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Child
Nutrition

EL

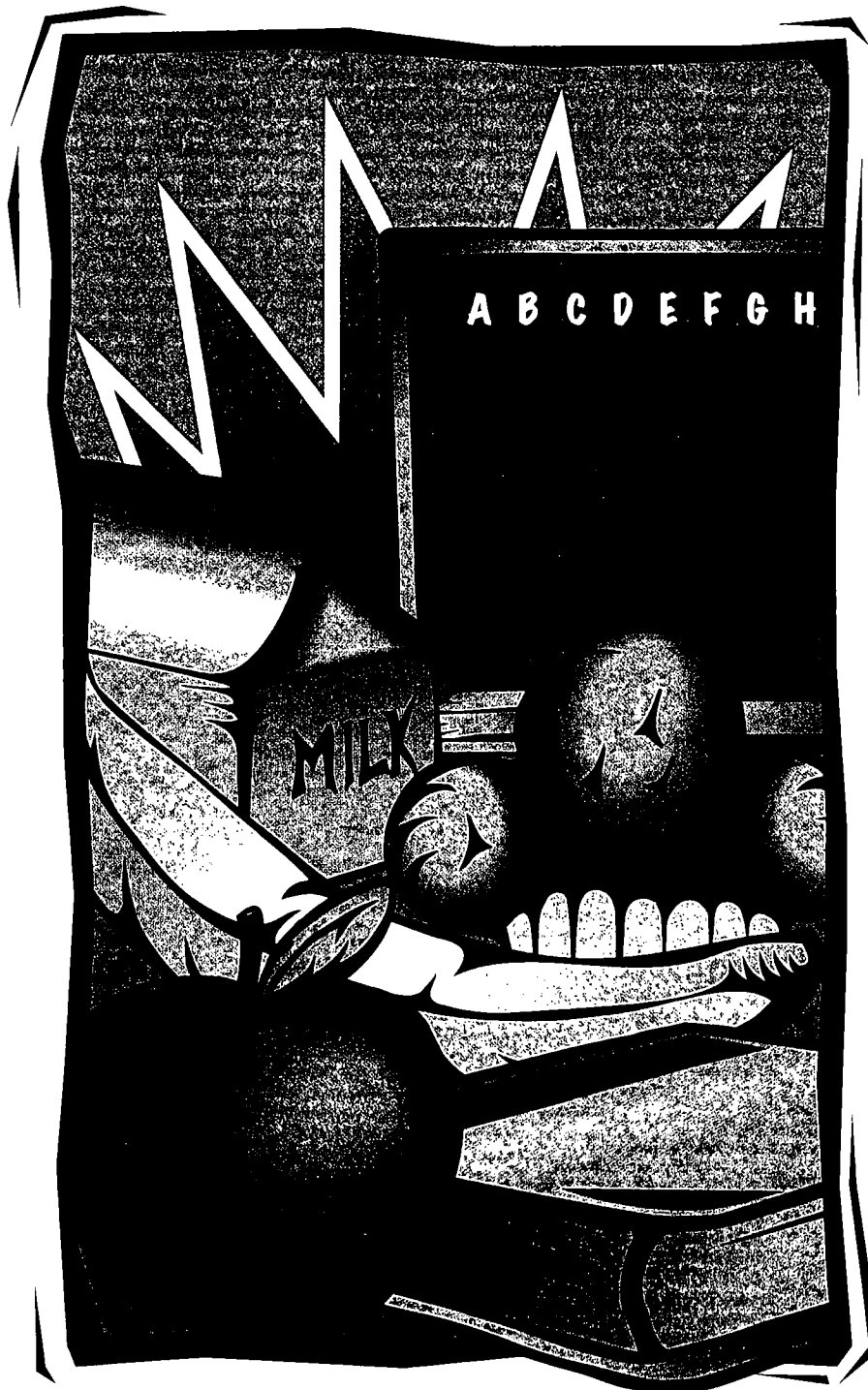
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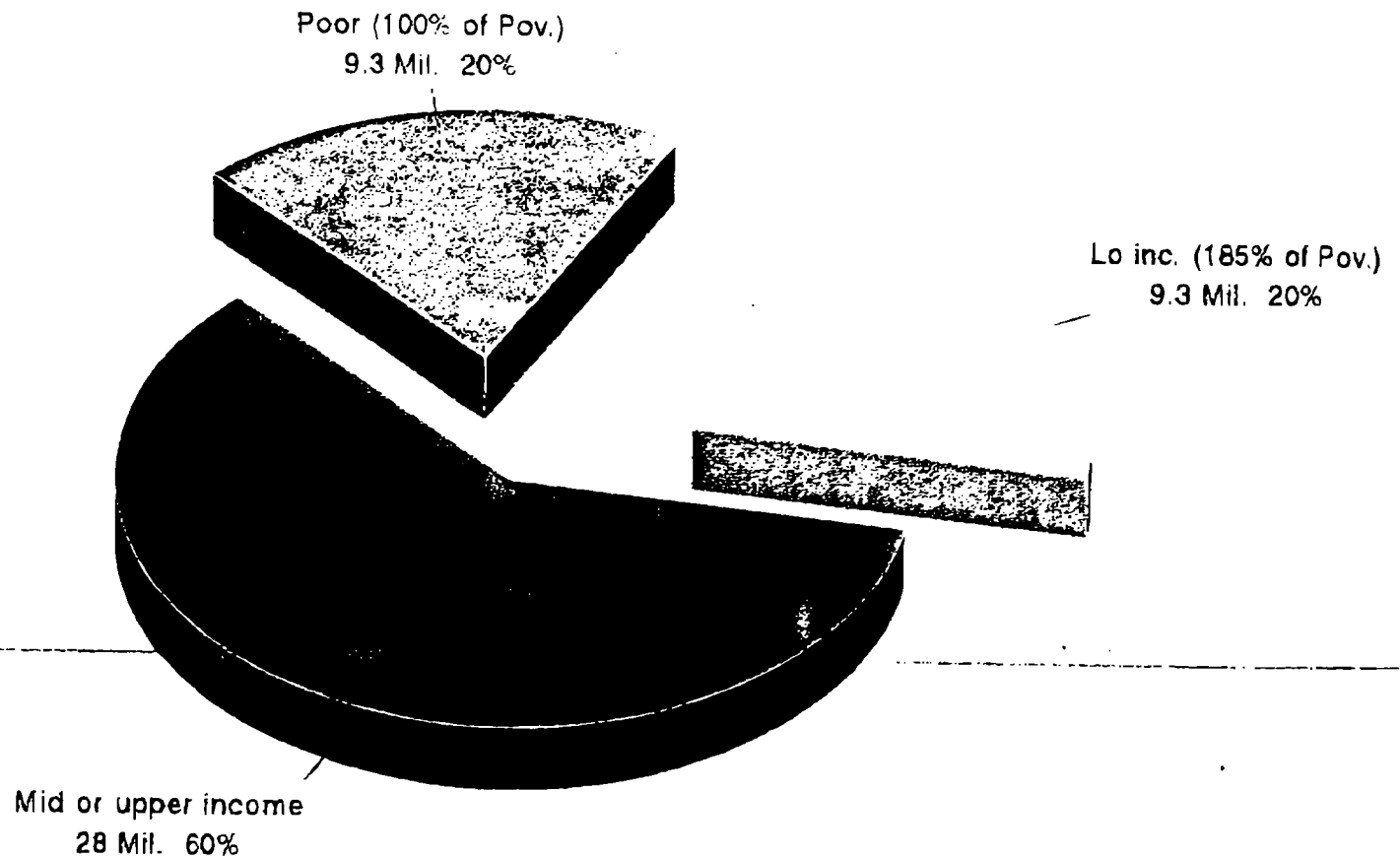
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School Breakfast Programs Energizing the Classroom



A Summary of the
First and Second Year
Study of the Universal
School Breakfast Pilot
Program in Minnesota
Elementary Schools

Income Distribution: U.S. Children 1995



Community Childhood Hunger Identification Project (CCHIP)

Of 48 million U.S. children under the age of twelve:

4.0 million are Hungry	8%
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9.6 million are At Risk for Hunger	21%
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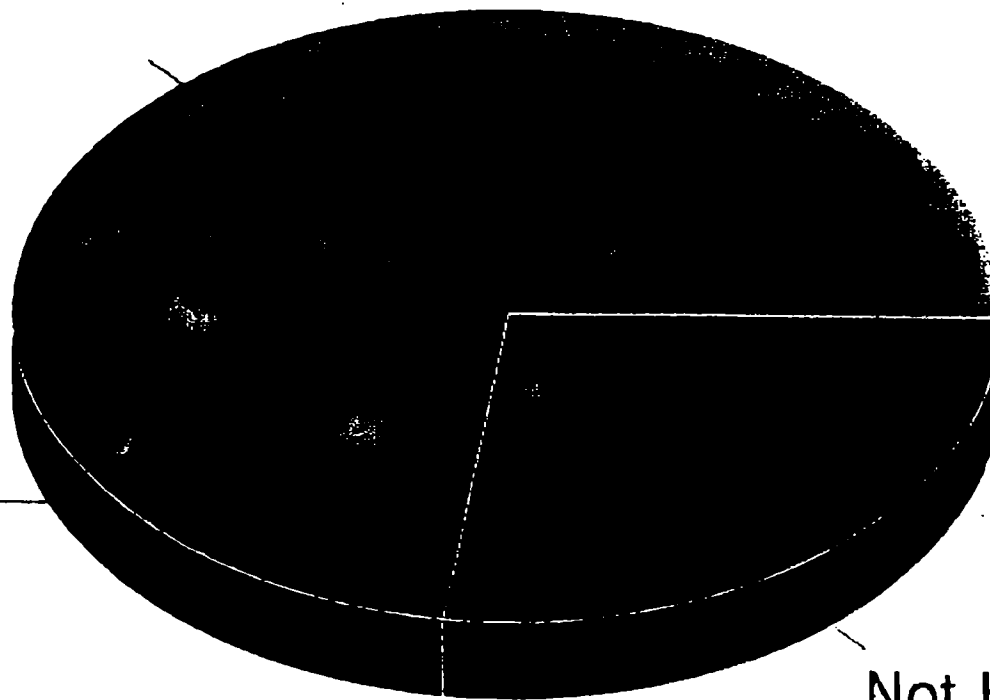
13.6 million are Hungry or At Risk	29%
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Summary of Major Findings 1992-94

10 U.S. States and District of Columbia; 200,000 households

Poor Children and Hunger

Hungry or At Risk
73%

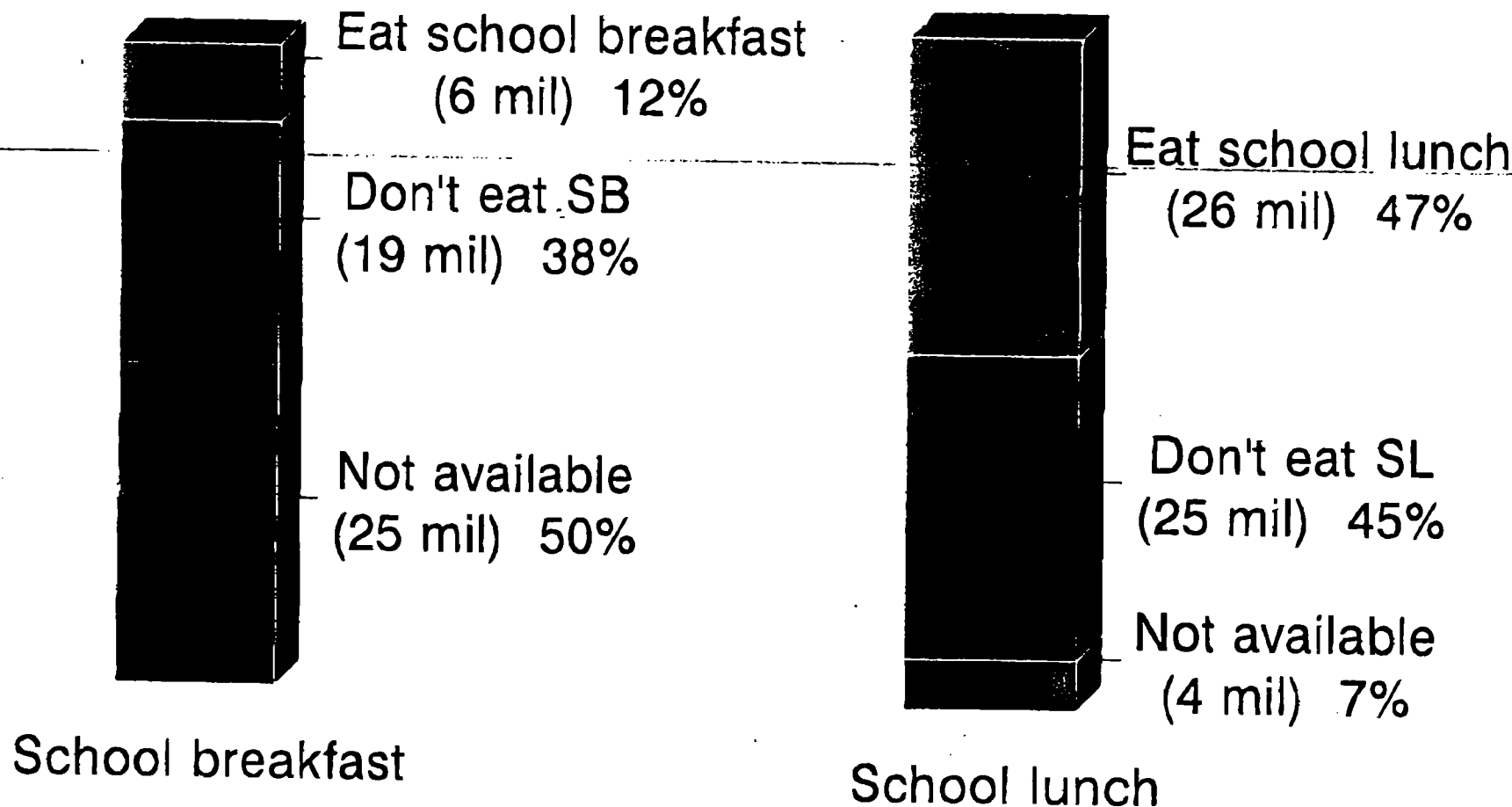


Not Hungry
27%

CCF P 1996

28

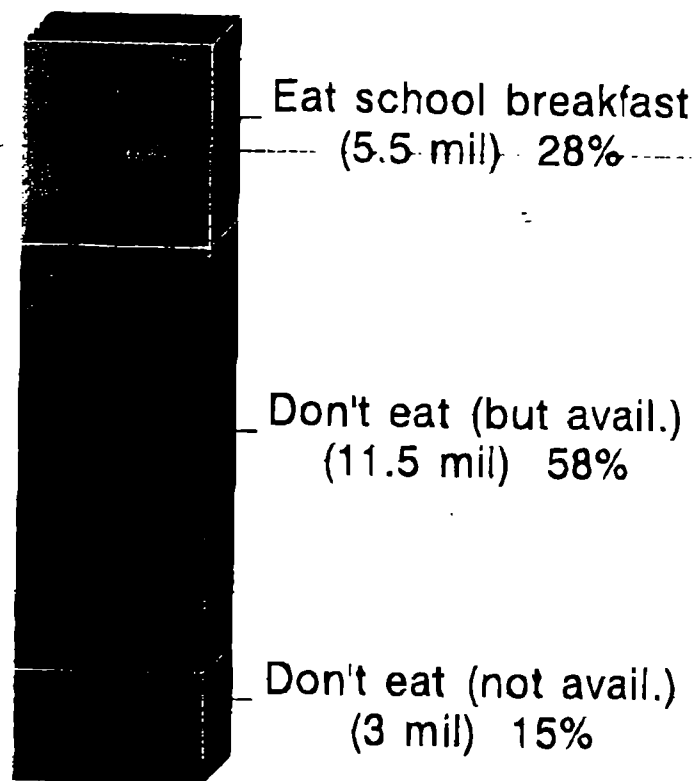
Control Feeding



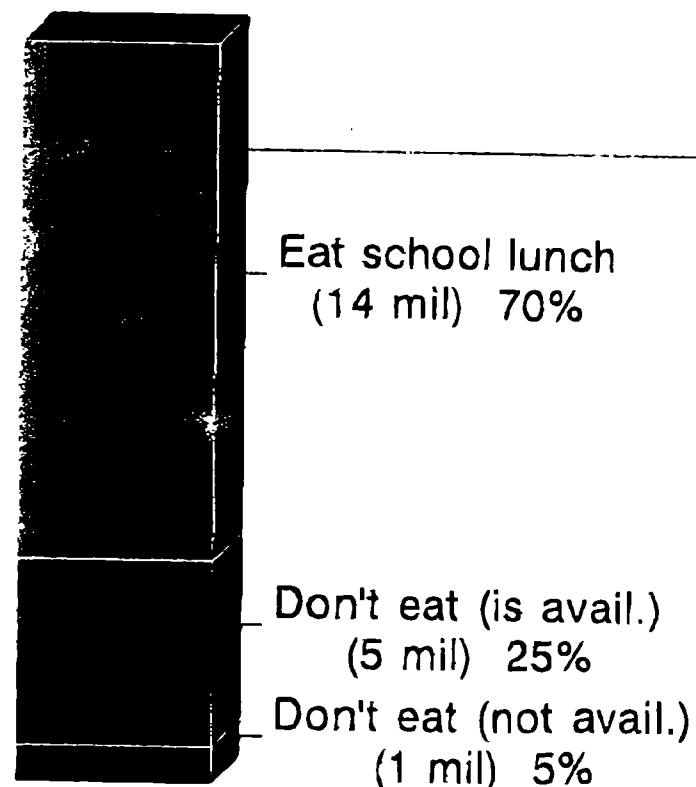
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Poor/Low Income Children



School breakfast



School lunch

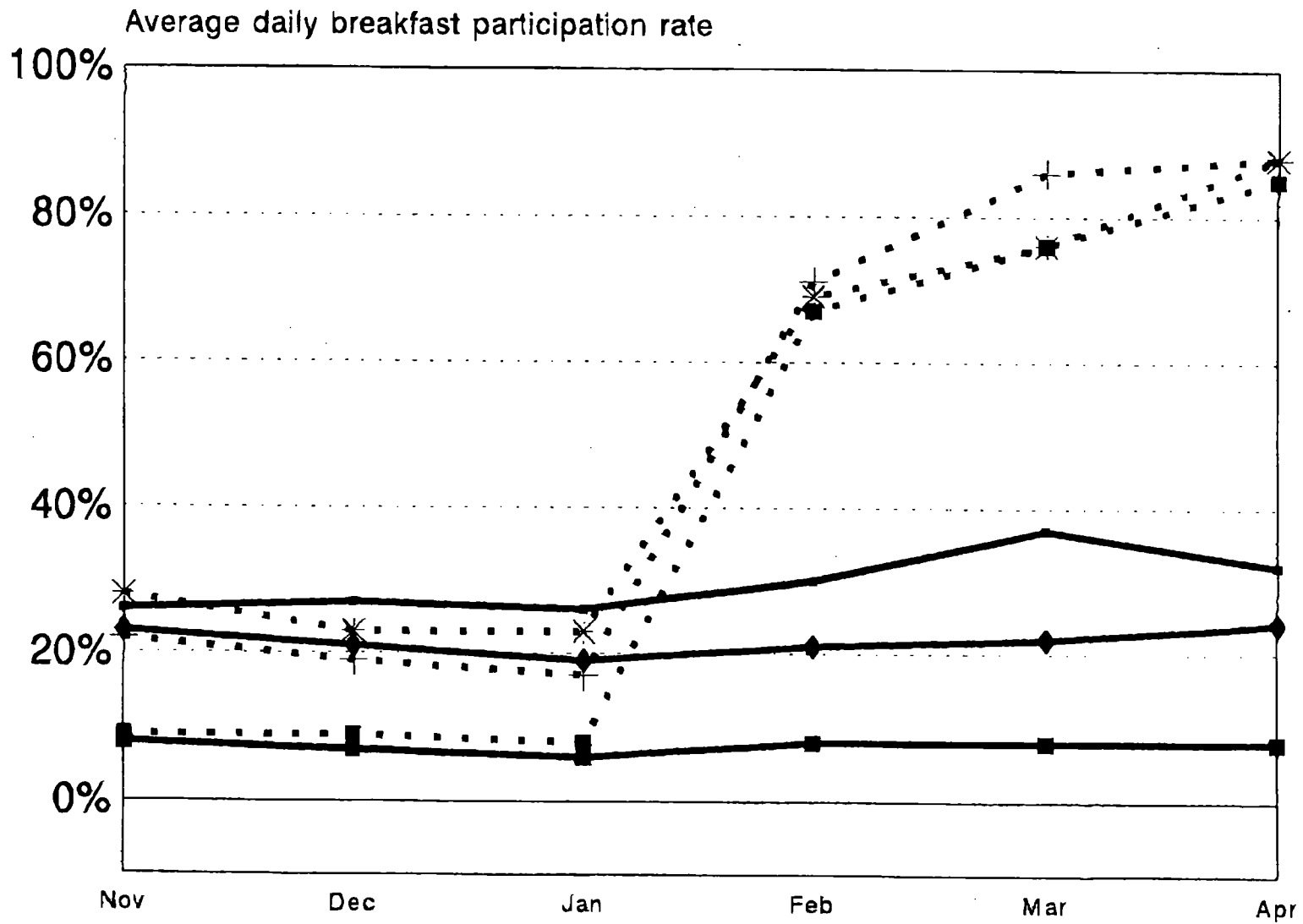
Based on national data provided by the Food Research and Action Council for 1995

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11

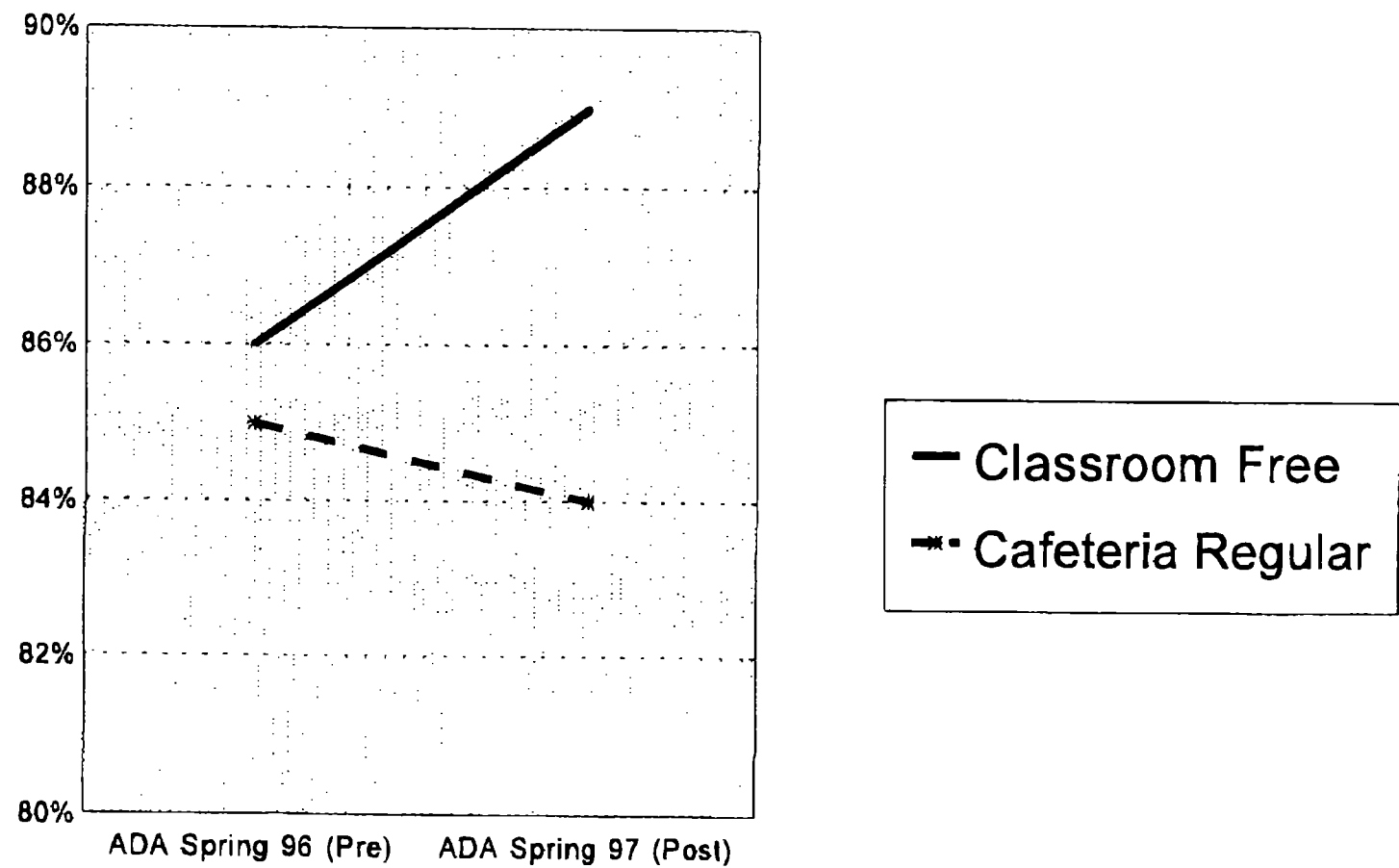
Classroom Feeding Boosts Participation in Three Baltimore Schools

