

The Effect of Sugar and Processed Food on Student On-Task Behavior in the National  
School Lunch Program:  
A Review of the Literature

Britt Lee

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*"He that takes medicine and neglects diet, wastes the skill of the physician."*

Chinese Proverb

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Abstract

Not too long ago, people in the United States ate real, fresh, seasonal food. Today, the prevalence of low quality foods has made it increasingly challenging to feed young children healthy, nutritionally balanced meals. Furthermore, what a child eats is often limited by his/her parents' income. Inexpensive food is often processed, full of sugar, and nutrient deficient; yet is also easily accessible. Research supports the fact that a wholesome diet delivers essential vitamins and minerals, protects against disease, and ensures proper growth. The National School Lunch Program (NSLP) was instituted to provide free lunches to those in need, but these lunches contain a significant amount of highly processed foods. How does highly processed food affect a child's ability to stay on-task and perform well in school? The purpose of this study is to examine the importance of serving nutritious lunches in free lunch programs, thus providing students with at least one nutritious meal a day.

## Chapter 1 Introduction

Not too long ago when most North Americans lived on farms, our diet primarily consisted of whole, fresh, and seasonal foods. Food choices were made for pleasure, tradition, and nutrition. This was an age of “slow food” when good, healthy food was enjoyed while sitting down with family and friends. Even many people in towns grew their own food in their own yards. However, as a result of increased technology after the Industrial Revolution, food production became processed and mass-produced. Processing the food takes away many of the valuable vitamins and minerals, resulting in food that is available to the masses, but lacking in nutrition. Food makers began adding sugar and fat to the food to make it taste better. Also, in today’s world, we demand fast food to fit our fast-paced lifestyle. Although such food is convenient, inexpensive, and accessible, it is not healthy for adults or children. The diet of a school-age child directly impacts their future health, including increased obesity, heart disease, and diabetes. An American born in the year 2000 has a 1 in 3 chance of developing diabetes in his lifetime. It has been shown that an estimated 80 percent of type 2 diabetes could be prevented by a change of diet and exercise (Pollan, 2008). In addition, a link between diet quality and academic performance has been established. Florence, Asbridge, and Veugelers (2008) found that children with overall better quality diets tend to have better cognitive function and academic performance. Now is the time to give our country’s children a healthier future.

### Statement of Problem

What children eat is often limited by their parents’ income. Inexpensive food is often processed, full of sugar, and nutrient deficient; yet it is also easily accessible. Low-

income families are faced with tight budgets and are often forced to choose inexpensive food that is nutritionally deficient over food that is healthy, but more expensive. Also, whether low income or not, families in the United States spend a smaller percentage of income on food than any other industrialized society (Pollan, 2008, p.145). School children who qualify for free or reduced-priced lunch through the National School Lunch Program (NSLP) obtain approximately one-third of their daily calories from this program. By serving wholesome food, there is an opportunity for children to receive at least one healthy meal a day. However, many school cafeterias nationwide sell items such as pizza, nachos, and soda, which limit the choices to unhealthy, empty calories.

Additionally, it can be difficult to navigate deceptive food labels. According to Pollan (2008), “the American Heart Association currently bestows (for a fee) its heart-healthy seal of approval on Lucky Charms, Cocoa Puffs, and Trix cereals, Yoo-hoo lite chocolate drink, and Healthy Choice’s Premium Caramel Swirl Ice Cream Sandwich – this at a time when scientists are coming to recognize that dietary sugar probably plays a more important role in heart disease than dietary fat” (p. 156). Adler and Stewart (2008) state that “it is harder to maintain a proper diet and be physically active in poorer neighborhoods. Healthy food is harder to come by, and food that is bad for you is cheap and in abundant supply” (p. 24). At Safeway, a bag of Cheetos costs \$2.50 and a bag of assorted apples and oranges costs \$6.99. In the film *Food, Inc.*, director Robert Kenner interviews Maria Andrea Gonzalez, a mother of two who, along with her diabetic husband, struggles daily to provide nutritious food to her family. She says, “When you have only a dollar to spend and two kids to feed, you either go to the market and try to find something that’s cheap, or go straight to a drive-thru and get 2 small hamburgers.

This is what's going to fill them up, not that one single item at the market. Sometimes you look at a vegetable and say 'you could get 2 hamburgers for the same price.'" It has been proven that a diet of fresh, wholesome food delivers essential vitamins and minerals, protects against disease, and ensures proper growth, yet the high price of fruit and vegetables does not make these foods a practical choice for a family on a tight budget.

Many schools serve lunches that are high in saturated fat and sugar and lack fruit, vegetables, and whole grains. For those students who rely on the NSLP for a free or reduced-priced lunch, this meal may be their only nutritious meal of the day. How does food high in fat and sugar affect a child's on-task performance in school?

Florence, Asbridge, and Veugelers (2008) found that students with decreased overall diet quality are more likely to perform poorly in school. The authors of the study examined 5,200 5<sup>th</sup> grade students in Nova Scotia, where 32.9% of students are at risk for overweight, and 9.9% are overweight. The subjects' overall diet quality was examined first, and then the students' academic performance was measured by taking the Elementary Literacy Assessment, a standardized test. The results demonstrated that students who reported higher diet quality were significantly less likely to fail the literacy assessment. Additionally, the students' consumption of more fruits and vegetables and less fat resulted in students who were less likely to fail the test.

