

## Marketing Fruit and Vegetables to Middle School Students: Formative Assessment Results

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*Please note that this study was published before the implementation of Healthy, Hunger-Free Kids Act of 2010, which went into effect during the 2012-13 school year, and its provision for Smart Snacks Nutrition Standards for Competitive Food in Schools, implemented during the 2014-15 school year. As such, certain research may not be relevant today.*

### ABSTRACT

#### Objectives

Middle school student consumption of fruit and vegetables is lower than that of elementary school students. A formative assessment was conducted to help plan a social marketing campaign to encourage fruit and vegetable purchase and consumption in middle school snack bars.

#### Methods

Individual interviews were completed with 103 middle school students in Houston, TX, and a survey, based on interview results, was completed by 2,472 students.

#### Results

A variety of fruit and juices were popular choices for the snack bar, but the only vegetable items preferred by participating students were baby carrots and salad in large, cup-like containers. The promotional methods favored by students included increasing the variety of items; providing attractive displays; offering free samples; and advertising with posters, table tents, and small contests. Funny or off-the-wall messages and images promoting fruit and vegetable consumption also were preferred.

#### Application to Child Nutrition Professionals

This research identifies strategies to improve fruit and vegetable consumption in middle school cafeterias, and these easily can be adapted for use by school foodservice departments.

### INTRODUCTION

Approximately 95% of school children in this country eat in school cafeterias each day (Devaney, Gordon, & Burghardt, 1993). Although results from previous research of the National School Lunch Program (NSLP) indicate that the program provides a significant amount of fruit and vegetables for elementary school children (Baranowski et al., 1997; Gordon, Devaney, & Burghardt, 1995), the cafeteria environment changes when students move to middle schools and gain access to snack bars and greater a la carte selection. The top-selling foods in snack bars, such as chips, French fries, and ice cream, are high in fat (Harnack et al., 2000; Story, Hayes, & Kalina, 1996).

Fruit and vegetable consumption at lunch by Fifth Grade students with access to snack bars was significantly lower, when compared with a group of elementary school students receiving only

an NSLP meal (Cullen et al., 2000). After Fourth Grade students transition to middle school, fruit, lowfat vegetable, and milk consumption at lunch declines, while sweetened beverage and high-fat vegetable consumption increases (Cullen & Zakeri, 2004). These results are consistent with social cognitive theory, which postulates that one's environment influences and interacts with behavior and personal factors in a reciprocal relationship (Bandura, 1986).

Programs designed to improve the school environment and promote the availability of healthier food choices in snack bars have the potential to positively impact consumption by a significant number of students. Although elementary school interventions have been implemented to encourage children's consumption of fruit and vegetables during lunch, few secondary school environmental interventions have been reported. Two recent middle school studies were designed to reduce consumption of high-fat foods by increasing the availability of lowfat foods, including fruit and vegetables, in the school food environment (Lytle et al., 2004; Sallis et al., 2003). The second study also included classroom and parent newsletter components (Lytle et al., 2004). After the two-year environmental-only intervention, there was no reduction in the amount of fat contained in the foods purchased in the intervention schools (Sallis et al., 2003). Additionally, the second study found no significant differences in fruit and vegetable or fat consumption by students (Lytle et al., 2004).

There have been at least two high school studies using social marketing to promote fruit and vegetable consumption (Nicklas et al., 1997; Nicklas et al., 1998) and lowfat food sales (French et al., 2004). No significant changes in consumption were found at the end of the first study (Nicklas et al., 1998). However, in the second study, significant increases in lowfat food sales were found for Year 1, and during Year 2 there was a higher percentage of sales of lowerfat foods (French et al., 2004).

Social marketing is the adaptation of business marketing practices to a social idea or practice. The strategy is to attempt to "sell" an idea or practice, in these cases, higher fruit and vegetable consumption, to a specific audience (Andreasen, 1995; Ling, Franklin, Lindsteadt, & Gearon, 1992; Novelli, 1990). Formative assessment of the target population is needed to identify appropriate strategies for each of the four major marketing elements: product, price, place, and promotion (Andreasen, 1995). The product must be right or consumers will not buy it. For example, an orange must be peeled before eating, thereby leaving hands free of sticky residue and an orange smell. Not having access to restroom facilities before the next class lessens the probability that a student will select a whole, unpeeled orange from the snack bar.

The decision to buy a food item also is based on customers' perceptions of its costs and benefits. A fruit or vegetable item may be competitively priced alongside a bag of chips, but a greater preference for the taste of chips makes them more likely to be chosen. In addition to costs and benefits, a product must be easily accessible. Finally, the promotion, or informational campaign, must be appropriate for the targeted audience. There have been no published papers providing information on the development of such a campaign for middle school students.

This article presents the results from two formative assessment studies, one qualitative and one quantitative, that were used to identify the appropriate social marketing techniques used to promote fruit and vegetable consumption among middle school students. First, individual student interviews were conducted to assess which fruit and vegetable items were acceptable (product and price), determine the likelihood that such items would be purchased in middle school snack bars (place), and ascertain what types of social marketing methods (promotion) would be acceptable and bring attention to fruit and vegetable availability and increase consumption.

