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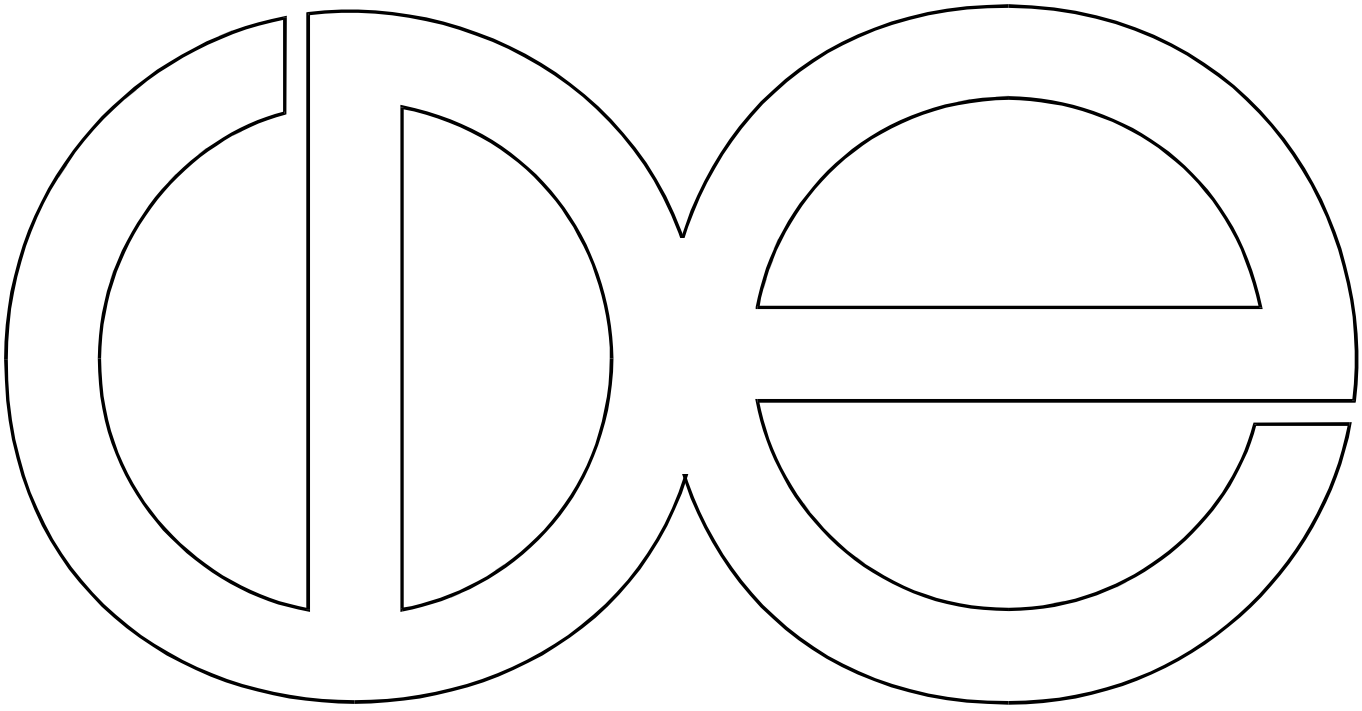

Maternal Employment, Family Structure, and Preschoolers' Overweight Problems

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Introduction

The rapid increase in childhood obesity from 1980 to 2000 aroused strong concerns among health policy makers. Childhood obesity increases the likelihood of being overweight during adulthood (Guo & Chumlea, 1999; Whitaker et al., 1997), and obesity is strongly related to type 2 diabetes and cardinal diseases (Dietz, 1998; Fagot-Campagna et al. 2000). What is behind the increase in childhood obesity? Are changes in socioeconomic factors causing the overweight problem? In this study, I explicitly examined the relationship between maternal work and preschoolers' physical development. I estimate the net effect of maternal work by using sibling models in order to control for unobserved maternal characteristics. The indicator I use to measure physical development is the Body Mass Index (BMI), a popular scale used by almost all pediatricians in this country. Before I advance my theoretical hypotheses as to how maternal work may cause problems for preschoolers' physical development, a brief summary of previous studies, chief contentions and problems, will provide us with some background.