The relationship between obesity and academic performance among school-age children has also been studied. Taras and Potts-Datema (2005) discuss nine studies that demonstrate the association between student health and academic outcomes. For example, one study examined the intellectual characteristics using the Wechsler

Intelligence Study for Children (WISC) of 65 obese children ages 8-13 and compared the results to a control group of 35 well-nourished, tall (>95<sup>th</sup> percentile for height) children who were of normal weight for their height. The study's results showed that the "children with normal height/weight ratios had significantly better performance in IQ than those in the obese group, had a wider range of interests, better capacity for social adaptability, and greater speed and dexterity" (p. 293). The impact of student health on school performance has many implications. One way to achieve improvement is to ameliorate the quality of food that our nation's children eat.

#### Purpose

The purpose of this study is to discuss the importance of serving healthy lunches in free lunch programs, thus providing students with at least one nutritious meal a day. Nearly one in three (32%) of American children are obese or overweight. Today's generation of children are predicted to be the first to die before their parents, due to obesity-related bad health (Oliver, 2010). A growing body of knowledge exists about the poor quality of food served in school lunches and its effect on academic performance. The purpose of this paper is to explore this issue on a deeper level.

#### Research Issue

The current state of the food served in the NSLP is in need of reform in order to better benefit the physical and mental health of American school children. Currently, this program serves 31 million children for \$9.3 billion a year, which boils down to \$2.68 per lunch per child. Of that \$2.68, only about \$1 goes toward food costs (Cooper, 2010). This is not enough money to provide fresh, nutritious meals for eligible students. Given



these facts, what can be done to improve the food that our nation's children eat, thus ensuring a healthier future for them?

### Theoretical Rationale

The important role food plays in our wellbeing was originally stated by Hippocrates when he said, "Let food be thy medicine and medicine be thy food." In America the USDA published its first dietary recommendations in 1894 before certain vitamins and minerals were even discovered. The first recommendations were written for American males and emphasized protein, carbohydrate, and fat. At that time, the relationship between a proportionate and varied diet and health was being established.

In 1946, the National School Lunch Act was approved to give schools aid to operate permanent school lunch programs. According to Gunderson on the U.S. Department of Agriculture's National School Lunch website, the program was instituted in 1946 under the following requirements: lunches must meet the minimum nutritional requirements prescribed by the Secretary of Agriculture, meals must be served without cost or at reduced cost to children who are determined unable to pay the full cost of the lunch and not to discriminate against such children, the program must be operated on a non-profit basis, schools must utilize the agricultural commodities from the USDA, and schools must maintain proper records of all receipts and expenditures. By the end of the program's first year, about 7.1 million children participated in the NSLP. In 2008, the NSLP served 30.5 million children each school day.

The USDA also played a large role in defining how Americans should eat when in 1992 the first Food Guide Pyramid was introduced. According to Willett and Stempfer (2006), "the basic advice was that people should minimize their consumption of fats and

oils but should eat six to 11 servings a day of foods rich in complex carbohydrates” (p. 12). In addition, ample amounts of fruits and vegetables were recommended. The food pyramid became an icon of nutrition to children and adults alike. In 2005 the Food Guide Pyramid was revised to include an emphasis on physical activity as well as whole grains. The new version does not provide a single recommendation for the general population. Instead it provides individualized advice based on age, gender, and level of physical activity. One can go to [www.mypyramid.gov](http://www.mypyramid.gov) to receive dietary advice.

This year, Congress is set to reauthorize child nutrition programs, including \$12 billion for school meals. The USDA standards for school meals include a minimum calorie count that was enacted around World War II when undernourished young men could not serve in the military. On the other hand, there is no maximum calorie count. In order to meet that minimum calorie count, lunch programs rely on adding high calorie items such as desserts and chocolate milk because it is difficult to hit that mark by adding fruits and vegetables alone. Advocates for school meal reform are calling for Congress to allocate more money to fund these programs so children have access to more nutritious meals. Ann Cooper, also known as the Renegade Lunch Lady, overhauled the school lunch program in Berkeley and is now working with Whole Foods Market to do so on a national level. In an interview by Jane Black of the Washington Post (2009), Cooper’s message is that “we need fresh fruits, vegetables, whole grains, and clean protein. If we could get rid of the highly processed food, refined sugar and flour, trans fats, and high-fructose corn syrup, we would be so far ahead” (para. 9).

## Assumptions

One of my assumptions is that a healthy diet during a child's development sets the stage for a healthy body in adulthood. I also assume there is a link between nutrition and on-task performance as determined by previous research. I contend that nutrition affects standardized test scores. Schools that are struggling financially are not keeping students' best interests in mind by serving less expensive and thus less nutritious meals. As a life-long vegetarian, it is also my belief that a plant-based diet is health promoting for both children and adults and that schools should make a concerted effort to emphasize meat-free options in school lunches.

