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Maternal Employment and Children's Body Mass Index: The Importance of Developmental Timing and Work Intensity

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Abstract

Previous literature indicates that maternal employment is positively associated with children's body mass index (BMI). However, the associations between maternal employment and child BMI may vary by employment intensity (work hours) and by the developmental period in which it occurs. Our paper tests the relationship between maternal employment over a child's lifetime and his or her BMI at age 13 or 14. Using data from the National Longitudinal Survey of Youth (NLSY) and the Children of the NLSY, and controlling for a host of characteristics of the child and mother, we find statistically significant associations between maternal employment in middle childhood (between ages six and 10) and body mass index, obesity, and overweight during adolescence. This relationship is found mainly among those who work more than 20 hours per week. We further find these effects are limited to children whose mothers have at least some college education or more.

Maternal Employment and Children's Body Mass Index

In the U.S., most mothers work. In 2010, 50.1% of mothers of infants were employed, as were 63.9% of mothers with children under age 6 and 76.5% of those whose youngest child is aged 6-17 years old (Bureau of Labor Statistics, 2011). Concerns about the potentially adverse consequences of maternal employment, especially early in a child's life, and especially in relation to children's cognitive development, have been discussed for decades and have not only fueled debates about public policy such as those related to parental leave and child care, but have also stoked the fires of the ongoing culture wars regarding the choices parents make about combining work and childrearing. Yet, the empirical evidence on the effects of maternal employment remains contradictory. Indeed, evidence from some of the most methodologically rigorous studies shows few, if any, substantial associations between maternal employment and children's development over the long-term.

The lack of consensus in the existing literature could stem from a variety of factors. For instance, some papers focus on short-term associations between early maternal employment and early childhood development, whereas others adopt a longer view. Existing studies also vary widely in their measurement of maternal employment. The present paper tackles these issues. First, we take a longer view of children's lifecourse than most studies by measuring maternal employment from the year prior to the child's birth through the end of his or her 12^{th} or 13^{th} year. Our analyses further distinguish maternal employment in different developmental periods (i.e., the child's first year of life versus the preschool years, middle childhood, and adolescence) in relation to the outcomes of interest. One potential explanation for the wide range of estimates reported across previous studies is that the impacts of maternal employment on child well-being

may well depend on the developmental timing of that employment (e.g., first year of life, early childhood, adolescence).

Second, we use the detailed weekly work history data in the National Longitudinal Survey of Youth (NLSY)-Child Supplement data. Although many studies in this area have used the NLSY (e.g., Aughinbaugh & Gittleman, 2004; James-Burdumy, 2005; Waldfogel, Han, and Brooks-Gunn, 2002), only one that we know of (Ruhm 2008) makes use of these detailed maternal employment data. The weekly work history data allows us to identify maternal employment in each week starting January 1, 1978 and thus create employment information for each child that is matched to his or her birthdate.

Finally, whereas many studies in this area have focused on children's cognitive development, we focus on body mass index (BMI, a measure of weight-for height). Doing so provides a more complete picture of the potential impacts of maternal employment on children's physical development.

Maternal Employment and Children's Body Mass Index

The associations between maternal employment and child development have been widely studied in the economics, psychology, and sociology literatures. Anderson, Butcher, & Levine (2003) were the first to examine the association between maternal work and children's BMI. They examined families with 3-11 year-olds in the National Longitudinal Survey of Youth (NSLY) and found that ten additional weekly hours of maternal employment over the child's life increases children's obesity by 1.0 to 1.5 percentage points. Since that time, several others have documented a positive relationship between additional maternal work hours and children's BMI (Chia, 2008; Phipps et al., 2006; Ruhm, 2008), and there is some evidence that the relationship between maternal employment and child BMI may be stronger among families with more

educated mothers (e.g., Anderson et al., 2006; Fertig et al., 2006) as well as those of higher-SES women (Ruhm, 2008). Morrissey, Dunifon, and Kalil (2010) found that an increase in the cumulative amount of time a mother is employed over her child's lifecourse is associated with an increase in her child's BMI. Further, several studies have identified high intensity maternal work (e.g., full-time work, or work more than 40 hours per week) as particularly deleterious for children's BMI (Ruhm, 2008; Scholder, 2008).

