



# The Scientific Newsletter

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« *Improving school meal:  
Efficient way to increase F&V consumption in children* »

## Editorial

### Is it still possible to increase the fruits and vegetables consumption of children?

It has been almost 15 years since the WHO highlighted the low levels of fruit and vegetable (F&V) consumption in children. In 2003, only 17.6% of all European 11-year-olds attained the recommended 400 g/day. In 2004, a new strategy was adopted that diffused the slogan “5 (fruits and vegetables) per day” around the globe. Actions multiplied throughout the world, without any remarkable results. Researchers worldwide analysed the question by examining the reasons for this failure. Many experiments were conducted in various school populations, leading to several recommendations. The articles in this issue confirm that above and beyond legislation, it is common sense and rules for healthy living that are more motivating for children. The evidence suggests that providing a diversified range of products, presenting these products in an attractive manner, and providing improved access to F&V are all options to help increase consumption. The articles especially highlight the fundamental role of the family in terms of nutritional behaviour and communication, as well as providing an example to children.

The formulas are well known, but implementing them remains difficult due to rigid mentalities that can stifle efforts to build better eating habits instead of being passive towards the problem. In addition, regulations that can impact to limit local deliveries of fresh products in public tenders, or discourage the use of fresh F&V through the imposition of drastic sanitary measures in community settings also cause issues. At a practical level private interests do not always leave way for the common or public good.

A low cost approach to supplies diminishes the quality of F&V flavour and thus, children reject them, in favour of more attractive “junk foods”. The health message so often related to F&V made them seem boring and associated with an effort to be made. Moreover, speeches on “unhealthy foods” are difficult for children to understand since they concern a far-away future.

In 2009, the European Commission launched its own “School Fruit Scheme” programme: 54 000 schools, 24 participant Member States and dedicated financial support of 90 million for 2013/14. To ensure European-wide cohesion during the programme’s implementation, additional measures were proposed to foster success and evaluate the results. A 10-member committee of scientific experts was nominated after public tender in 2009 (OJ L 338).

This multidisciplinary and multicultural committee has an objective to reach a consensus and to suggest modifications to the rules for programme inclusion. It proposes rules and recommendations for a more efficient overall scheme. It is hoped that scientific consensus will be taken into consideration in political debates, and by the EC in order to be transmitted to the Member States in the interest of all concerned.

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# Vegetable variety: An effective strategy to increase vegetable choice in children

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**Do you remember the last time you were at a buffet and regretted not trying everything? All of the tempting varieties of foods make resistance difficult - however research has now shown that exactly this effect can be used strategically to improve children's food choices.**

## Variety truly is the spice of life, even when it comes to vegetables

The World Health Organization (WHO) recommends a daily intake of at least 400 grams of fruit and vegetables which, unfortunately, most children do not meet<sup>1</sup>. And, even worse - bad dietary habits tend to track into adolescence and adulthood<sup>2</sup>. While most children like fruits, they are pickier when it comes to vegetables. Increasing children's vegetable intake is therefore more difficult.

Recently, nudging approaches, which focus on altering the food and eating environment instead of providing information to promote healthy eating, have gained attention. The idea is that more healthful choices could be made the easier choices, by simple changes in the environment<sup>3</sup>. Different nudging strategies have already shown to be promising in adults. As an example, it was demonstrated, that people eat less chocolate, when the effort to obtain a piece was increased slightly, by just wrapping it in transparent foil<sup>4</sup>.

In a similar way, increased vegetable variety could be used to increase children's intake of fruit and vegetables. Variety is usually known to increase consumption. But what happens, if there is a strategically increase in the variety of healthy options? Can this approach nudge children to eat healthier?

## Children are picky eaters, especially when it comes to vegetables

Previous research suggests that unlike adults, children might be more responsive to internal signals such of hunger and satiety and liking, rather than food related external cues<sup>5</sup>.

Therefore, it was unclear, whether school-aged children could also be 'nudged' into selecting more vegetables. To

test this, an experiment with very authentic replica foods was conducted<sup>6</sup>.

## Children served food from a 'fake food buffet'

One hundred children aged 7 to 10 years old were invited to the laboratory to serve themselves a meal from a small buffet of fake foods (The Fake Food Buffet<sup>\*</sup>). The foods on the "buffet" included chicken strips and pasta, along with vegetable choices of cooked carrots and beans. Children were randomly assigned to the experimental conditions: they could either serve one vegetable with the meal or they were offered both vegetables.

