and reading scores compared with a continuous full-time work pathway without control variables, but the significant association disappeared when control variables were included in the model, the same pattern we saw for the comparison between a continuous reduced work pathway and a flexible work pathway above.

Turning to behavioral adjustments (Table 6), a continuous full-time work pathway was positively related to children's risk-taking behavior compared to a flexible work pathway with or without control variables. Maternal employment patterns were not related to children's externalizing problems. With regard to mother-child relationship conflict, maternal employment patterns were not related, except that after controlling for background characteristics, a continuous full-time work pathway was negatively related to conflict in mother-child relationship compared to a flexible work pathway. Again, we tested differences in the coefficients across the three groups by running the same models but switching the reference group (data not shown). The results were similar to those found for academic outcomes: with control variables, differences among continuous reduced work, continuous non-work, and continuous full-time hours pathways were not significant. One exception was that a continuous full-time work pathway was negatively related to mother-child relationship conflict compared to a continuous non-work pathway.

To assess robustness of the findings, we conducted supplemental analyses to examine whether the frequency of changes in maternal employment was related to child outcomes at age 15, using measures of the number of changes in mothers' employment hours, the number of waves mothers worked full-time hours, the number of waves mothers worked reduced hours, and the number of waves mothers did not work (data not shown). The number of changes in mothers'

employment hours was not related to child cognitive ability and behavioral adjustments. The number of waves worked full-time was negatively related to picture vocabulary, reading, and math scores compared to the number of waves worked reduced work hours with or without controlling for background characteristics. The number of waves worked full-time was positively related to externalizing problems without control variables, but this association was not found once control variables were included in the model. These findings are consistent with the conclusion that mothers' changing work hours is not related to child outcomes, but their continuously working full-time hours is.

[Tables 5 & 6 about here]

DISCUSSION

Although maternal employment and its influence on child development have been studied widely, few have examined maternal employment from a long-term perspective using prospective data. Using data from the SECCYD, we examined mothers' long-term employment patterns from the first year to kindergarten of their children's lives and their links to children's academic and behavioral outcomes at age 15. The present analysis has three key findings that have important implications for conceptual debates and policy making regarding maternal employment and child outcomes.

First, our findings suggest that the vast majority of mothers change time spent on paid work over the course of their children's infancy and early childhood. This is consistent with the notion that many U.S. mothers continue to place their first priority on their children at the expense of their occupational advancement (Bianchi 2011; Hays 1996; Moen 2005; Presser 1995). Recent studies tend to emphasize continuity in employment pathways among women, especially among highly educated ones (Damaske 2011; Damaske and Frech 2016; García-

Manglano 2015). Our findings suggest that although it is true that there is a disparity among women by SES, women's employment paths are by and large interrupted after birth regardless of SES. We would argue that overestimating the prevalence of continuous full-time work among mothers with young children is misleading, especially when it could be used as an empirical base for policy-making regarding maternal employment and child care. One example is the case of the 1996 welfare reform which requires continuous full-time employment for mothers on welfare (Blank 2007). Our findings suggest that the expectation for low-income mothers to work full-time continuously is unreasonable and unrealistic.

Second, mothers' employment patterns are influenced by background characteristics. Older age, fewer children, relationship dissolution, and work-orientation are related to a continuous full-time work pathway than a flexible work pathway. Lone parenthood at birth, more children, family-orientation, higher family income, and not having a professional occupation prior birth are related to continuous nonwork than a flexible work pathway. Compared to a flexible work pathway, college degrees, and more children are related to a continuous reduced work pathway. These findings are consistent with prior findings that family structure (i.e., the number of children and partnership status), SES (college degrees, family income, professional occupation before birth), and attitudes toward work play a critical role in shaping maternal employment patterns during their children's early childhood (Frech and Damaske 2012; Hynes and Clarkberg 2005; Kilewald and Zhuo 2015).

Third, mothers' continuous full-time work, defined as working more than 35 hours across 14 waves or more, during their children's first six years was negatively related to child outcomes at age 15—lower vocabulary, reading, and math scores, and more risk-taking behavior—compared to a flexible work pathway, after controlling for background characteristics. These

patterns are somewhat consistent with prior research using maternal employment hours at one point in time, which found poorer outcomes among children of mothers who were employed full-time (Han et al. 2001; Goldberg et al., 2008; Milkie et al. 2015; Muller 1995). By examining mothers' long-term employment patterns, the present analysis added two important points: mothers adjust work hours throughout their childrening years and the ability to do so is beneficial for children's academic achievement and behavioral outcomes in adolescence.