Dramatic increases in school breakfast participation due to classroom feeding
vs. no change in three similar schools with cafeteria breakfast



Free Classroom Breakfast is Associated with Increases in School Attendance

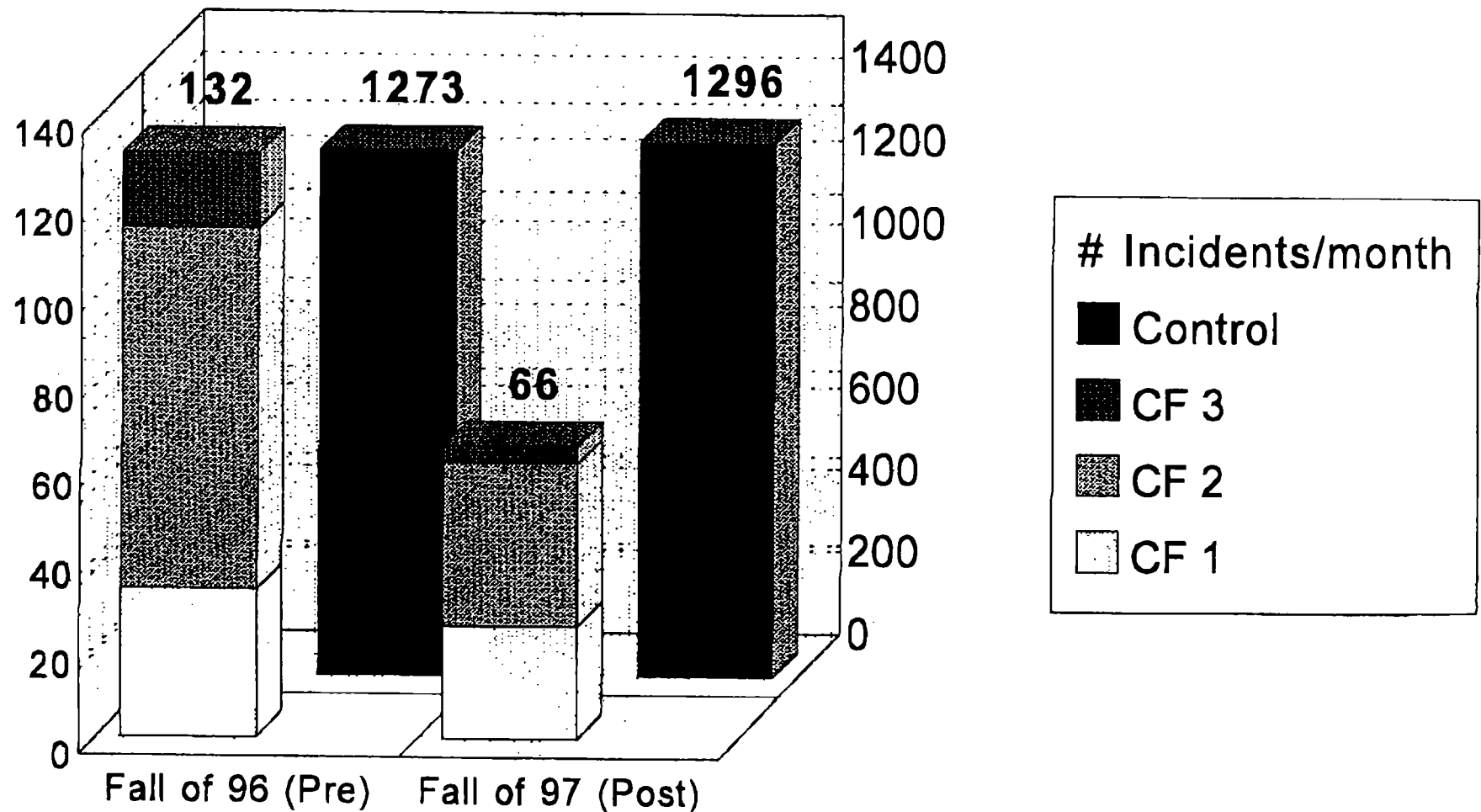
Rate of attendance increases when classroom feeding begins; declines in cafeteria breakfast schools



Classroom Free	86%	89%
Cafeteria Regular	85%	84%

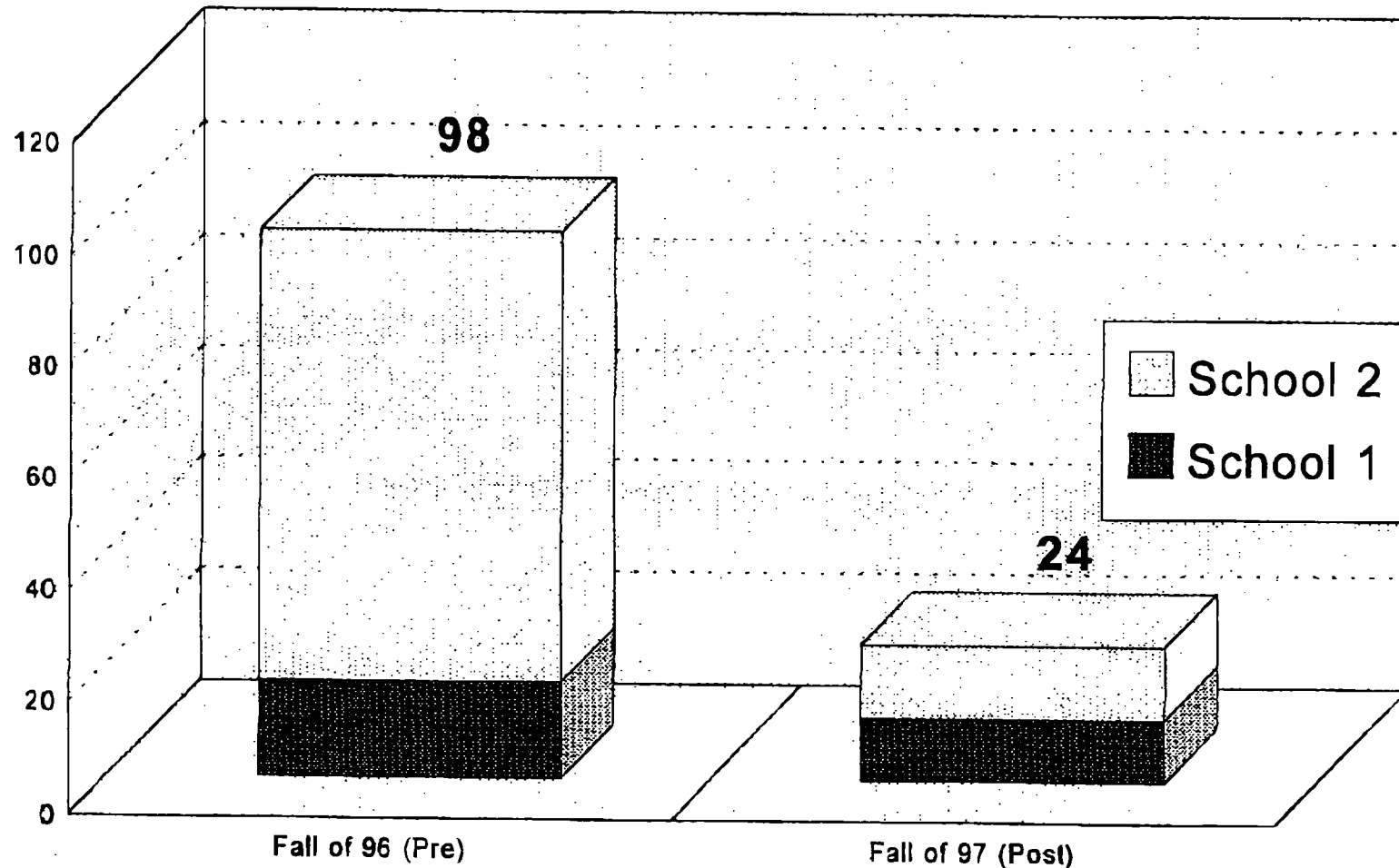
Average Daily Attendance for Spring of 1996 vs Spring of 1997; Nine Baltimore Public Schools involving 5400 elementary and middle school students; 3 schools for each of 3 conditions

Disciplinary Incidents Cut in Half in Classroom Feeding Schools; Stay the Same in Cafeteria Feeding Control School



Averages for Fall of 1996 vs Fall of 1997; three classroom feeding schools (CF 1-3) and one control school involving 3000 Baltimore elementary and secondary school students. Based on official school records supplied by principals.

Tardiness Plummetes After Classroom Feeding Begins in Two Baltimore Schools



Average monthly tardiness for Fall of 1996 vs Fall of 1997;
Involving 1000+ elementary school students

The Harvard/Kellogg Hunger/Breakfast Project

Planned Studies: Spring 1998 Baltimore

Questions:

- Can the Baltimore Public Schools implement classroom feeding in ten to forty new elementary schools in February of 1998?
- Can school breakfast participation rates again be tripled?
- Do the schools which begin classroom feeding show significant improvements in attendance, punctuality, and discipline?

The Baltimore Breakfast Challenge

Planned Studies: Spring 1998 Baltimore

Questions:

- Do teachers, parents, students really like the program?
- Can the city of Baltimore find ways to cover the increased costs of \$2000-5000 per year per school?
- Will the National School Breakfast Program be able to help with the planning or costs of the program?

Pirates sign pitcher Loaiza — Story on C1

WEATHER

It will remain warm today with a shower possible and a high of 62. Tonight will be cloudy with showers and a low of 53. See page 14.

PITTSBURGH Tribune-Review

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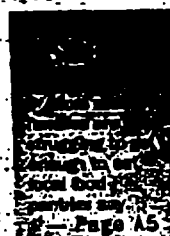
Study: Hungry kids have more social woes

Researchers find undernourished children more likely to fight, steal

By Lila Wilson
Pittsburgh

Hungry children are at least seven times more likely to have serious behavioral problems than youngsters who are equally poor but not hungry, researchers studying Pittsburgh households said Monday.

They are four times more likely to get mental health counseling, seven times more likely to get into frequent fights and 13 times more



Page A5

Likely to
steal.

"It's absolutely stunning," said Dr. Ronald Kleinman, associate professor of pediatrics at Harvard Medical

School and the study's lead author. The results are published in

today's issue of the medical journal *Pediatrics*.

Although he acknowledged the study could not prove cause-and-effect, Kleinman and his colleagues — who included Kenneth Regal of Just Harvest, a Homestead-based anti-hunger group — said hunger put an additional strain on children already suffering from other burdens of poverty.

"What this does is strengthen the case that hunger is a real problem in our community and that it doesn't exist independently of other

problems," Regal said yesterday. "Kids who are hungry are at risk for all kinds of different problems."

The study was based on lengthy interviews with 720 randomly selected low-income families in Pittsburgh and its immediate suburbs.

The research team chose Pittsburgh based on the city's earlier participation in the Community Childhood Hunger Identification Project, a national study of 38 cities, and the willingness of Just Harvest.

PLEASE SEE HUNGRY/A5

Clinton

MONUMENTAL MOONLIGHT

Longtime top

PHOTO BY JEFFREY M. HARRIS

Food requests on the rise at area pantries

Food banks working together, creating longer hours

By Sam Spector
Times Staff Writer

"Unemployment is low, fewer people are out of work, and the national economy is strong."

But there and there area families struggled during the last year to find enough to eat, according to food pantries in and around Pittsburgh.

"A lot of it is due to the welfare reform. Even the ones that are covered to get jobs, they get paid very little money. Some of them are holding down two jobs," said Mary Hightower, director of Northside Community Services Food Pantry.

The pantry has seen a 10 percent increase in requests over the past year, according to Hightower. "It's just not enough for the food and everything to carry them through the month, especially if they have children," Hightower said.

The situation in the Pittsburgh area pantries is a national trend.

A temporary food bank rate on a shortage of 14 percent in 20 cities that participated in a U.S. Department of Agriculture survey released last month. Pittsburgh was not included in the survey.

Some blame welfare reform for the high food stamp and other benefits and place work requirements on recipients, despite unemployment rates that are at their peak.

"People don't talk about the

wages," said Joyce Rothman, executive director of the Greater Pittsburgh Community Food Bank. "To those that have moved from welfare to the workplace without a lot of skills, experience and training — what's available to them is not so great."

The result is that more working parents and their children are taking advantage of soup kitchens and pantries, joining the traditional clientele of people on government assistance and the homeless.

"This blew my mind. Women are picking up their children after school and bringing them to a shelter for dinner," Rothman said.

Along with work may mean higher transportation and child care expenses that eat up already meager wages. said Mary Hightower, director of the East End Community Ministry food pantry in East Liberty. "When it comes to how you use your money, it changes," Hightower said.

Working families as well as the elderly and legal immigrants who have been restricted from food stamp programs, have helped double the demand at Pittsburgh's Kitchen Community Services in Homestead, said Assistant Director Nancy Scott.

The pantry serves about 100 people, and about 50 are in particular need of a breakfast program, she said.

A number of food banks have

been working together in better ways and are now on a schedule from the bottom through. There are 20 pantries have been extended to weekends and evenings, to serve those with families jobs.

Another way to decrease the load on pantries is to get the word out that food stamps are available to many, said Ann Henson, executive director of the Hunger Services Network, based in Lawrenceville, Ga.

The network reported 10 percent more people seeking food stamps in 1997 than in 1996.

Yet, food stamp rules are reportedly slowing down the process. In Allegheny County, the number of people on food stamps in June was 108,000 compared to 121,700 the year before, according to Joan Harwood, a Center for Action Against Hunger. That's a 10 percent drop.

Still, there are many people in Pittsburgh unaware they qualify, Henson said.

And Nancy Scott at Rainbow Kitchen said things could improve once people have them to adjust. "I think people are still in a state of shock about the welfare thing," Scott said. "Hopefully we'll see things starting up a little bit."

"A lot of them just don't know what they can get on their own again."

Deputy district

DEPUTY FROM/AS

Conrad's former boss, newly sworn in as a Common Pleas judge, had little to say.

"Mr. Buppala's entitled to run his office as he sees fit. It's no longer of concern to me," said Colville, who was reached last night in New College, where he is attending a judges' school.

Buppala was not available for comment yesterday, and the door to his law office was locked by his attorney.

"It's unfortunate that it happened. But I have to assume that something happened there, and that they (Buppala and Conrad) could not go on as a professional team," said Barry Simpson, president of the Allegheny County Bar Association.

Conrad, who prosecuted more than 100 criminal homicide cases, including some high profile, death penalty cases, said his law office concern was how to tell his two sons that he was fired.

"I'm ready to talk tomorrow," said Conrad, as he filed papers yesterday with personal materials that he later carried from the building.

It was a particularly cruel blow Conrad wheeled a body containing the bones from the fourth floor of the courthouse onto a elevator and then to the courtyard, where he loaded them into his truck.

"There was somebody there to help him. He was all by himself," said a courthouse employee, who covered up conspiracy because of "too much static around here."

"They dropped him (Conrad) through the good part of his life. It's a shame. He's a nice guy," he said.

Employees of the district attorney's office were number and equally reluctant to be quoted. Many had spent the day like players at foot-

ball (right) to report a change in the who's who of the district attorney's office.

While a change in the who's who of the district attorney's office was expected, the change in the who's who of the district attorney's office was not expected.

Conrad was a member of the district attorney's office for many years.

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Hungry children have more social problems, researchers find

Summary FROM/AS

Research in progress on the connection between hunger and social problems.

Families were designated hungry if they responded positively to at least five out of eight questions indicating inadequate household food or the need for food.

The original definition of hungry was based on the fact that children in Allegheny County were hungry, results that last January published in 1994.

For the new study, parents were asked to answer 167 questions about their children's academic and mental health history and behavior.

In low-income households with children aged 5 to 12, 10 percent of the children who received sufficient food were identified as "behaviorally dysfunctional" by the Pediatric Symptom Checklist, a standard scoring device.

The dysfunctional classification applied to children who scored at least 10 on a scale of 0 to 100, with 10 being the lowest score.

On that scale, 21 percent of the hungry children were judged as "behaviorally dysfunctional," a level that indicates a need for further attention.

Similarly, 3 percent of the non-hungry children had behavior problems, compared to 11 percent of the hungry children.

But the children's behavior problems were not necessarily connected to hunger. While fewer than 1 percent of the adequately nourished children were identified as having social problems, 11 percent of the hungry children were.

Because poverty has long been associated with health, dental, and nutritional problems, researchers have been unable to isolate one factor — such as hunger — and prove its causal relationship to another, such as increased tendency to fight or steal.

The study's authors concluded that the research in developing countries that has shown chronic childhood undernutrition — a degree of malnutrition more drastic than is widespread in the U.S. — leading to anxiety and aggression.

The connection between hunger and aggression in children is hardly far-fetched, they suggest, and may become more serious trouble when the children grow older.

"Problems such as fighting, stealing, and anxiety are very common in hungry, low-income, school-age children in our sample, so it's not surprising they have more social problems than the non-hungry children."

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Clinton pledges balanced budget 3 years early

CLINTON FROM/AS

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HEALTH & SCIENCE

Hunger linked to behavioral problems in childhood, study says

Hungry children found more likely to be aggressive

By Anita Srikameswaran
Post-Gazette Staff Writer

Evidence that going hungry is associated with emotional and behavioral problems in childhood has provided some food for thought for artists and doctors.

According to researchers in

Pittsburgh and Boston, low-income children who were hungry were more likely to be aggressive, irritable and anxious than those who weren't hungry.

"This tells us the hunger problem facing children in our community is severe and deep," said Ken Regal, co-director of the activist organization Just Harvest. "It's a problem that has consequences for our kids' futures and for the whole community."

He warned that the research does not indicate that hunger is the

cause of poor behavior, but that the two are somehow related.

Regal was part of the study team led by Dr. Ronald Kliegman of Massachusetts General Hospital. Results were reported today in the journal *Pediatrics*.

More than 300 parents and children from Pittsburgh and Allegheny County were asked, among other things, whether the household had run out of money for food or if the children had gone to bed hungry over the previous 12 months. Participants' annual family incomes were

at or below 185 percent of the poverty level in 1994, or \$21,467 for a family of four.

Nearly half of the group was identified as "at risk for hunger" and about one of every six children was classified as hungry.

Parents also were asked about their children's psycho-social problems. Overall, hungry children were seven times more likely than the nonhungry to have significant emotional or behavioral difficulties.

Researchers found that 21 percent of hungry children fought of-

ten, compared with 3 percent of nonhungry children. Twelve percent of hungry children had taken something that didn't belong to them, vs. less than 1 percent of nonhungry children, Regal said.

More hungry children also had been enrolled in special education classes or had used mental health services. About twice as many hungry children had to repeat a grade in school.

The families were surveyed as part of the 1994 Community Childhood Hunger Identification Project,

a national survey that showed 4 million American children were hungry and 9.6 million were at risk.

"There needs to be a much stronger public policy response by all levels of government to the problems of childhood hunger," Regal said. "And there needs to be a heightened alertness in this within the medical community."

"We need medical practitioners who see children with these behavioral problems to think that maybe part of what this family needs is food."

Dreams test whether brain has enough sleep

By Nicholas Wade
The New York Times

New measurements taken from sleeping people explain, at least in part, why dreams tend to have such bizarre but vivid story lines.

The findings deal a blow to the Freudian interpretation of dreams but leave open the possibility that some useful personal meaning can be extracted from them. The main purpose of dreams, however, the authors of the new study believe, is to test whether the brain has had enough sleep and, if so, to wake it up.

ering idea," Hobson said.

The new measurements were made by a team led by Dr. Allen R. Braun of the National Institutes of Health and Dr. Thomas J. Saito of the Walter Reed Army Institute of Research and are reported in the current issue of *Science*.

They applied the technique known as PET, or positron emission tomography, in a PET scan, an imaging technique that uses a radioactive glucose tracer to measure blood flow in the brain. Since visualizing changes in blood flow in the brain, PET actively firing nerve cells need more blood. PET scans show the working regions of the brain lighting up, while passive areas remain dark.

reaches the cortex. The sleeping brain is thus cut off from its usual stream of information from the outside world.

Writing as dreamers are in the dreamer, however, Braun and Saito believe that the principal purpose of the activity seen during REM sleep is to test whether the working centers of the brain have completed whatever the restorative process is that presumably takes place during sleep. This testing process occurs several times during the night. When the restoration is judged to be complete, the brain is made to wake up.

"Dreams are probably not necessary, they are

Picture A New You!
WEIGHT LOSS
Bariatrics

3 Years of Caring
North Hills
Squirrel Hill
Mt. Lebanon
Moon Township
Lower Merion
McArdle
Greensburg

WINTER
HEADANCE

1

The Relationship Between Hunger and Psychosocial Functioning in Low Income American Children

J. Michael Murphy, Ed.D, Cheryl A. Wehler, M.S., Maria E. Pagano, Ed.M., Michelle Little, B.A.,
Ronald E. Kleinman, M.D., and Michael S. Jellinek, M.D.

Dr. Murphy, Dr. Jellinek, Ms. Pagano, and Ms. Little are from the Child Psychiatry Service, Massachusetts General Hospital, 725 ACC, 15 Parkman Street, Boston, MA 02114. Drs. Murphy and Jellinek are also from the Department of Psychiatry, Harvard Medical School, 25 Shattuck Street, Boston, MA 02115. Ms. Wehler is from the Community Childhood Hunger Identification Project, C.A.W. and Associates, 10 Wilmont Road, Framingham, MA 01701. Dr. Kleinman is from the Division of Pediatric Gastroenterology and Nutrition, Massachusetts General Hospital and the Department of Pediatrics, Harvard Medical School, 55 Fruit Street, VBK 107, Boston, MA 02114.

Preparation of this manuscript was supported by the Mid Atlantic Milk Marketing Association and the Kellogg Corporation.

Reprint requests to Dr. J. Michael Murphy, Massachusetts General Hospital, Child Psychiatric Service, 15 Parkman Street, ACC 725, Boston, MA 02144.

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ABSTRACT

Objective: Using large-scale surveys from eleven states, the Community Childhood Hunger Identification Project (CCHIP) estimates that eight percent of American children under the age of twelve experience hunger each year. CCHIP operationalizes child hunger as multiple experiences of parent-reported food insufficiency due to constrained resources. The current study examined the relationship between food insufficiency and school-aged, low income children's psychosocial functioning. The study also assessed the inter-informant (parent vs child) reliability and time to time reliability of the CCHIP measure. Method: Two hundred four school-aged children and their parents from four inner-city public schools were interviewed using parent, teacher, and clinician report measures of psychosocial functioning. Ninety-six children and their parents were reinterviewed four months later. Results: Hungry and at-risk for hunger children were twice as likely as not hungry children to be classified as having impaired functioning by parent and child report. Teachers reported higher levels of hyperactivity, absenteeism, and tardiness among hungry/at risk children than not hungry children. Parent and child reports of hunger were significantly related to each other and time to time reliability of the CCHIP measure was acceptable. Conclusions: Results of this study suggest that intermittent experiences of food insufficiency and hunger as measured by CCHIP are associated with poor behavioral and academic functioning in low income children. The current study also supports the validity and reliability of the CCHIP measure for measuring hunger in children.