## Background and Need

In 2006 Grantham-McGregor and Olney demonstrated that diet quality is positively associated with academic performance. The authors state that "relieving hunger may improve the child's attention and decrease disruptive behavior, thus increasing the time spent concentrating on school tasks" (p. 106). The focus of my research builds upon such findings by further examining school lunches and documenting how improving the quality of these lunches also improves student on-task behavior and overall academic performance.

## Chapter 2 Review of the Literature

A review of the literature reveals several themes from the previous research on the relationship between diet quality and academic performance. The first theme demonstrates how diet quality affects academic performance. A diet full of nutritious foods like fruits, vegetables, and whole grains has a positive impact on academic performance, such as on-task behavior and attendance. On the other hand, a diet primarily comprised of processed food, fat, and sugar has a negative impact on student health and ability to concentrate.

An additional theme in the previous research is the link between socioeconomic status and the availability of fresh food. In some low-income areas known as food deserts, supermarkets are more than a mile away, thus limiting community access to nutritious food. Also, low-income families often rely on the NSLP for a free or reduced-price meal each day. If this meal is devoid of key vitamins and nutrients, it is possible that these children are not getting the nourishment they need to properly grow and develop.

Finally, the current status of the NSLP is examined. The original intent of the program was to ensure that the nation's children were not malnourished and received a warm lunch daily. Today our nation's children are confronting a different problem – obesity and obesity-related illnesses. Many efforts are under way to reform and improve the health and wellness of American children through a variety of programs, from serving healthier fare to planting an edible garden.

## Review of Previous Research

### *Diet Quality and Academic Performance*

One major theme in the literature is the relationship between overall diet quality and academic performance. Several studies examined the link between improved academic performance as measured by factors such as student test scores, behavior, and attendance, as a result of improved diet in elementary school children.

Grantham-McGregor and Olney (2006) examine the role of nutrition for school-aged children in several areas of school performance, including attendance, behavior, and achievement levels. This article cites evidence that children's academic performance improves when school meals improve, particularly with economically disadvantaged children. The authors state that "relieving hunger may improve the child's attention and decrease disruptive behavior, thus increasing the time spent concentrating on school tasks. Cognition can improve with the relief of hunger so the child is able to learn more efficiently" (Grantham-McGregor & Olney, 2006, p. 106). Most of the studies cited in the article focus on the increased academic achievement of poor children when given school meals and demonstrates that providing nutritious meals to high-risk populations has a positive effect on school performance.

Chmelynski (2007) proves that the implementation of free breakfast programs in schools is a means to increase academic performance. The author demonstrates the difference between what children were eating before receiving free breakfasts at school, "candy bars, potato chips, and all junk food," and how the healthier food provided by the breakfast program has improved performance. Chmelynski (2007) states "studies find

that students who eat school breakfast increase their math and reading scores and improve speed and memory in cognitive tests, also finding that children who eat breakfast at school – closer to class and test-taking time – do better on standardized tests than those who skip breakfast or eat it at home” (p. 60).

Florence, Asbridge, and Veugelers (2008) detail a link between overall diet quality and academic performance among 5<sup>th</sup> graders in Nova Scotia. The authors looked at many factors that contribute to a child’s academic performance and narrowed down the association between diet quality and academic performance. The authors studied the variables that contribute to improved academic performance with an improved diet. This study provides important information connecting diet and academic performance.

Florence et al. (2008) assessed 5,200 5<sup>th</sup> graders using the Elementary Literacy Assessment and also examined the overall diet quality of the students using the Diet Quality Index-International. The results illustrated that “students with an increased fruit and vegetable intake and lower caloric intake of fat were significantly less likely to fail the assessment” (Asbridge et al., 2008, p. 212).

Taras and Potts-Datemas (2005) are the authors of a journal article that examines the link between obesity among school children and how obesity affects academic outcomes. The authors discuss nine studies that demonstrate the positive correlation between student health and school performance. One such study compares the intellectual characteristics of 65 obese children ages 8-13 to those of a control group of 35 well-nourished and tall children. The outcome demonstrates that children in the control group performed better on the Wechsler Intelligence Scale for Children (WISC) and were also more socially comfortable, well-rounded, and dexterous.

Michael Pollan's work *In Defense of Food* (2008) discusses the current state of the Western diet and its effects on Americans' health. He presents a provocative look at our food culture and how what is now considered food is really a result of food science and an obsession with a food's nutrients as opposed to the food itself. Pollan offers basic and manageable advice for improving the nation's diet: "Eat food. Not too much. Mostly plants" (Pollan, 2008, p. 146).

### *Socioeconomic Status*

An additional theme is the relationship between a family's place on the economic ladder and their access to health care, nutritious food, a safe place to exercise, and ultimately how long they live. The lower one is on the ladder, the more difficult it becomes to have access to health-promoting resources.

The work of Adler and Stewart (2008) discusses a multitude of elements that go into a healthy way of life and how these elements are related to socioeconomic status in the United States. The authors illustrate that those who are financially secure are typically healthy and live long, whereas those who are economically disadvantaged do not have access to the same resources and are not as healthy. The authors discuss eight facts in-depth that contribute to one's health in the US: social status, the neighborhood where one lives, employment conditions, personal behaviors, health care, race, stress, and blood pressure. The information presented in this study is compiled from longitudinal studies as well as more specific studies about health, demographics, and socioeconomics. This study highlights the importance of nutritious school lunches for low-income children who do not have easy access to healthy food as more privileged students.