The children in the group that were offered two vegetables instead of only one served themselves significantly more vegetables. The percentage of energy from vegetable almost doubled from 6% (37 kJ and 38 kJ) to 11% (64 kJ) when two vegetables were served instead of only one. Interestingly, however, they did not serve themselves a meal with higher calorie content. This means that the children offered two vegetables had a higher proportion of energy from vegetables, composing a more nutrient-dense meal. Even children that reported not liking these vegetables served themselves more veggies if they were offered two types rather than one.

## If children are offered more vegetables, they choose more vegetables!

Why did children choose more vegetables when offered two instead of only one? The finding can be explained with a 'consumption norm'. The theory suggests that if children are presented with several different foods to choose and serve from, they will serve themselves at least a taste of all of the dishes. Thus, when children are given the choice of more varieties of healthy foods, in the end, they serve themselves a more nutrient-rich meal.

Researchers conclude from this experiment that offering a variety of vegetables to children might be a simple and effective strategy to nudge them to eat more vegetables and healthier meals, not just at home, but also in school cafeterias.

*\* The fake food buffet (FFB), a new method that uses replica food items for experimental investigation of food choice, has recently been proven as a reliable and valid method to investigate the effect of external influences<sup>7</sup>. It was shown that the amount of food served from fake foods is highly correlated with the amount of food served from a buffet containing the corresponding real food items<sup>7</sup>. Using fake foods instead of real foods for experimental studies reduces food waste, preparation effort, and costs, as the items do not need to be cooked and are reused. Most importantly, the FFB allows for study of individual subjects under controlled laboratory conditions. Therefore, this method is very suitable for investigation of environmental influences on food choice.*

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# Improving school meals: Efficient ways to increase fruit and vegetable consumption by children

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Everyone knows that kids should eat more fruit and vegetables. The question is how to get them to do it! Research studies from the Cornell Center for Behavioral Economics in Child Nutrition Programs (The B.E.N. Center) has found some simple techniques that make use of environmental cues to do just that. The B.E.N. Center has put them together in a program called the Smarter Lunchrooms Movement.

## What is Behavioral Economics & Why Should I Care?

Behavioral Economics is the study of the effect that environments, situations and emotions have on choices. Using knowledge of environmental cues, behavioral economics provides tools to use in our food environment to help drive consumption of healthy foods. Economists Thaler and Sunstein suggest that “choice-architecture”, the link between how a choice is presented and the resulting decision, has the potential to increase the bond between an individual’s intention and their actual behavior<sup>1</sup>. The use of choice architecture is easy in foodservice operations as it simply requires that certain choices are encouraged, sometimes by something as simple as how the food is organized and displayed. The perception of choice has a profound impact on consumption as well<sup>2</sup>. Experimental psychology and behavioral economics studies have shown that simple cues like presentation and visual appeal can influence split-second decision making and consumption by children. For example, asking a child if they want carrots or celery with their lunch increased the consumption of the vegetable chosen from 69% to 91%<sup>3</sup>.

## It All Comes Together in the Cafeteria

Knowing that students could be influenced by these cues, the B.E.N. Center completed a controlled study examining selection and consumption of vegetables when identified with creative and age-appropriate names in three schools (elementary, middle and high school). Vegetables on the menu were provided with names such as, “X-Ray Vision Carrots” or “California Blend Veggies”. The names were displayed on the lunch line next to the food items. Selection and consumption

rates were measured by analyzing sales, production records and plate waste. The use of names doubled consumption of carrots in the elementary school and increased selection in the high school by more than 40%<sup>4</sup>. Similar studies were completed emphasizing fruit. Whole fruit highlighted in a nice bowl by the register in high schools increased the selection of fruit by approximately 102%<sup>5</sup>.

Based on these field studies, the B.E.N. Center suggests that vegetables be identified with creative or age-appropriate names in the café and fruits be highlighted in a visible, convenient and attractive manner near high traffic locations.

## Can Schools and Homes Work Together?

Researchers have identified that the home environment is just as important as the school when encouraging healthy eating patterns. Caregivers serve as both the providers and the role models for children therefore increasing their influence on a child’s food preferences and ultimately consumption<sup>6</sup>. Using this knowledge, the B.E.N. Center designed a “Nutrition Report Card” which provided an accurate record to the child’s caregiver of the food students bought at lunch. For five weeks, report cards of 35 students ranging in grade from kindergarten to senior in high school were delivered via email to the caregivers. After the implementation of the Nutrition Report Card, students bought significantly fewer cookies while purchasing increased fruit and vegetables. In post-intervention surveys, parents indicated that the report card provided an appropriate catalyst for nutrition conversations with their children<sup>7</sup>.