Finally, scholars have examined whether the timing of maternal employment influences child development. Many discussions of maternal employment and child development have focused on the first year of life as an especially sensitive period. The child's first year could be a sensitive time for forming attachment relationships that promote future mental health. Nevertheless, other years in the child's lifecourse could represent sensitive periods for different outcomes. Few studies have explicitly addressed this question, particularly as it relates to BMI. Scholder (2008) is able to measure maternal employment at birth, and ages seven, 11, and 16; and finds that employment at age seven has the strongest association with child BMI in adolescence. Ruhm (2008) distinguishes between maternal employment occurring before vs. after age three when predicting adolescent BMI, finding that, for high-SES children only, maternal employment after age three is positively associated with BMI. Finally, Morrisey et al. (2010) showed that the association between maternal employment and children's BMI was strongest when children were in 5th and 6th grades (relative to 3rd grade). For example, when children were in 6th grade, maternal employment was associated with a substantially (40% of one standard deviation) higher level of BMI and a six-times greater likelihood of being overweight. It is possible that because older children generally have more independence and less adult supervision over their time use and food choices than younger children, maternal employment

precipitates poorer food choices and more sedentary activity. Children's lesser supervision at older ages may also be related to the diminished likelihood of being in an after-school program and a greater likelihood of being in self-care (Johnson, 2005), which could also increase the chances of engaging in poor nutrition choices, less physical activity, or more TV time.

To date, however, most studies have not examined simultaneously both intensity and the timing of maternal employment as related to child BMI (see Scholder, 2008 for an exception). The current study does so, examining both intensity and the developmental timing of maternal employment when predicting child BMI in adolescence, and considering a wide range of developmental periods when doing so. Unlike Scholder, which has employment information measured in only a few years over the child's life, our study has maternal employment measured in each year.

Theoretical Perspectives

The vast majority of studies in this area consider only maternal employment and do not take into account the employment, time use or other behaviors of spouses and fathers (for an exception see Morrissey, Kalil and Dunifon, 2011). This paper as well focuses exclusively on the work schedules of mothers, rather than fathers. This is for several reasons. First, all of the children in our sample live with their mothers. Additionally, we lack quality information on the work behaviors of these women's spouses or partners. More importantly, evidence suggests that mothers, even those who work outside of the home, continue to play the key role of caregivers and managers of their children's time (Bianchi, 2000). Evidence suggests that mothers spend more time on child care and housework than do fathers, even in dual-career households (Bianchi, Milkie, Sayer, & Robinson, 2000), and that whereas employed mothers perform fewer household and child-related tasks than do those who stay at home, this is not offset by increased time

contributions at home from husbands (Cawley & Liu, 2007). Thus, there is evidence that mothers continue to perform the majority of household tasks related to children and family functioning, and that when they are not there to do so, the quantity (and perhaps quality) of time spent on household routines and child development may decline. As such, there is reason to believe that maternal employment could have particular implications for children.

Most studies linking maternal employment and children's BMI control for family income. Because maternal employment involves a trade-off between time and money, the findings (above) suggesting a positive link between maternal employment and BMI imply that the impact of maternal employment on children's BMI relates to time use—either that of the mother, the child, or both. Mothers' employment patterns may be associated with both the quality and quantity of children's time with parents, key ingredients in healthy development (Shonkoff and Phillips, 2000). Increased work involvement may lead to greater income and promotion prospects for mothers, but may also impose a burden on her time, resulting in poorer supervision or care of her children and less time available to provide emotional support or foster the child's involvement in activities. Time-diary data confirm that working reduces the time mothers spend with children, although research suggests that mothers protect quality time with children by cutting back least on activities directly engaging children (Bianchi, 2000; Sandberg and Hofferth, 2001).

Looking at maternal time use, working mothers face time constraints; as such they spend less time in meal preparation and rely more heavily on fast foods or prepared foods, which generally are high in fat and calories, than do non-working mothers (Crepinsek & Burstein, 2004; Cawley and Liu, 2007). Ziol-Guest, DeLeire, and Kalil (2006), for example, found that among families in which all parents worked, a greater share of the food budget was spent on food

away from home, with a lesser share spent on vegetables, fruit, and protein. Cawley and Liu (2007) utilize time use data and find that employed women spend less time cooking or eating meals with their children than those who do not work; this is not offset by increased time contributions by their husbands or partners. There is some direct evidence that the intensity of maternal employment (e.g., hours worked) is associated with poorer nutritional intake (Fertig et al., 2006). School-aged children of working mothers may be more likely to rely on school-provided meals, rather than bringing their lunch from home (Datar & Nicosia, 2010). This could be associated with obesity, as evidence shows that children who eat school meals are more likely to be obese than those who bring a lunch from home (Schanzenbach, 2009).

A second perspective suggests that children with working mothers spend less time getting physical exercise, perhaps because they have less active recreational time, given their greater participation in child care, lack of parental time available to drive children to sports or other physical activities, or because it is more common for working parents to drive their children to school en route to work, which diminishes children's physical activity (Anderson & Butcher, 2006). Cawley and Liu (2007) found that employed mothers spent less time playing with their children than those who do not work. All else equal, children who engage in less physical activity are at greater risk of having a higher body mass index.