Providing access to healthy and affordable food for all is one component of First Lady Michelle Obama's Let's Go initiative to fight childhood obesity in America.

Finding fresh, healthy food can be particularly challenging to the 23 million Americans, including 6.5 million children, who live in urban and rural areas where there is no access to a supermarket. These communities are known as food deserts. Under the Healthy Food Financing Initiative, which joins the US Treasury, Agriculture and Health and Human Services Departments, financing will be provided to bring grocery stores to these neglected areas. Additionally, convenience stores and bodegas will be encouraged to provide more nutritious food options, thus increasing the availability of healthy food in areas where such choices once did not exist (U.S. Government, 2010).

The film *Food, Inc.* (2008) takes a macro view of the food industry by exploring the truth behind the food we buy at the supermarket and then serve to our families. Director and producer Robert Kenner takes a comprehensive look at the highly manipulated system of the national food industry. Only a handful of large companies control our food, including how it is made, the herbicides and antibiotics used, and how much it costs. These companies are more interested in profit than on delivering safe and healthy food to consumers. As a result of moving from the farming of food to the business of food, we live in a world where chickens are bigger and tomatoes are available year-round, and the natural state of plants and animals are ignored. Although the food is in an artificial state, it is also cheaper and widely available to the public. Organic apples grown in Sebastopol, California are much more expensive than drive-thru fast food options. The sad truth is that for a family on a tight budget, cheap nutrient-deficient food is far less expensive than organic fruits, vegetables, grains, and meat.



*Current Status of National School Lunch Program*

A third theme is the current state of the food that is served in American schools today. Many school cafeterias serve foods à la carte or from the vending machines that are not subsidized or regulated by the government and are high in saturated fat and sugar. Students are then free to make a meal of chips and a soda, which may appeal to children more than the healthier food offered by the government's NSLP.

Gunderson (2009) details the history of the NSLP in America on the United States Department of Agriculture's (USDA) website. Providing warm meals for children at school has been going on since the 1850s when families and private associations undertook the endeavor. It was not until 1946 when the National School Lunch Act was approved that free or reduced-price school lunches became a regulated and permanent part of the school system.

Willett and Stampfer (2006) provide a brief history of the original USDA Food Guide Pyramid that was introduced in 1992, as well as the revised pyramid of 2005. The Food Pyramid is a guide for balanced food consumption and also influences the composition of the foods served in the National School Lunch Program. The USDA has been publishing dietary recommendations since 1894, and in subsequent years foods were divided into five groups: 1) milk and meat; 2) cereals; 3) vegetables and fruits; 4) fats and fatty foods; and 5) sugar and sugary foods. Eventually this led to the establishment of recommended daily allowances (RDA).

A 2009 study by Briefel, Wilson, and Gleason examined the NSLP and discovered that "the association between program participation and excessive sodium intakes, along with the high prevalence of excessive saturated fat intakes among all

students, suggest areas for improvement in the meals these programs provide” (S44).

The study examined the diets of 2,314 nationally representative children grades 1 through 12 from 287 public schools. Data on children’s dietary intake was taken from 24-hour dietary recalls, and was then assessed for inadequate and excessive intake of energy and nutrients. The results demonstrate that 80% of American public school children had excessive intakes of saturated fat, and 92% had excessive intakes of sodium.

As previously discussed, Chef Ann Cooper is pioneering efforts to change both how the overall system works, as well as the food that is served. Cooper’s view is that our government is not allocating enough money to child nutrition programs and that children are not being fed nutritious food. The USDA is in charge of the NSLP as well as agribusiness, which Cooper cites is a conflict of interest. The National School Lunch Act was designed for schools to absorb surpluses from American farmers, and the surplus food is not always high quality. Cooper’s strong views and passion about the necessity of implementing change in the country’s school lunch program is shown in this interview.

Similarly, British chef Jamie Oliver helped change the way the people of England eat by encouraging the nation to start cooking again. He is now pioneering a movement in America, called Jamie Oliver’s Food Revolution. He created a reality TV show that chronicled his efforts to transform school lunches in one of America’s unhealthiest cities, Huntington, West Virginia. In addition, Oliver has written a petition to be presented to President Obama calling for the replacement of junk, snack, and processed foods in schools and homes with freshly cooked nutritious food. His belief is that “every child in America has the right to fresh, nutritious school meals, and that every family deserves real, honest, wholesome food. Too many people are being affected by what they eat. It's

time for a national revolution. America needs to stand up for better food” (Oliver, 2010).

In California, Colorado, and Washington, DC Revolution Foods is a company that provides school lunches that are “healthy, tasty, home-made, affordable and reimbursable” (Revolution Foods, 2010, para.1). Revolution Foods prepares food daily for schools and uses organic and locally produced products. Each meal contains fresh fruit and vegetables, healthy carbohydrates, and lean protein. The company does not use overly processed food, food that is microwaved, or foods that contain high fructose corn syrup or trans fats. All of the meals served by Revolution Foods meet the stringent quality standards of Whole Foods Market. In addition to serving wholesome food to students and staff, Revolution Foods also provides nutrition education to schools, ranging from sample lesson plans to on-site cooking demonstrations.