Altogether, the findings of present analyses suggest support for the adoptive strategies perspective of mothers' long-term employment patterns and their associations with child outcomes. The vast majority of mothers change their work hours during the first six years of their children's lives; and continuous full-time work is related to poorer child academic ability and behavioral adjustment at age 15. Note that our definition of full-time work is full-time hours, not full-time status. Some mothers could reduce work hours while keeping their full-time job. Given that a majority of mothers alter their work hours at least a few points over the course of their children's pre-school years, it could be that the situation that mothers are unable to cutback full-time hours at all may reflect constraints rather than opportunities.

Why is maternal continuous full-time work related to poorer child outcomes? For young children, Han and colleagues (2001) speculated that it is due to lack of high quality child care. For older children, Muller (1995) suggested that the major advantage of reduced employment of mothers for children's math score is mothers' monitoring after school. Prior research has suggested that one-on-one attention of a caregiver who engages with a child in age-appropriate stimulating activities is critical in the child's school readiness (Brooks-Gunn and Markman 2005; Davis-Kean 2005). Although such adults do not have to be mothers, alternatives are so limited in the current U.S. society, thereby mothers may end up taking the responsibility. Future research is

warranted to investigate whether children's cumulative hours spent on learning and studying differ by mothers' employment patterns.

The present analysis has limitations that should be addressed in future research. First, the sample has more mothers with college degrees than the general U.S. population. Yet, as we showed, the prevalence of varied work hours across children's pre-school years for mothers in the present sample was very similar to that for mothers in the ECLS-B, a national representative sample. Still, as other research has suggested (e.g., Gerstel and Clawson 2015), kinds of issues of maternal employment and child care may vary by SES. Thus, future research is warranted to examine SES, maternal employment patterns, and child outcomes. Second, we were unable to examine the role of father involvement as well as combination of mothers' and fathers' employment in shaping children's outcomes due to data limitations. Research has shown that mothers who work long hours continuously tend to have a husband or partner who also work long hours (Jacob and Gerson 2004). Future research is warranted to investigate whether the influence of maternal full-time employment on child cognitive ability and behavioral adjustment varies by fathers' employment hours and involvement in child care.

Despite some limitations, the present analysis makes an important contribution to the scholarships of maternal employment patterns and the association between maternal employment and child outcomes. First, it shows that change in employment hours during children's early childhood appears to be the norm among mothers. Second, patterns of employment changes are influenced by mothers' background characteristics especially the number of children, partnership status, and SES. Third, the ability to adjust work hours appears to be beneficial for children's academic ability and behavioral adjustment.

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Table 1. Descriptive Statistics for Child Outcomes and Background Characteristics in the Analyses (N = 712)

7 mary ses (1V = 712)			
	<i>M</i>	Std.	Range
Child Outcomes at Age 15			
Picture vocabulary score	51.34	(27.91)	1 – 99
Reading score	64.74	(28.84)	1 - 99
Math score	55.68	(27.29)	1 – 99
Externalizing score	48.87	(9.89)	25 - 86
Risk-taking score	5.80	(5.53)	0 - 53
Mother-child conflict scale	2.51	(0.94)	1 - 5
Mother's Education at 1 month			
Without a 4-year college degree	0.56		0 - 1
4-year college degree	0.27		0 - 1
Advanced degree	0.18		0 - 1
Professional occupations prior to birth	0.36		0 - 1
Income to poverty ratio at 1 month	3.18	(2.65)	0.11 - 19.84
Mother's age at 1 month	29.42	(5.21)	18 - 46
Single at 1 month	0.09		0 - 1
Union dissolution by kindergarten	0.23		0 - 1
Non White	0.15		0 - 1
Ideally working	0.65		0 - 1
Child's gender $(1 = girl)$	0.52		0 - 1
Child's birth order	1.79	(0.90)	1 - 7
# of additional children by kindergarten	0.66	(0.78)	0 - 5
Child's health at 1 month	3.70	(0.52)	1 - 4
Child's difficult temperament at 1 month	3.32	(0.64)	1 – 6
# of summer interviews	3.61	(1.11)	0 - 16

Table 2. Employment Patterns of Mothers from 6 months to Kindergarten (N = 712)