Children with working mothers may spend more time watching TV (Crepinsek & Burstein, 2004), possibly because they are more often in self-care or in the care of someone who supervises their TV consumption to a lesser extent than would their mother (Fertig et al, 2009). There are several possible ways that television viewing time may affect weight (Dietz & Gortmaker, 1985). First, television time may crowd out time spent in physical activity. Second, increased television watching has been linked with increased caloric intake among youth through

increased preference for and consumption of calorically-dense foods commonly advertised on television (e.g., snack foods or fast food; Weicha et al., 2006). Third, time in front of the television may be accompanied by snacking, thus contributing to higher levels of children's energy consumption.

These pathways may be particularly relevant for school-aged children. As noted above, maternal employment may be associated with participation in school meals and, therefore, linked to higher BMI. Additionally, care options may be more limited or of lower quality for school-aged children as compared to younger children. Such children may be in self-care, or in the care of an older sibling or a babysitter who is less able to regulate their eating, physical activity and TV time than would be their mother or would be the caregiver for a younger child. Additionally, school-aged children may be less able to self-regulate their time use than would older children. For these reasons, linkages between maternal employment intensity and BMI may be strongest in the school-aged years (ages 6-10).

There is also reason to think that the associations between maternal employment and child BMI may differ by SES. On the one hand, more advantaged mothers may be better able to purchase healthy inputs for their children to compensate for the time they lose by being at work—these could include purchasing healthy prepared foods, hiring high quality child care, or enrolling their children in health-promoting activities. If this is the case, the linkages between maternal employment and child BMI would be less strong among more advantaged women. On the other hand, children may benefit more directly from the time they spend with more advantaged mothers, and may suffer more when that time is reduced, compared to the children of less-advantaged mothers. This would be the case if higher SES mothers were better able to

promote child health through their knowledge and behaviors and if the reduction in their time available to do so, leads to detriments in child health.

Method

Sample

Data for this paper are drawn from the National Longitudinal Survey of Youth 1979 (NLSY79) and Children of the National Longitudinal Survey of Youth (CNLSY). The NLSY79 is a nationally representative sample of 12,686 youth (6,283 females and 6,403 males) aged fourteen to twenty-two years old in 1979 (Hispanic, Black, and low-income youth were oversampled). The primary research focus of the NLSY79 is labor force behavior, but a range of other important demographic and behavioral information is also collected. These youth were re-interviewed every year until 1994 and biennially since 1994. In 1986 a separate survey of the children of the original NLSY79 female respondents were interviewed (CNLSY). Child cognitive, socioemotional, and physiological assessments as well as a variety of attitude, aspiration, and psychological well-being questions have been administered for age appropriate children biennially.

We merged the female respondents from the NLSY79 with their children, drawing a sample of 13 or 14 year-old children from the 1994-2008 survey waves, thus representing birth cohorts born between 1980 and 1995. Because the children's surveys are conducted once every two years, we selected children who were either 13 or 14 at the time of the survey. When removing those who have missing data on the outcomes of interest or the controls, the sample consists of 2,544 children.

Dependent Variables

We use three anthropometric outcomes to assess the child, each determined based on the child's body mass index. The measure of adolescent body mass index was calculated as: $\frac{(Weight)}{(Height^2)} \times 703$, where weight is measured in pounds and height is measured in inches.

The first outcome measure is the standardized z-score of BMI according to the U.S. growth charts and taking into consideration the child's age and gender (U.S. DHHS, 2001; NIH, 1998). Second, overweight is defined as having a BMI greater than the 85th percentile for the child's age and gender. Finally, obese is defined as a BMI greater than the 95th percentile for the child's age and gender, based on Centers for Disease Control protocols (Kuczmarki et al., 2002).

Independent Variables

Maternal employment. Employment information is taken from the weekly work history files, are a week-by-week array spanning from January 1, 1978 through the current interview. Each week contains reports of the respondents work status including either the job number of the primary job, or alternate labor force status including military enlistment, unemployment, and out of the labor force (OLF). The number of hours worked per week is also reported for each week in which the respondent works.

The weekly work history data was matched to the child's birthday to create annual measures of maternal employment. For several different periods over the child's life we create measures representing whether the mother worked at all in that period, and the average number of hours worked each week in that period. The following periods are examined: the prenatal year (the 52 weeks prior to the child's birth), the first year after birth (the 52 weeks following the birth of the child), the two years following the child's first birthday (years 1-2), the three years following the child's third birthday (years 3-5), the five years following the child's sixth birthday

(years 6-10), and the years following the 11th birthday until the birthday immediately prior to assessment (year 12 for 13 year-olds and 13 for 14 year-olds).