An additional local example of innovation is the Edible Schoolyard (ESY), a one-acre garden and kitchen classroom at Martin Luther King, Jr. Middle School in Berkeley, CA. Founded in 1995 by chef Alice Waters of Chez Panisse, this garden acts as an outdoor classroom for students as they learn all aspects of growing, harvesting, and preparing nutritious produce. The garden itself serves as a part of the curriculum, teaching the students about food, health, and the environment. Students learn about a wide variety of fruits and vegetables as they watch them grow from seed to table. By watching first-hand where food comes from, students also learn how to make healthy food choices (The Edible Schoolyard, 2010).

Currently, First Lady Michelle Obama is leading a national anti-obesity initiative called Let’s Move. The four goals of the program are to help families make healthy choices, improve the quality of food in schools, improve access and affordability of

healthy foods, and increase physical activity (U.S. Government, 2010). In addition, the Obama administration has budgeted \$1 billion a year for school lunch programs to rebuild kitchens, serve healthier food, and train food service employees. These funds also go toward increasing the reimbursements that districts receive for the meals they serve to \$2.68 per lunch. Anthony Geraci, director of food and nutrition for the Baltimore City Public Schools says “the up-front costs of feeding our kids better food are wiped out on the back end by the high cost of treating Type 2 diabetes” (Lochhead, 2010, para. 4).

#### Summary of Major Themes

In reviewing this literature, it is apparent that what children eat today has an impact on how well they do in school, and how healthy they will be in the future. A substantial body of research exists documenting the relationship between diet and health, socioeconomic status and the availability of nutritious food, as well as ways to improve what students are fed. Armed with this knowledge, America is on the verge of a change in the right direction.

#### Statistical Information

As Americans’ waistlines grow due to poor diet and lack of physical activity, so do the statistics on obesity and obesity-related illnesses. A governmental agency that oversees the health of the nation is the Centers for Disease Control and Prevention (CDC). The Centers for Disease Control and Prevention is a part of the United States Department of Health and Human Services. The mission of the CDC is “collaborating to create the expertise, information, and tools that people and communities need to protect their health – through health promotion, prevention of disease, injury and disability, and

preparedness for new health threats” (Centers for Disease Control and Prevention (CDC), 2010b, para. 1). The CDC works to detect and investigate health problems, enhance prevention, develop prevention strategies, and promote healthy behavior (CDC, 2010b).

The CDC website has many reports, data, and statistics on all major health topics, from arthritis to heart disease. There is an entire section of the site dedicated to overweight and obesity for both adults as well as children. According to data collected in 1976-1980 and 2003-2006, the prevalence of childhood obesity has increased significantly in that time period. For children aged 2–5 years, prevalence increased from 5.0% to 12.4%; for those aged 6–11 years, prevalence increased from 6.5% to 17.0%; and for those aged 12–19 years, prevalence increased from 5.0% to 17.6% (CDC, 2010a). Many factors that contribute to childhood obesity are listed, including the consumption of energy-dense foods and beverages. CDC research indicates “in the area of consuming sugar-sweetened drinks, evidence is growing to suggest an association with weight gain in children and adolescents. Consuming sugar-sweetened drinks may be associated with obesity because these drinks are high in calories” (CDC, 2010a, para. 6). The CDC also lists schools as an important environment in which most children spend a large amount of time each day, and is therefore “an ideal setting for teaching children and teens to adopt healthy eating and physical activity behaviors” (CDC, 2010a, para. 8). The Centers for Disease Control and Prevention website not only provides statistics about the obesity epidemic in America, it also gives tips and tools for parents, schools, and policymakers to help fight and prevent obesity.

## Administrative Records

Slow Food USA is part of a worldwide grassroots movement that supports a sustainable connection between the food on our plates and the health of the planet. Slow Food is the antithesis of fast food. The mission of Slow Food USA is “to create dramatic and lasting change in the food system. We reconnect Americans with the people, traditions, plants, animals, fertile soils, and waters that produce our food. We seek to inspire a transformation in food policy, production practices, and market forces so that they ensure equity, sustainability, and pleasure in the food we eat” (Slow Food USA, 2010b, para. 1). Slow Food USA envisions a world where all people have access to good, clean, and fair food. Food that is *good* is both nutritious as well as grown from plants and animals that were cared for in a humane manner. Food that is *clean* is healthy and is harvested in a way that has a positive impact on our planet and its ecosystems. Food that is *fair* is accessible to all, regardless of income. People who are justly compensated for their labor grow this delicious food (Slow Food USA, 2010b).

Slow Food USA has a project called Time for Lunch, a campaign aimed at urging legislators to help reform the Child Nutrition Act, which is up for renewal in 2010. Time for Lunch believes that:

For too long, Congress has underfunded school lunch programs, to the point that today’s schools have only \$1 per child to buy ingredients. School nutrition directors do their best to stretch that dollar, but it’s simply not enough to keep kids healthy. It’s even harder to do when junk food is sold in school vending machines, and when schools lack the resources to start nutrition programs or to buy and cook local food (Slow Food USA, 2010a, para. 2).