Background and Previous Research

Cherry and Eaton (1977) suggested that the effects of maternal work on children's physical development, and more specifically on their weight, height, and head circumferences differed markedly between single- and two-parent families. In the two-parent families, children with working mothers were healthier than those with non-working mothers. Cherry and Eaton (1977) also found, however, that the impact of maternal work in single-parent families is the opposite. Their arguments were based on a sample of 200 black children living in low-income families, and their conclusion was not built on any strictly statistical tests. Anderson et al. (2003) found the negative impact of maternal work on child obesity only for children in higher socioeconomic status families, and Mott (1991) found, by using the 1986 NLSY sample, that maternal work in the child's first year has no significant impacts on the motor and social development of children between the ages of one and three. While motor development of course falls within the general rubric of physical development, Mott (1991) did not directly explore the

relationship between children's physical development and maternal work. Thus one of my goals is to measure children's physical development by using indicators defined by weight-for-height, as a way of seeing whether Mott's (1991) conclusion can be generalized to other aspects of the physical development of preschoolers.

Maternal work does have negative impacts on children's physical development simply because working mothers do not have the same time resources to expend on their preschoolers as unemployed mothers do. It can be asserted, on the basis of social capital theory that the amount of time a mother spends on her work in the labor market cuts into the time she has available for her children (Coleman 1988). A working mother does not have as much time to take care of meals, for instance, as does a mother who is staying at home. Mothers with more time to watch over children's meals are more likely to help those children develop good eating habits and maintain balanced nutrition. Previous research has shown us that working mothers are more likely to purchase ready made meals and less likely to prepare food at home (Goebel & Hennon, 1982; Johnson et al. 1992). Thus, assuming that the time a working mother is able to devote to her children's diet is less than that of a mother who is not working full time, *the first hypothesis of this research is that maternal work is associated with higher odds of children having overweight problems*.

Social capital theory suggests that a two-parent family will be able to provide more resources to aid its children's development than will a single-parent family. Children living in single-parent families may suffer from "diminished parenting" (Wallerstein and Kelly, 1980). Due to work overload, a single parent tends to pay less attention to her/his children's well-being. She or he is also likely to spend less time supervising the children's behavior. The stress experienced as a result of a divorce may influence a child's physical development. Dawson (1991), using the National Health Interview Survey, found that the children who were under the age of 18 and were living in single-parent families or step-families were more likely to feel physically vulnerable than were children from intact families. Children experiencing any change in family structure were more likely to suffer from asthma. Compared to children living within a

two-parent family structure, children in single-parent families ran a high risk of accident and injury. Dawson (1991) did not control for family income in his research, and this factor must very certainly be taken into account, when one is striving to assess the impact of family structure upon children's physical development. Thus, I will investigate the effects of family structure on children's physical development only after I have controlled for family income. Previous research has not, however, reported any noteworthy impacts of family structure on children's physical development. It may simply be the case that social capital theory cannot be applied to children's eating behaviors and physical health. If this is the case, then we should not expect to see any differences in children's physical development caused by family structure: *the second hypothesis of this research is that family structure is not associated with higher odds of children having overweight problems*.

Several studies have found that children in poor families are more likely to be overweight, and physically underdeveloped; such children also experience hospitalization more often than do children from higher-income families (Anderson et al., 2003; Parker et al., 1992; Jones et al., 1985; Ryan et al., 1990). Montgomery and Carter-Pokras (1993) also found that children in poor families were more likely to exhibit more unhealthy physical symptoms and disabling chronic conditions. By comparing Cherry and Eaton's (1977) research to the larger and more updated NLSY data, I am able to explore the effects of maternal employment, family structure, and family income on children's physical development.

The effects of maternal work on children's health may be related to certain maternal characteristics that cannot be controlled for directly by using the NLSY data, i.e., mother's weight, health, attitude toward taking care of her children, etc. Wolfe and Behrman (1987), for example, found that maternal education has no direct effect on children's physical development; they also found, however, that maternal health is related both to maternal education and to children's physical development. By using the sibling models to control for the mothers' unobserved characteristics, including maternal health, it can help us to document the net impacts of maternal work and economic resources on children's health.

Few researchers have addressed the relationship between maternal employment and children's physical development. Researchers focusing on children's health outcomes have paid more attention to race and social background factors, rather than to the effects of maternal employment on children. They have found that a child's physical health is related to family structure, family income, mother's education, and racial difference (Cherry & Eaton, 1977; Dawson, 1991; Kimbro et al., 2007; Montgomery & Carter-Pokras, 1993). Previous studies did not simultaneously, however, control for family economic backgrounds, and for maternal and child characteristics.