% employed in e	ach wave	Employment patterns across 16 waves		
6 months	66.71	Continuous employment, %	30.17	
9 months	70.51	Four employment pathways, %		
12 months	70.93	Continuous full-time hours (all 16 waves)	13.20	
15 months	69.10	Continuous reduced hours (all 16 waves)	3.65	
18 months	72.19	Continuous nonwork (all 16 waves)	6.85	
21 months	69.21	Flexible work hours	76.29	
24 months	70.51	Four employment pathways with a loose definition, %		
27 months	68.79	Continuous full-time hours (14 or more waves)	28.09	
30 months	71.01	Continuous reduced hours (14 or more waves)	8.99	
33 months	71.21	Continuous nonwork (14 or more waves)	13.48	
36 months	69.94	Flexible work hours	49.44	
42 months	71.07	Mean # of waves worked, M (std)	11.34	(5.48)
46 months	72.47	Mean # of waves not worked, M (std)	4.66	(5.48)
50 months	70.51	Mean # of waves worked reduced hours, M (std)	4.39	(5.08)
54 months	74.30	Mean # of changes across non-employed, reduced hours, and full-time hours, M (std)	2.63	(2.34)
60 months	73.88	Mean # of waves worked full-time, $M(std)$	6.95	(6.38)
Kindergarten	75.06	Ratio worked nonstandard schedules, M (std)	0.30	(0.36)

Table 3. Mothers' Work Patterns During the Focal Child's Early Childhood

		SECCYD	(N=712)	E	ECLS-B $(N = 6,450)$					
	9 mo ^a	24 mo ^b	Presc ^c	Kinder	9 mo	24 mo	Presc	Kinder		
	%				%					
Employed	75.00	77.81	82.73	75.08	53.18	55.13	59.21	61.84		
								-0.4		
Nonemployed	25.00	22.19	17.28	24.92	46.82	44.87	40.79	38.16		
Reduced hours	32.58	38.88	45.93	32.13	19.89	20.37	19.62	19.79		
Full time hours	42.42	38.93	36.80	42.95	33.28	34.76	39.59	42.06		
Employment Patterns	from 9 months	to Kinderg	garten							
Number of Changes	(0-3)		%			%				
	0		40.87			43.04				
	1		29.27			29.21				
	2		24.97			22.17				
	3		4.89			5.58				
Work patterns			%			%				
Continuous full-tin	aa haura		21.18			18.15				
Continuous reduce			11.38			3.86				
Continuous nonwo	rk		8.31			21.03				
Flexible hoursVa	ried		59.13			56.96				

^a Average of 9 mo, 12 mo

^b Average of 24 mo, 27 mo, and 30 mo

^c Average of 46 mo, 50 mo, 54 mo

Table 4. Coefficients from Multinominal Regression Models of the Association Between Background Characteristics and Maternal Employment Pathways (N = 712)

	Maternal Employment Pathways ^a								
		Continuous Full- time Hours		inuous ıwork	Continuous Reduced-Hours				
	b	SE	b	SE	b	SE			
Mother's Education ^b									
< college	.200	.269	514	.325	-1.171	.413**			
Advanced degree	152	.298	163	.432	067	.359			
Prof. before birth	.185	.257	-1.540	.385***	.267	.366			
Income/poverty ratio	065	.045	.150	.052**	.082	.055			
Mother's age	.070	.022***	.026	.029	.040	.039			
Single	.514	.362	1.285	.430**	186	1.087			
Union dissolution	.619	.218**	408	.342	100	.385			
Non white	.029	.268	218	.377	-1.007	.645			
Ideally working	.475	.208*	671	.259**	.146	.324			
Child's gender	.082	.185	.299	.250	216	.291			
Child's birth order	271	.127*	.511	.148***	.575	.181***			
Additional children	421	.144**	.066	.166	.012	.225			
Child's health	.176	.185	026	.225	.249	.311			
Child's temperament	.082	.149	.213	.188	.407	.234			
Summer interviews	.013	.083	.126	.113	.164	.130			
Intercept	-3.414	1.223**	-3.760	1.518*	-6.733	2.037***			

^{*} p < .05; ** p < .01; *** p < .001a Omitted reference group is a flexible work hours pathway. The loose definition of continuity

^b Omitted reference groups is a 4-year college degree.

Table 5. Coefficients from Ordinary-Least-Squared Regression Models of the Association Between Maternal Employment Paths and Child Academic Outcomes at Age 15 (N = 712)