Key Words: Hunger, Low income children, School Breakfast, Psychosocial Functioning

' Are food insufficiency and hunger a real problem for poor children in the United States, as some child advocates have claimed? Or, as skeptics have argued, are the experiences of food deprivation and poor quality nutrition that children from low income families sometimes experience merely mild exacerbators of other and far more devastating problems like violence, drug addiction, and family breakdown? For the past decade, an academic and political debate over these questions has taken place in the fields of public health and public policy. Recent efforts to diminish or eliminate the National School Breakfast and Lunch programs, as well as other programs that provide food for low income children, have highlighted the issue of hunger for growing children and the potential relevance for clinicians who work with low income children and their families.

The concepts of "food insufficiency" (Wehler, et al., 1992) or "food insecurity" (Radimer, et al., 1992) as a proxy for hunger increased our understanding of the epidemiology of hunger among children in the U.S. The most widely used measure of this sort was developed by the Community Childhood Hunger Identification Project (CCHIP) which conducted a series of studies using large, rigorously selected samples in twenty-one communities across the U.S. (Wehler et al., 1991; 1996a). CCHIP categorizes families and children as "hungry", "at risk for hunger", or "not hungry" on the basis of parent answers to eight standardized questions about child and family experiences of food insufficiency due to constrained resources.

The most recent summary of CCHIP's findings, based on the data from eleven states from across the U.S., reports that 8% of the children under the age of twelve experience hunger and that an additional twenty-one percent are at risk for hunger (Wehler, et al., 1996a). According to CCHIP, hunger is most prevalent in children from the lowest income families (e.g. Aid to Families with Dependent Children recipients). In such samples, as many as 21% of children are found to be hungry and an additional 50% are classified as at risk for

hunger on the CCHIP measure, suggesting that more than two-thirds of all of the poor children in this country have had at least one experience of food insufficiency/hunger in the past year.

Studies from non-industrialized countries have shown that severe undernutrition is associated with increased anxiety, attention deficits, school absence, and tardiness in school-aged children (Barrett et al, 1982; Mora, 1979) and lower levels of social responsiveness in young children (Chavez and Martinez, 1979; Graves, 1976, 1978). Aggression has also been linked to undernutrition in both human and animal studies, although the human evidence has been largely anecdotal and/or poorly controlled (Gray, 1986; Halas, et al., 1975). The only data currently available on the impact of intermittent episodes of food insufficiency and hunger comes from the CCHIP surveys (Wehler et al, 1991; 1996a) which have consistently shown that children who are classified as hungry are more likely to have mood and attention problems and more likely to be absent from school than poor children who are classified as not hungry. One limitation of these data has been that the information on child functioning, like the CCHIP measure itself, is based solely on parental report.

The fact that CCHIP data on the prevalence of food insufficiency and hunger is based on parent report raises several issues. First, a parent report of multiple family experiences of food insufficiency does not necessarily mean that each child in the family has had the same experience. And even if the child has experienced food insufficiency, it does not follow that he/she has suffered from a clinically significant state of undernutrition. For now however, short of inducing hunger in children in a laboratory setting to develop physiological measures, CCHIP appears to provide an acceptable way of estimating the prevalence of hunger and its relationship to other factors. One indicator of CCHIP's acceptability has been its wide use in

the public policy arena and the adoption of its questions by a number of large scale governmental surveys like the National Health and Nutrition Examination Survey (NHANES) and by federal agencies like the United States Department of Agriculture (USDA; Wehler, et al, 1991, 1996a) and the U.S. Census Bureau (Bickel, et al., 1996).

The current study examined the relationship between child hunger as measured by parent reports on CCHIP and psychosocial problems assessed using standardized measures and multiple informants and academic functioning using school records of attendance and tardiness. Secondary goals of this study were to determine if parental reports of food insufficiency were confirmed by a second informant and whether the CCHIP measure was stable over time. Toward these ends we examined the extent of agreement between parent and child answers to CCHIP questions and between parents' answers to the CCHIP questions at two different administrations four months apart.

METHODS

Study Population and Sampling

Data for the current analyses came from a collaborative study of a free breakfast program in the Philadelphia and Baltimore Public Schools. Students and their parents in four schools (two in Philadelphia and two in Baltimore) were assessed on a battery of psychosocial, academic, and food sufficiency/hunger measures before the start of a free breakfast program in the schools. Teachers of all the students in the study were asked to complete a standardized behavior problem questionnaire before and after the free breakfast program began. The free breakfast program was made possible by Provision 2 of the USDA school meal guidelines which permits free meals for all children in a given school under

certain conditions in low income areas. In Philadelphia, more than 150 other schools had already implemented Universal Feeding while in Baltimore only three other schools had tried the program at the time of this study.

In all four schools, the regular school breakfast was made available for free for all students at the beginning of the second semester. For the current study, students and their parents were interviewed in late January or early February prior to the start of Universal Feeding and then again in late May-early June after the program was implemented. In all four schools, children in grades three and higher were invited to participate in the study although all children were eligible for a free breakfast. Two schools were Kindergarten through 6th grade, the third was Kindergarten through 8th grade, and the fourth was 5th through 8th grade.

In Philadelphia, the parents of all 126 students in the 4th through 5th grades of an elementary school and 186 fifth and eighth grade students in 4 classrooms of a middle school were invited to participate in the study through letters that were sent home with students. After an additional invitation letter and follow-up phone calls, 125 of the 312 parents (40%) agreed to participate. When interviews were scheduled, 31 of the initially agreeing parents could not be scheduled, resulting in 94 complete parent/child interviews (75% of the agreeing sample and 30% of the total sample). In the two selected schools in Baltimore, the parents of all 367 students in the 3-8th grades were asked to participate in the study through invitation letters that were sent home with students. After an additional invitation letter and follow-up phone calls, 41% (149/367) of the parents agreed to participate. When interviews were scheduled, 39 of the parents who initially agreed to participate could not be scheduled, leaving a sample of 110 children from the two Baltimore schools (74% of the agreeing sample and

30% of the total sample). Data on the 110 children from Baltimore and the 94 children from Philadelphia were combined, resulting in a sample of 204 children.

To save time and expense, the study design called for only half of the initial sample of 204 children to be reinterviewed at the end of the school year in late May, four months after the initial interviews. The parents of 106 children who had participated in the initial school breakfast interview were sent invitation letters for another interview. Students were randomly selected within three groups based on their pre Universal Feeding school breakfast participation (rarely, sometimes, often) in order to yield a reinterview sample that had the same proportion of participants from the three breakfast groups at the time of the initial interviews (50% ate breakfast rarely, 25% sometimes, 15% often). After follow-up phone calls, 101 (96%) agreed to participate. When interviews were set up, 5 of the initially agreeing parents could not be scheduled, leaving a reinterview sample of 96 parents and children (91% of the agreeing sample and 95% of the parents who were recontacted).

The parent and child were interviewed separately, one by a masters level research assistant and the other by a lay interviewer from the community. Lay interviewers were part or full time employees of the school and had associates or bachelors' degrees. They were trained in the administration of the simple measures prior to the start of the interviews and their work was checked by the research assistant. All clinical coding was done by one of the authors. Parents and children were asked questions about food security and children's psychosocial, behavioral, and academic functioning, other questions about food and eating, and questions about the family's functioning and background. CCHIP hunger questions were asked at the end of the interviews after the other measures had been administered and interviewers were blind to the family's CCHIP hunger status. The study was approved by the

Human Studies Subcommittee at the Massachusetts General Hospital and by the research committees of the Philadelphia and Baltimore Public Schools. Participation of parents, children, and teachers was voluntary and access to school records was made possible through a separate consent signed by parents.

MEASURES

Background Data

For the current study, the children's grade level, ethnicity, gender, and parental marital status were assessed from questions in the parent interview.

CCHIP Hunger Scale

The eight item CCHIP hunger measure assesses experiences of food insufficiency in households in order to classify them as "hungry", "at-risk for hunger" or "not hungry" (Table 1). Principal component factor analyses have shown the content validity of the CCHIP measure to be excellent (Wehler, et al., 1996b). Since there have been no published data on CCHIP's validity and time to time reliability, the current study addressed these issues.

Four of the eight questions on the CCHIP scale concern the children in the household, two concern hunger in adult members of the household, and two concern household food insufficiency. Children are classified as "hungry" if the parent responds positively to five or more of the eight questions concerning hunger in the past year. With a score of five, the parent must have responded positively to at least one question concerning the child's hunger, thus providing face validity that CCHIP is a measure of child hunger. Children are classified as at-risk for hunger if the parent responds positively to one or as many as four of the eight

food insufficiency questions. If the parent does not respond positively to any of the eight food insufficiency questions, the household and child is classified as not-hungry.

Child Hunger Status

The eight item CCHIP scale was administered to parents at the time of the initial interviews and again after four months in the reinterview phase of the study to assess the time to time reliability of CCHIP questions. The full set of eight CCHIP questions was not administered to children because the investigators believed that the children would not have knowledge of three of the (parent/household hunger) questions. Instead, we asked children the five CCHIP questions that we thought that children as well as parents would have knowledge of, and then assessed the inter-informant agreement (convergent validity) of this modified CCHIP measure.

Solely for the purpose of this assessment, we created a five item scale, the Child Hunger Index-Parent (or Child) report (CHI-P/CHI-C; see Table 1). For parents and children, a total CHI-P or CHI-C score was computed by summing the yes answers to the five CCHIP questions. In an effort to match the relative distribution of hunger categories on the new measure with the distribution of categories on the standardized eight item CCHIP measure, children who (or whose parents) responded positively to two or more of the above questions were classified as "hungry". When the child or parent responded positively to one of the questions, the child was classified as at-risk for hunger on the CHI-P/CHI-C. Those who did not respond positively to any of the items were classified as not hungry. The degree of agreement between parent and child reports of the child's hunger (CHI-P vs CHI-C) could then be calculated. The degree of association between the child's report of hunger on the

CHI-C and the parent's report of child hunger on the full 8 item CCHIP measure was also assessed.

For the assessment of time to time reliability, CCHIP hunger category based on parental response to the full 8 item CCHIP survey at Time 1 and again at Time 2 was used.

Parent-report measures

Pediatric Symptom Checklist (PSC)

The Pediatric Symptom Checklist (PSC) is a widely used, brief, parent-completed questionnaire that has been validated as a screening measure to identify children with psychosocial problems (Jellinek et al., 1986; Jellinek and Murphy, 1988; Murphy and Jellinek, 1988; Murphy, et al., 1992, 1996). The PSC consists of 35 items that are rated as "never", "sometimes", or "often" present and scored 0, 1, or 2, respectively. A total score is obtained by adding the scores for each of the items and impairment is defined as a total score of 28 or higher.

Child Behavior Checklist (CBCL)

The Child Behavior Checklist (CBCL) is the most widely used parent-report of children's symptoms and behaviors (Achenbach, 1991). It has been validated in normative samples for children aged 4 to 18 years (Achenbach, 1991). The CBCL consists of 118 items scored on a three point Likert scale. The parent indicates for each symptom whether it is "often", "sometimes", or "never" present. The individual symptoms are given scores of 2, 1, or 0 (often, sometimes, or never present) and a total score is obtained by adding the scores for each of the items. Following standard practices with the CBCL, cutting scores based on the

Total Behavior Problems item set were also used as a criterion of case/non-case rating (Achenbach, 1991).

Teacher-report measure

Conners' Teacher Rating Scale-39 (CTRS-39)

The Conners' Teacher Rating Scale-39 (CTRS-39) is one of the most frequently used teacher-reported symptom checklists. It consists of 39 items which assess hyperactivity and other behavioral problems in school-age children. Teachers check each item as not at all present, just a little present, pretty much present, or very much present, with numerical scoring weights of 0, 1, 2, and 3, respectively.

Although there are seven subscales on the CTRS-39, the most frequently used scale and the one that is recommended for behavior problem change studies is the Hyperactivity Index. The Hyperactivity Index is based on a subset of ten items and has been demonstrated to be a valid and useful assessment tool (Boyle and Jones, 1985; Sandoval, 1981). Total scores on the CTRS-39 Hyperactivity Index have been shown to correlate reliably with the amount of observed motor activity in the classroom among normal school-age children (Kivlahan, et al., 1982) as well as ratings of excessive talking (Minde, 1980). For all CTRS-39 subscales, indeed for all of the psychosocial measures used in the current study except the CGAS, a higher score indicates more symptomatology. The total symptom t-score of the CTRS-39's Hyperactivity Index is the only one reported in the current study because the other subscales were not found to be significantly associated with hunger levels.

Interviewer rated measure

Children's Global Assessment Scale (CGAS)

After the interviews were completed, the researchers reviewed all of the parent and child questionnaire data for each case (excluding the hunger questions) and provided ratings of each child's overall functioning using the Children's Global Assessment Scale (CGAS). Using the cutoff defined by Shaffer and associates, CGAS scores of 70 or below were considered indicative of a clinical range of impairment (Shaffer, et al., 1983). The CGAS has been widely used for more than a decade and the validity and reliability of the measure have been demonstrated (Green et al., 1994).

School Record Measures

Data on each child's tardiness and absence rates were collected from official school records for the fall term prior to the implementation of the free school breakfast program.

RESULTS

Background characteristics and CCHIP Hunger

Of the 204 children in this sample, 82% (168) were from elementary grades (3-5) and 18% (36) were from middle school grades (grade 8). Eighty percent of children (164/204) were from African-American backgrounds. Approximately half of the children were male (47%; 96/204) and from single parent families (47%; 95/204). According to the eight item CCHIP scale, 65% (132/204) of children were classified as not hungry, 27% (56/204) were classified as at-risk for hunger, and 8% of the children (16/204) were classified as hungry.

Children in the three CCHIP hunger groups did not differ significantly from each other with respect to grade, ethnicity, parental marital status, or city. Hunger category scores did

differ significantly by gender, with female children somewhat more likely to be at risk for hunger and somewhat less likely to be classified as hungry or not hungry than male children ($X^2=15.4$, $df=2$, $p<.001$).

Parent-report measures and CCHIP Hunger

As shown in Table 2, CCHIP hunger group was significantly associated with both parent report measures of children's symptoms. Total CBCL score was significantly associated with CCHIP hunger status ($F=34.1$, $df=2$, $p<.0001$) and impairment on the CBCL was also significantly associated with CCHIP hunger categories, with rates that were twice as high in hungry and at risk for hungry children ($X^2=8.5$, $df=2$, $p<.05$). Total PSC score was significantly associated with CCHIP hunger status ($F=22.3$, $df=2$, $p<.001$). Although the PSC impairment rate was nearly 3 times higher for hungry children than for non hungry children, this finding did not reach statistical significance.

Teacher-report measures and CCHIP Hunger

The mean CTRS-39 Hyperactivity Index T score for children classified as hungry was significantly higher than for children who were classified as at-risk for hunger or not hungry ($F=37.5$, $df=2$, $p<.0001$). Although the not hungry children had slightly higher mean CTRS-39 Hyperactivity Index T scores than at risk for hunger children, post hoc analysis (Duncan's multiple-range test) indicated that this difference was not statistically significant, whereas the differences between children classified as hungry vs at risk and hungry vs not hungry were statistically significant.

Interviewer-rated measure and CCHIP Hunger

Interviewer rated CGAS scores were significantly related to parent-reported CCHIP hunger status ($F=4.1$, $df=2$, $p<.01$). The mean total CGAS score was worst for hungry children, followed by at-risk for hunger children, and highest (indicative of the best functioning) for not hungry children. Hungry and at-risk for hunger children were more likely to be cases on the CGAS ($X^2=25.4$, $df=2$, $p<.001$).

School Record Measures and CCHIP Hunger

As Table 2 also shows, hungry and at-risk for hunger children were absent from school significantly more days than not hungry children ($F=4.2$, $df=2$, $p<.05$). Hungry and at-risk for hunger children also had significantly higher rates of tardiness than not hungry children ($F=4.1$, $df=2$, $p<.05$).

Time to Time Reliability of the CCHIP Hunger Scale

Table 3 shows the distribution of CCHIP hunger classifications at Time 1 and Time 2 based on the reports of the 96 parents in the reinterview sample. Comparison of CCHIP hunger status by parent report at initial interview and reinterview showed exact agreement for 73% of the subjects (70/96). Partial agreement was found for 22% of the subjects (21/96) and complete disagreement was found in only five percent of the subjects ($N=5$), which was statistically significant ($X^2=39.4$, $df=4$, $p<.0001$; $K=0.43$). The correlation between CCHIP total score at Time 1 and Time 2 was $r=.56$, indicating a rate of time to time reliability that would be considered acceptable.

Agreement Between Parent and Child Reports of Hunger

Table 4 shows the agreement between the five item Child Hunger Index by parent report (CHI-P) and the five question Child Hunger Interview by child report (CHI-C).

Complete pre-UF CHI-P and CHI-C data were available for 193 of the 204 subjects (95%).

Hunger status by child report was significantly related to parent's report of child hunger ($X^2=71.7$, $df=4$, $p<.0001$). Exact agreement between parent and child report was found for 74% (142/193) of the sample, partial agreement was found for 23% (45/193), and full disagreement was found for 3% (6/193) of the subjects. Statistically, the degree of association ($k=.36$) was in a range that is generally considered to indicate an acceptable level of agreement. As shown in Table 4, 85% (16/19) of the children whose parents reported hunger on the CHI-P measure were hungry (53%) or at-risk for hunger (32%) on the CHI-C ($X^2=78.9$, $df=2$, $p<.0001$). Similarly, of the 14 children who were classified as hungry on the standard 8 item CCHIP measure, 93% (13/14) were classified as hungry (64%) or at risk (29%) by their own report on CHI-C ($X^2=80.9$, $df=4$, $p<.0001$; not shown).

DISCUSSION

In the current study, the parent-reported CCHIP hunger score was significantly associated with psychosocial dysfunction as assessed by standardized measures filled out independently by parents, teachers and clinicians, and with school records of absence and tardiness. These findings provide clear evidence of the association between parental report of food insufficiency due to constrained resources and children's behavioral and academic functioning.

In this study of low income children, as in other samples, about one-third of the

children were found to have significant problems in psychosocial functioning as measured by the CGAS. Children from families coded as hungry on CCHIP were more than twice as likely to be rated as impaired as low income children from the same communities whose parents did not report hunger. Hungry children were also 2 to 3 times more likely to receive scores in the impaired range on the other measures of emotional problems than non hungry children. Behavioral and attention problems by teacher report were more prevalent in hungry than at-risk for hunger or not hungry children. Academic problems were also associated with hunger status; hungry children were absent and tardy twice as many days as not hungry children. Since gender has never been found to be related to hunger in other CCHIP studies and since it was not in our CCHIP study in Pittsburgh involving a larger number of cases, we concluded that the observed gender difference was artifactual.

The face validity of the CCHIP measure was shown by significant agreement between parent and child reports of hunger on the child-focused questions of the CCHIP measure and the time to time reliability of the CCHIP measure was good. Descriptively, the fact that 85% of the children classified as hungry on the basis of parent report on the CHI-P measure and 93% of the children classified as hungry on the basis of the standard CCHIP measure gave answers that led them to be coded as hungry or at risk on the CHI-C -- based on totally independent reports -- provides strong evidence for the inter-informant face validity of the CCHIP coding of child hunger.

A number of limitations of the study must be taken into account in interpreting its findings. Since only about one-third of the parents of eligible students participated in the study, a sampling bias may have occurred and it is possible that poorer families, for example, may have been less likely to participate. The fact that the prevalence rates of hungry and at-

risk for hunger children in the current study are somewhat lower than those reported in previous CCHIP studies with low income families (Wehler, et al., 1996a) suggests that this in fact may have been the case. However, even if low income families or some other group were systematically less likely to participate, the relationship between CCHIP hunger and psychosocial impairment in the current sample would remain and would still be an important finding.

Another limitation is that there was a hunger related feeding intervention between the first and second administrations of the CCHIP parent scale which may have influenced parents' ratings of their childrens' hunger. Since CCHIP assesses child/family food insufficiency over a one year period, it is unlikely that even if children had become markedly less hungry because of the school breakfast program that their parent report CCHIP scores would have changed very much. Even if CCHIP scores had changed by Time Two for this reason the result would have been an artifactually lower level of time to time reliability. Since time to time reliability was found to be acceptable even under these circumstances, it is probable that agreement would only be better under nonintervention (and shorter interval) test-retest conditions. Future studies could assess the stability and sensitivity of CCHIP scores by reinterviewing groups of parents who have lost benefits due to the recent welfare reforms to see if CCHIP scores increased.

These limitations notwithstanding, the results of this study suggest that the CCHIP hunger measure accurately documents the intermittent, subcatastrophic experiences of hunger that are common in some low income families. The current study also shows that these experiences of hunger are associated with increased risk of psychosocial and academic impairment. Because the current study is cross-sectional rather than longitudinal, causality

cannot be inferred and it is possible that hunger itself may not be the only or even the major cause of these children's problems. For example, if hunger is more likely to occur in multi problem families and if these families are also more likely to experience violence, homelessness, or disorganization, then the latter experiences rather than the intermittent experiences of hunger may play a more important role in causing behavioral or academic problems. Whatever the causality, the current study does show that children in families classified as hungry by the CCHIP measure are two to three times more likely to have psychosocial and academic problems than children in low income families classified as not hungry. These children are at exceptionally high risk and research designed to assess the causal links between hunger and psychosocial dysfunction is clearly warranted. Sadly, recent federal budget cuts are likely to increase the number of children who are hungry and in poverty.

CLINICAL IMPLICATIONS

Although the specific contribution of hunger is unknown, this study demonstrates that hunger is a risk factor associated with psychosocial dysfunction in poor children. During diagnostic evaluations, especially in poverty populations, child psychiatrists should ask about the availability of food and the presence of hunger in poverty populations. Clinicians should assure that children and parents are fully aware of programs like Women, Infants, and Children (WIC), food stamps, and the National School Breakfast and Lunch programs for which many low income children are eligible. Childhood hunger, in and of itself a stress that should be remedied, may also be relevant to clinicians as a potential contributing factor to later aggressive behavior and school drop-out during adolescence.

