
# Exploring the Influence of the National School Lunch Program On Children Using The Early Childhood Longitudinal Study

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Paper previously presented at the United States Department of Agriculture Small Grants Program Pre conference, Institute for Research on Poverty, University of Wisconsin-Madison and the Annual Meetings of the Population Association of America, Minneapolis, MN.

August 8, 2006

Working Paper 2006-08-10
http://ipia.utah.edu/workingpapers.html

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## Abstract

Using data from the Early Childhood Longitudinal Study, 1998-1999 Kindergarten Cohort, the proposed study examines two research questions. First, what are the effects of participation in the National School Lunch Program (NSLP) on changes in children's behavior, test scores, and body weight? Second, do these effects differ by gender?

To address issues of selection, we use first difference regression techniques. These techniques reduce the bias resulting from unobserved time-invariant characteristics that influence a family's enrollment in the NSLP. The results from this project provide important insight into the role of the National School Lunch Program in influencing child health, academic well-being, and social development.



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## Introduction

Using data from the Early Childhood Longitudinal Study, 1998-1999 Kindergarten Cohort (ECLS-K), the proposed study examines two research questions. First, what are the effects of participation in the National School Lunch Program (NSLP) on changes in children's health, behavior and test scores? Second, do these effects differ by gender?

We use data from the Early Childhood Longitudinal Study (ECLS), which first assessed 22,00 kindergarteners is 1998-199, reassessing these children again in first grace. To address issues of selection, we use a model that relates changes in children's participation in the NSLP to changes in child outcomes between the first and second wave of the study. This allows us to control for all time-invariant factors that may be associated with the likelihood that a child participates in the NSLP. This method is explained in more detail below.

Our previous work explored the relationship between participating in the National School Lunch Program and child outcomes (Dunifon and Kowaleski-Jones, 2003). However, this work used cross-sectional data that was unable to answer the question of how the influence of the NSLP on children may change over time. The current paper is able to address this issue. .....

## The Federal School Lunch Program

The National School Lunch Program (NSLP) is a federally sponsored nutrition program serving approximately 28 million children a day with estimated expenditures of $6.1 billion in 2002 (USDA, 2003). Recent estimates indicated that the NSLP is available to 92% of U.S. students, and that 56% of these students participate in the program (Burghardt and Devaney, 1995). The aim of the program is to provide nutritious foods to school-age children at no, or reduced cost. Eligibility for free NSLP lunches is limited to families whose incomes are at or

below 135% of the poverty line. Reduced price lunches are available to families whose incomes are between 135% and 185% of the poverty line. Approximately 47% of all school lunches are served to children whose family incomes are less than 185% of the poverty level. The NSLP also subsidizes full priced lunches in most schools, so virtually all school children may benefit from NSLP (Devaney et al., 1997). Lunches provided by this program are expected to enable students to consume at least one-third of the recommended daily allowance of specific nutrients and to have the following core items: meat or meat alternative, two or more vegetables and fruits, whole-grain or enriched breads, and milk.

Much of the available research on the NSLP focuses on the relationship between participating in the program and increased nutrient intake (Burghardt and Devaney, 1995). For example, Bhattacharya and Currie (2001) find that participation in the NSLP leads to healthier diets among children. There is some concern, however, that while the NSLP is effective in delivering on the promise of achieving RDA goals, the lunches are likely to be higher in total fat and saturated fat than recommended by *the Dietary Guidelines for Americans* (Meyers et al, 1989). For example, Gleason and Suitor (2001) find that NSLP participation leads to increased intake of six vitamins and minerals and reduced intake of sugars over 24 hours but is also associated with an increased intake of fats. To address this problem, the USDA has recently begun a program called Team Nutrition, which seeks to help schools create meals that meet nutrition guidelines regarding fat and sodium.

Other research has examined the effects of NSLP on child anthropometry (Vereersch et al, 1984), and finds that among children younger than ten, participation in NSLP was linked to a lower likelihood of falling below the 25$^{th}$ percentile of weight-for-height. One of the few studies examining the links between participation in food assistance programs and

performance outcomes for children studied the effects of the school breakfast program (SBP) on the school performance of children in Massachusetts (Meyers et al., 1989). This research compared children's achievement test scores before and after SBP was implemented in the schools, finding evidence of higher scores among those children who received the SBP. Meyers et al. also found positive effects of SBP on school tardiness and absences. Although this study evaluated the effects of SBP, not the NSLP, it does suggest some potential linkages between food assistance programs and child outcomes.