Control variables. Variables representing the child, maternal, and household characteristics are included in the multivariate analysis. Child characteristics include gender; age in months; birth order; and whether the child was normal birth weight, low birth weight (weighed less than 2,500 grams at birth), and very low birth weight (weighed less than 1,500 grams at birth). Maternal characteristics include race, AFQT taken in 1980, education (less than high school, high school graduate, some college, college graduate or more), and if she was married around the time of birth. Finally, log of household income during the child's prenatal year is included. All analysis also includes birth year and month fixed effects.

Regression Analysis

Ordinary least squares (OLS) regressions were estimated for analyses looking at BMI z-scores, and logistic regressions were estimated when predicting overweight and obesity status. Several different specifications of hours of maternal employment were examined.

First, as a comparison to the existing literature, we tested a linear specification of average weekly work hours over the child's entire lifetime (up to the 12th year for 13 year-olds and the 13th year for 14 year-olds). Based on the previous literature, we hypothesize that the number of hours worked on average over the child's life is positively associated with children's body mass index measures. Specifically, we estimated the following:

$$Y_i = \alpha + \beta H_{iL} + \phi X_i + \varepsilon_i \text{ (Eq. 1)}$$

where Y_i represents child i's anthropometric outcome at either age 13 or 14, H_{iL} is the average number of maternal weekly work hours (in 10-hour units) for child i over the lifetime (L), X_i is a vector of control variables for child i, and ε_i is the error term.

Equation 1 treats all maternal work hours in a linear framework, which suggests that an extra hour at the bottom of the distribution has the same effect on children's body mass index as an extra hour at the top of the distribution. We hypothesize that full-time employment and more will have a positive association with children's body mass index. To test whether this is the case, we estimated the following:

$$Y_i = \alpha + \beta E_{iL} + \phi X_i + \varepsilon_i \text{ (Eq. 2)}$$

where Y_i represents child i's anthropometric outcome at either age 13 or 14, E_{iL} is a series of dummy variables the average number of maternal weekly work hours (1-19 hours, 20-34 hours, 35-44 hours, and 45 or more hours) for child i over the lifetime (L), X_i is a vector of control variables for child i, and ε_i is the error term.

The third set of analyses specifically examines the developmental timing of maternal employment, where hours of work is entered with a linear variable. Based on limited prior literature, we hypothesize that maternal work hours in middle childhood will be associated with children's body mass index in adolescence. We estimated the following:

$$Y_i = \alpha + \beta_1 H_{i1} + \beta_2 H_{i2} + \beta_3 H_{i3} + \beta_4 H_{i4} + \beta_5 H_{i5} + \beta_6 H_{i6} + \phi X_i + \varepsilon_i \text{ (Eq. 3)}$$

where Y_i represents child i's anthropometric outcome at either age 13 or 14, $H_{i1\text{-}6}$ is a series of variables representing the average number of maternal weekly work hours (in 10-hour units) for child i in each period (1 prenatal, 2 birth year, 3 years 1-2, 4 years3-5, 5 years 6-10, and 6 years 11-12/13), X_i is a vector of control variables for child i, and ε_i is the error term.

Fourth, Equation 3 (like Equation 1 in the lifetime analysis) treats all weekly hours of maternal employment the same. A non-linear specification will allow us to test both the developmental timing as well as the intensity of work and their joint effect on children's body

mass index. We hypothesize that full-time maternal employment in middle-childhood will be positively associated with children's body mass index. Specifically we estimated the following:

$$Y_i = \alpha + \beta_1 E_{i1} + \beta_2 E_{i2} + \beta_3 E_{i3} + \beta_4 E_{i4} + \beta_5 E_{i5} + \beta_6 E_{i6} + \phi X_i + \varepsilon_i \text{ (Eq. 4)}$$

where Y_i represents child i's anthropometric outcome at either age 13 or 14, $E_{i1\text{-}6}$ is a series of dummy variables (1-19 hours, 20-34 hours, 35-44 hours, and 45 or more hours) representing the average number of maternal weekly work hours (in 10-hour units) for child i in each period (1 prenatal, 2 birth year, 3 years 1-2, 4 years3-5, 5 years 6-10, and 6 years 11-12/13), X_i is a vector of control variables for child i, and ε_i is the error term.

Finally, because previous research has found different associations depending on socio-economic status of the household, we will test equations 1-4 on two sub-samples of children; those whose mothers have a high school education or less (low-educated mothers) and those with at least some college (high-educated mothers). We hypothesize that our findings will be strongest among the children with high-educated mothers, based on Ruhm's (2008) finding among mothers with higher SES.