The policy platform for the Time for Lunch campaign is to increase funding for school lunches by \$1 more per child per day, protect children from the junk food sold in vending

machines and cafeterias, and to connect schools and farmers to ensure that kids are eating fresh and local food (Slow Food USA, 2010b).

On September 7, 2009 over 20,000 people attended Slow Food “Eat-Ins” to demonstrate to Congress that it is time to fix school lunches. An Eat-In is a potluck that brings people together to share a meal and to show solidarity for a cause such as school lunch reform. The Time for Lunch campaign relies on “the power of ordinary people working together” to get the message out to friends, family, communities, and legislators that our nation’s children deserve healthy meals made from real food (Slow Food USA, 2010a, para. 4).

The Slow Food movement is an important force behind the changing public awareness and behavior around food. Made up of local chapters, Slow Food USA works on both a national as well as community level to bring good, clean, fair food to everyone. The mission behind Slow Food is central to my thesis because I truly believe that “food is a common language and a universal right” (Slow Food USA, 2010b, para. 3). The Time for Lunch campaign helped me realize how important it is to spread this message to the community as well as policymakers because we are all responsible for making sure that our nation’s children have a bright and healthy future.

### Special Collections

The Center for Weight and Health is a part of the University of California at Berkeley College of Natural Resources. Founded in 1999, the Center’s mission is to “illuminate factors influencing U.S. trends in hunger and obesity, and to address factors that can impact chronic health conditions including diabetes, heart disease and cancer” (University of California at Berkeley, 2010, para. 1). The Center works with various

partners to examine how the modification of nutrition, physical activity, and environmental factors improves the health and quality of life of children and adults. Of great importance to the Center is teaching children and adults to adjust their behavior in settings such as school, the workplace, after school, as well as neighborhoods.

Additionally, the Center for Weight and Health reviews literature and research to create guidelines and strategies for communities, health organizations, and policy makers to prevent obesity and promote health. The Center also conducts research on the effectiveness of policies aimed at health advocacy, and offers improved solutions if necessary. Another function of the Center is to provide educational and environmental resources that respond to the needs of diverse populations.

The staff is primarily comprised of doctors and registered dietitians. The website has a host of information about projects and reports that have been conducted on topics such as the impact of selling healthier food in schools, the correlation between childhood obesity and television watching, and the benefits of fruit and vegetable consumption. The website also has an extensive amount of information for targeted groups such as schools, after school programs, and parents. The information offered to each of these groups includes resources, helpful organizations, and examples of successful projects with similar goals.

This website is a tremendous asset to the field of health and nutrition. It includes valuable, facts-based information and research done by the Center for Weight and Health that contributes to public awareness of the current state of health-related issues. The Center does not just provide the facts, it also offers tangible and realistic solutions to many of these issues. The case studies done by the Center contributes additional support



for the focus of my research. For example, a report on the financial impact of selling healthier food in schools adds strength to my research because it provides documentation that nutritious food is good for both the body as well as the bottom line. Looking through all of the information and research on this website makes me realize both the importance of proper health and nutrition as well as the volume of data available on this topic.

### Chapter 3 Research Interview

#### Sample and Site

Chef Ann Cooper was interviewed from her home in Colorado via telephone on March 3, 2010. Cooper is an expert in the field of school lunch reform and has a proven record of overhauling school lunch programs in the Berkeley Unified School District and the Boulder Valley School District. Cooper was selected to provide insight on the issue and to offer her solution to the problem.

#### Ethical Standards

This study adheres to the ethical standards of the American Psychological Association in the protection of human subjects used in research. Additionally, Britt Lee completed the Dominican University of California application for the Institutional Review Board for Protection of Human Subjects. The application was submitted to the program director for review and received approval.

#### Data Gathering Strategies

Eight interview questions were created to gain an understanding of the process of improving the quality of food served in the NSLP. Five questions measure methods that Cooper has employed to make school meals more nutritious. Two questions assess the current status of the NSLP as well as a new national campaign against childhood obesity. The final question addresses how healthy eating can be made a part of a child's everyday life. The interview questions are shown below:

- 1.) Given the intense efforts of food companies to market unhealthy food to children, what was the initial reaction from the kids when you took away the French fries and replaced them with roasted sweet potatoes?

- 2.) Providing nutritious meals at school is a wonderful accomplishment. What else can be done to ensure that students are eating healthfully at home and on the weekends?
- 3.) What major challenges exist in making a positive shift towards healthy school lunches in schools nationwide?
- 4.) You stress the importance of serving regional, local, and organic foods in school lunches. How is this possible in urban or remote rural areas where access to farmers and fresh produce is limited?
- 5.) In 1946 when the National School Lunch Program (NSLP) was created, lunches had minimum calories counts due to malnourished children. Obviously in today's world this threat is no longer pertinent. Please describe your proposed changes to this program.
- 6.) Please describe your response to First Lady Michelle Obama's Let's Move initiative to fight childhood obesity.
- 7.) Describe what you would say to someone who would like to take the first step toward serving healthier school lunches.
- 8.) Please describe your vision for a healthy school lunch program.