Other work (Dunifon and Kowaleski-Jones, 2003) investigated the associations between food insecurity, NSLP participation, and children's well-being using cross-sectional data from the Panel Study of Income Dynamics Child Development Supplement (PSID-CDS). To address problems of selection (that is, the idea that families of children participating in the NSLP may differ in unobservable ways from those of children not participating), the sample was restricted to children in families in which at least one child participated in the NSLP. Results suggested that food insecurity was associated with behavioral problems, but not health or cognitive difficulties among children. Additionally, after adjusting for selection, participation in the NSLP did not significantly impact child outcomes. A limitation of the previous study was its use of cross-sectional data, which prohibited the examination of changes in children's participation in the NSLP over time. The current study examines how changes in children's participation in the NSLP between kindergarten and first grade is associated with changes in key measures of child development.

If participation in the NSLP leads to improved nutritional intake, participating children may also see improvements in their ability to learn and regulate their behavior and in their overall health. Additionally, concerns about the content of school lunches suggest that NSLP

participation may be associated with children's weight for height. However, it is possible that NSLP participation may not translate into improved outcomes among children along these domains. First, children may already be receiving adequate nutrients in their diet. Second, the food eaten as part of the NLSP may not be of adequate nutritional value to improve children's outcomes. Finally, even if children participate in the NLSP and increase their nutrient intake as a result, their overall nutrient intake may not improve if their parents compensate for this by decreasing the food provided to children in the home. Overall, then, it is unclear whether NSLP participation will be associated with improved well-being among children, suggesting the need for empirical research.

Sample

We study the influence of NSLP participation on child outcomes using the 1998 Early Childhood Longitudinal Study. This study is based on a nationally representative sample of approximately 22,000 children who were enrolled in roughly 1,000 kindergarten programs during the 1998-1999 school years. These children were selected from both public and private kindergartens, offering full-day and part-day programs. The sample is designed to support separate estimates of public and private school kindergartners; Black, Hispanic, White, and Asian children; and children by socioeconomic status (U.S. Department of Education, 2002). Our analyses focus on the complete sample of children and follow them to their assessment in first grade during academic year 1999-2000.

Measurement

We use three measures of NSLP participation from the ECLS-K. The first is a parent-reported variable indicating whether a child receives a lunch at school, based on responses to the question "Does CHILD usually receive a complete lunch offered at school?", with

responses ranging from 0 (no) to 1 (yes). This question was asked in spring of the child's kindergarten year and again in spring of the first grade; it does not distinguish between receiving a full-price lunch or receiving a free or reduced price lunch. We also include a variable, with responses ranging from 0 (no) to 1 (yes), which determines whether a child ate a free or reduced-price lunch. From these two, we create a third measure of whether a child usually eats a full-price lunch at school. Some of our analyses use the single indicator of whether the child usually eats a lunch provided by the school, while others use the other two indicators: receives a full-price lunch and receives a free or reduced price lunch. In both sets of analyses the omitted category is not receiving a lunch at school.

Our dependent variables are measured in three domains: children's behavior, body mass index, and test scores. Each of these measures is taken twice: once in spring of the kindergarten and another in the spring of first grade. We measure *child behavior* with two teacher reported variables measuring externalizing and internalizing behaviors. Externalizing Problem Behaviors include five items that rate the frequency with which a child argues, fights, gets angry, acts impulsively, and disturbs ongoing activities. The Internalizing Problem Behavior scale asks about the apparent presence of anxiety, loneliness, low self-esteem, and sadness. This scale comprises four items.

We measure *achievement* with cognitive assessments developed especially for the ECLS-K. These assessments focus on three general areas of competence: reading, mathematics, and knowledge of the social and physical world, referred to as "general knowledge." Information about children's cognitive skills and knowledge is obtained through direct assessments of the children. These assessments use a two-stage adaptive administration approach. In each domain, (reading, mathematics, general knowledge) children are first administered a routing test that includes items across the ability distribution.

Next, they are administered a level test based on their performance on the routing test. We use the IRT Scale Scores in math, reading and general knowledge, which use the pattern of right, wrong, and omitted responses to place each child on a continuous ability scale. This is the best method of measuring changes in children's test scores over time (ECLS-K Codebook).