Children whose mothers have attained a higher level of education are likely to have better health outcomes: normal birth weight and height. Montgomery & Carter-Pokras (1993) discovered that low birth weight was associated with mother's educational level. Dawson's (1991) study found that mothers who have reached a higher educational level are less likely to have children with speech defects. Thomas et al. (1991) and Barrera (1990) are in agreement that children's height is in direct ratio to a mother's level of education. Wolfe and Behrman (1987), on the other hand, argued that a mother's educational level has no direct effect on children's height. These researchers also posed the hypothesis that a mother's education is an indicator of her health status. However, several health indicators have shown the opposite to be true. Dawson (1991) found that children who are under the age of 18 and whose mothers received more years of schooling were likely to have a higher risk of accident/injury or asthma in the year prior to the survey. Therefore, while it seems that physical development may indeed be associated with the mother's educational level, the topic certainly stands in need of further investigation.

The relationship between children's races and their health outcomes may be superficial, in that actually the effects of racial difference may be caused by economic and social factors. Based on 1989 natality data, Montgomery & Carter-Pokras (1993) were able to demonstrate that after controlling for the variable of the mother's education, black children have two or more times the incidence of low birth weight (less than 2500 grams) than white children. Starfield et

al. (1991) discovered that this particular racial difference is diminished among families living below the poverty level. Nevertheless, several studies also have shown race to be a factor in children's health outcomes, after controlling for social-background factors. Taking their subjects from a high-risk neighborhood close to New York, Geschwind et al. (1992) found that black babies had a higher risk of congenital malformation than did white babies. Annest & Mahaffey (1984) showed that black children were more likely than white children to have blood lead levels above normal (25 ug/dl), even after controlling two income variables: poverty level and mother's education level. Therefore I control family-background factors in my analysis, so as to more accurately assess the effects of race on children's physical development.

Data and Method

Sample and Research Design

The sample used in this research is the NLSY 1986-1992 children sample, ages 3 to 6. Table 1 provides the sample description. The sample size is 5241. I present the results of the younger age if there has been more than one weight-for-height reported for the children who are between the ages of three and six. After checking my results, I have discovered that this decision has not altered any of my substantive conclusions.

In the sample as defined above, there are 5459 children who should have information for their weight-for-height, and yet only 5328 children actually have valid weight-for-height information. Another 87 cases were excluded from the analysis because those children lived with their fathers at the time of the survey, since the effects of maternal work on preschoolers' physical development can have very different implications if the children do not live with their mothers. Unfortunately, the sample of children not living with their mothers also was too small for me to do a separate analysis of it. Children who died before they entered the preschool period were also excluded from our analyses, there were 99 of these cases. Most of these children died before the age of three, therefore the impact of attrition due to mortality was small.

I use the sibling sample to control for the unmeasured characteristics of mothers. I report statistical results from the full sample, while the sibling sample controls for variations within the family. The conditional logistic regression provides net estimates of unmeasured maternal and family characteristics that could be related to the key parameters of this study, maternal work and family structures. Hamerle & Ronning (1995) found that the conditional logistic regression for the binary outcome variable, estimated by a full information, maximum-likelihood procedure, did not have an inconsistency problem even when there were omitted variables.

Variables

As mentioned in the previous section, I use Body Mass Index (BMI) as the indicator of physical development. It is defined by a standard curve of weight divided by the square of the height. By applying the standard of the Body Mass Index-for-Age Percentiles Growth Charts, I have been able to classify children into three groups: underweight, normal, and overweight. Children at or below the 5^{th} percentile of the BMI are defined as being underweight and those at or above the 95^{th} percentile are defined as being overweight, with all those in between being defined as normal. In the sample not limited to siblings, 12 percent of the children are underweight, 13 percent of them overweight. The percentage of overweight children found in the NLSY sample is similar to what was reported by FASEB (1995), using the Third National Health and Nutrition Examination Survey (1988-94) (NHANES III).

In addition to maternal working status and family structure, the other explanatory variables controlled for in this research are parental education, family income, public transfers, race and neighborhood, mother's intellectual ability, sibship size, birth order, gender, birth weight, and physical limitations.