REFERENCES

- Achenbach TM, (1991), *Manual for the Behavior Problem Checklist and Revised Behavior Profile*. Burlington: University of Vermont Department of Psychiatry
- Barrett DE, Radke-Yarrow M, Klein RE (1982), Chronic malnutrition and child behavior: Effects of early caloric supplementation on social and emotional functioning at school age. *Developmental Psychology* 18:541-556
- Bickel G, Andrews M, Klein B (1996), Measuring food security in the United States: A supplement to the CPS. In: *Nutrition and Food Security in the Food Stamp Program*, Hall D, Stavrianos M, eds. Alexandria: United States Department of Agriculture, Food and Consumer Service
- Boyle MH, Jones SC (1985), Selecting measures of emotional and behavioral disorders of childhood for use in general populations. *J Child Psychology Psychiatr Allied Disciplines* 26:137-159
- Chavez A, Martinez M (1979), Consequences of insufficient nutrition on child characteristics and behavior. In: *Malnutrition, Environment and Behavior*, Levitsky DA, ed. New York: Cornell University Press
- Graves PL (1976), Nutrition, infant behavior, and maternal characteristics: A pilot study in West Bengal, India. *Am J Clin Nutrition* 29:305-319
- Graves PL (1978), Nutrition and infant behavior: A replication study in the Katmandu Valley, Nepal. *Am J Clin Nutrition* 31:541-551
- Gray GE (1986), Diet, crime and delinquency: A critique. *Nutr Rev May Supplement*: 89-94

- Green B, Shirk S, Hanze D, Wanstrath J. The Children's Global Assessment Scale in clinical practice: an empirical evaluation. *J Am Acad Child Adolesc Psychiatr* 33:1158-64
- Halas ES, Hanlon M, Sandstead H (1975), Intrauterine Nutrition and aggression. *Nature* 257:221-222
- Jellinek MS, Murphy JM, Burns BJ (1986), Brief psychosocial screening in outpatient pediatric practice. *J Pediatr* 109:371-378
- Jellinek MS, Murphy JM (1988), Screening for psychosocial disorders in pediatric practice. *Am J Diseases Children* 142:1153-1157
- Kivlahan DR, Siegel II, Ullman DG (1982), Relationships among measures of activity in children. *J Pediatric Psychology* 7:331-344
- Minde KK (1980), Some thoughts on the social ecology of present day psychopharmacology. *Canadian J Psychiatr* 25:201-212
- Mora JO (1979), Nutritional supplementation, early stimulation, and child development. In: *Behavioral effects of energy and protein deficits*, Brozek J, ed. Bethesda, MD: Dept. of Health, Education and Welfare
- Murphy JM, Jellinek MS (1988), Screening for psychosocial dysfunction in economically disadvantaged and minority group children: further validation of the Pediatric Symptom Checklist. *Am J Orthopsychiatr* 58:450-456
- Murphy JM, Reede J, Jellinek MJ, Bishop SJ (1992), Screening for psychosocial dysfunction in inner-city children: Further validation of the Pediatric Symptom Checklist. *J Am Acad Child Adolesc Psychiatr* 31:1105-1111
- Murphy JM, Ichinose C, Hicks RC, Kingdon D, Crist-Whitzel J, Jordan P, Feldman G,

- Jellinek MS (1996), Utility of the Pediatric Symptom Checklist as a psychosocial screen in EPSDT. *J Pediatrics* 129:862-869
- Radimer K, Olson CM, Greene CC, Campbell CC, Habicht JP (1992), Understanding hunger and developing indicators to assess it in women and children. *J Nutrition Education* 24:36S-45S
- Sandoval L (1981), Format effects in two teacher rating scales of hyperactivity. *J Abnorm Child Psychology* 9:203-218
- Shaffer D, Gould MS, Brasic J, Ambrosini P, Fisher P, Bird H, Aluwahlia S (1983), A Children's Global Assessment Scale (CGAS). *Arch. Gen. Psychiatry* 40:1228-1231
- Wehler CA, Scott RI, Anderson JJ (1991), *The Community Childhood Hunger Identification Project: A Survey of Childhood Hunger in the United States*. Washington, DC: Food Research and Action Center
- Wehler CA, Scott RI, Anderson JJ (1992), *The Community Childhood Hunger Identification Project: A model of domestic hunger - Demonstration Project in Seattle, Washington*. *J Nutrition Education* 24:29S-35S
- Wehler CA, Scott RI, Anderson JJ (1996a), *The Community Childhood Hunger Identification Project: A Survey of Childhood Hunger in the United States*. Washington, DC: Food Research and Action Center
- Wehler CA, Scott RI, Anderson JJ (1996b), Development and testing process of the Community Childhood Hunger Identification Project Scaled Hunger Measure and its application for a general population survey. In: *Conference on Food Security Measurement and Research: Papers and Proceedings, Jan 1994, Washington DC, Technical Appendix A*, Alexandria: United States Department of Agriculture, Food and Consumer Service

Table 1. Community Childhood Hunger Identification Project Survey

Eight questions asked of the parent:

Thinking about the past twelve months:

- ** 1. Did your household ever run out of money to buy food to make a meal?
- 2. Did you or adult members of your household ever eat less than you felt you should because there was not enough money to buy food?
- ** 3. Did your child(ren) ever eat less than you felt they should because there was not enough money to buy food?
- ** 4. Did your child(ren) ever say they were hungry because there was not enough food in the house?
- ** 5. Did your child(ren) ever go to bed hungry because there was not enough money to buy food?
- ** 6. Did you ever cut the size of your child(ren)'s meals or did they skip meals because there was not enough money to buy food?
- ** 7. Did you or adult members of your household ever cut the size of your meals or skip meals because there was not enough money to buy food?
- 8. Did you ever rely on a limited number of foods to feed members of your household because you were running out of money to buy food for a meal?

** Questions comprising the Child Hunger Interview Parent Report (CHI-P) scale

Five questions asked of the child constituting the Child Hunger Interview Child Report (CHI-C)

Thinking about the past twelve months:

- 1. Did your household ever run out of money to buy food to make meal?
- 2. Did you ever eat less than you felt you should because there was not enough money to buy food?
- 3. Did you ever tell your parent(s) that you were hungry because there was not enough food in the house?
- 4. Did you ever go to bed hungry because there was not enough money to buy food?
- 5. Did you ever cut the size of your meals or did you skip meals because there was not enough money to buy food?

Table 2. Child Adjustment Scores by CCHIP categories

	Total	Hungry	At Risk	Not Hungry
	204 (100%)	16 (8%)	56 (28%)	132 (65%)
Parent Report Measures				
CBCL ^b IMPAIRED [*]	31 (15%)	3 (19%)	15 (27%)	13 (10%)
CBCL MEAN SCORE ^{****}	51.5	56.8	56.3	48.8
PSC ^a IMPAIRED	28 (14%)	5 (31%)	9 (16%)	14 (11%)
PSC MEAN SCORE ^{***}	16.2	21.5	18.9	14.4
Teacher Report Measures				
CTRS-39 HI ^c MEAN SCORE ^{****}	54.6	71.5	51.7	53.5
Interviewer Rating of Child Functioning				
CGAS ^d IMPAIRED (<71) ^{***}	80 (40%)	13 (81%)	23 (41%)	44 (34%)
MEAN CGAS SCORE ^{**}	72.5	66.3	72.2	73.4
School Record Measures^e				
DAYS ABSENT [*]	2.8	5.2	3.2	2.3
DAYS TARDY [*]	.8	1.8	1.0	.7

^{*} p<.05 ^{**} p<.01 ^{***} p<.001 ^{****} p<.0001

^a PSC = Psychosocial Screening Checklist

^b CBCL = Child Behavior Checklist

^c CTRS-HI = Conners Teacher Rating Scale/Hyperactivity Index

^d CGAS = Children's Global Assessment Scale

^e Absences/Tardies from school records for first semester

Table 3. * Time to Time Reliability of Parent Reports of Hunger on CCHIP Questions

		Time 2 CCHIP Categories _a			
		Total	Not Hungry	At Risk	Hungry
Time 1 CCHIP Hunger Categories****		96 (100%)	73 (76%)	19 (20%)	4 (4%)
Not Hungry		59 (62%)	55 (93%)	3 (5%)	1 (2%)
At Risk		26 (27%)	14 (54%)	12 (46%)	0 (0%)
Hungry		11 (11%)	4 (36%)	4 (36%)	3 (27%)

**** p<.0001

* CCHIP Hunger Scale based on the full 8 questions

Table 4. Parent and Child Reports of Hunger on CCHIP Questions

	Total	CHILD REPORT (CHI-C),		
		Not Hungry	At Risk	Hungry
PARENT REPORT (CHI-P),****	193 (100%)	139 (72%)	38 (20%)	16 (8%)
Not Hungry	147 (76%)	122 (83%)	22 (15%)	3 (2%)
At Risk	27 (14%)	14 (52%)	10 (37%)	3 (11%)
Hungry	19 (10%)	3 (16%)	6 (32%)	10 (53%)

**** p<.0001

Child Hunger Interview Child Report (CHI-C)

Child Hunger Interview Parent Report (CHI-P)

INCREASING SCHOOL BREAKFAST PARTICIPATION THROUGH
UNIVERSAL FEEDING, CLASSROOM FEEDING, BREAKFAST CARTS
AND "THE SCHOOL BREAKFAST CHALLENGE"

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Only about twelve percent of the children in this country eat breakfast in school each day and even in the poorest communities where most children are eligible for a free school breakfast, only about twenty percent participate in the National School Breakfast Program. The school breakfast program reaches only one quarter of the children who receive school lunch despite more than a decade of advocacy from organizations like the American School Food Service Association, Children's Defense Fund, Food Research Action Council, and anti-hunger groups in virtually every major city in the country.

FRAC puts out a breakfast report card each year and although it has shown a steady growth in the number of children participating in the national school breakfast program, the numbers are still quite low. In the pages that follow, we will briefly review some of the methods we have explored for increasing school breakfast participation. Our research over the past three years demonstrates 1) that it is possible to obtain dramatic increases school breakfast participation using a number of innovative methods and that 2) increases in school breakfast participation are associated with improved student outcomes in inner city schools. This report focuses on the first finding only.

Our school breakfast expansion research was actually unintended, a spin off of our main line of research which was on whether the kinds of mild to moderate hunger experienced by poor children in the US had any measurable negative effects. Having found that hunger was associated with poorer psychosocial and academic functioning, we then began to explore whether providing additional feeding for children could improve their functioning.

This line of reasoning brought us into contact with the published findings of the school district of Philadelphia which had implemented a pilot Universal Feeding program for low income children that was funded by the United States Department of Agriculture. According to an article published by the Tom McGlinchy, who was then the director of the school food service for Philadelphia, the nations sixth largest school district, dramatic increases in school breakfast participation were obtained when a free school breakfast and lunch were made available to all students in more than 100 Philadelphia public schools. McGlinchy also found that the program was economically feasible and would continue in Philadelphia. As powerful as these results were, no research had been done in Philadelphia to determine whether the increase in school breakfast participation had had a measurable effect on the students involved.

Since we were looking for a population of low income children who could be fed more to assess the impact of increased feeding, we asked Mr. McGlinchy whether he would consider putting a free breakfast program in a new school so that we could assess changes in student functioning for students who did or did not increase their school breakfast participation.

We began our discussions with Mr. McGlinchy in the fall of 1994 and in February of 1995, Philadelphia made a free breakfast available every day to all four hundred children in the Edmonds Elementary School. Figure 1 illustrates what happened. By May of 1995 after four months of universal feeding, 22% of all of the students

at the Edmonds were eating breakfast at school each day, in contrast to the baseline rate of 12% in February before universal feeding started. When we looked more closely at the published data from Philadelphia, it turned out that the increase we had obtained was comparable to but actually somewhat better (100% increase vs 23% increase) than the increase obtained during the first year of universal feeding in the school district. Since we were free to focus all of our attention on this school, it made sense that our increase was somewhat larger than the districts.

Figure 1 also illustrates what happened in a second Philadelphia public school that started a free breakfast program the following year, also as a part of our collaboration. At the Lingelbach, the increase was "only" 75% but still of the same order of magnitude (from a baseline of 20% up to 30%).

But as big and significant as these increases were, the end result was that school breakfast participation did not get over 36%, in contrast to school lunch where for elementary schools at least participation was usually in the 80% range and sometimes in the 90% range. In the course of our work with the Philadelphia school food service, we noticed a few schools which did have much higher breakfast participation rates.

We learned that at the Fairhill School, the principal who was a believer in the importance of breakfast had mandated that all students should receive breakfast at their desks in their classrooms. Since her school was one of the original group of universal feeding schools, this program was free to all students. Figure 2 shows where her school had started in 1991, the year before UF began in Philadelphia and where it had gone by the time we saw it in 1994. From an pre UF breakfast participation rate of 14%, the average daily school breakfast participation rate had climbed 74%, a dramatic increase of over 500%. The rate continued to climb in 1995 and Figure 2 shows the whole five year progression. So we learned that one of the simplest ways to boost school breakfast participation is to put it on students' desks at the beginning of homeroom period every day.

Aware of this potential when we started our work in Philadelphia, back in February of 1995 we had asked Mr. McGlinchy to try classroom feeding in a single classroom in a middle school that already had a free breakfast in the cafeteria program as a preliminary test of what could be done with older students. Figure 3 shows that within the course of a single semester, the students in one eighth grade classroom at the Rhodes Middle School increased their school breakfast participation from a pre classroom feeding rate of 16% to fully 85% of all students eating school breakfast everyday (the solid line). The second (dotted) line in the figure shows the overall school-wide rate at the Rhodes with no change from February to May of that 1995 school year.

Figure 4 shows more information on what was happening at the Rhodes over a three year period of time. The 23% rate at the Rhodes in 1995 was actually up from a baseline rate of 6% the year before. The difference was that in conjunction with our project, the

cafeteria manager and the regional manager had teamed up to experiment with placing a cart at the entrance of the school each morning to give a hand held reimbursable breakfast to each student who wanted one. Using a two foot square stainless steel cart to hold the trays of food, the cafeteria manager had found that was possible to quadruple daily breakfast participation by putting the food directly into the students hands. By May of 1994 he had gone from serving an average of 48 breakfasts per day to 162 per day. The following year, in 1996, as a part of our project, two larger carts had been placed at each of the main entrances to the school, and more than 600 breakfasts were being served each day (to 80% of all students).

So breakfast carts and classroom feeding are two different methods that can quadruple school breakfast participation and raise it to the 80% level in schools from low income areas that provide a free breakfast. Figure 5 returns to the more the progress over five years of the Universal Feeding program in the school district of Philadelphia. As the Figure shows, the total number of breakfasts served each nearly doubled over the four years. From a baseline of about 13,000 breakfasts a day in the 1990-91 school year, the Food Service Department served more than 24,000 breakfasts each day in 1995-96 and this figure has continued to grow over the past two years as well.

This increase was made possible by the fact that Philadelphia is the only major school system in the U.S. to have adopted Provision 2 of the USDA's school meal reimbursement procedures. All of the students in nearly 200 of the city's schools are now eligible for free a breakfast and lunch at school each day. The slide leaves little doubt that even without additional efforts providing a free breakfast can make a significant impact on school breakfast participation rates, with an expected increase of about 20% per year.

Having demonstrated to our own satisfaction through the above projects that school breakfast participation could be doubled or even quadrupled and having shown in an academic paper (Murphy, et al, 1997) that students who increased their school breakfast participation had significant improvements in their attendance, math grades, classroom behavior, and overall psychosocial functioning and having established close working relationships with the school food service and a local foundation, we issued a school breakfast challenge to the principals of some of Baltimore's most troubled inner city schools.

In the fall of 1997, our research team from Harvard Medical School and Massachusetts General Hospital joined forces with the School Food Service of the Baltimore Public Schools and the Abell Foundation of Baltimore and offered The Baltimore School Breakfast Challenge to the principals of eight of the thirty one Reconstituted schools for the 1996-97 school year: for principals who were willing to commit just four hours of their own time and the leadership necessary to carry out the changes, the Abell Foundation would provide the supplementary funding necessary to provide a free school breakfast to every student in their schools who wanted one. The Baltimore School Food Service would supply the meals and the Harvard research team, through funding provided by the Kellogg Corporation, would monitor the program and its effects. Breakfast was not only to be free as it had

been in the project during the past year, but this year it was to be provided in the classroom on the students' desks as a pilot test of the power of classroom feeding to help troubled schools to turn around.

Principals from three schools attended a meeting at the Food Service office in October of 1996 and agreed to take the challenge and on February 3, 1997, classroom feeding began in the William Paca and the Montebello elementary schools and the Diggs-Johnson middle school. Three other reconstituted schools (the Pimlico, Lafayette, and the Calverton) which did not send representatives to the meeting agreed to act as control schools for the first year with an option to receive classroom feeding during the next year.

Figure 6 shows what happened. The lines represent the percentage of children eating breakfast on an average day in each of the months during the 1996-97 school year. The broken lines represent the three classroom feeding schools while the solid lines represent the three regular feeding schools. Two of the schools were serving less than 10% of all students each day and the other four schools were all serving around 20% of their students. These rates persisted through the first five months of the school year until February when free classroom feeding began in the Montebello, Paca, and Diggs-Johnson and regular cafeteria feeding continued in the Calverton, Pimlico and Lafayette.

In January of 1997, prior to the free breakfast program, the three classroom feeding schools had been serving breakfast to an average of about 16% of their students. In February of 1997, the rate had skyrocketed to 63% of all students each day--nearly a fourfold increase--and the rate continued to grow in March (71%) and April (77%). In May and June the school breakfast participation rate had fallen slightly to 76% for both months.

In contrast, in the Lafayette, the Paca, and the Calverton control schools, the school breakfast participation went up only slightly from January (15%) to February (17%) to March and April (19%) and declined slightly for the rest of the year (May and June = 18%) providing very strong evidence that free classroom feeding can dramatically increase school breakfast participation in an environment in which for non intervention schools, breakfast participation increases only slightly.

Figure 7 illustrates these difference in terms of numbers of breakfasts served each day. In the three classroom feeding schools on an average day the increase was from serving 328 breakfasts on an average day in January to 1845 on an average day during June. Starting at almost exactly the same point, the regular cafeteria breakfast schools increased from 339 breakfast per day during January to 377 per day in June. In just three classroom feeding schools, an additional 1500 poor and low income students were eating breakfast at school every day.

In summary, making a free breakfast available to all students can double the rate of school breakfast participation. Putting a free breakfast on the students desks--or at the

entrance to the school on a breakfast cart--can quadruple the rate to the point where almost every student in the school is eating every day and the breakfast participation rates come close to the lunch participation rates.

The next question and the next part of our Baltimore School Breakfast Challenge had been our belief that:

"Principals who take the breakfast challenge will see significant improvements in school-wide attendance rates and in student emotional and behavioral functioning, and possibly improvements in scores on standardized achievement or competency tests as well."

Figure 8 shows what happened to school attendance for the three classroom feeding schools compared to the six control schools. In the classroom feeding schools, average daily attendance increased to 89% over the five months over the breakfast program, up from 86% over the same five months during the previous school year. In the regular cafeteria schools where school breakfast participation did not change, during the spring term of 1997 the average rate of attendance was 84% in the three schools, compared to a rate of 85% for the same five months during the previous school year. Using each school as its own control, the schools that had a major increase in school breakfast participation showed a significant increase in daily attendance, compared to the control schools where a static school breakfast participation rate was associated with a decrease in average daily attendance.

Data on tardiness were not available from the superintendent's office as we had hoped and data on disciplinary incidents were confined to out of school suspensions. Although there was no difference between the classroom and regular breakfast schools on this indicator, the number of incidents was so rare (approximately one per school per month) that statistically there was probably not enough data for a meaningful comparison. Two of the principals in the classroom feeding schools did report a decrease in the number of less severe disciplinary incidents and a measure of this kind of incident will be necessary for future studies.

No standardized achievement test scores were available on a school-wide basis for these Baltimore schools during the spring of 1997 and in future years we hope incorporate an assessment of changes in test score into our research. In the 1997 Baltimore study, a math competency test was given in the fall and spring to all eighth grade students in the middle schools we studied. As Figure 9 suggests, however, there was a greater improvement in the percentage of students passing in the one classroom feeding middle school (8.4% vs 7.2%) in contrast to the one cafeteria feeding middle school (7.4% vs 7.3%) but the difference and the number of students involved were so small as to preclude statistical significance.

As also shown in Figure 9, a third group of schools had been involved in the Baltimore school breakfast work, three schools which had been provided with a free breakfast in the cafeteria both during 1995-96 and 96-97. These schools showed higher rates of

students passing the math competency test in both fall and spring and a higher rate of improvement from fall to spring, thus suggesting that the effects of a free breakfast program may be cumulative and continuing.

Although the free cafeteria breakfast schools had shown a smaller increase in school breakfast participation (from about 20% to about 40%) they did maintain them throughout the second year of the program and it seems reasonable to imagine that they may have been associated with the observed math test outcomes. Since researchers from the University of Minnesota have recently reported significant improvements in standardized math test scores in schools which provided a free breakfast program, it seems likely that such changes will eventually be found in Baltimore.

The cost to the city of Baltimore for each of the three free breakfast schools was actually quite low, since the standard USDA reimbursement procedures paid for most of the cost. As Table 1 shows, in one of the schools, the William Paca, 85% of all of the students were eligible for free meals and another 4% were eligible for reduced price meals. When the status of the actual participants was determined, only 20 of the students had been ineligible for any USDA subsidy and only 20 more received only partial reimbursement. At an estimated cost to the school district of \$.55 formerly paid student's meal and \$.10 for each formerly reduced price meal, the cost to the school district was only \$12.80 per day. Over the course of a full school year, this works out to be only about \$2304 per year for this large school. Depending on the size of the school and the percentage of students eligible for free and reduced price meals the actual cost per school would probably vary from \$500 to \$5000 per school per year.

During the coming year we are exploring the ways in which each of the free breakfast schools would be able to pick up the unreimbursed costs of this program. For example, each school has at least one business partner/sponsor and it is possible that these partners could conduct fund raising activities that would make up for these costs.

Conclusions

The projects reported here have shown that it is possible to dramatically increase school breakfast participation under existing USDA reimbursement procedures. The Baltimore School Breakfast Challenge showed that it was possible to establish a free classroom feeding school breakfast program in three low income public schools. The three schools that adopted the free breakfast program had significant improvements in their average daily attendance in contrast to three similar regular breakfast schools where attendance actually declined.

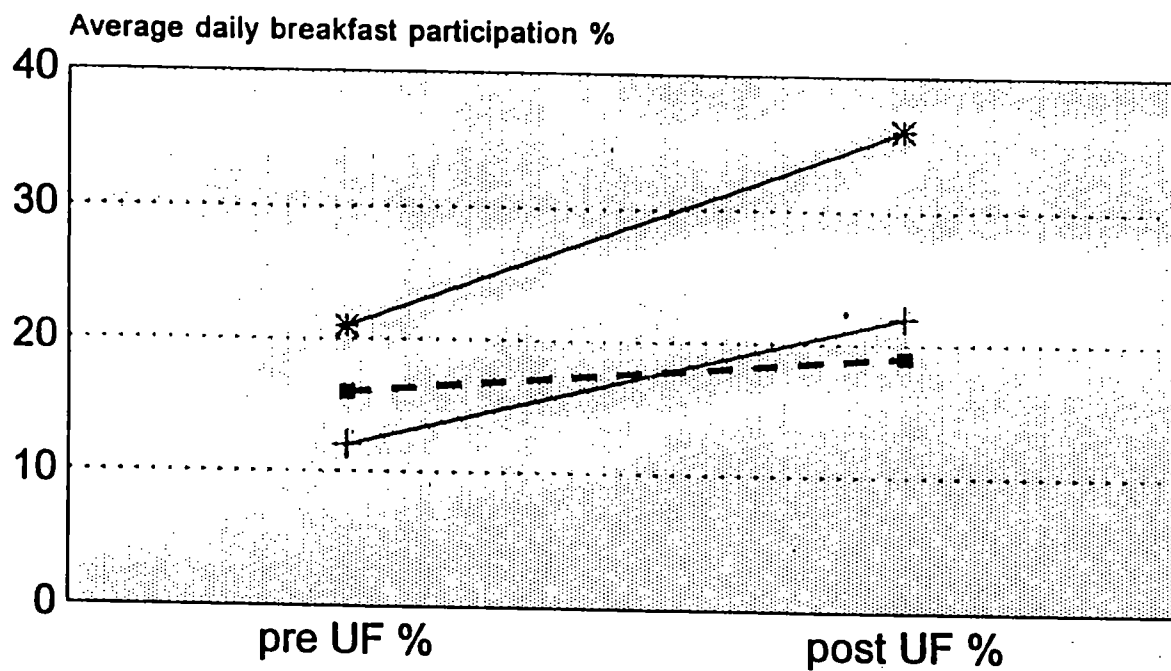
Given the research team's recent findings that students who increased their school breakfast participation showed decreased classroom hyperactivity, tardiness, depression, and overall behavior problems and increased math grades, it seems likely that school breakfast expansion programs could have similarly beneficial effects for schools in other areas as well.

For low income schools with a high percentage of students who were eligible for free and reduced price meals, the cost to the local school district under existing reimbursement guidelines would be relatively inexpensive, (\$500 to \$5000 per school per year) although still difficult enough to obtain. Whether school districts would feel such a program was worthwhile remains to be seen, although initial indications are that the program meets with great parent and student support. Principals, teachers, and food service staff have generally been supportive although there have been some exceptions, which is understandable given the increased burden that these parties bear when such programs are established.

Finally, the program is relatively inexpensive because the federal government assumes the major share of the cost. In a large school, the cost of the free breakfast program could easily come to \$500 to \$1000 per day, \$100,000 to \$200,000 per school year. If this program were to be widely disseminated, it could easily increase the cost of the National School Breakfast program by one to several billion dollars per year. Whether the USDA or Congress would support such an increase remains to be seen. For now, the issue has been raised and the next phase in the discussion can begin.