Children's *Body Mass Index* is measured based on parental reports of height and weight. Body Mass Index is defined as weight in kilograms divided by height in meters squared.

In all analyses, we also control for an extensive set of background characteristics of the child's family, including: total family income; household size; number of siblings; parents' education; child age; maternal employment (dummies for whether the mother is working less than 35 hours per week, and whether she is working 35 or more hours per week, with no employment as the omitted category); whether the family is receiving TANF (welfare) benefits; whether the family is receiving Food Stamps; maternal age; and whether the child is living in a single-parent or divorced family (with living with biological married parents as the omitted category) . For the bulk of our analyses, all variables are measured as changes between kindergarten and first grade. Thus, time-invariant measures, such as race or gender, are not explicitly controlled in the model, but are controlled implicitly through the first-difference method detailed below. (Our cross-sectional analyses do include controls for child gender and race). All control measures were taken in the spring of the child's kindergarten and first grade years, to correspond with the assessments of NSLP participation and the outcome measures.

Analysis

When relating NSLP participation to child outcomes, we address issues of selection

that may bias estimates of the influence of food assistance programs on individual outcomes. Despite the extensive set of control variables available in the ECLS, we will be unable to account for all of the ways in which families using NSLP may differ from those who do not, leading to bias in the estimates of the influence of NSLP participation on children.

To address these issues, we use first-difference models to relate changes in a child's NSLP participation between kindergarten and first grade to changes in child well-being, as shown in Equation 1 below.

$$Y_{i1} - Y_{ik} = \alpha_{i1} - \alpha_{ik} + \beta_{1j}(LUNCH_{i1} - LUNCH_{ik}) + \beta_{2j}(X_{i1} - X_{ik}) + \varepsilon_{i1} - \varepsilon_{il} \quad (1)$$

In Equation 1, changes in child behavior, for example, between kindergarten and first grade are a function of changes in that child's participation in the NSLP and changes in a series of control measures. This first-difference model implicitly controls for all time-invariant characteristics that may be associated both with a child's likelihood of participating in the NSLP and that child's outcomes. In all of our analyses we measure the change in participation in the NSLP between kindergarten and first grade only for those children who attended a full day kindergarten, as preliminary analyses indicate that very few children in half-day kindergarten have access to school lunch.

In order for the first-difference model to be identified, children must change from not receiving a lunch (whether free or reduced price, or full price) to receiving one, or vice-versa. Table 1 presents the number of children in our sample (those in full-day kindergarten) who made such a change, first for the measure of whether the child received a free or reduced price lunch, and then for the measure of whether the child received a full-price lunch. The first panel of Table 1 shows that 490 children moved from receiving a free or reduced-price lunch in kindergarten to not receiving one in first grade, while 399 children received one in

first grade but did not in kindergarten. The second panel shows that 857 children received a full-price lunch in kindergarten but not in first grade, and 873 made the opposite transition.

Results

Table 2 presents descriptive characteristics for our main sample: children attending full day kindergarten who were subsequently followed and assessed again in the first grade. Children are scoring about 56 points (out of a possible 89) on the reading test, 43 points (out of a possible 61) on the math test, and 34 points (out of a possible 44) on the general knowledge test. The average BMI for the sample is almost 17, which is slightly higher than the 50$^{th}$ percentile for children of this age (Centers for Disease Control, 2003). Finally, children are scoring a little over 1.5 points on the internalizing and externalizing scales, out of a possible 4 points. In this sample, 73% of the children usually eat lunch at school; 38% of the children usually receive a full-price school lunch, and 35% receive a free or reduced-price lunch. On average, children in this sample had at least one other sibling in their household. A relatively low (5%) proportion of the children lived in families that received welfare benefits. However approximately 15% of children received Food Stamps.

Results

Before moving to our main analyses, using the first-difference method, it is useful to examine cross-sectional estimates of the influence of participation in the NSLP on children. Table 3 presents results of cross-sectional analyses of the associations between receiving a school lunch and six measures of child development, controlling for child and family-specific factors. These analyses relate the indicator of whether the child usually eats a lunch provided by the school (measured in the spring of the first grade), to child outcomes also measured in the spring of first grade. All other control variables are taken from the same assessment.