Maternal Work

Maternal work is measured three months prior to the assessment of the children's outcomes. Based on the mother's working hours per week, three categories are defined: full-time work (35 or more hours), part-time work (fewer than 35 hours), and no work. The timing of return to work is categorized into three groups: working during the child's first year, working after the child's first year, and not working at all between the child's birth and the time of the survey. In order to control for working experiences before a child is born, I have created two dummy variables: no work within one year before the child's birth, and working less than 20 hours per week within that one year. I will be following Parcel's (1989) research, in the sense that I too will be employing the Dictionary of Occupational Titles (DOT), so as to measure the degree of job complexity.

Family structure

Family structure is categorized into four groups: two-parent families, cohabited father-mother families, never-married-mother-only families, and other-single-parent families. Because there are only a few cases (3%) of mother-stepfather families, and because a preliminary investigation showed no significant difference in preschoolers' well-being between intact families and step-families, in this study I will combine cases of mother-stepfather families with those of intact families. The category of other-single-mother families consists of families after divorce or separation, and widowed families.

Family income

Adjusted family income is the total family income divided by the square root of the family's size (Buhmann et al., 1988; Sandefur et al., 1992). Like Duncan et al. (1994), I have used average annual family income in a child's life, from the year the child was born to the year of the survey. For the sake of comparability across waves, and before the transformation in income, dollars will all be standardized as 1992 dollars, using the consumer price index. Transitory income is calculated as the difference between family income one year prior to the

time of the survey and the average family income in a child's life. Thus a positive transitory income means that family income moved upwards in the year before the survey. Welfare recipiency refers to the fact that a family received AFDC, public assistance, within one year prior to the survey.

Neighborhood factors

Duncan et al. (1994) used two dummies: fraction neighbors with income of less than $10,000, and fraction neighbors with income above $30,000. I choose two indicators instead to employ in my research to measure the neighborhood effects: the average percentage poor people living in a neighborhood during the child's life, and children living in a rich neighborhood.

The percentage of poor, in the NLSY, is matched with and coded from the *County and City Data Book*.[1] Living in a rich neighborhood constitutes a proxy for the percentage of affluent in the neighborhood. I have defined a household in a rich neighborhood as one whose average median family income falls within the top ten percent of all counties in the United States. I have used a median family income of greater than $24,000 (in 1979 dollars) as an indicator of a rich neighborhood. Rather than using the neighborhood factor during the child's first year, as was done by Duncan et al. (1994), I have used average scores on the neighborhood factor from the year of a child's birth to a year prior to the survey.

Physical Limitations

The NLSY data for children's health status, in 1986, included 15 items on impairment: learning disability, minimal brain dysfunction, hyperkinesis or hyperactivity, asthma, respiratory disorder, speech impairment, serious hearing difficulty or deafness, serious seeing difficulty or blindness, serious emotional disturbance, allergic conditions, crippled or orthopedic handicap,

[1]The data for the percentage of poor people living within a neighborhood from 1979 through 1982 is based on the 1969 census in the 1977 *County and City Data Book*, and the data from 1983 through 1992 comes from the 1979 census in the 1983 *County and City Data Book*.

mentally retarded, heart trouble, chronic nervous disorder, and other physical limitation. Between 1988 and 1992 three more items were added: chronic ear problems or infections, blood disorder or immune deficiency, and epilepsy or seizures. A dummy for one or more impairment will be created, to contrast children without any such impairment with those having one or more of them.

Other Variables

The other control variables are mother's race, mother's education, mother's intelligence, mother's self-esteem, mother's age at time of observation, number of older siblings and younger siblings at time of observation, and child's birth-weights. Race groups are classified into three categories: hispanic, black, and white. Mother's education is measured by current years of schooling. Mother's intelligence is measured by The Armed Forces Qualification Test (AFQT) intelligence measures as gathered in 1980. The AFQT sum scores include four subscale scores: arithmetical reasoning, work knowledge, paragraph comprehension, and numerical operations. Mother's self-esteem is measured by a 10-item Rosenberg self-esteem scale. Dummies for mother's age above 24, birth order and number of younger siblings will be included in the analyses. Low birth-weight is defined as a newborn baby weighing below 5.5 pounds.