#### Analysis Approach

The participant's responses to the interview questions were recorded and then transcribed to ensure that all data were accurately recorded. Next, a narrative interview report was created using the participant's responses to the interview questions.

Information gathered from the interview served as a guide for this paper.

#### Chapter 4 Interview with an Expert

On Wednesday, March 3, 2010 I interviewed Chef Ann Cooper, who is also known as the Renegade Lunch Lady. I conducted a telephone interview because Chef Ann currently lives in Boulder, Colorado where she is reforming the lunch program in the Boulder Valley School District. Prior to our interview I emailed Chef Ann the consent form and she scanned, signed, and emailed it back to me. I used a tape recorder and wrote notes by hand to make certain that I captured the invaluable information conveyed during this interview. At the beginning of the interview I explained that I had come across her work many times while conducting research for my thesis, and that I would love to take thirty minutes to ask her several questions about the National School Lunch Program (NSLP) and how it can be improved.

Chef Ann is an author, chef, educator, and advocate for better food for all children. She has written four books, the most recent of which is *Lunch Lessons: Changing the Way We Feed Our Children*. She founded the nonprofit organization Food Family Farming Foundation (F3) in 2009, which works to find solutions to the school food crisis. F3 maintains The Lunch Box, a free web portal with copious resources and research that supports school lunch reform. In addition, Chef Ann is the force behind the complete overhaul of Berkeley Unified School District's school lunch program. Chef Ann is transforming the school lunch experience of tens of thousands of students across America by helping their schools switch from processed foods to fresh, natural ingredients and meals made from scratch.

I began the interview by asking Chef Ann about the reaction of the kids when she replaced French fries with roasted potatoes. She responded by saying that there was a bit

of pushback from the students, but that it is important to embed experiential learning opportunities such as gardening and cooking classes in the curriculum so the kids realize the concept of farm to table. Education was at the core of many of Chef Ann's responses. When asked what else can be done to ensure that students are eating healthfully at home and on the weekends when nutritious school lunches are not available, she said that educating the children and parents to make good choices is key.

There are challenges, however, to making healthy school lunches a reality in all American schools. The five major obstacles Chef Ann noted are: food, finances, facilities, human resources, and marketing. In terms of food, school districts must figure out where they are going to get regional, local, organic food in addition to staples such as brown rice and whole wheat bread. When it comes to finances, districts must determine how they will pay for this food. The NSLP only allots \$2.68 per meal, which is not enough to cover the cost of healthier fare. Adequate facilities are also important. Building kitchens with walk-in refrigerators and other industrial kitchen equipment makes certain that fresh meals are served on-site. In order to run these kitchens and cook healthy meals from scratch, districts must train and educate food service staff. Finally, marketing and education about the current state of the NSLP is a key component. In order to help make a difference, teachers, parents, and the community at large need to know what is being served in school cafeterias and understand the negative implications of unhealthy food on our nation's children.

In addition to putting the logistics of food, finances, facilities, human resources, and marketing in place, it is also necessary to look at the food being served under the NSLP. When it was created in 1946, there was a minimum calorie count due to the

malnourishment of children who were unfit to fight in WWII. Obviously in today's world this threat is no longer pertinent. Chef Ann supports the Institute of Medicine (IOM) guidelines, which promote a minimum and a maximum calorie count for school meals, increasing the amount and variety of fruits, vegetables, and whole grains, as well as focusing more on reducing saturated fat and sodium in school meals. Chef Ann stated that the United States Department of Agriculture (USDA), the department responsible for running the NSLP, has hired the IOM to re-do the school meal guidelines. Chef Ann's vision for a healthy school lunch program would include fresh fruits, fresh vegetables, whole grains, clean protein, and minimally processed food. Asked whether it is possible to implement this vision nationwide, she responded that it is absolutely possible. We live in a country that put man on the moon and sent the Rover to Mars, yet we cannot feed our children healthy food. It is clear that the nation's priorities are out of balance she said.

A growing body of research exists about the necessity to eat healthy food and to exercise more. Many initiatives are cropping up to promote these efforts. Chief among them is First Lady Michelle Obama's Let's Move campaign to fight childhood obesity. Chef Ann's reaction to this proposal is one of support because it elevates the issue to a high awareness in the public eye. But digging deeper, Chef Ann says that there is no policy and no money behind the movement. The President's budget allocates \$1 billion for school lunches, which amounts to 10, 12, 15 cents for actual food when labor is taken out. What this comes down to is a social equity issue, says Chef Ann. The kids who need the help the most are the kids who are dependent on the NSLP, yet instead of nourishing them, the NSLP is getting them sick.