The results show that eating a school-provided lunch is associated with a decrease in reading and general knowledge test scores, an increase in Body Mass Index, and an increase in externalizing problems. However, it is unlikely that participating in the NSLP is actually detrimental for children, as suggested in Table 3. The pattern of associations between NSLP participation and children's outcomes suggests that omitted variables may be biasing the results presented in Table 3.

To address this, Table 4 presents the results of analyses using the first difference change model shown in Equation 1. In this model, changes in child outcomes between kindergarten and first grade are a function of changes in that child's participation in the NSLP and changes in a series of control measures. The first panel presents results for the full sample of children. Here, receiving a school lunch is associated with a marginally-significant increase in math and reading scores. Looking separately by gender reveals that receiving a school lunch is particularly beneficial for boys' reading scores, but is not associated with improved test scores for girls. Also, in Table 4, the detrimental outcomes associated with receiving a lunch that were found in the cross-sectional analyses have disappeared.

Table 5 presents results of analyses looking at the two separate lunch measures—whether the child receives a full-price lunch and whether the child receives a free or reduced-price lunch. There is a potentially important distinction between the two types of lunches. Regardless of whether it is full price or not, a school provided lunch can provide a reliable source of nutrition and social interaction. A child who is eating a school lunch is receiving, by federal guidelines, one third of the recommended allowances of nutrients. Adequate nutrition can have important effects on academic functioning and social development. The social aspect of school lunch is important as well. When a child is eating a school provided

lunch, that child is typically eating this lunch in close proximity to other students, promoting the opportunity for peer interactions.

When a student is receiving a free or reduced price lunch, this is also a marker for a student who is at an economic disadvantage, relative to other students. The receipt of a school lunch in this scenario takes on an additional importance as it represents a reliable source of nutrition in family situation where resources for a variety of needs, including food, may not be consistently and reliably available. Finally, receiving a free or reduced-price lunch may be associated with a social stigma, if other students are aware that the student is not paying full price. We next examine the influence on children of both a full-price lunch, as well as a free or reduced price lunch.

Results in Table 5 show few differences between these two school lunch measures. Additionally, these results confirm the results shown in Table 4, which indicate a positive association between receiving a school lunch (regardless of whether it is full-, free-, or reduced-price) and boys' reading test scores. No other outcome measures are associated with school lunch receipt.

Discussion

Previous research on the impact of the NSLP and food insecurity on child well-being has been extremely limited. The results from these analyses provide insight into the ways in which a widely-used food assistance program and may influence the overall well-being of U.S. children.

Our cross-sectional results indicated detrimental associations between NSLP participation and child outcomes. These associations were eliminated after adjusting for time-invariant unmeasured child- and family-specific factors associated with the selection of

children into participation in the program through the use of the first-difference method. The dramatic difference between the cross-sectional and change model results highlights the importance of addressing issues of selection when examining the effects of NSLP participation on child well-being, and is consistent with our prior work in this area (Dunifon and Kowaleski-Jones, 2002).

Also consistent with our prior work, overall we find few beneficial associations between participation in the NSLP and child well-being. There are several potential explanations for this. It is possible that additional nutrients in a child's diet that result from participation in the NSLP do not lead to overall improvements in child well-being because most children are already receiving an adequate nutritional intake. Second, the likelihood exists that families may use the NSLP to replace food the child would have eaten anyway, rather than to add to the child's overall diet. Thus, participation in the NSLP may not have an impact on children because it does not significantly improve their overall nutritional intake. Finally, it is possible that NSLP participation does not significantly change children's intake of vitamins and minerals and, therefore, does not lead to benefits in the domains measured here.

One important exception to this is the finding that receiving a school lunch is associated with improvements in boys' reading test scores (but not for girls). This association does not differ for full-price lunches vs. free or reduced-price ones.

To our knowledge, previous work in this area has not examined gender differences in the influence of NSLP participation on children, so it is difficult to put these results in context. However, it is possible that boys' nutritional needs during the early elementary years are greater than girls'. Alternatively, boys' regular diets may be more lacking in nutrients than girls. Under either of these scenarios, the NSLP could represent a needed extra source of

nutrients for boys which could translate into improved test scores. The ECLS does not have measures of nutrient intake, so we are not able to test this hypothesis. It is also possible that other aspects of the school lunch experience, including social elements, are particularly salient for boys. Our future work will take advantage of the detailed measures of school context available in the ECLS to examine whether the school environment plays a role in mediating or moderating the influence of NSLP participation on children, and in accounting for the gender differences we observe.