Results

Univariate Analyses

Table 1 gives the sample sizes and the descriptive statistics for both the full and the sibling samples being analyzed in this study. The zero-order estimates for the odds of overweight problems among preschoolers are shown in Table 2.[2] It supports the hypothesis that maternal work is positively associated with the odds of having an overweight problem. About 16 percent

[2]In the ensuing analyses I apply cutoff points as defined by the year 2000 CDC growth charts. In the "zero order" results described below, year dummies are controlled for by the models so that all of my zero-order estimations are nets of the yearly variations, in contrast to the year 2000 CDC growth chart applied in my analyses.

of children whose mothers worked full-time three months prior to the interview have overweight problems. Children whose mothers worked part-time or were unemployed show a lower proportion of overweight problems.

Clearly, children's overweight problems are related to family resources. Children living in low-income families are more likely to be overweight than are the children of higher-income families. Preschoolers who live with unmarried cohabiting parents or never-married mothers are more likely to be overweight than are children who live with married parents. Preschoolers who have younger siblings are less likely to be overweight. Mothers who have high intellectual ability are less likely to be overweight. Nonwhite or Hispanic children are more likely to be overweight. Thus, the zero-order analyses do not reject our first and second hypotheses. In the next section, however, I subject them to further scrutiny.

Mutlivariate Analysis

Maternal work

Current maternal work status is related to higher odds of having an overweight problem. Model 6, shown in Table 3, explores the possible link between maternal work and children's overweight problems. It does so by including only maternal work three months prior to the survey, and year dummies. Model 4 tells us that the odds of having an overweight problem are lower among children who have a part-time working mother. The impacts of current maternal work remain significant after I control for maternal working status in the year before childbirth, as shown by Model 7 of Table 3. Model 7 also shows the fact that being an unemployed mother can reduce a child's likelihood of having an overweight problem. This effect was not as stable in Model 6, however, because maternal employment status prior to childbirth is associated with lower odds of overweight problems, and because prenatal employment status is positively related to current employment status. The results of Model 7 are not affected by the characteristics of children, mothers, and the family income, as may be seen in Models 8, 9, 10, and 11 of Tables 3 and 4. Based on Model 11, I have estimated that the odds of a preschooler having an overweight

problem when his or her mother is not working in the labor market are 46 percent lower than preschoolers who have full-time working mothers.

Limited evidence shows us that an unstable job prior to childbirth, or returning early to work after childbirth may be related to higher odds of a child suffering from an overweight problems. The results seen in Tables 2, 3, and 4 show that part-time work before childbirth and return to work in the first year after childbirth both predict higher odds of overweight problems.

The Family Structure, Birth Order and Sibship Size

Children in single-parent families do not have higher odds of developing an overweight problem, after I control for family characteristics. In the models shown in Table 2, preschoolers living with never-married single mothers and with cohabiting mothers are more likely to be overweight. The relative risks of overweight among children living with cohabiting-mother families are 49 percent higher than they are among the children of two-parent families, and 25 percent higher than among the children of cohabiting families.

Clearly, family-structure effects are explained by the number of younger siblings. Children who have more younger siblings are less likely to be overweight, and children living with never-married single mothers and cohabiting mothers are less likely to have younger siblings. After we control for sibship size, the variations in the incidence of overweight problems, by family structure, become statistically insignificant. As may be seen in Model 11, however, sibship size and birth-order effects are not as important as maternal characteristics that have been controlled for by the conditional logit model.

The Family's Economic Resources

Children's overweight problems are not related to a family's economic resources. We do see, in the zero-order analyses shown in Table 2, that a higher family income is associated with lower odds of a child having an overweight problem. The impact of family economic resources on overweight becomes insignificant, however, in the logit model controlling for maternal and

family characteristics. Nor is any impact of transitory income found to be statistically important in any of the models seen in Tables 2, 3, and 4. Yet maternal time-resources, as those related to maternal work, ethnicity, and maternal ability, are clearly linked to family income and to the odds of a child having an overweight problem.

The Mother's Characteristics

A mothers' cognitive ability is related to her children's overweight problems. Mothers with a higher intellectual ability are more likely to obtain the health-related knowledge that is so crucial to a child's physical development, including body weight. Maternal intellectual ability can be an indicator of maternal health status and hence can be a predictor of child development. And yet, while previous studies have suggested that maternal education is positively related to good birth weight and height (Barrera, 1990; Montgomery & Carter-Pokras, 1993; Thomas et al., 1991), this study finds no such relationship to overweight problems.