	Picture Vocabulary				Reading				Math			
	Model 1 Model 2		del 2	Model 1 Mo			Iodel 2		Model 1		Model 2	
	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE
Work Pathways ^{ab}												
Cont. nonwork	-6.202	3.222	-2.874	3.134	-2.308	3.127	.699	3.134	-5.331	3.236	-3.931	3.197
Cont. reduced hours	8.260	3.782*	.211	3.605	9.114	3.649*	1.047	3.417	5.868	3.695	-1.837	3.566
Cont. full-time hours	-4.779	2.479	-5.724	2.368*	-5.804	2.501*	-6.824	2.501**	-5.762	2.396*	-6.113	2.337**
Nonstandard work			2.841	2.710			2.946	2.782			.649	2.659
Mother's education ^a												
< college			-10.571	2.678***			-12.001	2.723***			-14.408	2.556***
Advanced degree			468	2.930			.870	3.059			.850	2.984
Prof. before birth			2.886	2.557			2.969	2.552			-1.521	2.470
Income/poverty ratio			.464	.412			.304	.504			.513	.475
Mother's age			.786	.220***			.593	.226**			.334	.217
Single			-3.158	3.638			-4.471	3.694			-7.966	3.647*
Union dissolution			.250	2.506			4.367	2.670			1.693	2.310
Non white			-9.424	2.800***			-10.352	2.784***			-8.882	2.716***
Ideally working			-1.480	2.099			1.013	2.406			.365	2.190
Child's gender			-7.940	1.879***			.690	1.969			-6.422	1.860***
Child's birth order			-6.415	1.221***			-3.860	1.279**			-2.681	1.175*
Additional children			-2.484	1.394			-1.014	1.371			-1.171	1.322
Child's health			1.784	1.812			527	1.795			-3.634	1.778*
Child's temperament			.081	1.587			.333	1.756			1.260	1.466
Summer interviews			.675	.833			.475	.891			1.278	.883
Intercept	52.774	1.438***	43.328	12.555**	65.864	1.415***	59.278	12.865***	57.493	1.473***	69.791	11.976***
Pseudo R^2	.022		.238		.024		.212		.019		.205	

^{*} p < .05; ** p < .01; *** p < .001

^a Omitted reference categories are: a flexible work hours pathway, a 4-year college degree. ^bThe loose definition of continuity was used.

Table 6. Coefficients from Ordinary-Least-Squared Regression Models of the Association Between Maternal Employment Paths and Child Behavioral Outcomes at Age 15 (N = 712)

	E	Externalizing Problems				Risk-Taking Behavior				Mother-Child Relationship Conflict			
	Model 1		Me	odel 2	Mo	odel 1	Mod	del 2	Mo	odel 1	Mo	odel 2	
	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE	
Work Pathways ^{ab}													
Cont. nonwork	.497	1.134	.541	1.193	.426	.637	.350	.659	168	.107	139	.113	
Cont. reduced hours	-1.601	1.339	459	1.380	357	.760	.299	.758	106	.127	.000	.130	
Cont. full-time hours	.609	.876	.498	.909	1.435	.487**	1.457	.491***	135	.083	169	.086*	
Nonstandard work			1.901	1.082			.138	.589			.043	.102	
Mother's education ^a													
< college			2.056	1.028*			320	.565			.279	.097**	
Advanced degree			1.161	1.139			378	.622			026	.108	
Prof. before birth			877	1.020			591	.551			.112	.095	
Income/poverty ratio			258	.165			124	.104			021	.015	
Mother's age			.206	.088*			004	.048			.012	.008	
Single			2.986	1.439*			1.577	.790*			.264	.136	
Union dissolution			1.015	.923			.693	.503			.035	.089	
Non white			2.156	1.092*			3.019	.606***			104	.103	
Ideally working			756	.804			384	.437			019	.075	
Child's gender			1.688	.736*			-1.961	.398***			.226	.069***	
Child's birth order			953	.472*			083	.259			128	.044**	
Additional children			262	.527			052	.288			009	.051	
Child's health			530	.719			055	.401			033	.067	
Child's temperament			.626	.577			149	.320			.184	.055***	
Summer interviews			160	.326			.088	.177			.017	.031	
Intercept	48.781	.531***	43.000	4.703***	5.371	.297***	7.320	2.580**	2.579	.050***	1.657	.442***	
Pseudo R^2	.004	<u> </u> ***	.06	54***	.01	4***	.119)***	.00)6***	.07	7***	

^{*} *p* <. 05; ** *p* < .01; *** *p* < .001

^a Omitted reference categories are: a flexible work hours pathway, a 4-year college degree. ^bThe loose definition of continuity was used.

Appendix Table. Weighted Means (Std.) for Background Characteristics for Mothers in the Baseline Interview of the ECLS-B (N = 6,450)

Mother's Education		
Without a 4-year college degree	0.75	
4-year college degree	0.16	
Advanced degree	0.09	
Family income in thousands	51.49	(72.19)
Mother's age	28.41	(11.71)
Single	0.18	
Non White	0.43	
Child's gender $(1 = girl)$	0.49	
Child's birth order	2.02	(1.87)