Figure 1: Free School Breakfast in Cafeteria/1

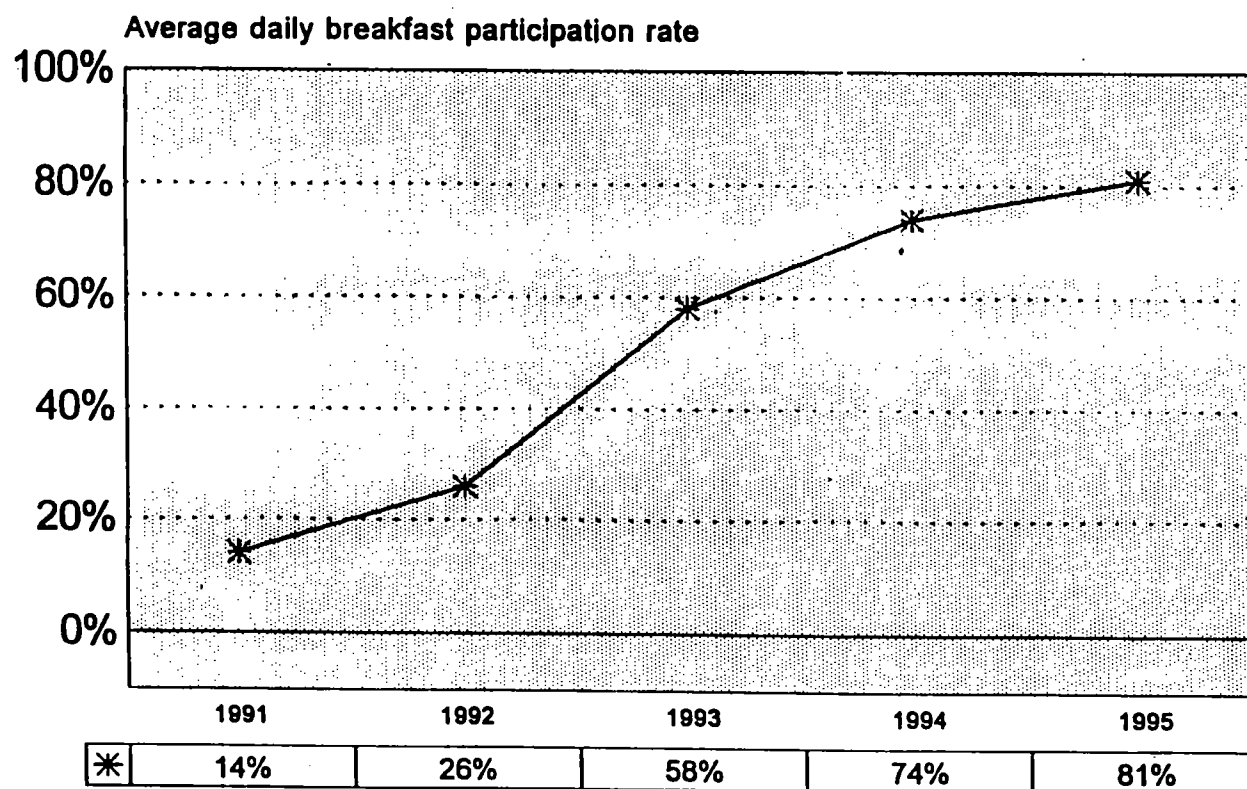
In Philadelphia: Two new study UF Schools that blasted off and one old school system that didn't
Best case vs average expectable increases in school breakfast participation with Universal Feeding



Edmonds	+	12	22
Lingelbach	*	21	36
Philadelphia	■	16	19

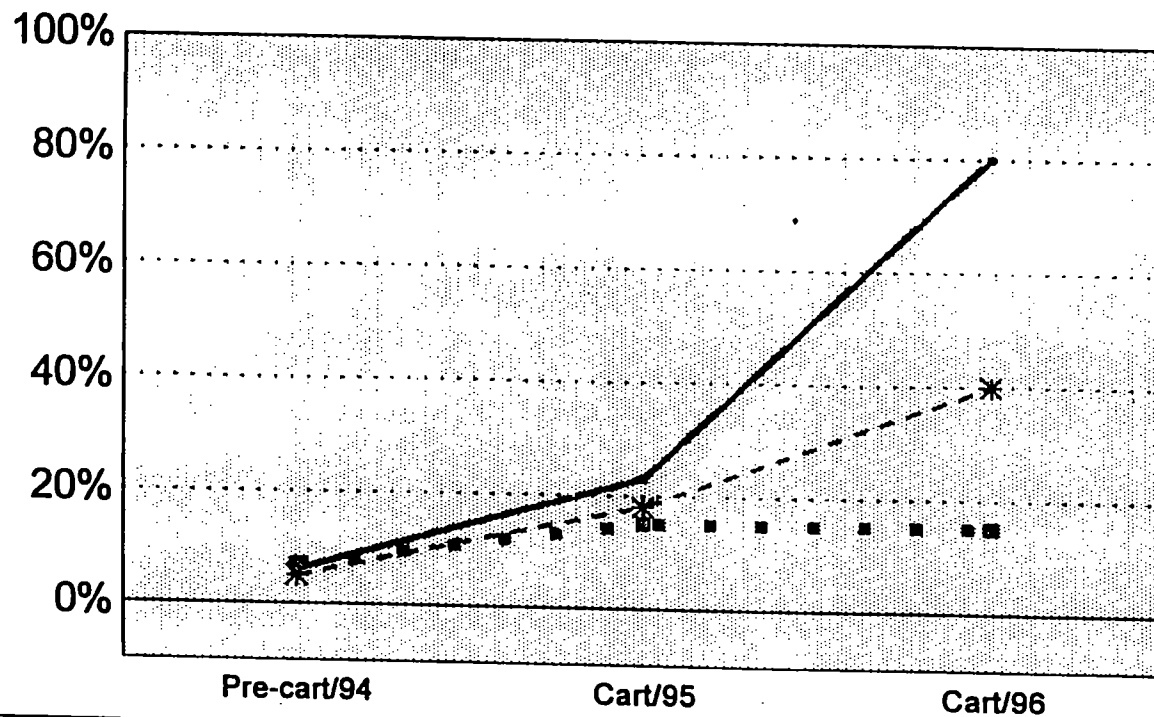
Nearly 100% increase in just one year in one study school, and nearly 75% increase in the other;
"Only" 23% increase over all schools for first year of UF in Philadelphia

Figure 2: Free School Breakfast in Classroom/1
Fairhill Elementary School, Philadelphia



More than 500% increase over five years;
Before (1991-92) and after (1992-93 through 1995-96) four years of classroom feeding

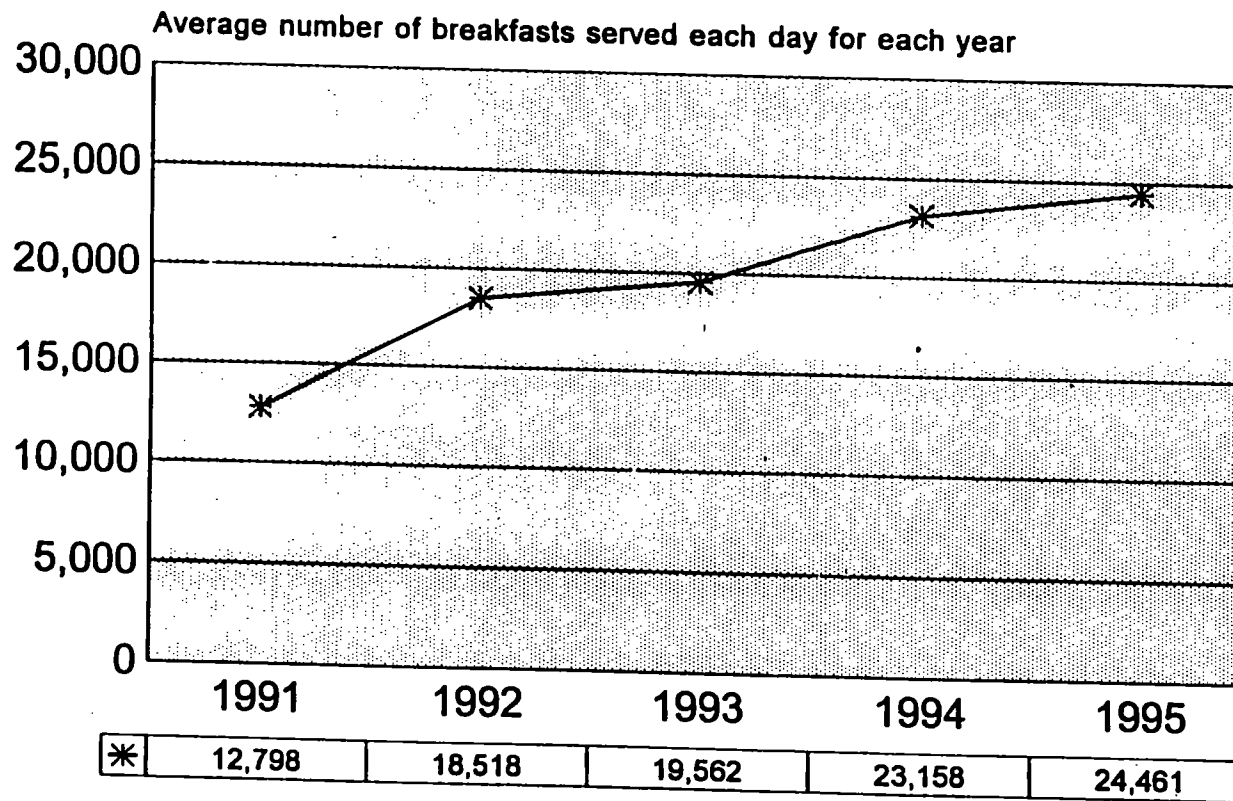
Figure 4: Free School Breakfast from Cart Three Philadelphia Public Middle or High Schools



Rhodes MS	6%	23%	80%
MLK HS	5%	18%	40%
Roxborough HS	7%	15%	15%

Figure 5: Free School Breakfast in Cafeteria

The School District of Philadelphia



Nearly 100% increase over five years;
 Before (1991-92) and after (92-93 through 95-96) first four years of Universal Feeding

Figure 6: Classroom Feeding Boosts Breakfast Participation in 3 Baltimore Schools
Dramatic increases in participation occur after classroom feeding begins
but no change in three similar schools which continue regular cafeteria breakfast

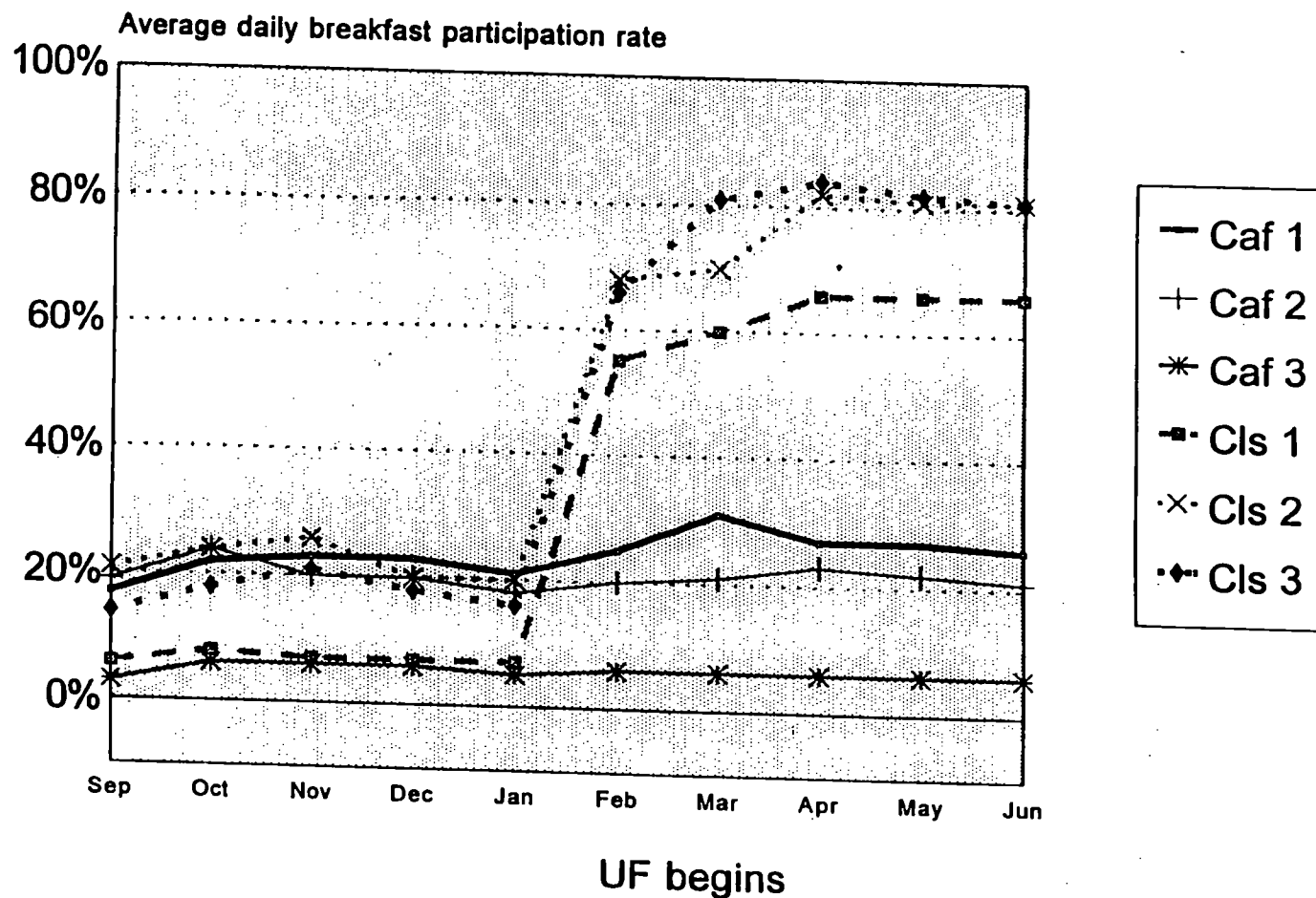
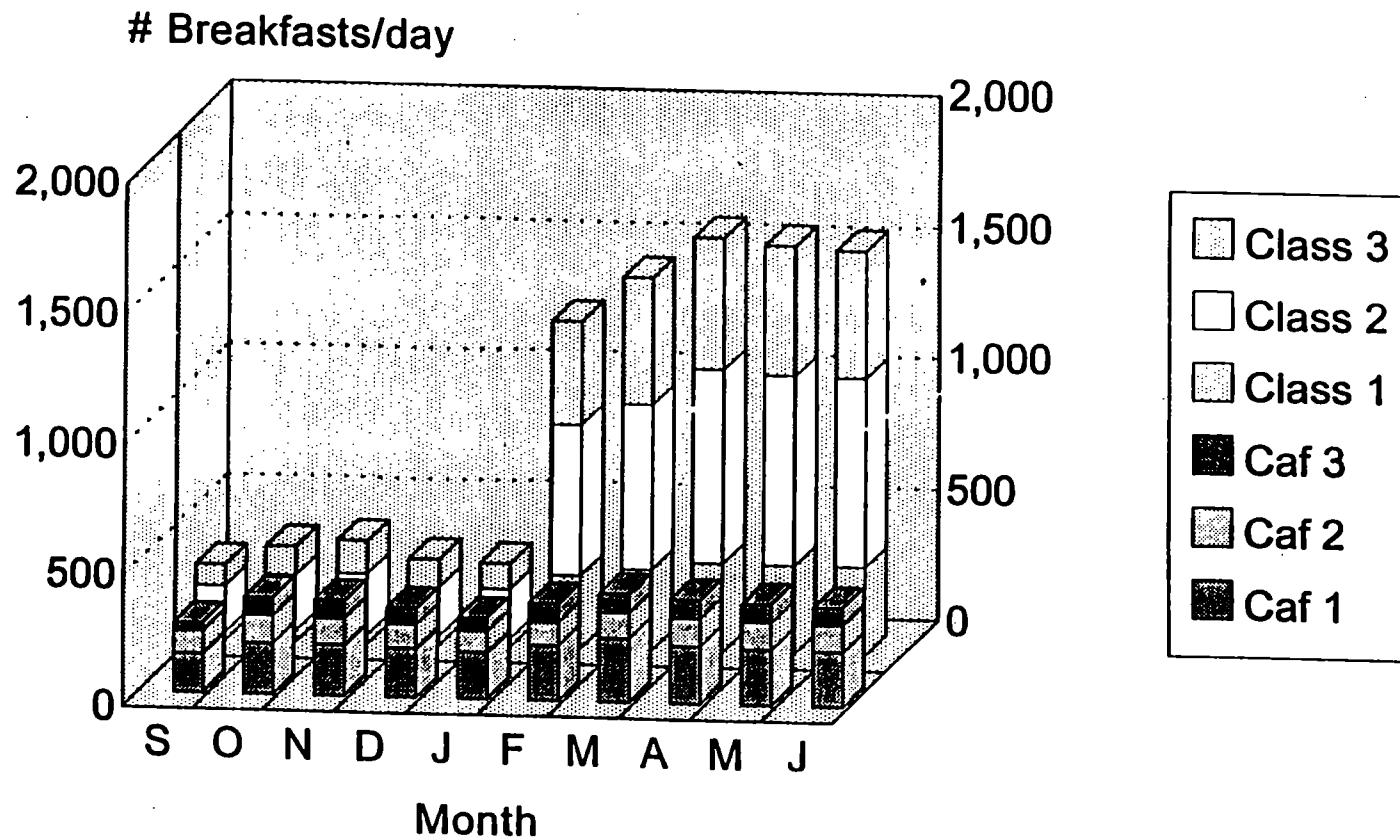
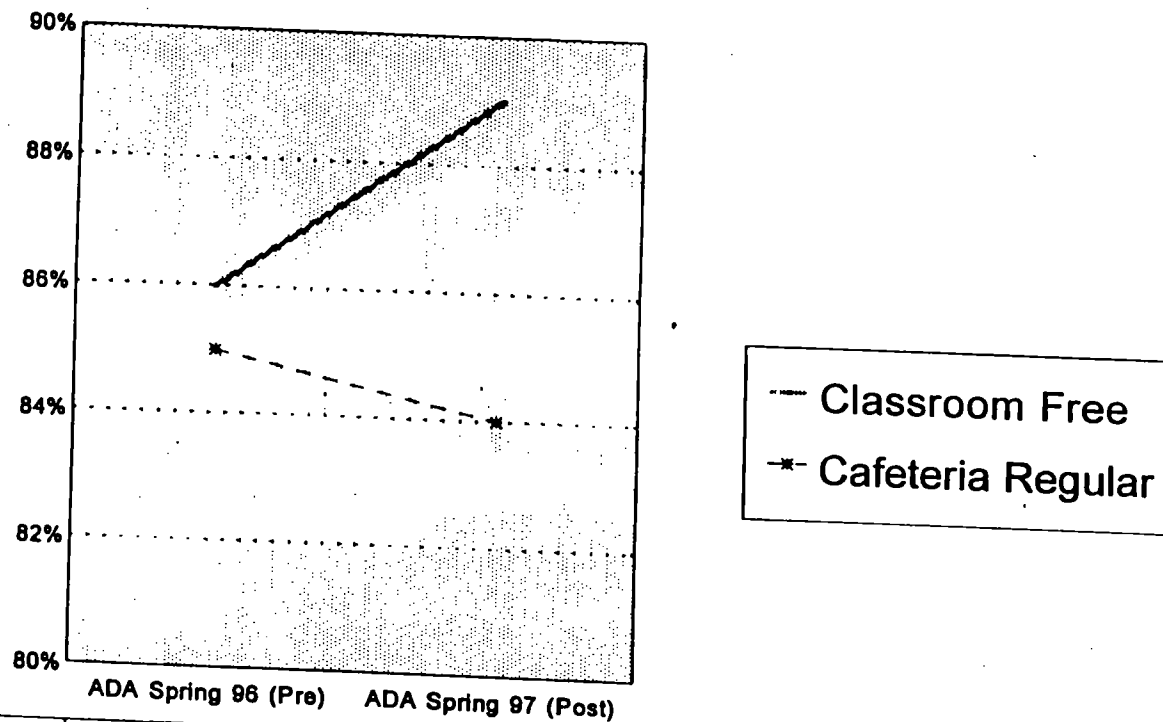


Figure 7: Classroom feeding quadruples school breakfast participation
 Number of breakfasts served each day for classroom (free) vs cafeteria (free/reduced/paid) schools
 In six Baltimore Elementary and Middle Schools, 1996-97 School Year



Note: Caf 1=Pimlico Elem (#223); Caf 2=Lafayette Middle (#202); Caf 3=Calverton Middle (#75)
 Class 1=Diggs Johnson Middle (#162); Paca Elem (#83); Montebello Elem (#44)

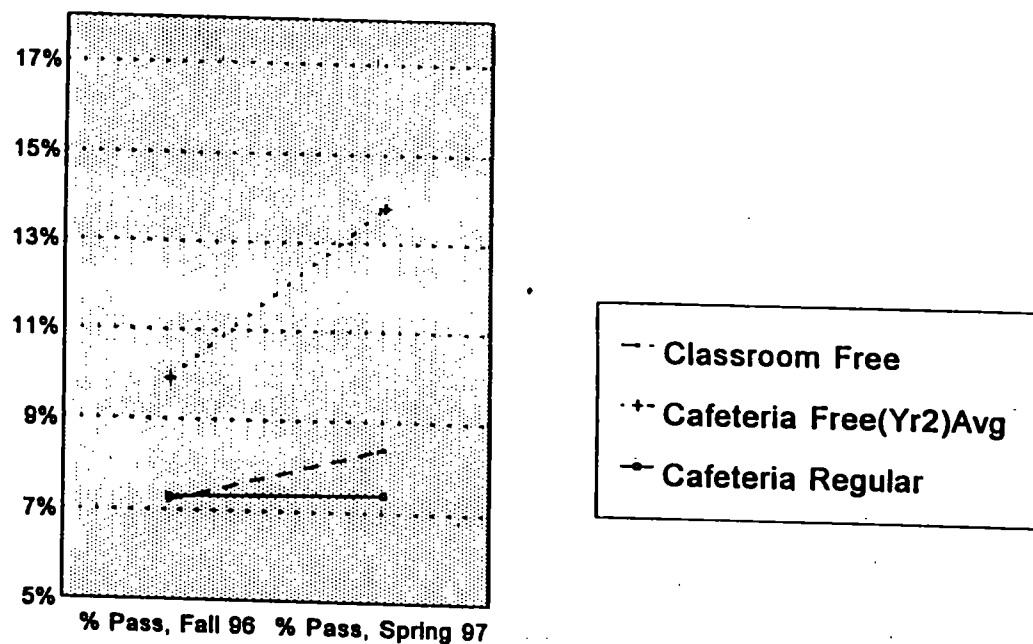
Figure 8: Average Daily Attendance Increases for Free Breakfast Schools
 Gain for 3 schools w. free classroom feeding vs decline for 3 schools w. regular cafeteria breakfast



Classroom Free	86%	89%
Cafeteria Regular	85%	84%

Average Daily Attendance for Spring of 1996 vs Spring of 1997; Six Baltimore Public Schools involving 4800 elementary and middle school students; 3 schools for each of 2 conditions

Figure 9: Free Breakfast is Associated with Improved Math Competancy Scores
 Compared to Regular Breakfast in Cafeteria: Fall 96 vs Spring 97
 Percentage of Middle School Students Passing Math Competancy Test



Classroom Free	7.2%	8.4%
Cafeteria Free(Yr2)Avg	9.9%	13.8%
Cafeteria Regular	7.3%	7.4%

Diggs Johnson vs Lakeland and Southeast vs Calverton Middle Schools in Baltimore

Table 1: Free breakfast would be possible for all low income U.S. children under existing reimbursement procedures

- Most urban schools have 70-80% of all students eligible for free or reduced price meals
- In schools like these, most of the free breakfasts will be reimbursed by the Federal government

Example: William Paca Elementary School, Baltimore, 85% USDA Free and Reduced

	Enrollment	ADA#(%)	Pre-UF Breakfast	Post-UF Breakfast	Cost Rate	Cost to school/day	Cost to USDA/meal	Cost to USDA/day
Free	768(85%)	831 (92.3)	177 (96%)	693 (93%)	\$ 0	\$ 0	\$1.19	\$825
Reduced	35 (4%)		7 (4%)	27 (3%)	\$.10	\$ 2.70	\$.89	24
Paid	97(11%)		0 (0%)	20 (3%)	\$.55	\$10.10	\$.20	4
Total	900(100%)		831(92)	184 (22%)	740(89%)	\$12.80		\$853

Total Cost per year = 180 days * \$12.80 = \$2304; Cost per enrolled student per year = \$2.56; Cost per daily participant = \$3.11
 Total Cost to USDA per year = \$153,540; Cost per enrolled student per year = \$ 171; Cost per daily participant = \$ 207 per year

Hunger in Children in the United States; Potential Behavioral and Emotional Correlates

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ABSTRACT

Objective. Results from a recent series of surveys from 9 states and the District of Columbia by the Community Childhood Hunger Identification Project (CCHIP) provide an estimate that 4 million American children experience prolonged periodic food insufficiency and hunger each year, 8% of the children under the age of 12 in this country. The same studies show that an additional 10 million children are at risk for hunger. The current study examined the relationship between hunger as defined by the CCHIP measure (food insufficiency due to constrained resources) and variables reflecting the psychosocial functioning of low-income, school-aged children.