Results

Table 1 presents maternal employment over the child's lifetime for the sample. The first column illustrates that 95% of mothers worked at all over the child's lifetime, and worked an average of 21.66 hours per week. The majority of mothers worked 20 or more hours, with one-third working 20-34 hours per week, 21% working 35-44 hours per week, and almost 3% working 45 or more per week on average over the child's entire life. The remaining columns present maternal employment in the different periods. Findings illustrate the mothers are least likely to be employed in the first year following the child's birth, and average weekly work hours

are also lowest during this year. Full-time employment increases over time as children get older, including working a schedule of hours greater than full-time (more than 35 hours per week).

Table 2 presents the three outcome variables when the child is either 13 or 14, both for the entire sample as well as by average hours worked over the child's lifetime. Over one-third (35.5%) of the children are overweight at 13/14, and nearly one-fifth (18.3%) are obese. When looking at the role of maternal employment, several patterns emerge. Children whose mothers worked, on average, 1-19 hours per week over the child's lifetime are the least likely to be overweight and obese. On the contrary, those whose mothers work the most (45 hours per week or more) are the most likely to be overweight and obese and have the highest standardized BMI.

Table 3 presents the descriptive statistics for the control variables. On average, the children in the sample are the second born and were of normal birth weight. Mothers were 25 at the time of the child's birth, and the majority have a high school diploma or more.

Lifetime maternal employment. Table 4 presents the findings from six regressions (two for each outcome, namely the BMI z-score, overweight, and obese). The top of Table 4 tests Equation 1 and the bottom tests Equation 2. Additional weekly hours of employment over the child's lifetime is associated with larger standardized BMI scores, and increased likelihood of overweight and obesity at ages 13 or 14. A ten hour increase in weekly work hours on average over the child's life is associated with a 2.4 percentage point increase in the likelihood of overweight and a 1.2 percentage point increase in the likelihood of obesity. There are no significant (at conventional levels) associations between the various categories of work hours and the three outcomes. For overweight there is a trend-level association with increasing work hours. These findings suggest that maternal employment, specifically more hours worked, are associated with children's body mass index.

Developmental period maternal employment. Table 5 examines how total work hours in each developmental period influence BMI in adolescence (Equation 3). Findings suggest that hours worked during the years 6-10 period are positively associated with standardized BMI, overweight, and obesity. A ten-hour increase in average weekly hours worked between ages six and ten corresponds to a 2.7 percentage point increase in the probability of overweight, controlling for the mothers' work hours in all other periods. Table 6 presents the coefficients looking at work hour categories within each period (Equation 4). As with the linear measure, employment in years six through ten are associated with increased body size. Additionally, similar to the lifetime measures, these associations are concentrated at 20 hours of work or more.

Maternal education sub-groups. Table 7 presents regressions of the average weekly work hours over the lifetime separately for those children whose mothers are low-educated (high school diploma or less) and high-educated (at least some college). Findings from the linear specification show similar findings to Table 4, specifically that higher work hours are associated with increased standardized BMI and likelihood of being overweight or obese. However, this association is only found among the children with more educated mothers.

Table 8 presents results of analyses using average weekly hours in each developmental period for both low-educated and high-educated mothers separately to predict child BMI. Similar to the full sample analysis, maternal work hours during years 6 through 10 are significantly associated with standardized BMI and overweight, but only for the children with high-educated mothers. Table 9 breaks down maternal work hours into categories within each developmental period by maternal education. Maternal work hours in years 6 through 10 are significant and increase linearly for children with high-educated mothers.

Discussion

Results presented here add to our understanding of the associations between maternal employment and a crucial aspect of child health—BMI. We advance the previous literature in this area by focusing on both the intensity of maternal employment and the developmental stage when this employment occurs. We further examine whether the linkages between maternal employment and child BMI differ for low vs. high-SES children.

Our results confirm previous studies showing a positive association between maternal employment and child BMI. We find that work intensity matters—specifically, working 20 hours per week or more is associated with increases in overweight and obesity, and the associations strengthen with increasing number of work hours. Furthermore, we show that the association between work intensity and BMI is strongest when this work takes place when children are aged six to ten. Looking across all developmental periods, only work during this time period, and only work of 20 hours per week or more, are associated with children's body weight. Finally, we show that the association between maternal employment intensity when children are aged six to ten and child BMI holds only for children of more educated mothers.

As noted above, there is reason to think that the health of school-aged children may be particularly influenced by maternal employment. Our results confirm that this is the case, highlighting the need for policies and interventions focusing specifically on the issues faced by working mothers of school-aged children. Additionally, we confirm previous studies finding that associations between maternal employment and teen BMI vary by SES. The reasons behind this require further investigation; in particular, it would be important to disentangle the extent to which the income earned by more advantaged working mothers compensates for any reduction in her time spent with children, when looking at health outcomes.