This study indicates that a simple summary of lunch purchases being delivered to caregivers can spark conversations about nutrition and ultimately influence the selection of healthy foods among school-aged children.

There are many ways in which to highlight items in the food environment to help encourage the taking and eating of healthy foods. More information can be found at: [www.smarterlunchrooms.org](http://www.smarterlunchrooms.org)



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# State laws governing school meals and disparities in fruit/vegetable intake

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## Background

The vast majority of adolescents in the United States (U.S.) do not eat recommended amounts of fruits and vegetables (F&V)<sup>1</sup>. A common barrier to F&V intake is not having F&V access within the home, as many families face physical, social, and economic barriers to healthy foods<sup>2-4</sup>. Disparities in neighborhood access to healthy foods have been widely documented in the U.S.<sup>4</sup>

One objective of school lunch programs is to provide an alternative source of F&V to students who face such barriers. Studies have shown, however, that school meals often do not meet nutrition standards<sup>5,6</sup>. As a result, many federal, state, and local policymakers in the U.S. have enacted laws to strengthen school meal standards, including requiring a minimum number of F&V<sup>7,8</sup>. A study was conducted to determine if: 1) students consumed more F&V overall if they resided in states with laws that required F&V in school meals, and 2) determine if such laws were associated with smaller disparities in F&V intake between students who had access to healthy foods at home versus those who did not.

## Data on FV consumption and state laws

This cross-sectional study linked data on students' F&V consumption with state laws regarding F&V requirements for school meals. Student data came from the National Youth Physical Activity and Nutrition Study (NYPANS), a nationally representative study of 9th-12th grade students, conducted by the Centers for Disease Control and Prevention in Spring 2010<sup>9</sup>. State law data were obtained from legal research databases as part of the Bridging the Gap research program.

Using a written questionnaire, students reported how many cups of F&V they eat or drink each day; fruits and vegetables were measured separately. Students also reported how often F&V were available at home, and how often unhealthy snacks ("chips, cookies, or cakes") were available at home. Questions on food access included five response options, ranging from "never" to "always." These data were linked to state laws governing F&V requirements for school meals in high schools. Only two states in NYPANS – California and Mississippi – required high schools to provide a minimum number of F&V in school meals during the 2009-10 school year.

## Importance of the home food environment

As expected, students tended to consume more F&V if they had more access to F&V at home. Vegetable intake, for example, ranged from 0.41 cups/day among students who never had access to F&V at home (95% confidence interval (CI): 0.28, 0.54) to 1.25 cups/day among students who always had access (95% CI: 1.19, 1.31). Conversely, the more often students had access to unhealthy snacks, the fewer F&V they tended to consume.

## State laws associated with smaller disparities

In the total sample, there was little association between F&V requirement laws and F&V intake. Students in California/Mississippi consumed 0.03 fewer cups of fruit (95% CI: -0.09, 0.03) and 0.04 more cups of vegetables (95% CI: -0.02, 0.11) per day, on average, compared to states that did not require F&V in school meals.

In contrast, however, laws were associated with higher F&V intake among students who did not have regular access to F&V at home, particularly if they obtained a school lunch 4-5 days/week. This sub-sample consumed 0.45 more cups of fruit (95% CI: 0.07, 0.84) and 0.61 more cups of vegetables (95% CI: 0.21, 1.00), on average, if they resided in California or Mississippi versus states with no fruit/vegetable requirements. Consequently, disparities in F&V intake were considerably smaller in California/Mississippi versus other states.

## Implications

The home food environment is a consistent predictor of F&V intake among children<sup>10</sup>, but this study suggests that state laws that require F&V in school meals may benefit students with limited F&V access at home. Results were similar in California and Mississippi, two states that have aggressively targeted school meal standards despite being dissimilar in many political, demographic, and cultural respects.

Our study was limited by its cross-sectional design, which makes it impossible to conclude that F&V laws caused higher intake. Yet our evidence is encouraging, particularly given that school lunch programs in the U.S. were originally designed to address disadvantages that low-income children face. Previous research suggests that school meal programs have fallen short of that objective, but improvements to school meal standards have the potential to reduce disparities that are caused by disadvantages beyond school.



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