Other Family Characteristics

Both Hispanics and Non-Hispanic blacks are more likely to be overweight, in the zero-order analysis. Non-Hispanic black preschool children do not show significant differences vis-a-vis the overweight problem, after controlling for maternal marital status in the model. Hispanic children are still, however, more likely to be overweight, after controlling for family resources and mothers' characteristics.

Discussion

Maternal work is positively related to overweight among preschoolers. Previous research has pointed out multiple factors, such as television viewing, limited number of physical activities (Anderson et al., 1998), and food selection (Gable & Lutz 2000), that are related to childhood obesity. Mothers with full-time jobs may have less time available to them to monitor a child's eating behaviors or food preparation. As compared to full-time working mothers, non-working

mothers are more likely to be able to control their preschoolers' schedules, nurture a healthy diet, and arrange their activities and exercises. As a way of compensating for her absence with money, a full-time working mother may also prepare more junk food at home or use fast-food services, whenever she cannot get a regular meal on the table in time. It certainly seems, then, that if mothers with a full-time job and a child-care provider paid more attention to their children's diet and exercise, the latter would suffer from fewer overweight problems.

Family economic resources and family structures seem to be related to child overweight patterns. These relationships are nullified, however, once maternal characteristics and maternal time-resources have been controlled for.

Table 1 Weighted Means for Variables in the Analysis

	Full Sample		Sibling Sample	
	Mean	**S.D.**	**Mean**	**S.D.**
Number in Sample	5241		3621	
Underweight	0.12	0.32	0.13	0.33
Overweight	0.13	0.33	0.12	0.32
Maternal Work Three Months Before Survey				
Full-time (reference, >34 hours/week)	0.35	0.48	0.30	0.46
Part-time (<35 hours/week)	0.20	0.40	0.21	0.41
Not-employed	0.44	0.50	0.48	0.50
Maternal Work After Childbirth				
After child's first year (reference)	0.25	0.50	0.25	0.43
Within child's first year	0.55	0.50	0.52	0.50
Never worked	0.18	0.39	0.20	0.40
Maternal Work One Year Pre-Childbirth				
Full-time (reference, >20 hours/week)	0.41	0.49	0.36	0.48
Part-time	0.25	0.44	0.27	0.44
No work	0.31	0.47	0.35	0.48
Mother's Job Complexity	-0.01	0.74	-0.04	0.72
Family Structure				
Two-parent families (reference)	0.73	0.44	0.75	0.44
Unmarried mother-father families	0.03	0.15	0.03	0.14
Single-ever-married-mother families	0.14	0.38	0.13	0.36
Single-never-married-mother families	0.09	0.31	0.08	0.27
Number of Younger Siblings	0.53	0.71	0.64	0.74
Zero (reference)	0.56	0.50	0.47	0.50
One	0.37	0.48	0.43	0.50
Two or more	0.07	0.26	0.10	0.29
Birth Order	1.77	0.92	1.96	0.95
Family Income				
Log family income in $1992	9.52	0.82	9.48	0.84
Transitory income	0.28	4.92	0.10	4.35

Table 1 Weighted Means for Variables in the Analysis (continued)

	Full Sample		Sibling Sample	
	Mean	**S.D.**	**Mean**	**S.D.**
Welfare Recipiency	0.22	0.42	0.25	0.43
Neighborhood factor				
% poor in the neighborhood	10.01	4.74	10.03	4.75
Median family income >24,000 in $1979	0.09	0.29	0.09	0.28
Mother's Intellectual Ability (AFQT)	83.87	25.55	83.31	26.11
Mother's Education				
Never finished high school (reference)	0.21	0.41	0.22	0.41
High school graduate	0.49	0.50	0.51	0.50
College or higher	0.30	0.46	0.28	0.45
Mother's Age at Childbirth				
Under 25	0.60	0.49	0.61	0.49
25 or older (reference)	0.40	0.49	0.39	0.49
Grandmother's Education				
Never finished high school (reference)	0.15	0.35	0.14	0.35
High school graduate	0.50	0.50	0.50	0.50
College or higher	0.36	0.48	0.36	0.48
Father's Education	31.68	4.54	31.72	4.47
Never finished high school (reference)	0.06	0.23	0.06	0.23
High school graduate				
College or higher	0.08	0.27	0.08	0.27
Father's Age at Childbirth	0.49	0.50	0.48	0.50
Father Part-time Work in Child's 1st Year	0.06	0.23	0.06	0.23
Father's Work One Week Prior to Survey				
Part-time	0.08	0.27	0.08	0.27
35-40 hours per week (reference)	0.49	0.50	0.48	0.50
40 hours per week or more	0.44	0.50	0.44	0.50
Race				
White (reference)				
Black	0.74	0.44	0.73	0.44
Hispanic	0.17	0.38	0.18	0.38