This study contains several limitations that should be noted. First, as noted above, we lack information on paternal employment patterns. To the extent that mothers' and fathers' employment decisions are made jointly and with children's well-being in mind, this omission will bias our results. Additionally, the lack of information on fathers makes it impossible to discern whether it is maternal employment in particular, or parental employment in general, that is associated with children's BMI.

Additionally, we are not able to determine a causal relationship between maternal employment patterns and BMI. It is possible that unobservable characteristics of mothers and/or children differentiate mothers with certain employment patterns. Additionally, reverse-causality is a concern—mothers may adjust their employment behavior in response to child health. Our inclusion of important covariates, such as maternal AFQT scores and child birthweight, can help alleviate, but not eliminate, these concerns.

Despite these limitations, this study advances research in this important area, highlighting the importance of considering both the timing and intensity of maternal employment when considering its implications for child health. Results can inform policies and programs designed to address the time demands faced by working mothers and thereby improve the health of our children. For example, results from this study suggest that perhaps afterschool programs providing nutritious snacks and physical activities for school-aged children may be important in the fight against childhood obesity.

Table 1

Maternal Employment over Child's Life Course (n=2,544)

	Lifetime		Prenatal Year		Year after Birth		Years 1-2		Years 3-5		Years 6-10		Years 11-12/13	
	Mean or %	SD	Mean or %	SD	Mean or %	SD	Mean or %	SD	Mean or %	SD	Mean or %	SD	Mean or %	SD
Any employment	95.52%	---	71.84%	---	61.38%	---	74.17%	---	80.74%	---	89.11%	---	84.63%	---
Average weekly hours	21.66	13.31	18.09	16.40	13.63	15.28	17.23	15.97	19.45	15.78	22.50	15.13	24.87	16.79
None	4.60%	---	28.16%	---	38.62%	---	25.83%	---	19.26%	---	10.89%	---	15.37%	---
1-19 hours	38.84%	---	24.74%	---	26.31%	---	30.07%	---	31.29%	---	30.07%	---	20.60%	---
20-34 hours	33.25%	---	20.35%	---	19.94%	---	20.44%	---	23.07%	---	28.54%	---	23.35%	---
35-44 hours	20.68%	---	23.22%	---	12.98%	---	20.40%	---	22.76%	---	26.06%	---	32.31%	---
45 or more hours	2.63%	---	3.55%	---	2.16%	---	3.26%	---	3.62%	---	4.44%	---	8.37%	---

Table 2

Child Outcomes by Lifetime Maternal Employment

	Overall Sample		No Employment		1-19 Hours		20-34 Hours		35-44 Hours		45+ Hours	
	Mean or %	SD	Mean or %	SD	Mean or %	SD	Mean or %	SD	Mean or %	SD	Mean or %	SD
Standardized BMI	0.60	1.10	0.62	1.09	0.53	1.09	0.63	1.11	0.64	1.09	0.77	1.11
Overweight	35.57%	---	33.33%	---	33.30%	---	36.52%	---	37.64%	---	44.78%	---
Obese	18.28%	---	20.51%	---	16.19%	---	19.86%	---	18.06%	---	26.87%	---

Table 3

Descriptive Statistics of Control Variables

	Mean or %	SD
Child age (months)	164.82	5.25
White	51.69%	---
Hispanic	18.91%	---
Black	29.40%	---
Male	50.86%	---
Birth order	1.98	1.09
Mother's AFQT (1980)	38.67	28.26
Mother's age at birth	25.54	4.32
Mother less than high school	10.61%	---
Mother high school	43.51%	---
Mother some college	27.59%	---
Mother college graduate	18.28%	---
Mother married around child's birth	69.69%	---
Child born normal birth weight	92.30%	---
Child born low birth weight	6.64%	---
Child born very low birth weight	1.06%	---
Log household income (prenatal year)	10.50	1.26

Table 4

Regressions of Lifetime Employment: Average Hours

	Standardized BMI			Overweight			Obese		
	B		SE	B		SE	B		SE
Average Hours (linear)	0.05	*	0.02	0.10	**	0.04	0.09	*	0.04
Average Hours (categorical)									
1-19 hours	0.01		0.11	0.20		0.23	-0.08		0.26
20-34 hours	0.14		0.11	0.44	+	0.24	0.27		0.26
35-44 hours	0.10		0.12	0.42	+	0.24	0.07		0.28
45+ hours	0.16		0.18	0.59	+	0.36	0.49		0.40

Note: B are OLS coefficients for continuous variables and logit coefficients for dummy variables. A one-unit change corresponds to a 10 hour increase.