Methods. Subjects were 328 parents and children from a Community Childhood Hunger Identification Project (CCHIP) study of families with at least one child under the age of 12 years living in the city of Pittsburgh and surrounding Allegheny county. A two-stage area probability sampling design with standard cluster techniques was employed. All parents whose child was between the ages of 6 and 12 years at the time of interview were asked to complete a Pediatric Symptom Checklist, a brief parent-report questionnaire that assesses children's emotional and behavioral symptoms. Hunger status was defined by parent responses to the standard 8 food insufficiency questions from the CCHIP Survey which are used to classify households and children as "hungry", "at-risk for hunger" or "not hungry".

Results. In an area probability sample of low income families, those defined as hungry on the CCHIP measure were significantly more likely to have clinical levels of psychosocial dysfunction on the PSC than children defined as at-risk for hunger or not hungry. Analysis of individual items and factor scores on the PSC showed that virtually all behavioral, emotional, and academic problems were more prevalent in hungry children, but that aggression and anxiety had the strongest degree of association with experiences of hunger.

Conclusion. Children from families which report multiple experiences of food insufficiency and hunger are more likely to show behavioral, emotional, and academic problems on a standardized measure of psychosocial dysfunction than children from the same low income communities whose families do not report experiences of hunger. Although causality cannot be determined from a cross-sectional design, the strength of these findings suggests the importance of greater awareness on the part of health care providers and public health officials of the role of food insufficiency and hunger in the lives of poor children.

A decade-long political debate over the meaning and measurement of domestic hunger has taken on greater urgency in the context of recent federal legislation that has significantly diminished support for many low income children and their families. The prevalence of chronic undernutrition, (weight for height below the 5th percentile) is relatively low and has been estimated at less than 1.0% of all children and less than 10% even in the highest risk groups (e.g. children in homeless shelters) in the United States.¹ In contrast, intermittent episodes of prolonged food insufficiency and hunger are more common, especially in low income populations. And although severe undernutrition can be readily recognized by biochemical, anthropometric and clinical indicators, the periodic and repeated episodes of hunger that some poor children and adults experience are not accurately assessed by these measures.²

The understanding of the epidemiology of hunger among children in the U.S. advanced significantly in the early 1980's when the constructs of "food insecurity"³ and "food insufficiency"⁴ were advanced as a proxy for the more difficult to quantify construct of hunger. The most widely used measure of this sort was developed by the Community Childhood Hunger Identification Project which conducted a series of eighteen studies using large, rigorously selected samples in communities across the U.S. CCHIP categorizes families as "hungry" "at risk for hunger" or "not hungry" on the basis of parent answers to 8 standardized questions about child and family experiences of food insufficiency due to constrained resources.^{4,6} One indicator of CCHIP's acceptability has been its wide use in the public policy arena and the adoption of its questions and/or methods by a number of large scale governmental projects like the National Health and Nutrition Examination Survey and by the federal agencies like the United States Department of Agriculture and the U.S. Census Bureau.⁷⁻⁹ Despite the official acceptance and use of this measure however, there have been no studies to date of the emotional or behavioral correlates of hunger as assessed by CCHIP.

Using this measure of food insufficiency as the principal indicator of hunger, a recent CCHIP summary report estimates that eight percent of the children under the age of twelve in this

country experience hunger and that an additional 21% are at risk for hunger.⁵⁻⁶ According to CCHIP, hunger is most prevalent in children from the lowest income families. In such samples, as many as 21% percent of children are found to be hungry using the CCHIP measure and an additional 50% are classified as at risk for hunger, suggesting that more than two-thirds of all of the poor children in this country have had at least one experience of prolonged food insufficiency in the past year. If CCHIP's figure is accurate, hunger is an issue for most low income children in this country and a serious problem for many of them.

Like hunger, psychosocial problems are common among low income children in the U.S.¹⁰⁻¹⁵ With estimates ranging from 10-30%, the prevalence of psychosocial dysfunction in low income children is generally considered to be higher than the prevalence of dysfunction in more advantaged populations (12-20%).¹⁰⁻¹⁵ While many investigators have documented the association between increased psychosocial dysfunction and low income status in general, there have been no studies exploring the emotional and behavioral consequences of domestic hunger, which the CCHIP studies now suggest are also a common correlate of low-income status.

Although it is not clear how similar the effects of subcatastrophic hunger are to those of severe undernutrition, it does seem likely that there would be at least some similarities. Studies have shown that for infants and children in non-industrialized countries, chronic undernutrition is associated with increased anxiety, attention deficits, increased prevalence of school absence and tardiness,¹⁶⁻¹⁷ lower levels of social responsiveness, and decreased affect.¹⁸⁻²¹ Aggression has also been linked to subclinical hunger in both human and animal studies, although the human evidence is largely anecdotal and/or poorly controlled.²²⁻²³ The current study sought to build upon prior work by examining the relationship between persistent periods of food insufficiency and psychosocial problems.

METHODS

Subjects were children from a Community Childhood Hunger Identification Project (CCHIP) study of families with at least one child under the age of 12 years living in the city of Pittsburgh and surrounding Allegheny county. As in other CCHIP studies, a two-stage area probability sampling design with standard cluster techniques was employed. Door-to-door enumeration of 25,000 households was conducted to build a sampling frame of 4,638 households with at least one child under the age of 12 years and incomes at or below 185% of poverty (\$25,812 for a family of 4 at the time the households were screened in 1993). A sample of 1,018 households was randomly selected for interviews. One hour face-to-face interviews were conducted with 720 households (71% of the initial sample, 75% of the eligible households at the time of interviewing).

Interviews were conducted orally with one parent of each household by lay interviewers from the community trained for the CCHIP study. Eight-four percent of the subjects were mothers of the children. When a parent was not available, a guardian was interviewed. Just Harvest, a community-based anti-hunger organization hired lay interviewers from the local community to conduct the door-to-door interviews. Data collection was directed by the National CCHIP researchers.²⁴ Community interviewers and their supervisors were provided an initial two-week intensive training in survey interviewing by the National CCHIP researchers. Each interviewer received extensive supervision throughout the interview process. On occasions when responses were ambiguous or unclear, interviewers followed-up to clarify ambiguities either by phone or by returning to the subjects' homes.

The full CCHIP interview contains 165 questions. An 8 item "hunger" scale that explores food shortages in the household is used to classify households and children as "hungry", "at-risk for hunger" or "not hungry" (Table 1). Four of the 8 questions on the hunger scale concern the children in the household, 2 concern hunger of adult members of the household and 2 concern household food insufficiency. Children are classified as "hungry" if the parent responds positively to 5 or more of 8 questions concerning hunger in the past year. With a score of 5, the parent must have responded positively to at least 1 question concerning the child's hunger. Children are classified as

at-risk for hunger if the parent responds positively to 1 or as many as 4 of the 8 hunger questions. If the parent does not respond positively to any of the 8 hunger questions, the child is classified as not-hungry.

In the Pittsburgh and Allegheny County CCHIP survey, the interview included a Pediatric Symptom Checklist (PSC) for all parents whose randomly selected child was between the ages of 6 and 11 years at the time of interview. The PSC is a brief, parent-completed questionnaire that has been validated as a screening measure to identify children in this age range with psychosocial dysfunction.²⁵⁻²⁷ The PSC consists of 35 items that are answered "never", "sometimes", or "often" and which are scored 0, 1, or 2, respectively. A total score of 28 or higher is indicative of psychosocial dysfunction.

Of 720 households participating in the Pittsburgh CCHIP survey, 329, or 46% had a target child between the ages of 6 and 12 years and all of these households were administered the PSC. Because of incomplete data one interview was eliminated, leaving a sample of 328. To be consistent with the administration of the rest of the standard CCHIP interview, PSC items were presented orally to the parent and responses were recorded by the interviewer. In addition to the standard PSC items, the form used in this study contained items asking the parent whether the child was receiving special education services, mental health services, had ever repeated a grade or was living in a single parent family.

Statistical Analysis

To test the hypothesis that hungry children have a higher rate of psychosocial dysfunction than not hungry children, Pearson chi square analysis of case rates and oneway analysis of variance of differences in mean PSC total symptom scores were used for the 3 CCHIP hunger groups. To explore the relationship between hunger status and more specific behavioral symptoms, the differences between the 3 hunger groups on individual PSC symptoms were examined. Finally, a factor analysis assessed differences between the hunger groups in terms of clusters of PSC

symptoms.

The study was approved by the Committee on Human Studies at the Massachusetts General Hospital. Consent for participation in this study was obtained by community interviewers at the time of initial meeting at subjects' homes.

RESULTS

The 328 families in the current subsample did not differ significantly from the rest of the Pittsburgh CCHIP sample in terms of family income, race, gender, or hunger category. Fifty-three percent (175/328) of children in the current study were male, 63% (208/328) came from single parent families, 12% (38/328) had received mental health counseling, 17% (55/328) had received or were receiving special education services and 18% (58/328) had repeated a grade.

As shown in Table 2, 17% (56/328) of the households interviewed in this school-aged subsample were classified as hungry, 49% (161/328) were classified as at-risk for hunger and 34% (111/328) were classified as not hungry, virtually identical to the percentages obtained in the Pittsburgh and Allegheny County CCHIP sample as a whole and similar to those found in other CCHIP samples.⁴ Children in the 3 hunger groups did not differ significantly with respect to gender, age or single parent family status.

PSC Score

The mean PSC score for the sample as a whole was 12.5 (s.d.= 9.9; range= 0-47; Table 2). Hunger status was significantly related to total PSC score. The mean PSC score of hungry children was 18.0, compared to 13.4 for children who were at-risk for hunger and 8.4 for not hungry children, ($F=20.6$, d.f.= 2, 325; $p < .0001$). Eight percent of the children (25/328) received scores of 28 or greater on the PSC and were thus classified as "cases". As hypothesized, hungry children

were significantly more likely to be classified as dysfunctional by the PSC than not hungry children or children who were at-risk for hunger. Twenty-one percent of hungry children (12/56) were classified as dysfunctional by the PSC, compared to 6% of at-risk for hunger children (10/161) and 3% of not hungry children (3/111; $\chi^2=19.4$, d.f.= 2, $p<.01$).

CCHIP hunger status was also associated with several other parent-reported indicators of global psychosocial functioning that were assessed on the PSC form. Hungry children were significantly more likely to be receiving special education services, ($\chi^2=6.8$, d.f.=2, $p<.05$), with 29% of hungry children (16/56), 15% (24/161) of at-risk for hunger children and 14% (15/111) of not hungry children receiving special education services. Hungry children were also significantly more likely to have a past or current history of mental health counseling than other children in the sample ($\chi^2=9.5$, d.f.=2, $p<.01$): 21% (12/56) of hungry children, 12% (20/161) of at-risk for hunger children and 5% (6/111) of the not hungry children had a history of mental health counseling. Hunger status also appeared to be related to a child's history of academic failure (repeating a grade), although differences reached only marginal statistical significance ($p<.10$). Twenty-five percent (14/56) of hungry children, 19% (31/161) of the children at-risk for hunger and 12% (13/111) of not hungry children had repeated a grade.

PSC Items and Hunger Status

Thirty-one of the 35 individual PSC items were significantly ($p<.05$) correlated with hunger status and an additional item was marginally ($p<.10$) correlated, with correlations ranging from $r=.29$ to $r=.08$. Even using a Bonferroni correction to control for multiple significance testing, 22 individual items on the PSC were associated (at $p<.001$) with hunger status.

The six PSC items that had the highest correlations (.21 or higher) with the CCHIP "hungry" category are listed in Table 3. Five of these 6 symptoms could be viewed as symptoms of conduct disorder and the sixth, item number 23: "Wants to be with you more than before", reflects either anxiety or depression. As an example of what these associations mean for children in this

sample: 21% of hungry children were rated as fighting often compared to 6% of at-risk for hunger children and 3% of not hungry children. Further, 12% of hungry children, 2.5% of at-risk children and .9% of not hungry children were rated as often taking things that did not belong to them. Thus, in this sample of poor children, the prevalence of fighting was 7 times higher in families that reported many experiences of hunger than in families that reported none. The prevalence of stealing was 12 times higher in hungry families than in not hungry families.

Factor Scores and Hunger Status

A Principal Component Analysis with Varimax rotation was used to extract factor scores from the PSC. Eight factors that explained 55.2% of the variance of PSC scores were extracted using this analysis (Table 4). Since preliminary analysis of factor scores showed that more than half did not have near-normal distributions, mean factor scores of hungry, at-risk for hunger and not hungry children were compared using Kruskal-Wallis Analysis of Variance (ANOVA), a non-parametric statistical test. This analysis showed that hungry children had significantly higher mean rank scores on 2 of the 8 factors (Table 5). On the Oppositional/Aggression factor, hungry children had a mean rank score of 185.8, compared to 169.5 for at-risk for hunger children and 135.9 for not hungry children ($\chi^2=13.21$, $p<.01$). Hungry children also had significantly higher mean rank factor scores on the Irritability/Anxiety factor, (192.7) than at-risk for hunger (163.4) or not hungry (141.2) children, ($\chi^2=11.6$, $p<.01$). Hungry children had higher scores than at-risk and not hungry children on the other six factors as well, although the findings did not reach statistical significance.

DISCUSSION

Studies have consistently shown that poverty is one of the most powerful predictors of psychiatric and functional problems in children.²⁸ In addition to the lack of money to pay for the basic needs of family life, poverty is also associated with higher rates of marital discord, single parenthood, family dysfunction, family and neighborhood violence and parental psychopathology than in more advantaged families.²⁸⁻³² These multiple stressors put low income children at

significantly greater risk for the development of psychosocial problems than their more advantaged peers.

The data from this study reveal that hunger may constitute another of these poverty-related burdens and appears to have a unique impact on the daily psychosocial functioning of poor children. In this rigorously selected community sample of low-income children, hungry children were 3 times more likely than at-risk for hunger children and 7 times more likely than not hungry children to receive scores indicative of clinical dysfunction on the PSC. Comparison of mean PSC scores also confirmed this relationship between psychosocial dysfunction and child hunger by showing twice the overall level of symptomatology in hungry than in non-hungry children. The same pattern of at least doubling of risk was found when other indicators of psychosocial dysfunction like special education and repeating a grade were examined. Analysis of specific symptoms revealed that hungry children were 7 to 12 times more likely to exhibit symptoms of conduct disorder than not hungry children. In addition, the PSC case rate in this sample (8%) was consistent with case rates of 7-11% found in recent large-scale studies of low income populations employing an oral administration of the PSC,^{33,34} although lower than the rate found in earlier studies using the standard written administration with African-American children.²⁷

Although poverty puts a child at-risk for dysfunction, the added burden of periodic experiences of hunger may increase the chance of psychosocial dysfunction and may produce some important negative behavioral sequelae. Specifically, the findings from this study suggest that hungry children demonstrate higher levels of anxious and irritable, aggressive and oppositional behaviors than their low income, but not hungry peers. These findings complement studies of the behavioral effects of more severe, chronic undernutrition in developing countries which have found that school-age hungry children are more likely to be anxious and irritable, and suggest that the relationship between aggression and hunger should be further explored in future research.^{16-17,22-23}

Many of the oppositional and aggressive behaviors found prevalent in our sample may be interpreted as an understandable behavioral response to the additional stress and anxiety imposed

by periodic hunger. Thus, when health care providers encounter cases of psychosocial dysfunction in their low income patients, they should be mindful of the possibility of household food shortages and consider food-assistance related interventions such as referrals to food stamp programs, food pantries, school meal or summer food programs.

A correlational study design like the current one cannot prove a causal relationship between hunger and behavioral problems. Although it is possible that hunger causes the types of behavior problems documented in the current study, it is also possible that hunger is less of a cause than a correlate of still another variable. For example, in families in which the parents are emotionally drained by chronic illness, or in which the constant struggle to make ends meet precludes planning for food purchases, or in which spending for alcohol or drugs receives a higher priority than food, hunger may be more an effect than a cause. Experiences of hunger may occur more often in these families but the other problems may play a larger role in undermining the children's functioning.

Several potential limitations of the current study should be noted. The fact that CCHIP data on the prevalence of food insufficiency and hunger is based on parent reports raises several issues. First, a parent report of multiple family experiences of food insufficiency does not necessarily mean that each child in the family has had the same experience. And even if the children have experienced food insufficiency, it does not follow that they have suffered from a clinically significant state of undernutrition. For now, however, short of inducing hunger in children in a laboratory setting to develop physiological measures, CCHIP appears to provide an acceptable way of estimating the prevalence of hunger and its relationship to other factors. In fact, parent-reported measures of food insufficiency offer methodological advantages over other hunger measures. Because the CCHIP survey includes questions concerning feelings of deprivation or restricted food choices based on generally accepted norms, (i.e. being able to purchase enough food to feed everyone in a household without relying on begging, scrounging, stealing, etc.),³ use of the CCHIP measure allows researchers to quantify the social as well psychological consequences of food deprivation which are not addressed using biological and/or anthropometric measures alone.

Reliance on parent reports of child psychosocial symptomatology and of child hunger also introduces the possibility of confounding since both reports might be unduly biased by factors such as parental dysfunction or distress.³⁵⁻³⁶ This question may be resolved by our ongoing study of the association between parent reported CCHIP hunger status and child psychosocial functioning using child-report and school record data. Second, the current study, like other CCHIP studies, made use of lay interviewers working under the auspices of a community-based anti-hunger group which introduces the possibility of bias. The designers of the CCHIP survey methodology were aware of this bias risk, but determined that it was more than outweighed by the benefit of higher response rates and an interview context that facilitated honest, frank responses to potentially embarrassing and stigmatizing questions.

Whether hunger is a cause or a correlate of aggressive behavior and emotional problems in poor children, the fact that these problems are far more prevalent in children whose parents report multiple experiences of hunger suggests both the possibility of and the need for intervention. Problems such as fighting, stealing, and anxiety are more common in hungry, low income school-age children in our sample 5 to 10 years before they appear in society as increased rates of violence, underachievement, and substance abuse. Given the enormous emotional and financial impact of the association between repeated episodic hunger and psychosocial dysfunction, further research into this relationship and useful social policy interventions are warranted. Recent federal cuts in the safety net of public assistance to low income families make this an urgent public policy challenge.

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REFERENCES

1. Yip R, Parvanta I, Scanlon K. et. al. Pediatric nutrition surveillance system United States 1980-1991. *Morbidity and Mortality World Report*. U.S. Dept. of Health and Human Services Public Health Service: Atlanta, GA; 1992
2. Nestle M, Gutmacher S. Hunger in the United States: Rationale, Methods, and Policy Implications of State Hunger Surveys. *J Nutr Education*. 1992;24:18s-22s
3. Campbell CC. Food insecurity: A nutritional outcome or a predictor variable? *J Nutr*. 1991;121:408-415
4. Wehler CA, Scott RI, Anderson JJ, et al. The Community Childhood Hunger Identification Project: A model of domestic hunger- Demonstration project in Seattle, Washington. *J Nutr Education*. Supplement, 24, 29S-35S
5. Wehler CA, Scott RI, Anderson JJ, et al. The Community Childhood Hunger Identification Project: A Survey of Childhood Hunger in the United States. Food Research and Action Center, Washington, DC; 1996
6. Wehler CA, Scott RI, Anderson JJ, et al. The Community Childhood Hunger Identification Project: A Survey of Childhood Hunger in the United States. Food Research and Action Center, Washington, DC; 1991
7. Bickel G, Andrews M, Klein B. Measuring food security in the United States: A supplement to the CPS. In D Hall, M Stavrianos (eds.) *Nutrition and Food Security in the Food Stamp Program*. United States Department of Agriculture, Food and Consumer Service: Alexandria; 1996:91-111
8. Briefel RR, Wotecki CE. Development of food insufficiency questions for the Third National Health and Nutrition Examination Survey. *Journal of Nutrition Education*. 1992;24:24S-28S
9. Wehler, CA, Scott, RI, Anderson, JJ. Development and testing process of the Community Childhood Hunger Identification Project Scaled Hunger Measure and its application for a general population survey. In *Conference on Food Security Measurement and Research; Papers and Proceedings*, January 1994, Washington DC, Technical Appendix A. United States Department of Agriculture, Food and Consumer Service: Alexandria; 1996
10. Schwartz-Gould M, Wunsch-Hitzig MA, Dohrenwend B. Estimating the prevalence of childhood psychopathology: a critical review. *J Am Acad Child Adolesc Psychiatry* 1981;20:462-476
11. Horwitz SM, Leaf PJ, Leventhal JM, et al. Identification and management of psychosocial and developmental problems in community-based primary care pediatric practices. *Pediatr*. 1993;80:480-485
12. Bird HR, Shaffer D, Fisher P, et al. The Columbia Impairment Scale (CIS): Pilot findings on a measure of global impairment for children and adolescents. *International Journal of Methods in Psychiatric Research*. 1993;3:167-176
13. Brandenburg NA, Friedman RM, Silver SE. The epidemiology of childhood psychiatric

disorders: Prevalence findings from recent studies. *J Am Acad Child Adolesc Psychiatry*. 1990;29:76-83

14. Costello EJ. Primary care pediatrics and child psychopathology: a review of diagnostic, treatment and referral practices. *Pediatrics*. 1986;78:1044-1051

15. Tarnowski KJ. Disadvantaged children and families in pediatric primary care settings, I: broadening the scope of integrated mental health service. *J Clin Child Psychol*. 1991;20:351-359

16. Scanlon KS. Activity and Behavior Changes of Marginally Malnourished Mexican Preschoolers. Ph.D. dissertation, University of Connecticut, Storrs, CT, 1989

17. Mora JO, et. al. Nutritional supplementation, early stimulation, and child development. In J. Brozek (ed.) *Behavioral effects of energy and protein deficits*. Bethesda, MD: Dept. of Health, Education and Welfare (NIH); 1979

18. Barrett DE, Radke-Yarrow M, Klein RE. Chronic malnutrition and child behavior: Effects of early caloric supplementation on social and emotional functioning at school age. *Dev Psychol*. 1982;18:541-556

19. Chavez A, Martinez M. Consequences of insufficient nutrition on child characteristics and behavior. In DA Levitsky (ed.) *Malnutrition, Environment and Behavior*. Cornell University Press: New York; 1979; 238-255

20. Graves PL. Nutrition, infant behavior, and maternal characteristics: A pilot study in West Bengal, India. *Am J of Clin Nutr*. 1976;29:305-319

21. Graves PL. Nutrition and infant behavior: A replication study in the Katmandu Valley, Nepal. *Am J Clin Nutr*. 1978;31:541-551

22. Gray GE. Diet, crime and delinquency: A critique. *Nutr Rev* 1986; May Supplement:89-94

23. Halas ES, Hanlon M, Sandstead HH. Intrauterine nutrition and aggression. *Nature*. 1975;257:221-222

24. Just Harvest. *Hometown Hunger: Hungry children in Allegheny County*. October 1994; Homestead, PA: Just Harvest

25. Jellinek MS, Murphy JM, Robinson J, et al. Pediatric Symptom Checklist: screening school-age children for psychosocial dysfunction. *J Pediatr*. 1988;112:201-209

26. Jellinek MS, Murphy JM, Burns B. Brief psychosocial screening in outpatient pediatric practice. *J Pediatr*. 1986;109:371-378

27. Murphy JM, Reede J, Jellinek MS, Bishop S. Screening for psychosocial dysfunction in inner-city children: further validation of the Pediatric Symptom Checklist. *J Am Acad Child Adolesc Psychiatry*. 1992;31:221-232

28. Rutter M, Quinton D. Psychiatric Disorder: Ecological factors and concepts of causation. In H. McGurk (Ed.), *Ecological Factors in Human Development*. North Holland: Amsterdam.