It is interesting that our results find no evidence that participation in the NSLP is associated with increases in children's body weight. This may partially alleviate concerns about detrimental effects of fatty foods contained in school-provided lunches. Finally, we find no evidence that receiving a school lunch is associated with improvements in children's behavior.

Overall, this study does find that participating in the National School Lunch program can lead to improvements in the test scores of boys between kindergarten and first grade. Additionally, these beneficial associations do not depend on whether the lunch is full price, or free or reduced price.

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Table 1. Change in Status of Lunch Receipt from Kindergarten to First Grade.

| | *Free or Reduced-Price Lunch in First Grade* | |
|---|---|---|
| *Free or Reduced-Price Lunch in Kindergarten* | No | Yes |
| No | 4,692 | 399 |
| Yes | 490 | 2,569 |

| | *Full-Price Lunch in First Grade* | |
|---|---|---|
| *Full-Price Lunch in Kindergarten* | No | Yes |
| No | 4,515 | 873 |
| Yes | 857 | 2,400 |

Table 2. Sample Characteristics Measured in Spring of First Grade: Children in Full-Day Kindergarten

| | Mean | SD |
|---|---|---|
| Reading Test Score | 55.78 | 13.99 |
| Math Test Score | 43.34 | 9.17 |
| General Knowledge Test Score | 34.10 | 7.77 |
| Body Mass Index | 16.92 | 2.97 |
| Internalizing problems | 1.59 | .51 |
| Externalizing problems | 1.69 | .65 |
| Child eats lunch provided by school | .73 | .44 |
| Child eats full-price lunch | .48 | .49 |
| Child eats free or reduced price lunch | .37 | .48 |
| Child is Male | .50 | .50 |
| Child is White (omitted) | .54 | .50 |
| Child is Black | .20 | .40 |
| Child is Hispanic | .15 | .36 |
| Child is Other Race | .11 | .31 |
| Child age | 7.26 | .36 |
| Number of siblings | 1.49 | 1.17 |
| # persons in household | 4.54 | 1.40 |
| Lives with married parent (omitted) | .70 | .46 |
| Lives with divorced parent | .14 | .34 |
| Lives with never married parent | .13 | .34 |
| Age of mother | 34.66 | 6.81 |
| Mother is not employed (omitted) | .29 | .45 |
| Mom wk >= than 35 hrs | .51 | .50 |
| Mom wk < than 35 hrs | .21 | .41 |
| Family receives welfare (TANF) | .05 | .21 |
| Family receives Food Stamps | .15 | .35 |
| Family Income | 60,257 | 51,204 |

Table 3. Cross sectional Estimates of School Lunches on Child Outcomes. Results from spring of first-grade year (only children in full-day kindergarten included).

| | *Math* | | *Reading* | | *General Knowledge* | | *BMI* | | *Internalizing* | | *Externalizing* | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Coeff | Std Err | Coeff | Std Err | Coeff | Std Err | Coeff | Std Err | Coeff | Std Err | Coeff | Std Err |
| Whether received school lunch | -.32 | .26 | -1.14*** | .40 | -.81*** | .20 | .34*** | .10 | -.02 | .02 | .07*** | .02 |
| N | 7296 | | 7196 | | 7189 | | 6862 | | 6693 | | 6734 | |
| R-square | .22 | | .20 | | .35 | | .03 | | .03 | | .09 | |

NOTE: * = p < .10, ** = p < .05, *** = p < .01

All analyses control for child race/ethnicity, child gender, parental education, child age, number of siblings, number of people in household, whether divorced family, whether never married family, mother's age, maternal employment, whether family receives TANF, whether family receives food stamps, income, and an indicator for missing income.

Table 4. First-Difference estimates of School Lunches on Child Outcomes: Single School Lunch Measure

| | *Math* | | *Reading* | | *General Knowledge* | | *BMI* | | *Internalizing* | | *Externalizing* | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Coeff | Std Err | Coeff | Std Err | Coeff | Std Err | Coeff | Std Err | Coeff | Std Err | Coeff | Std Err |
| Whether received school lunch | .35* | .20 | .52* | .29 | -.002 | .15 | -.01 | .06 | .02 | .02 | -.01 | .02 |
| N | 14391 | | 14099 | | 14079 | | 13979 | | 13596 | | 13673 | |
| R-square | .36 | | .33 | | .20 | | .02 | | .002 | | .0001 | |