Table 1 Weighted Means for Variables in the Analysis (continued)

	Full Sample	Sibling Sample

	Mean	S.D.	Mean	S.D.
Gender of Child	0.08	0.28	0.09	0.29
Male (reference)				
Female	0.51	0.50	0.52	0.50
Shyness of Child	0.49	0.50	0.48	0.50
In Kindergarten or First Grade	0.04	1.05	0.05	1.05
Low Birth Weight of Child	0.07	0.25	0.07	0.25
Physical Problem One Year Prior to Survey	0.04	0.19	0.04	0.19
In Kindergarten or Elementary School	0.19	0.40	0.20	0.40
Type of Child Care in Child's First Year				
Center care	0.04	0.18	0.03	0.16
Non-Center care	0.34	0.48	0.31	0.46
Non regular care when mother worked	0.21	0.40	0.22	0.41
Mother care	0.40	0.49	0.43	0.49
Year of Survey				
1986	0.33	0.47	0.34	0.47
1988	0.25	0.43	0.26	0.44
1990	0.20	0.40	0.20	0.40
1992	0.22	0.41	0.19	0.40
Age of Child				
Three	0.38	0.49	0.39	0.49
Four	0.37	0.48	0.36	0.48
Five	0.15	0.36	0.15	0.36
Six	0.10	0.30	0.10	0.30

Source: NLSY mother-child data for 1986, 1988, 1990, and 1992. The distribution of the father's information is only for children living with two parents at the time of the survey. (5189 full sample and 3625 sibling sample).

Table 2 Zero-order Effects of Maternal Work on Children's Underweight and Overweight

	Underweight		Overweight	
	b	**s.e.**	**b**	**s.e.**
Maternal Work Three Months Prior to Survey				
Full-time (reference, >34 hours/week)				
Part-time (<35 hours/week)	0.10	0.12	-0.40	0.13
Not-employed	0.05	0.10	-0.12	0.09
Maternal Work after Childbirth				
After child's first year (reference)				
Within child's first year	0.03	0.10	0.08	0.11
Never worked	0.17	0.12	0.16	0.13
Maternal Work One Year Prior to Childbirth				
Full-time (reference, >20 hours/week)				
Part-time	0.06	0.10	0.33	0.11
No work	0.20	0.10	0.16	0.11
Mother's Job Complexity	-0.09	0.06	0.04	0.06
Family structure				
Two-parent families(reference)				
Unmarried mother-father families	0.38	0.21	0.49	0.20
Single-ever-married-mother families	-0.01	0.12	0.02	0.12
Single-never-married-mother families	0.16	0.12	0.25	0.12
Number of Younger Siblings				
Zero (reference)				
One	0.04	0.09	-0.30	0.10
Two or more	0.27	0.15	-0.30	0.18
Birth Order	0.01	0.04	-0.04	0.06
Family Income				
Log family income in $1992	-0.14	0.05	-0.11	0.05
Transitory income	-0.00	0.01	-0.01	0.01
Neighborhood factor				
% poor in the neighborhood	0.02	0.01	0.00	0.01

Table 2 Zero-order Effects of Maternal Work on Children's Underweight and Overweight (continued)

	Underweight		Overweight	
	b	**s.e.**	**b**	**s.e.**
Median family income >24,000 in $1979	-0.28	0.18	-0.05	0.16
Welfare Recipiency	0.14	0.09	0.12	0.10
Mother's Intellectual ability (AFQT)	-0.005	0.002	-0.006	0.002
Mother's Education				
Never finished high school (reference)				
High school graduate	-0.09	0.10	-0.15	0.11
College or higher	-0.15	0.12	-0.11	0.12
Mother's Age at Childbirth				
Under 25	0.30	0.11	0.12	0.11
25 or older (reference)				
Grandmother's Education				
Never finished high school (reference)				
High school graduate	0.24	0.10	0.25	0.11
College or higher	0.18	0.11	0.35	0.11
Race				
White (reference)				
Black	0.07	0.08	-0.14	0.09
Hispanic	0.31	0.14	-0.04	0.17
Gender of Child	0.50	0.20	0.13	0.22
Male (reference)	-0.23	0.12	-0.14	0.12

Source: NLSY mother-child data in 1986, 1988, 1990, and 1992.