1977;173-187

29. Anderson J, Williams S, McGee R, Silva P. Cognitive and social correlates of DSM-III disorders in pre-adolescent children. *J Am Acad Child Adolesc Psychiatry*. 1989;28:842-846
30. Offord DR, Boyle MH, Szatmari P et al. Ontario Child Health Study: Six-month prevalence of disorder and rates of service utilization. *Archives General Psychiatry*. 1987;44:832-836
31. Belle D. Poverty and women's mental health. *Am Psychol*. 1990;45:385-389
32. Rutter M. Parental mental disorder as a psychiatric risk factor. In R. Hales & A. Frances (Eds.) *American Psychiatric Association Annual Review*. Washington, DC:American Psychiatric Press. 1987;6:647-663
33. Pagano M, Murphy JM, Pedersen M, et al. Screening for psychosocial problems in 4-5 year olds during routine EPSDT examinations: validity and reliability in a Mexican-American sample. *Clin Pediatr*. 1996;35:139-146
34. Murphy JM, Ichinose C, Hicks RC et al. Utility of the Pediatric Symptom Checklist as a psychosocial screen in EPSDT. *J Pediatr*. 1996;129:864-9
35. Holahan CJ, Moos RH. Risk, resistance and psychological distress: A longitudinal analysis with adults and children. *J Abnorm Psychol*. 1987;96:3-13
36. Hammen C, Adrian C, Gordon D, Burge D, Jaenicke C, Hiroto D. Children of depressed mothers: Maternal strain and symptom predictors of dysfunction. *J Abnorm Psychol*. 1987;96:190-198

Table 1.

**Eight Food Insecurity Questions Used to Measure Hunger in
the Community Childhood Hunger Identification Project Survey**

Thinking about the past twelve months:

1. Did your household ever run out of money to buy food to make a meal?
2. Did you or adult members of your household ever eat less than you felt you should because there was not enough money to buy food?
3. Did your child(ren) ever eat less than you felt they should because there was not enough money to buy food?
4. Did your child(ren) ever say they were hungry because there was not enough food in the house?
5. Did your child(ren) ever go to bed hungry because there was not enough money to buy food?
6. Did you ever cut the size of your child(ren)'s meals or did they skip meals because there was not enough money to buy food?
7. Did you or adult members of your household ever cut the size of your meals or skip meals because there was not enough money to buy food?
8. Did you ever rely on a limited number of foods to feed members of your household because you were running out of money to buy food for a meal?

Table 2.

	Total	Hungry	At-Risk	Not hungry
Full Sample	N=720 (100%)	N=113 (16%)	N=349 (48%)	N=258 (36%)
School-age sample	n=328 (53%)	n=56 (17%)	n=161 (49%)	n=111 (34%)
	n (%)	n (%)	n (%)	n (%)
Gender				
Male	175 (53%)	32 (57%)	82 (51%)	61 (55%)
Female	153 (47%)	24 (43%)	79 (49%)	50 (45%)
Mean Age	8.4	8.4	8.5	8.3
Single parent family				
No	120 (37%)	16 (29%)	62 (39%)	42 (38%)
Yes	208 (63%)	40 (72%)	99 (62%)	69 (62%)
History of mental health counseling				
No	290 (88%)	44 (79%)	141 (88%)	105 (95%)
Yes	38 (12%)	12 (21%)	20 (12%)	6 (5%)*
Receiving special education services				
No	273 (83%)	40 (71%)	137 (85%)	96 (87%)
Yes	55 (17%)	16 (29%)	24 (15%)	15 (14%)*
Repeated a grade				
No	270 (82%)	42 (75%)	130 (81%)	98 (88%)
Yes	58 (18%)	14 (25%)	31 (19%)	13 (12%)**
PSC mean score	12.5	18.0	13.4	8.4*
PSC case	25 (8%)	12 (21%)	10 (6%)	3 (3%)*

* p <.05 Results from 3-way analysis. ** p <.10 Results from 3-way analysis.

Table 3.

Correlations of Pediatric Symptom Checklist Items and Children's CCHIP Status: "Hungry"

<u>PSC Item</u>	<u>Pearson Correlation Coefficient</u>
16. Fights with other children	($r=.29$)
23. Wants to be with you more than before	($r=.25$)
33. Blames other for his/her problems	($r=.25$)
5. Has trouble with a teacher	($r=.22$)
29. Does not listen to rules	($r=.21$)
30. Takes things that do not belong to him/her	($r=.21$)

*All correlations significant at the $p<.05$ level.

Table 4.

**Factors extracted from the Pediatric Symptom Checklist
using Principal Components Analysis with Varimax Rotation**

Factor	% Variance explained
1: Oppositional Behavior/Aggression	27.0
2: Attention Problems	5.9
3: Irritability/Anxiety/Worry	4.7
4: Depression	4.1
5: Hyperactivity/Impulsivity	4.0
6: Antisocial Behavior	3.5
7: School Problems	3.1
8: Somatization	2.9

Table 5.

Mean Rank Factor Score Comparison of Hungry, At-Risk for Hunger, and Not Hungry Children, N=321¹

Factor	Mean Rank Factor Score		
	Hungry	At-risk	Not hungry
	n=56	n=157	n=108
1. Oppositional Behavior/Aggression*	185.8	169.5	135.9
2. Attention Problems	169.9	162.5	154.2
3. Irritability/Anxiety/Worry*	192.7	162.5	141.2
4. Depression	162.3	161.3	159.9
5. Hyperactivity/Impulsivity	175.9	162.7	150.8
6. Antisocial Behavior	163.9	167.9	149.5
7. School Problems	178.6	161.0	151.9
8. Somatization	180.2	155.3	159.4

¹ Cases with missing data on any item were removed for this analysis, resulting in a sample of 321.

*p<.01

**School Breakfast and Psychosocial Functioning;
Cross Sectional and Longitudinal Observations in an Inner-city School Sample**

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Many studies have demonstrated the negative effects of severe malnutrition on early childhood development and functioning¹⁻³ and a number of the reports have documented that chronic malnutrition has a negative impact on children's social, emotional, and cognitive functioning.⁴⁻⁷ For example, undernourished children, as defined by clinical and diet history and anthropometry, tend to be less active, more dependent on adults, and more anxious, interacting less with others and showing less affect than their better nourished peers.^{4,5} Studies of the cognitive effects of nutritional deprivation have also demonstrated deficits in attention and working memory as a result of inadequate nourishment⁸⁻¹⁴ and more serious deficits in intelligence scores over the long term as a result of early and serious malnourishment.^{2,3,15} Until recently, however, the prevalence and effects of chronic mild to moderate undernutrition, defined as food insufficiency or the experience of hunger, has not been well documented.

A recent report by the Community Childhood Identification Project (CCHIP) has provided epidemiological data from 11 states suggesting that 8% of American children under the age of 12 years experience persistent episodes of food insufficiency and hunger and that an additional 20% are at risk for these conditions.¹⁶ The CCHIP report also documents that family low income is the strongest predictor of food insufficiency and hunger, and that these adverse conditions are associated with parental reports of mood and concentration problems and school absence for their children.^{16,17} Two recent studies^{18,19} have provided the first ever documentation of the relationship between periodic, persistent food insufficiency as measured by CCHIP and objective measures of psychosocial or academic functioning, as well as of the validity and reliability of CCHIP. The relationship between the broader category of poverty and psychosocial dysfunction in children has long been known and is well documented.²⁰

The possibility that some of the negative effects of chronic, intermittent undernutrition on children in the United States could be reversed through school feeding programs is one of the most important justifications for the National School Lunch and Breakfast Programs.^{21,22} Although the National School Lunch Program has

been shown to be very successful in supporting the nutrient requirements of nutritionally at risk children, the benefits of the National School Breakfast Program (NSBP) have not been well documented.¹³ Although nearly 60% of the nation's elementary school students participate in the school lunch program, less than one-third of these children participate in the school breakfast program. The large disparity between these two rates suggests that school breakfast participation could be increased substantially and that this in turn offers the potential for a major increase in feeding for the nation's children.

The NSBP was established in 1966 by Congress under the Child Nutrition Act to provide breakfast to low income children. Although nutritional gains in participating children have not been documented for the NSBP program¹³, recent studies from the United States²³, Peru²⁴, and Jamaica²⁵ have shown significant beneficial effects of breakfast provided at home and in school on school attendance and cognitive performance, particularly among nutritionally at risk children. A recent report of a free school breakfast program in Rhode Island documented that children who participated in school breakfast had significantly lower rates of absence and consumed more nutritious breakfasts than non participants.²⁶ This study replicated results of decreased absences and tardiness found in Meyers et al's study in Lawrence, Massachusetts a decade ago, which also documented significant improvements in academic functioning from school breakfast participation.²³

While these studies have increased the understanding of the cognitive and educational benefits of school breakfast programs, the benefits of school breakfast to childrens' emotional or behavioral functioning remain largely unexplored. The link between increases in school breakfast participation and improved academic and behavioral functioning on an individual student basis has not been demonstrated either. In this study, we examined the relationship between school breakfast participation and several measures of academic performance and psychosocial functioning.

METHODS

Study Population and Sampling

Data for the current analyses came from a collaborative study of a free breakfast program in the Philadelphia and Baltimore Public Schools. Students and their parents from 3 inner city schools (one in Philadelphia and two in Baltimore) were assessed on a battery of psychosocial, academic, and food sufficiency/hunger measures before the start of a free breakfast program in the schools. In both cities, school districts had been taking advantage of Provision 2 of the USDA school meal guidelines which permits schools to provide universally free meals to all students in low income areas under certain conditions. In Philadelphia, more than 150 other schools had already implemented Universal Feeding, while in Baltimore only three other schools had tried this program. Since preliminary analyses showed that the socioeconomic and ethnic characteristics of the children were similar in all 3 schools, the samples were combined for all subsequent analyses.

The regular school breakfast was made available to all students using the conventional payment categories of free, reduced, and full price meals during the first semester. At the beginning of the second semester, the same school breakfast was made available for free to all students. For the current study, students and their parents were interviewed in late January or early February prior to the start of Universal Feeding and then again in late May-early June after the program was implemented. In the 3 schools, children in grades 3 and higher were invited to participate in the study although all children were eligible for a free breakfast. Two schools were K-6 and the third was K-8. Only 3rd graders and older were considered, since that is the minimum age required for some of the child measures.

The parents of all 126 students in the 4-5th grades in the Philadelphia school and the parents of all 367 students in the 3-8th grades in the two Baltimore schools were invited to participate in the study through letters that were sent home with students. After an additional invitation letter and follow-up phone calls, 220 of the 493 (45%) agreed to participate. When interviews were scheduled, 51 of the initially agreeing parents from the 3 schools could not be scheduled, leaving a combined sample of 169 pre-UF breakfast interviews

with parents and children (77% of the agreeing sample and 34% of the total sample). Pre-UF records of individual student breakfast participation were available for 79% of the 169 children, resulting in a sample of 133 students with complete parent/child measures, school records, and staff report of pre-UF breakfast participation.

Parents and children were subsequently reinterviewed about 4 months after the initial interviews. In Philadelphia, the parents of all 59 students who had participated in the initial school breakfast interview were sent invitation letters and were called to set up another interview. In Baltimore, due to time and financial constraints, the study design called for 55 interviews (half of the sample of 110 parents) to be reinterviewed. In these 2 schools, children were randomly sampled from the 3 breakfast groups in efforts to match the original prevalence rate of school breakfast participation. Of the 110 children who were invited for reinterviews, 62 (57%) rarely ate school breakfast, 30 (27%) ate sometimes, and 18 (16%) ate school breakfast often. The parents of 102 of these children (93%) agreed to be reinterviewed. When interviews were scheduled, 12 of the initially agreeing parents could not be scheduled, leaving a final post-UF interview sample of 90 parents and children (88% of the agreeing sample and 82% of parents who were recontacted). Of these 90 subjects, 5 children (6%) had incomplete pre-UF staff breakfast participation records, resulting in a post-UF interview sample of 85 parents and children with complete data. There were no differences in grade level, ethnicity, gender, parental marital status, or fall grades between the initial sample and the reinterview sample.

In all schools, a variety of informational and promotional methods were employed to make parents and children aware of the UF program and to encourage student participation. The study was approved by the Subcommittee on Human Studies at the Massachusetts General Hospital and by the Research Committees of the Philadelphia and Baltimore Public Schools. Participation by parents and children was voluntary and access to school records was made possible through a separate consent.

MEASURES

Pre- and Post- UF Breakfast Participation

School breakfast participation was recorded on site by school staff personnel. Data were collected on student participation the week prior to the implementation of the Universal Feeding Program (pre-UF) and after about sixteen weeks of school breakfast feeding (post-UF). School attendance was obtained from official school records for these one week periods and was used to calculate pre- and post- UF breakfast participation rates by dividing the total number of breakfasts each student consumed each week by the number of days the student attended (not late or absent) during each of the weeks. Children were considered to be "often" participants of school breakfast if they ate breakfast 80% or more of days present. Breakfast participation "sometimes" was the classification used for students who ate between 20% and 79% of days present. Students who ate less than 20% of the time were classified as "rare" school breakfast participants.

Change in Breakfast Participation after UF

For each child, changes in school breakfast participation rates were calculated by subtracting the pre-UF breakfast rate from the post-UF breakfast rate. Children were classified as "increased" school breakfast participants if their rates increased by 20% or more than the rate they participated prior to the implementation of the UF program. Children were considered to have the "same" school breakfast participation if their post-UF rates ranged +/- 19% of their pre-UF rates. Children were considered to be "decreased" school breakfast participants if their participation rate fell 20% or more.

Background Factors

Each child's grade level, ethnicity, gender, and parental marital status was assessed during the initial interviews with parents.

School Record Measures

The students' grades in math, science, social studies, and reading and their absence and tardiness rates were collected for fall and spring quarters from official school records. Letter grades were converted into numerical values based on a 4.0 grading system.

Interview measures: Child Report

Children's Depression Inventory (CDI).

The Children's Depression Inventory (CDI) is a 27-item questionnaire designed to measure depressive symptomology in school-age children.²⁷ It is one of the most widely used depression inventories and has normative data.²⁸ For each item, children are asked to mark one of three statements which best describes their behavior and/or feelings during the previous two weeks (scored 0, 1, or 2). Total CDI scores were used in the analyses of pre-UF, post-UF, and change data.

Revised Child Manifest Anxiety Scale (RCMAS)

The Revised Child Manifest Anxiety Scale (RCMAS) is a 28-item checklist which assesses symptoms of anxiety in school-age children.²⁹ It has been validated in children from a variety of socio-economic levels.^{29,30} Children are asked whether statements are true or false about them. Total RCMAS scores were used in the analyses of pre-UF, post-UF, and change data.

Interview measures: Parent Report

Pediatric Symptom Checklist (PSC).

The Pediatric Symptom Checklist (PSC) is a brief, widely used, parent-completed questionnaire that has been validated as a screening measure to identify children with psychosocial dysfunction.³¹⁻³³ The PSC consists of 35 items that are reported "never", "sometimes", or "often" present and scored 0, 1, or 2, respectively. A total score is obtained by adding the scores for each of the items. For the PSC, RCMAS,

and CDI, higher scores indicate worse functioning.

Teacher-completed measures.

For each participating child in the Baltimore study, teacher-completed evaluations of child behavior were collected with before the program began and again at the end of May.

Conners' Teacher Rating Scale-39 (CTRS-39)

The Conners' Teacher Rating Scale-39 (CTRS-39) is one of the most widely used teacher-reported symptom checklists. It consists of 39 items which assess hyperactivity and other behavioral problems in school-age children. Teachers check each item as not at all present, just a little present, pretty much present, or very much present with numerical scoring weights of 0, 1, 2, and 3, respectively. Although there are 7 subscales on the CTRS-39, the most frequently used scale to assess behavior problems and the one that is recommended for assessing behavior change over time is the Hyperactivity Index. The CTRS-39 Hyperactivity Index is based on a subset of 10 items and has been demonstrated to be a valid and useful assessment tool.^{34,35} Total scores on the CTRS-39 Hyperactivity Index have been shown to correlate reliably with the amount of observed motor activity in the classroom among normal school-age children³⁶ as well as ratings of excessive talking.³⁷ For all 7 CTRS-39 subscales, a higher score indicates more symptomatology. Only the Hyperactivity Index Scores are reported here because the other scores did not demonstrate statistically significant effects.

Statistical Methods

For all measures, differences between group means were compared by use of oneway analysis of variance (ANOVA). Nominal data were compared by the chi-square test with Yates' correction for continuity. A probability level of .05 was considered significant in all tests.

RESULTS

As shown in Table 1, 78% of the children in the full sample were in elementary grades (3-5) and 22% were in middle school grades (6-8). The mean age was 10.3 (SD=1.6). Just under half of the sample was male (44%) and from single parent households (45%). Eighty-three percent were from minority (African-American) backgrounds.

Pre-UF Breakfast Participation and Background Characteristics

Prior to the introduction of the UF Program, the average daily school breakfast participation in the 2 Baltimore schools was 14% (61/432) and 26% (84/322) while in the Philadelphia school the pre-UF rate was 11% (95/873). When all students were pooled, the mean pre-UF breakfast participation rate for the 3 schools was 15% (240/1627) of days present. In the study sample, 62% of the children were classified as eating school breakfast rarely or never, 20% as eating school breakfast sometimes, and 18% as eating school breakfast often (Table 1). Children in the 3 pre-UF breakfast participation groups did not differ significantly with respect to grade level, gender, or parental marital status. Minority children were significantly less likely to eat school breakfast than non-minority children ($\chi^2=13.1$, $df=2$, $p<.01$).

Pre-UF Breakfast Participation and School Record Measures

Math Scores

Students' grades in math were related to school breakfast participation before the UF program began, although their grades in science, social studies, and reading were not. As shown in Table 2, during the fall term prior to the UF Program, children who did not eat school breakfast or who ate breakfast sometimes had significantly lower math scores than those who ate school breakfast often ($F=12.2$, $df=2$, $p<.001$).

Absence and Tardy Rates

During the fall term prior to the UF Program, children who ate breakfast rarely or sometimes were absent from and late to school more days than children who ate school breakfast often, although differences were not statistically significant (Table 2).

Pre-UF Breakfast Participation and Interview Measures

As shown in Table 2, the mean child report of depression (CDI) score for children classified as eating school breakfast rarely was significantly higher(worse) (7.9) than for children who ate school breakfast sometimes (4.5) or often (3.4; $F=13.2$, $df=2$, $p<.001$). The mean child report of anxiety (RCMAS) score for children classified as rarely eating school breakfast (11.4) was significantly higher than for children who ate school breakfast sometimes (8.3) or often (7.2; $F=9.0$, $df=2$, $p<.01$). The mean parent-report of psychosocial symptoms (PSC) score for children classified as rarely eating school breakfast was significantly higher (18.9) than for children who ate school breakfast sometimes (14.7) or often (13.9); ($F=8.1$, $df=2$, $p<.05$).

Pre-UF Breakfast Participation and Hyperactivity

The mean CTRS-39 Hyperactivity Index t-score for children (Baltimore only) classified as eating school breakfast rarely (Table 2) was significantly higher (63.3) than for children who ate school breakfast sometimes (57.3) or often (49.1); ($F=10.7$, $df=2$, $p<.01$).

Post-UF Breakfast

Following the implementation of Universal Feeding, the average daily school breakfast participation in the 2 Baltimore schools increased to 24% (104/426) and 47% (148/318) while in the Philadelphia school the Post-UF rate was 20% (177/868). The mean daily average for the 3 schools combined rose significantly from 15% to 27% ($F=32.5$, $df=2$, $p<.001$). In the study sample, the rate of children who ate school breakfast often rose from 18% to 24%, the rate of children who ate school breakfast sometimes rose from 20% to 33%,

while the rate of children who ate school breakfast rarely declined from 62% to 43%.

Post-UF Breakfast Participation and School Record Measures

Math Scores

At the time of the follow-up assessments, math grades were again significantly related to school breakfast participation (Table 3). Children who ate school breakfast rarely had a mean math grade score of 1.9 compared to 2.0 for children who ate school breakfast sometimes and 2.8 for children who ate school breakfast often ($F=11.1$, $df=2$, $p<.01$).

Absence and Tardy Rates

Children who ate school breakfast rarely were absent from school significantly more days (2.8) than children who ate school breakfast sometimes (1.9 days) or often (1.5 days) during the last academic term; ($F=4.2$, $df=2$, $p<.05$). Children who ate school breakfast rarely were also tardy significantly more days (1.2) than children who ate sometimes (.1 days) or often (.4 days); ($F=6.6$, $df=2$, $p<.01$).

Post-UF Breakfast Participation and Interview Measures

After 4 months of UF breakfast availability, children who ate school breakfast rarely had worse mean CDI and PSC scores than children who ate often, although these differences failed to reach statistical significance (Table 3).

Post-UF Breakfast Participation and Hyperactivity

At the time of the reinterviews, the mean CTRS-39 Hyperactivity Index score for the children classified as eating school breakfast rarely (58.3) was significantly higher than for the children who ate school breakfast sometimes (53.4) or those who ate school breakfast often (47.3); ($F=8.9$, $df=2$, $p<.01$).

Change in UF Breakfast Participation and School Record Measures

Table 4 shows the relationship between changes in school breakfast participation and changes in child academic and psychosocial adjustment scores. In the re-interview sample 42% of the students increased their school breakfast participation rate, 37% had the same school breakfast participation rate, and 21% of the children decreased their school breakfast participation rate. Although these changes in breakfast participation groups in the interview sample did not reach statistical significance, the overall average of school breakfast participation in the 3 schools increased from 15% pre-UF to 27% post-UF was, as already noted, statistically significant.

Math Scores

Children who increased their rate of school breakfast participation were significantly more likely to increase their math scores (+.3 of a grade) than children who had the same or decreased school breakfast participation (decreases of -.1 and -.9 of a grade respectively; $F=24.6$, $df=2$, $p<.001$)

Absence and Tardy Rates

Children who increased their rate of school breakfast participation decreased their rate of school absence (-.1 days) compared to increases of .9 days and 1.6 days for students whose breakfast participation rates stayed the same or decreased ($F=4.2$, $df=2$, $p<.05$). Children who increased their school breakfast participation were also late to school significantly fewer days (-.4) than children whose school breakfast participation remained the same (+.3 days) or decreased (+.9 days); a change that was also statistically significant ($F=6.5$, $df=2$, $p<.05$).

Change in UF Breakfast Participation and Interview Measures

The mean total CDI score decreased by -2.3 points for children who increased their school breakfast participation compared to an increase of +.6 for children whose school breakfast participation stayed the same and an increase of +4.6 on the CDI for children who decreased their school breakfast participation ($F=12.5$, $df=2$, $p<.001$). Children who increased their breakfast participation had significantly greater decreases in total

RCMAS score (-4.4), compared to children who had the same (-.1) or decreased (-2.3) school breakfast participation ($F=5.2$, $df=2$, $p<.05$). Finally, children who increased their breakfast participation rates had the largest decrease in total PSC score (-3.6) compared to children with the same or decreased (-.8 and -.3.1 respectively) breakfast participation ($F=5.5$, $df=1$, $p<.05$).