Table 5

Regressions of Development Period Employment: Average Hours

	Standardized BMI			Overweight			Obese		
	B		SE	B		SE	B		SE
Prenatal	0.01		0.02	-0.05		0.04	-0.01		0.06
Birth year	-0.02		0.03	0.00		0.05	0.01		0.07
Ages 1-2	-0.01		0.02	0.02		0.05	0.00		0.06
Ages 3-5	0.01		0.02	-0.01		0.05	-0.05		0.07
Ages 6-10	0.06	*	0.03	0.12	*	0.05	0.21	**	0.07
Ages 11-12/13	0.00		0.02	0.00		0.04	-0.07		0.05

Note: B are OLS coefficients for continuous variables and logit coefficients for dummy variables.

Table 6

Regressions of Developmental Period Employment: Hour Categories

	Standardized BMI			Overweight			Obese		
	B		SE	B		SE	B		SE
Prenatal									
1-19 hours	-0.09		0.07	-0.21		0.14	-0.14		0.17
20-34 hours	0.03		0.08	-0.18		0.16	0.10		0.20
35-44 hours	-0.05		0.09	-0.22		0.19	0.11		0.24
45+ hours	-0.08		0.14	-0.31		0.33	-0.50		0.43
Birth year									
1-19 hours	-0.01		0.07	0.00		0.13	-0.07		0.17
20-34 hours	-0.09		0.09	-0.13		0.18	-0.14		0.22
35-44 hours	-0.12		0.11	-0.04		0.23	-0.08		0.29
45+ hours	0.05		0.19	0.14		0.42	0.11		0.51
Ages 1-2									
1-19 hours	0.02		0.07	0.12		0.14	0.25		0.18
20-34 hours	-0.01		0.09	0.10		0.19	0.29		0.24
35-44 hours	0.09		0.11	0.30		0.22	0.29		0.29
45+ hours	-0.06		0.16	0.00		0.35	-0.02		0.44
Ages 3-5									
1-19 hours	0.05		0.08	-0.03		0.16	0.02		0.20
20-34 hours	0.01		0.09	-0.03		0.20	-0.12		0.25
35-44 hours	0.06		0.11	-0.09		0.22	-0.28		0.30
45+ hours	-0.03		0.16	-0.20		0.34	-0.18		0.42
Ages 6-10									
1-19 hours	0.06		0.10	0.28		0.20	0.19		0.25
20-34 hours	0.20	+	0.11	0.45	*	0.23	0.65	*	0.29
35-44 hours	0.18		0.13	0.46	+	0.27	0.62	+	0.34
45+ hours	0.26		0.18	0.76	*	0.35	1.14	**	0.43
Ages 11-12/13									

1-19 hours	-0.10	0.09	-0.28	+	0.17	-0.31	0.21
20-34 hours	-0.10	0.09	-0.23		0.18	-0.46 *	0.22
35-44 hours	-0.04	0.10	-0.01		0.19	-0.34	0.23
45+ hours	-0.01	0.12	-0.08		0.24	-0.34	0.30

Table 7

Regressions of Lifetime Employment: Average Hours by Maternal Education Sub-Group

	Standardized BMI				Overweight				Obese			
	Low-Educated Mothers		High-Educated Mothers		Low-Educated Mothers		High-Educated Mothers		Low-Educated Mothers		High-Educated Mothers	
	B	SE	B	SE	B	SE	B	SE	B	SE	B	SE
Average Hours (linear)	0.02	0.03	0.06 *	0.03	0.04	0.05	0.14 *	0.05	0.07	0.06	0.06	0.07
Average Hours (categorical)												
1-19 hours	-0.21	0.14	0.37 *	0.16	-0.17	0.27	1.04 *	0.50	-0.49	0.31	1.07 +	0.60
20-34 hours	-0.05	0.14	0.40 *	0.16	0.03	0.28	1.14 *	0.50	-0.15	0.32	1.20 *	0.60
35-44 hours	-0.26 +	0.16	0.52 **	0.16	-0.17	0.30	1.30 **	0.50	-0.46	0.35	1.16 *	0.60
45+ hours	0.34	0.25	0.35	0.23	0.47	0.59	1.26 *	0.57	0.51	0.59	1.40 *	0.70

Table 8

Regressions of Development Period Employment: Average Hours by Maternal Employment

	Low-Educated Mothers			High-Educated Mothers		
	B		SE	B		SE
Standardized BMI						
Prenatal	-0.01		0.03	0.01		0.03
Birth year	-0.03		0.04	0.00		0.04
Ages 1-2	-0.01		0.03	-0.02		0.04
Ages 3-5	-0.01		0.03	0.02		0.03
Ages 6-10	0.04		0.04	0.08	*	0.04
Ages 11-12/13	0.02		0.03	-0.03		0.03
Overweight						
Prenatal	-0.10	+	0.06	-0.02		0.06
Birth year	0.01		0.07	0.05		0.08
Ages 1-2	0.02		0.07	-0.01		0.08
Ages 3-5	0.01		0.07	-0.06		0.08
Ages 6-10	0.03		0.07	0.21	*	0.08
Ages 11-12/13	0.04		0.05	-0.05		0.06
Obese						
Prenatal	-0.07		0.07	0.04		0.09
Birth year	0.07		0.09	0.01		0.11
Ages 1-2	-0.06		0.08	0.08		0.11
Ages 3-5	-0.11		0.09	0.01		0.11
Ages 6-10	0.20	*	0.09	0.18		0.11
Ages 11-12/13	0.04		0.06	-0.25	**	0.08

Note: B are OLS coefficients for continuous variables and logit coefficients for dummy variables. A one-unit change corresponds to a 10 hour increase.