Table 3 Effects of Maternal Work on Children's Overweight

	Model 1		Model 2		Model 3		Model 4	
	b.	**s.e.**	**b.**	**s.e.**	**b.**	**s.e.**	**b.**	**s.e.**
Maternal Work Three Months Prior to Survey								
Full-time (reference, >34 hours/week)								
Part-time (<35 hours/week)	-0.40	0.13	-0.44	0.14	-0.37	0.14	-0.35	0.14
Not-employed	-0.12	0.09	-0.21	0.10	-0.28	0.12	-0.24	0.11
Maternal Work One Year Prior to Childbirth								
Full-time (reference)								
Part-time			0.40	0.12	0.39	0.12	0.40	0.13
No work			0.24	0.12	0.18	0.14	0.20	0.15

Source: NLSY mother-child data for 1986, 1988, 1990, and 1992.
Note: Only maternal work three months prior to the survey and the year dummies have been included in Model 1. In addition to maternal work three months prior to the survey, work situations during the year prior to childbirth, and year and age dummies are included in Model 2. Based on Model 2, these factors have been controlled for in Model 3: child's gender, race, low birth weight, physical limitation, and school enrollment; and mother's intelligence ability, age at childbirth, education level, and maternal work in the child's first year. Based on Model 3, family's economic resources (family income, sibship size, family structure, and welfare recipiency), and neighborhood information are included in Model 4.

Table 4 Effects of Maternal Work on Children's Overweight

	Model 5 Full Logit Model		Model 6 Conditional Logit Model	
	b	**s.e.**	**b**	**s.e.**
Mother's Working Hours per Week Three Months Prior to Survey				
Full-time (reference, >34 hours/week)				
Part-time (<35 hours/week)	-0.35	0.14	-0.60	0.34
Not-employed	-0.24	0.12	-0.61	0.31
Timing of Mother's Return to Work				
After child's first year (reference)				
Within child's first year	0.14	0.13	0.78	0.26
Never returning to work	0.22	0.15	0.37	0.35
Work Status one year before birth				
Full-time (reference)				
Part-time	0.40	0.13	0.70	0.26
No work	0.20	0.15	0.44	0.29
Mother's Job Complexity	0.07	0.07	-0.06	0.19
Family Structure				
Two-parent family (reference)				
Unmarried mother-father family	0.35	0.24	-0.16	0.66
Single-ever-married-mother family	-0.10	0.14	-0.17	0.42
Single-never-married-mother family	0.06	0.16	-0.23	0.69
Number of younger siblings				
Zero (reference)				
One	-0.27	0.10	-0.07	0.22
Two or more	-0.29	0.19	-0.13	0.46
Birth Order	-0.09	0.06	0.07	0.28
Family Income				
Log (family income in $1992/square root of family size), average from birth to one year before survey	-0.03	0.08	-0.05	0.26
Transitory Income	-0.01	0.01	-0.01	0.03
Neighborhood factors				
% poor in the neighborhood	-0.01	0.01	0.01	0.06
Median family income >24,000 in $1979	-0.08	0.18	-0.84	0.69

Received Welfare	0.01	0.13	-0.42	0.34
Mother's Intelligence Ability (AFQT)	-0.006	0.003		
Mother's Education				
<12 years (reference)				
12 years	-0.05	0.13	0.86	0.68
College or higher	0.09	0.16	0.21	1.08
Mother's Age at Childbirth				
<25	0.11	0.12	0.34	0.29
25 or older (reference)				
Race				
White (reference)				
Black	0.06	0.14		
Hispanic	0.25	0.13		
Sex of Child				
Male (reference)				
Female	-0.15	0.09	-0.21	0.17
Low Birth Weight of Child	-0.08	0.18	0.06	0.35
Physical Problem 1 Year Prior to Survey	0.09	0.23	-0.57	0.61
In Kindergarten or First Grade	0.28	0.20	0.50	0.38
Constant	-1.74	0.84		

Source: NLSY mother-child data in 1986, 1988, 1990, and 1992.

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