### Chapter 5 Discussion

The Industrial Revolution dramatically altered agriculture, and since its dawn the food we eat has been rapidly changing. Gone are the days when one ate from one's own farm or garden, which automatically ensured that the food was local, seasonal, and probably organic. In today's world, it is more probable that one's food is from halfway around the world, contains high-fructose corn syrup, or comes from a box. Eating in this manner negatively impacts one's health, yet it is difficult to avoid due to the reasonable prices and engineered, addictive taste of such food. Unwholesome food choices are everywhere, from grocery stores to schools. It has become de rigeur to consume foods loaded with sodium and saturated fat in portions that are too much for our bodies to handle. Sadly these same foods and eating patterns are prevalent in the NSLP. After examining the research on childhood nutrition and academic performance in-depth, it has become clear that this program is doing a disservice to its participants by serving food that does more harm than good.

Extensive research documents the benefits of a well-balanced diet on overall health, both mental and physical, for children and adults. In theory finding and consuming foods in their most natural state sounds like an easy task; however in practice it is more challenging. The two major obstacles to doing so include availability and affordability of nourishing food. Purchasing organic fruits and vegetables, whole grains, grass-fed meats, and cage-free eggs is expensive, and thus is not a realistic option for many low-income individuals and families. Therefore, maintaining good health and preventing obesity and obesity-related illnesses through a healthy diet are endeavors that are much more difficult for low-income families. These are the same families that rely

on free and reduced-priced meals from the NSLP to feed their children at least one nutritious meal a day. The reality is that these meals are not nutritious and are contributing to problems such as type 2 diabetes as well as difficulty staying on-task at school. Americans are becoming much more aware of the issue at hand, and people such as Chef Ann Cooper, Jamie Oliver, and First Lady Michelle Obama are creating movements to bring healthy foods and habits back to the lives of the American people.

Throughout my research, my findings aligned with my assumptions – that poor quality food has an adverse effect on on-task behavior in school. Since the childhood obesity epidemic is somewhat new, the long-term consequences and effects are unknown at this point. However, it has been shown that 80% of children who were overweight at age 10-15 were obese at the age of 25 (CDC, 2010a), which indicates that overweight children are at risk for a host of problems and potential complications later in their lives. As Tom Vilsack, U.S. Secretary of Agriculture stated:

The health of our nation depends on the health of our kids. Children that aren't receiving proper nutrition don't learn as well as those that do. If kids are not able to perform to their fullest potential, they will not be fully prepared for a competitive world and global economy. Additionally, children who are obese have greater struggles with weight in later years. And the medical costs of obesity are enormous – approximately 10 percent of our nation's health-care spending (Health.com, 2010, para. 4).

Our nation is at a critical juncture with regard to the health of its inhabitants – adults and children alike. Below is a model of basic nutrition and healthy habits that I believe would greatly increase the health and happiness of schoolchildren, at the same time decreasing their odds for becoming overweight or obese. While this model was designed for children age 5-18, it can easily be adapted to fit an adult's lifestyle.



**Lee Nutritional Model**

<b>Healthy Element</b>	<b>Amount Per Day</b>	<b>Rationale</b>
Fruits and Vegetables	5-9 per day	Essential vitamins, minerals, and antioxidants protect against disease
Whole Grains	4-9 per day	Whole grains contain more fiber, which aids digestion, lowers cholesterol, and keeps one satiated
Lean Protein	2-3 per day	Contains building blocks for essential growth, B vitamins, iron
Calcium	2-3 per day	Builds strong bones
Healthy Fats	3 per day	Essential Fatty Acids
Added Sugar and Fats	Rarely	Sugars and fats add unnecessary calories and increase the risk for obesity
Water	6-8 cups per day	Hydration is necessary for the body to function
Physical Activity	30 minutes per day	Manage weight, improve fitness level, build bone and muscle mass, increase flexibility
Sleep	As much as needed to feel rested	During sleep the body rests and restores itself
Fun	As much as needed to feel happy and relaxed	Participating in enjoyable activities lends excitement and balance to life

It is clear that there is room for improvement in the NSLP, as well as the way children eat outside of school. In addition to the above model, educating families about the basics of nutrition is a critical step towards ameliorating the health of our nation's children. Holding classes at schools, churches, and community centers that teach families the benefits of a balanced diet, how to prepare simple wholesome meals, and where to buy fresh and affordable produce would contribute to a society that is more informed of the how's and why's of healthy eating. In addition, ensuring that schools are

providing adequate physical education (PE) so children are guaranteed at least one daily opportunity to be active. Nutrition basics could also be a unit in PE classes so from a young age kids understand the link between eating right and feeling great.

To see a significant change in the NSLP, first enough funding must be given to the Childhood Nutrition Act to enable schools to spend more than the just \$1 per student per day on food. After that, employing trained chefs who follow a model such as the one above to create healthy and delicious meals for the students on a daily basis will be a more realistic goal. An additional way to boost vegetable consumption in school cafeterias would be to create a salad bar with a variety of veggies and toppings where students have a hand in preparing their own nutrient-rich meals. A less expensive way to quickly make school lunches healthier would be to cut out the sugar that is so prevalent in many lunch items. Foods such as strawberry-flavored milk have the equivalent of sugar found in sugary sodas.

It is high time for our nation to focus its priorities on its future. If we work together to help lay a solid foundation of healthy habits early on, children will live lives of greater quality. As I embark on the next stage of my journey and become a Nutrition Consultant, I hope to serve as a guide to help families bring their eating habits back into balance so they can live healthier and happier lives.

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