These results then were used to develop a survey completed by a larger group of students to further elucidate the success of the product and promotional strategies.

## **Methodology**

The two formative assessment studies were approved by the Institutional Review Board of the Baylor College of Medicine. Student assent was required and obtained prior to participation; no interview data were identified with student names; and the surveys were anonymous. Three Houston area school districts in Texas and a number of principals from a convenience sample of schools agreed to participate in the study. The student population in one district was 83% black and 17% Hispanic, with 74% of the students receiving free or reduced-price meals. Hispanic students were in the majority in the other two districts (48% and 61%, respectively), with approximately 55% of the students receiving free or reduced-price meals at each school.

### **Individual Interviews**

Study investigators created an interview question guide to obtain information about two major areas: 1) which fruit and vegetable items were acceptable to students and which would be purchased by middle school students in snack bars, and 2) what types of social marketing methods would be agreeable and bring attention to the availability fruit and vegetables in order to promote their consumption. There were four major open-ended questions: 1) what are the usual meal and food choices available in NSLP meals and snack bar foods; 2) what influences student food choices; 3) what fruit and vegetables would students purchase; and 4) what information campaign designs, methods and strategies would influence students to consume more fruit and vegetables.

The questions were pre-tested with several students prior to use and wording changes were made based on student feedback. Over a four-week period, during lunch periods, students in one middle school cafeteria in each district were asked to participate in individual interviews conducted by two graduate nutrition students. The graduate students were trained in conducting interviews and had previously conducted interviews in other studies. Students were approached in the cafeteria after they had obtained their meals and were seated. The interviews took approximately 15 minutes and answers were recorded on interview forms. Students could give more than one answer.

### **Survey**

Two major sections in the survey were based on the responses from the individual interviews. First, the 45 fruit and vegetable items reported by students in the individual interviews were listed, and the students in the survey were asked whether they would purchase these from the snack bar. Responses included "yes," "no," "maybe," and "don't know." Students then were asked to identify reasons for eating or not eating fruit and vegetables from school snack bars and to indicate the types of messages and role models they would prefer to see on marketing materials. There were three to eight responses derived from the initial interview responses and students in the survey could select more than one answer. The surveys were distributed during homeroom

periods and teachers returned the surveys to the main office, where they were collected by research assistants.

The frequency of each response was tallied and descriptive statistics were summarized. Fruit, juice, and vegetable preference scales were created by calculating the means of the fruit, juice and vegetable items that students reported they would purchase. Analysis of variance (ANOVA) and chi-square tests of independence and association were used to assess differences in responses by age, ethnicity, and gender. Due to the large sample sizes, many of the items had the potential to be statistically significant, but not meaningfully significant. Only items that were considered meaningfully significant, defined as having at least a 10% difference between two groups for each response, are identified.

## Results

One hundred and three students participated in the individual interviews (43% Black, 44% Hispanic, and 14% Caucasian). Approximately 3,200 Sixth to Eighth Grade students from five different schools in the three districts received surveys, which were completed during the homeroom period. The surveys were returned by 2,472 students (21% Caucasian, 15% African-American, 53% Hispanic, and 11% Other; 51% boys, and 41% girls; and 32% Sixth Grade, 34% Seventh Grade, 34% Eighth Grade), for a 77% response rate overall. The individual schools averaged between a 33% and 90% total response.

### Product

Students in the initial interviews reported liking a variety of fruit, including strawberries, apples, grapes, oranges, and kiwi, as well as apple, orange, and grape juice. Of vegetables, they identified corn, broccoli with cheese sauce, cucumbers, potatoes, and salad.

In the survey, Sixth Grade students reported greater vegetable preferences than Eighth Grade students (Table 1). Caucasian students reported greater vegetable preferences, as compared with African-American or Hispanic students, and African-American students had greater juice preferences than Hispanic or Caucasian students. Girls reported greater vegetable preferences than boys. Baby carrots and salads in cup-like shaker containers were the only two vegetable items for which 50% of students reported they would purchase.

Reasons for eating or not eating fruit and vegetables are indicated on Table 2. Items considered meaningfully significant are shaded. More Caucasian students and fewer African-American students indicated that either there were no fruit and vegetables they liked or that the variety was low as reasons for *not* eating vegetables.

As for reasons to eat fruit and vegetables, taste was a more important reason for eating fruit and vegetables for Caucasian students than for African-American or Hispanic students (Table 2). In addition, girls were more likely to report that they helped to control their weight; more Caucasian students cited this reason than African-American students. Eating fruit and vegetables for better health was endorsed more often by Caucasian students than by African-American students.

### **Price**

About 80-88% of the interviewed students reported they would spend up to \$1 to purchase fruit and vegetables from the snack bar. Survey results are similar to those obtained from the interviewed students. A small percentage of the surveyed students reported they would not buy fruit (6%) or juice (4%), and 23% reported that they would not buy vegetables from the school snack bar. The only significant difference among the groups was found for other students, who were more likely (29%) to report that they would not buy vegetables in the snack bar, as compared with Caucasian students (18%).