Change in UF Breakfast Participation and Hyperactivity

Children who increased their breakfast participation had significantly greater decreases in their total CTRS-39 Hyperactivity Index scores (-8.3), than children who had the same school breakfast participation (-6.0), or children who decreased their school breakfast participation rate (an increase of 2.6 on the CTRS-Hyperactivity Index score; $F=9.2$, $df=2$, $p<.01$).

DISCUSSION

In this study of school breakfast participation in 3 inner city public schools, fewer than 1 in 5 elementary and middle school children were eating school breakfast prior to the start of a Universally Free school breakfast program, confirming previous reports that the National School Breakfast program is vastly underutilized in terms of the numbers of children served and possibly in terms of its potential to correct some of the negative effects of chronic undernutrition among low income children in this country. Following the implementation of a Universal Feeding program in 3 inner city schools, the current study documented a nearly 100% increase in school breakfast participation and significant gains in academic and emotional functioning for the children whose breakfast participation increased.

Before UF, cross sectional analyses showed that higher levels of school breakfast participation were associated with better functioning on several measures of academic and psychosocial functioning in children. Children who ate school breakfast often had significantly higher math scores, and significantly lower symptom scores on child-, parent-, and teacher- report questionnaires than children who ate school breakfast

sometimes or rarely. In the longitudinal follow-up analyses, students who increased their school breakfast participation showed the greatest academic improvements in their math grades, attendance, and on time arrival. These children also demonstrated the greatest improvements in functioning on standardized measures of depression, anxiety, overall psychosocial symptoms, and hyperactivity as reported by parents, children, and teachers.

There are a number of limitations that must be taken into account in interpreting the findings of the study. First of all, causal inferences cannot be made since this was not a randomized, controlled study. Such a study, however, which would ultimately cause some children who were eating breakfast to be deprived of breakfast, is impossible for ethical reasons. Secondly, the sample size was relatively small and thus susceptible to variations due to chance. Third, the sample may not have been representative due to loss of subjects at various stages in the sampling. Finally, the children we studied were predominately African-American students from inner-city public school districts, and the impact of school breakfast participation may differ in other racial or ethnic groups from various income levels in other locations.

Nevertheless, our findings are congruent with previous reports of the positive association between school breakfast and academic performance.^{23,26} Significant decreases in child absenteeism and tardiness and increased academic performance were observed in this study as they had been in Meyers et al's study²³ conducted nearly a decade ago and Cook's more recent report.²⁶ The students in these two earlier reports were from different racial/ethnic groups and geographic locations than those from this study. Thus the association between increases in school breakfast participation and improved school attendance and on time arrival has now been replicated across a range of ethnic groups and locations.

We have extended the observations made in earlier studies by documenting for the first time, on an individual case basis, a significant relationship between increases in school breakfast participation and decreases in psychosocial symptoms on standardized measures. The decreases found in child-, parent-, and teacher- reports of psychosocial symptoms in relation to increased school breakfast participation are consistent with and of comparable magnitude to the increases in academic performance. It remains to be seen if the

significant changes in academic, behavioral, and emotional functioning will be sustained for periods longer than the 4 months (one school term) that the program was in place in our 3 study sites.

The associations between school breakfast participation and student functioning appeared to be meaningful as well as statistically significant. For example, in cross sectional data, the students who ate school breakfast often had math grades that averaged almost a whole letter grade higher than students who ate school breakfast rarely (a B [3.0] vs a C [2.1]), a difference that most educators would probably find meaningful. In the longitudinal analyses, the observed change was of about the same magnitude (one-third of a letter grade increase for students who increased vs one full grade decrease for those who decreased their school breakfast participation). In both cross sectional and longitudinal data these differences were approximately one full standard deviation ($sd=1.1$).

Similar and only somewhat less powerful associations were observed for the child-, parent-, and teacher-symptom report measures, where, in the cross sectional data, the differences between students who ate school breakfast often and students who ate rarely ranged from more than one-half (CDI depression) to almost one full standard deviation (Conners hyperactivity). In longitudinal data, the differences between students who increased and those who decreased their school breakfast participation were smaller in some instances, with changes ranging from .10 standard deviation (PSC) to more than one full standard deviation (CDI). Most of the differences for most of the measures were in the .5 of a standard deviation or greater range. Changes of this magnitude in psychological measures are generally considered clinically meaningful. Most teachers would probably notice such differences in school grades, attendance, and behavior in class.

Provision 2 of the current regulations of the National School Breakfast Program offers the option of providing free school breakfast to each child who wants one for all school districts that have 70% or more students who qualify for free or reduced meals, although this provision has been used infrequently. Although this provision was designed primarily to ease the burden of paperwork for school administrators, it appears from both the longitudinal and cross-sectional findings in these school children, that increased participation in free school breakfast programs in low income schools is accompanied by significant improvements in

students' academic performance and psychosocial functioning. From a public health point of view, the potential impact of increasing school breakfast participation through universal feeding deserves much greater attention.

REFERENCES

1. Yip R, Parvanta I, Scanlon K. et al. Pediatric nutrition surveillance system - United States 1980-1991. *Morbidity and Mortality World Report*. U.S. Dept. of Health and Human Services Public Health Service: Atlantic, GA; 1992
2. Hertzog ME, Birch HG, Richardson SA, Tizard J. Intellectual levels of school children severely malnourished during the first two years of life. *Pediatrics*: 1972;49: 814-824
3. Lloyd-Still JD, Hurwitz Wolf P, Schwachman H. Intellectual development after severe malnutrition in infancy. *Pediatrics*. 1974;54: 306-311
4. Barrett DE, Radke-Yarrow M, Klein RE. Chronic malnutrition and child behavior: Effects of early caloric supplementation on social and emotional functioning at school age. *Developmental Psychology*. 1982;18: 541-556
5. Scanlon KS. Activity and behavior changes of marginally malnourished Mexican Pre-Schoolers. Ph.D. dissertation, University of Connecticut, Storrs, CT;1989
6. Connors CK, Blouin A. Nutritional effects on behavior of children. *J Psychiatric Research*. 1982;17: 193-201
7. Chandler AK, Walder SP, Connolly K, Grantham-McGregor S. School breakfast improves verbal fluency in undernourished Jamaican children. *J Nutrition*. 1995;125: 894-900
8. Pollitt E, Leibel R, Greenfield D. Brief fasting, stress, and cognition in children. *Amer J Clin Nutr*. 1981;34:1526-33
9. Simeon DT, Grantham-McGregor S. Effects of missing breakfast on the cognitive functions of school children of different nutritional status. *Amer J Clinical Nutrition*. 1989;49: 646-653
10. Pollitt E, Lewis N, Garza C, Shulman R. Fasting and cognitive function. *Journal of Pediatric Research*. 1982;17:169-174
11. Schoenthaler SJ, Amos SP, Eysenck HJ, Peritz E, Yudkin J. Controlled trial of vitamin-mineral supplementation: Effects on intelligence and performance. *Personality and Individual Differences*. 1991;12:351-362
12. Benton D, Sargent J. Breakfast, blood glucose and memory. *Biol Psychol*. 1992;33: 207-210
13. Pollitt E. Does breakfast make a difference in school. *J Amer Dietetic Assoc*. 1995;95: 1134-9
14. Pollitt E, Jacoby E, Cueto S. School breakfast and cognition among nutritionally at-risk children in the Peruvian Andes. *Nutrition Reviews*. 1996;54: S22-26
15. Galler JR, Ramsey F, Solimano G, Lowell WE, Mason E. The influence of early malnutrition on subsequent behavioral development I. Degree of impairment in intellectual performance. *J Amer Acad Child Adolesc Psychiatr*. 1983;22:8-18
16. Wehler CA, Scott RI, Anderson JJ, et al. *The Community Childhood Hunger Identification Project: A*

32. Jellinek MS, Murphy JM, Burns B. Brief psychosocial screening in outpatient pediatric practice. *J Pediatr*. 1986;109:371-378
33. Murphy JM, Reede J, Jellinek MS, Bishop S. Screening for psychosocial dysfunction in inner-city children: further validation of the Pediatric Symptom Checklist. *J Amer Acad Child Adolesc Psychiatr*. 1992;31:221-232
34. Boyle MH, Jones SC. Selecting measures of emotional and behavioral disorders of childhood for use in general populations. *J Child Psychology Psychiatr Allied Disciplines*. 1985;26:137-159
35. Sandoval L. Format effects in two teacher rating scales of hyperactivity. *J Abnorm Child Psychology*. 1981;9:203-218
36. Kivlahan DR, Siegel IJ, Ullman DG. Relationships among measures of activity in children. *J Pediatric Psychology*. 1982;7:331-344
37. Minde KK. Some thoughts on the social ecology of present day psychopharmacology. *Canadian J Psychiatr*. 1980;25:201-212
38. McGlinchy, TE. Everyone eats free; Can Universal Feeding work? *School Business Affairs*. 1992;58:3-7

Survey of Childhood Hunger in the United States. Food Research and Action Center, Washington, DC; 1996

17. Wehler CA, Scott RJ, Anderson JJ, et al. *The Community Childhood Hunger Identification Project: A Survey of Childhood Hunger in the United States*. Food Research and Action Center, Washington, DC; 1991
18. Kleinman RK, Murphy JM, Little M, Pagano M, Wehler CA, Regal KR, Jellinek MS. Hunger in the United States; Potential Behavioral and Emotional Correlates. Accepted for publication *Pediatrics*. 1997
19. Murphy JM, Wehler CA, Pagano M, Little M, Kleinman RK, Jellinek MS. The relationship between hunger and psychosocial functioning in low income American children. Accepted for publication *J Amer Acad Child Adolesc Psychiatr* 1997
20. Brandenburg NA, Friedman RM, Silver SE. The epidemiology of childhood psychiatric disorders: Prevalence findings from recent studies. *J Amer Acad Child Adolesc Psychiatr*. 1990;29:76-83
20. Rutter M, Quinton D. Psychiatric disorder: Ecological factors and concepts of causation. In H. McGurk (Ed.), *Ecological Factors in Human Development* (pp.173-187) North Holland: Amsterdam; 1977
21. Burghardt J, Devaney B. The School Nutrition Dietary Assessment Study: Summary of Findings. Prepared by Mathematica Policy Research, Inc. Princeton, NJ, under contract NO. 53-3198-0-16 with the Food and Nutrition Service, U.S. Department of Agriculture, October 1993
22. Food Research and Action Center (FRAC). *Fuel for Excellence: FRAC's guide to school breakfast expansion*; 2nd ed. Washington, D.C.: FRAC; 1990
23. Meyers AF, Sampson AE, Weitzman M, Rogers BL, Kayne H. School breakfast program and school performance. *Amer J Diseases Children*. 1989;143:1234-9
24. Jacoby E, Cuerto S, Pollitt E. Benefits of a school breakfast program among Andean children in Huaraz, Peru. *Food and Nutrition Bulletin*. 1996;17:54-9
25. Powell C, Grantham-McGregor S, Elston M. An evaluation of giving the Jamaican school meal to a class of children. *Hum Nutr Clin Nutr*. 1983;37:381-8
26. Cook JT, Ohri-Vachaspati P, Kelly GL. *Evaluation of a Universally-Free School Breakfast Program Demonstration Project*. Medford, MA: Center on Hunger, Poverty, and Nutrition Policy; 1996
27. Kovacs M. The children's depression inventory (CDI). *Psychopharmacology Bulletin*. 1985;21:995-8
28. Nelson WM, Politano PM, Finch AJ, Wendel N, Mayhall C. Children's Depression Inventory: Normative data and utility with emotionally disturbed children. *J Amer Acad Child Adolesc Psychiatr*. 1987;26:43-48
29. Reynolds CR, Richman BO. *Revised Children's Manifest Anxiety Scale (RCMAS)*. CA: Western Psychological Services; 1985
30. Ziv A, Luv M. Manifest anxiety in children in different socioeconomic levels. *Human Development*. 1973;16:224-232
31. Jellinek MS, Murphy JM, Robinson J et al. Pediatric Symptom Checklist: screening school-age children for psychosocial dysfunction. *J Pediatr*. 1988;112:201-9

Table 1.

Background Characteristics and School Breakfast Participation Groups

		TOTAL 133 (100%)	RARELY BK* 83 (62%)	SOME BK 26 (20%)	OFTEN BK 24 (18%)
Grade Level	Elementary (grades 3-5)	111 (83%)	73 (70%)	17 (16%)	14 (14%)
	Middle (grades 6-8)	22 (17%)	16 (55%)	6 (21%)	7 (24%)
Gender	Male	58 (44%)	36 (62%)	12 (21%)	10 (17%)
	Female	75 (56%)	47 (63%)	14 (19%)	14 (19%)
Parental Marital Status	Non-single	73 (55%)	46 (63%)	11 (15%)	16 (22%)
	Single	60 (45%)	37 (62%)	15 (25%)	8 (18%)
Ethnicity	Non-minority	111 (83%)	71 (64%)	25 (23%)	15 (14%)
	Minority	22 (17%)	12 (55%)**	1 (5%)**	9 (41%)**

BK = breakfast

p<.01

Table 2.
Pre-UF Child Adjustment Scores for School Breakfast Participation Groups

		TOTAL 133 (100%)	RARELY BK 83 (62%)	SOME BK 26 (20%)	OFTEN BK 24 (18%)
SCHOOL RECORD MEASURES^a					
MATH grade score ^{***}	mean (sd)	2.3 (1.1)	2.1 (1.0)	2.3 (1.2)	3.0 (1.2)
Days absent	mean (sd)	1.5 (2.1)	1.5 (2.1)	1.5 (2.2)	1.4 (2.1)
Days tardy	mean (sd)	.5 (1.3)	.6 (1.5)	.4 (1.2)	.1 (.3)
INTERVIEW MEASURES					
CHILD REPORT^b					
CDI total score ^{***}	mean (sd)	6.4 (5.9)	7.9 (6.6)	4.5 (3.8)	3.4 (3.1)
RCMAS total score ^{**}	mean (sd)	10.1 (6.4)	11.4 (6.5)	8.3 (5.6)	7.2 (5.6)
PARENT REPORT^c					
PSC total score [*]	mean (sd)	17.2 (9.5)	18.9 (10.3)	14.7 (8.2)	13.9 (6.4)
TEACHER REPORT MEASURES^d					
CONNERS SCORE ^{**}	mean (sd)	76 (100%) 58.4 (17.5)	41 (54%) 63.3 (19.8)	15 (20%) 57.3 (11.5)	20 (26%) 49.1 (11.9)

p<.05 ** p<.01 *** p<.001

Math grade scores on an A=4.0 grade scale

CDI = Child Depression Inventory

RCMAS = Revised Child Manifest Anxiety Scale

PSC = Pediatric Symptom Checklist

CONNERS = Conners Teacher Rating Scale, Hyperactivity Index/ Baltimore sample only

Table 3.
Post-UF Child Adjustment Scores for School Break Participation Groups

		TOTAL 133 (100%)	RARELY BK 57 (43%)	SOME BK 44 (33%)	OFTEN BK 32 (24%)
SCHOOL RECORD MEASURES^a					
MATH grade score**	mean (sd)	2.2 (1.2)	1.9 (1.3)	2.0 (1.1)	2.8 (1.0)
Days absent*	mean (sd)	2.2 (2.6)	2.8 (3.0)	1.9 (2.3)	1.5 (1.7)
Days tardy**	mean (sd)	.6 (1.9)	1.2 (2.7)	.1 (.3)	.4 (.8)
INTERVIEW MEASURES					
CHILD REPORT^a		85 (100%)	27 (32%)	39 (46%)	19 (22%)
CDI total score	mean (sd)	6.2 (6.3)	6.8 (5.4)	6.8 (7.4)	4.2 (3.6)
RCMAS total score	mean (sd)	7.8 (7.0)	7.2 (7.3)	8.4 (6.9)	7.3 (7.1)
PARENT REPORT^a					
PSC total score	mean (sd)	15.7 (11.0)	17.2 (12.3)	15.2 (11.0)	14.7 (9.6)
TEACHER MEASURES^d					
CONNERS score**	mean (sd)	53.8 (11.9)	58.3 (12.1)	53.4 (12.6)	47.3 (7.2)

p<.05 ** p<.01

Math grade scores on an A=4.0 grade scale

CDI = Child Depression Inventory

RCMAS = Revised Child Manifest Anxiety Scale

PSC = Pediatric Symptom Checklist

CONNERS = Conners Teacher Rating Scale, Hyperactivity Index/ Baltimore sample only

Table 4.
Pre-UF vs Post-UF Changes in Child Adjustment Scores for School Breakfast Participation Groups

		TOTAL 133 (100%)	DECREASE BK 28 (21%)	SAME BK 49 (37%)	INCREASE BK 56 (42%)
SCHOOL RECORD MEASURES^a					
MATH grade score ^{***}	mean (sd)	-.1 (1.1)	-.9 (1.3)	-.1 (1.1)	.3 (.9)
Days absent [*]	mean (sd)	.6 (2.8)	1.6 (3.4)	.9 (3.4)	-.1 (1.5)
Days tardy [*]	mean (sd)	.1 (2.1)	.9 (3.7)	.3 (1.1)	-.4 (1.4)
INTERVIEW MEASURES					
CHILD REPORT^b		85 (100%)	14 (17%)	29 (34%)	42 (49%)
CDI total score ^{***}	mean (sd)	-.2 (6.3)	4.6 (3.4)	.6 (7.7)	-2.3 (4.9)
RCMAS total score [*]	mean (sd)	-2.6 (6.6)	-2.3 (5.5)	-.1 (6.6)	-4.4 (6.4)
PARENT REPORT^c					
PSC total score [*]	mean (sd)	-2.6 (8.3)	-3.1 (8.8)	-.8 (9.7)	-3.6 (7.1)
TEACHER MEASURES^d					
CONNERS score ^{**}	mean (sd)	76 (100%) -4.5 (13.4)	33 (43%) 2.6 (10.1)	22 (29%) -6.0 (11.9)	21 (28%) -8.3 (14.9)

p<.05 ** p<.01 *** p<.001

Math grade scores on an A=4.0 grade scale
 Change in absences/tardies between first and last quarter

CDI = Child Depression Inventory
 RCMAS = Revised Child Manifest Anxiety Scale
 PSC = Pediatric Symptom Checklist

CONNERS = Connors Teacher Rating Scale, Hyperactivity Index/ Baltimore sample only

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United States
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Food and
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Evaluation

Measuring Food Security in the United States

Household Food Security in the United States in 1995

Executive Summary



Measuring Food Security in the United States

**United States
Department of
Agriculture**

Food and
Consumer
Service

3101 Park
Center Drive

Alexandria, VA
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Indicators of Food Insecurity

- (1) *I worried whether our food would run out before we got money to buy more.* Was that often, sometimes, or never true for you in the last 12 months?
- (2) *The food that we bought just didn't last, and we didn't have money to get more.* Was that often, sometimes, or never true for you in the last 12 months?
- (3) *We couldn't afford to eat balanced meals.* Was that often, sometimes, or never true for you in the last 12 months?
- (4) *We relied on only a few kinds of low-cost food to feed the children because we were running out of money to buy food.* Was that often, sometimes, or never true for you in the last 12 months?
- (5) *In the last 12 months, did you or other adults in your household ever cut the size of your meals or skip meals because there wasn't enough money for food?*
- (6) *How often did this happen – almost every month, some months but not every month, or in only 1 or 2 months?*
- (7) *We couldn't feed the children a balanced meal because we couldn't afford that.* Was that often, sometimes, or never true for you in the last 12 months?
- (8) *In the last 12 months, did you ever eat less than you felt you should because there wasn't enough money to buy food?*
- (9) *The children were not eating enough because we just couldn't afford enough food.* Was that often, sometimes, or never true for you in the last 12 months?
- (10) *In the last 12 months, were you ever hungry but didn't eat because you couldn't afford enough food?*
- (11) *Sometimes people lose weight because they don't have enough to eat. In the last 12 months, did you lose weight because there wasn't enough food?*

- (12) In the last 12 months, *did you ever cut the size of any of the children's meals because there wasn't enough money for food?*
- (13) In the last 12 months, *did you or other adults in your household ever not eat for a whole day because there wasn't enough money for food?*
- (14) *How often did this happen* – almost every month, some months but not every month, or in only 1 or 2 months?
- (15) In the last 12 months, *were the children ever hungry but you just couldn't afford more food?*
- (16) In the last 12 months, *did any of the children ever skip a meal because there wasn't enough money for food?*
- (17) *How often did this happen* – almost every month, some months but not every month, or in only 1 or 2 months?
- (18) In the last 12 months, *did any of the children ever not eat for a whole day because there wasn't enough money for food?*



Measuring Food Security in the United States

**United States
Department of
Agriculture**

Food and
Consumer
Service

3101 Park
Center Drive

Alexandria, VA
22302-1500

Findings

During the 12 months ending in April 1995:

- ✓ 12 million American households experienced food insecurity, the uncertain or limited access to enough food (12% of all households)
- ✓ 4 million American households experienced moderate or severe hunger (4% of all households)
- ✓ About 800,000 American households experienced severe hunger (less than 1% of all households)
- ✓ 2 million households with children experienced moderate or severe hunger (5% of all households with children)
- ✓ About 500,000 households with seniors (age 60 or older) experienced moderate or severe hunger (2% of all households with elderly and no children)
- ✓ Poor households – those with income below the poverty line – were about three times more likely to experience moderate or severe hunger than the average household (13% of all poor households compared to 4% households)
- ✓ Black and Hispanic households were about two times more likely to experience moderate or severe hunger than the average household (8% and 9%, respectively, compared to 4% of all households)

*Child
Nutrition
Services*

**Talking Points On Why There Should Be A
Presidential Signing Ceremony For
H.R. 3874
The Child Nutrition Reauthorization Act of 1998**

- H.R. 3874 compliments a major White House initiative on expansion of after-school education and mentoring programs. It provides \$120 million dollars over a five year period for snacks for over 1 million children. Over 940,000 children in school based after-school programs as well as 61,000 children in At Risk child care programs will benefit. Snacks will be served free to children ages 6-18 in every major urban area in the country. Such snacks will be a catalyst for local educational officials to start or expand existing after-school programs.
- H.R. 3874 demonstrates Presidential leadership. The President promised a cost neutral progressive child nutrition bill and he delivered one.

This legislation:

- improves program operations,
- reduces paperwork burdens,
- and enhances the nutrition and health status of children
- The Administration's bill was adopted by the Chairman of the House and Senate authorization committees as their mark-up vehicle.
- Two years ago the House Republican leadership voted to end the entitlement status of School Lunch and block grant the program. President Clinton "school lunched" the House Republican leadership by vetoing the 1st Welfare Reform bill in part because it contained School Lunch Block Grant demos. The political fallout for Republicans was enormous and was a major factor in why the Conference Report on H.R. 3874 passed the House by a vote of 422 to 1 and the Senate by unanimous consent.
- There are 94,000 schools that participate in School Lunch. Every town has a school that offers a school lunch. Every kid that eats a lunch has one or two parents. These folks all vote.
- H.R. 3874 is the largest child nutrition bill since 1978.
- Key democratic members strongly supported this legislation including:
 - Minority leader Daschle
 - Senators Johnson, Harkin and Leahy
 - Rep. Woolsey, Clay, Martinez and Kildee

- **Key democratic constituencies strongly supported this legislation including:**

These and other allied groups have a combined membership of over 15 million people. They all want to go to a White House signing ceremony. The last White House signing ceremony on a major child nutrition bill was in 1978.

- provide 15,000 preschool children in Kentucky and Iowa with nutritious meals through the Child and Adult Care Food Program. These children would have been terminated from CACFP without this legislation since they were in for profit child care centers. All of these children are poor, but Federal guidelines presented a barrier to participation. H.R. 3874 changed those guidelines thereby benefiting these children
- makes a change in licensing requirements for CACFP requested by the entire Ohio delegation, thereby preserving benefits for thousands of young children served by Boys & Girls Clubs
- gives USDA funding (through the use of Sec 32 funds) to ensure that commodities that pose health or safety risks are immediately removed from schools i.e., bad strawberries and e-coli meat)

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