Table 9

Regressions of Developmental Period Employment: Hour Categories by Maternal Education Sub-Group

	Standardized BMI				Overweight				Obese			
	Low-Educated Mothers		High-Educated Mothers		Low-Educated Mothers		High-Educated Mothers		Low-Educated Mothers		High-Educated Mothers	
	B	SE	B	SE	B	SE	B	SE	B	SE	B	SE
Prenatal												
1-19 hours	-0.10	0.09	0.01	0.12	-0.31 +	0.17	0.03	0.25	-0.26	0.21	0.11	0.34
20-34 hours	-0.02	0.11	0.14	0.12	-0.39 +	0.22	0.12	0.27	-0.06	0.27	0.34	0.36
35-44 hours	-0.08	0.13	0.03	0.14	-0.21	0.26	-0.10	0.30	0.02	0.31	0.31	0.41
45+ hours	-0.05	0.22	-0.03	0.18	-0.99 +	0.55	0.13	0.45	-1.19 +	0.69	0.01	0.58
Birth year												
1-19 hours	-0.05	0.09	0.05	0.11	-0.13	0.17	0.28	0.24	-0.21	0.22	0.13	0.31
20-34 hours	-0.24 *	0.12	0.08	0.13	-0.25	0.25	0.15	0.29	-0.36	0.31	0.19	0.36
35-44 hours	-0.20	0.19	0.03	0.16	-0.35	0.35	0.46	0.35	-0.27	0.41	0.30	0.45
45+ hours	0.34	0.29	0.06	0.26	0.56	0.64	0.37	0.61	1.09	0.71	-0.16	0.76
Ages 1-2												
1-19 hours	0.07	0.09	-0.12	0.11	0.36 *	0.18	-0.52 +	0.28	0.28	0.21	0.12	0.37
20-34 hours	0.01	0.12	-0.18	0.14	0.04	0.25	-0.40	0.34	0.07	0.31	0.35	0.44
35-44 hours	0.28 +	0.16	-0.17	0.16	0.59 *	0.30	-0.42	0.38	0.48	0.38	0.05	0.51
45+ hours	-0.12	0.24	-0.13	0.21	0.31	0.49	-0.48	0.52	-0.09	0.66	0.07	0.67
Ages 3-5												
1-19 hours	-0.11	0.10	0.28 *	0.13	-0.24	0.19	0.24	0.31	-0.16	0.23	0.24	0.44
20-34 hours	-0.16	0.12	0.28 +	0.15	-0.35	0.25	0.47	0.36	-0.53 +	0.30	0.44	0.51
35-44 hours	-0.14	0.15	0.29 +	0.16	-0.16	0.30	0.04	0.39	-0.57	0.39	0.14	0.55
45+ hours	-0.15	0.23	0.22	0.22	-0.01	0.49	-0.22	0.51	-0.98	0.68	0.58	0.66
Ages 6-10												
1-19 hours	-0.01	0.12	0.21	0.18	-0.01	0.23	1.02 *	0.43	0.04	0.29	0.35	0.52
20-34 hours	0.18	0.14	0.29	0.19	0.22	0.28	1.04 *	0.48	0.57	0.34	0.58	0.61

35-44 hours	0.04	0.17	0.42	*	0.21	0.02	0.33	1.37	**	0.52	0.40	0.40	0.75	0.68
45+ hours	0.27	0.30	0.33		0.25	0.61	0.51	1.32	*	0.60	1.33	*	0.59	0.92	0.78
Ages 11-12/13															
1-19 hours	-0.06	0.11	-0.17		0.15	-0.20	0.21	-0.46		0.32	-0.27	0.26	-0.33	0.39
20-34 hours	-0.02	0.11	-0.28	+	0.15	-0.07	0.22	-0.59	+	0.33	-0.30	0.27	-0.86	*	0.41
35-44 hours	0.06	0.12	-0.22		0.16	0.19	0.24	-0.39		0.35	0.08	0.29	-0.98	*	0.43
45+ hours	0.06	0.18	-0.14		0.17	0.02	0.34	-0.40		0.39	0.32	0.40	-1.02	*	0.49