| *BOYS* | *Math* | | *Reading* | | *General Knowledge* | | *BMI* | | *Internalizing* | | *Externalizing* | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Coeff | Std Err | Coeff | Std Err | Coeff | Std Err | Coeff | Std Err | Coeff | Std Err | Coeff | Std Err |
| Whether received school lunch | .47 | .28 | 1.19*** | .41 | .04 | .21 | .02 | .08 | .02 | .03 | -.03 | .03 |
| N | 7221 | | 7082 | | 7067 | | 7011 | | 6813 | | 6861 | |
| | .34 | | .33 | | .20 | | .01 | | .003 | | .0001 | |

| *GIRLS* | *Math* | | *Reading* | | *General Knowledge* | | *BMI* | | *Internalizing* | | *Externalizing* | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Coeff | Std Err | Coeff | Std Err | Coeff | Std Err | Coeff | Std Err | Coeff | Std Err | Coeff | Std Err |
| Whether received school lunch | .23 | .27 | -.16 | .41 | -.04 | .21 | -.04 | .08 | .004 | .03 | .01 | .03 |
| N | 7170 | | 7017 | | 7012 | | 6968 | | 6783 | | 6812 | |
| | .38 | | .35 | | .20 | | .02 | | .001 | | .001 | |

NOTE: * = p < .10, ** = p < .05, *** = p < .01

All analyses control for child age, number of siblings, number of people in household, whether divorced family, whether never married family, mother's age, maternal employment, whether family receives TANF, whether family receives food stamps, income, and an indicator for missing income.

Table 5. First-Difference estimates of School Lunches on Child Outcomes: Two School Lunch Measures

| | *Math* | | *Reading* | | *General Knowledge* | | *BMI* | | *Internalizing* | | *Externalizing* | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Coeff | Std Err | Coeff | Std Err | Coeff | Std Err | Coeff | Std Err | Coeff | Std Err | Coeff | Std Err |
| Received full-price lunch | .32 | .20 | .49 | .30 | .05 | .15 | -.03 | .06 | .03 | .02 | -.012 | .02 |
| Received free or reduced-price lunch | .39 | .27 | .72* | .41 | -.19 | .21 | .06 | .08 | -.01 | .03 | .001 | .03 |
| N | 14381 | | 14089 | | 14069 | | 13970 | | 13587 | | 13664 | |
| R-square | .36 | | .33 | | .21 | | .02 | | .00 | | .0002 | |

| *BOYS* | *Math* | | *Reading* | | *General Knowledge* | | *BMI* | | *Internalizing* | | *Externalizing* | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Coeff | Std Err | Coeff | Std Err | Coeff | Std Err | Coeff | Std Err | Coeff | Std Err | Coeff | Std Err |
| Received full-price lunch | .39 | .29 | 1.05** | .42 | .11 | .22 | .02 | .08 | .04 | .03 | -.04 | .03 |
| Received free or reduced-price lunch | .66 | .40 | 1.87*** | .58 | -.25 | .30 | .03 | .11 | .02 | .04 | .001 | .05 |
| N | 7217 | | 7078 | | 7063 | | 7008 | | 6810 | | 6858 | |
| | .34 | | .32 | | .21 | | .01 | | .002 | | .0003 | |

| *GIRLS* | *Math* | | *Reading* | | *General Knowledge* | | *BMI* | | *Internalizing* | | *Externalizing* | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Coeff | Std Err | Coeff | Std Err | Coeff | Std Err | Coeff | Std Err | Coeff | Std Err | Coeff | Std Err |
| Received full-price lunch | .26 | .28 | -.08 | .42 | -.01 | .21 | -.08 | .08 | .02 | .03 | .02 | .03 |
| Received free or reduced-price lunch | .14 | .38 | -.46 | .57 | -.13 | .29 | .09 | .10 | -.03 | .04 | -.001 | .04 |
| N | 7164 | | 7011 | | 7006 | | 6962 | | 6777 | | 6806 | |
| | .38 | | .36 | | .20 | | .02 | | .003 | | .001 | |

NOTE: * = p < .10, ** = p < .05, *** = p < .01

All analyses control for child age, number of siblings, number of people in household, whether divorced family, whether never married family, mother's age, maternal employment, whether family receives TANF, whether family receives food stamps, income, and an indicator for missing income.