### **Place**

Most of the interviewed students who ate a home-prepared or NSLP lunch also purchased snack bar items, spending \$2 to \$3 daily. Chips were the favorite snack bar purchase. These students also reported purchasing a variety of high-fat entrees and other snack food items, including cookies, from the snack bar.

### **Promotion**

More than 70% of the interviewed students reported that being healthy and having energy for sports and school were important. The top reported health issues were muscle/strength, weight, healthy skin, and sanitary food. Survey results revealed that health (50%), energy for sports and play (37%), weight control (26%), and healthy skin (16%) were the most-often cited reasons for eating fruit and vegetables. These messages could be used to promote a higher rate of consumption (Table 2).

As reported in both the interviews and surveys, the most successful methods used to promote fruit and vegetable purchases in the school snack bar included increasing the variety of fruit and vegetables; creating attractive displays; providing free fruit and vegetable samples; and advertising with posters, table tents, small raffles, and contests. Survey data revealed only one ethnic difference among the responses (Table 3). Caucasian and Asian-American students were more likely to report that friends were an important marketing influence. Additionally, there were several gender-based differences. Girls endorsed friends and music stars more than boys, while boys were more likely to endorse professional athletes.

Funny or off-the-wall messages and images were reported by 70% of the students who were interviewed as best capturing their attention to eating more fruit and vegetables. More than 40% of the total number of surveyed students agreed, with 29% preferring health-based messages (Table 3). Only 15% and 12% of total student population surveyed liked scientific or serious messages, respectively. The only ethnic difference was that Caucasian students were more likely than other groups to endorse funny or off-the-wall messages.

## **Discussion**

Results from both formative assessment studies revealed a wide variety of fruit and juice items preferred by students. Some of the preferred items, such as bananas, apples, orange, canned peaches, mixed fruit, pineapple, and pears, are available year round. Sliced or wedged versions were preferred forms. Students in both studies also reported that they would purchase strawberries, watermelon, and grapes. However, these are expensive items, except when they are

in-season. Apple, orange and grape juice were the preferred fruit juice selections. Vegetable preference was more selective. The students' preferences were limited to corn, broccoli with cheese sauce, carrot sticks with dip, and tossed salads in cup-like shaker containers.

It is important to note that almost one quarter of the surveyed students reported they would not purchase vegetable items from the school snack bar, while only 6% and 4% would not purchase fruit or juice items, respectively. This finding probably reflects the lower preferences for vegetables traditionally reported by children and adolescents (Domel et al., 1993). Vegetable and fruit selections in school snack bars are often limited to French fries and bowls of whole fresh fruit (Cullen et al., 2000; Harnack et al., 2000; Story et al., 1996). Perhaps a more frequent exposure to other vegetable items would increase preference and consumption of these over time (Birch, 1987). The most preferred items identified by students in the current study were fruit in ready-to-eat form (i.e., sliced or wedged) and ready-to-eat baby carrots. This finding reflects the importance of ease of consumption (Hearn et al., 1998). For example, students with braces may have difficulty eating whole apples and peeling whole oranges may prove too messy and time consuming. The cup-like shaker container for salads provides more space for tossing with dressing, and is similar to products currently available in quick-serve restaurants. Pricing did not appear to be a problem, with fruit and vegetable items comparably priced to most other snack or dessert items available at the school snack bars (less than \$0.75).

Promotional methods need to feature relevant role models with appropriate messages. The literature suggests that role models who are "similar to [the student]" are preferred (Bandura, 1986). The middle school students in both studies reported the most interest in funny or off-the-wall message formats. Results also suggest that friends, music stars, and sports celebrities appeared to be the most acceptable role models, with cartoon characters the least preferred. Gender differences suggest that some marketing materials should include sports celebrities promoting fruit and vegetables to respond to boys' preferences, and other materials focusing on friends and music stars in order to reach girls.

There were additional gender differences, as well as some ethnic differences, in regard to the types of messages or promotional themes that are preferred. For the majority of students responding to both studies, funny or off-the-wall messages appeared to be important strategies. Controlling weight was more likely to be reported by girls than boys as a reason for eating fruit and vegetables. However, only about 33% of all girls cited this reason, with Caucasian girls more likely to select this response than African-American girls. Good taste and better health were selected by almost 50% of all students, there although were some ethnic differences. Overall, the findings suggest that messages promoting the benefits of eating fruit and vegetables would be acceptable to a majority of students.

There are several limitations to both studies. First, more than 50% of the middle school students interviewed and surveyed were Hispanic, from a single, small geographic area, and more than 50% were eligible for free or reduced-price meals. This limits the researchers' ability to generalize the reactions of other student populations. Second, the marketing campaign targeted students who might have been more health conscious or vocal. These students also may have given socially desirable answers to the interviewers.

Results from the interviews and survey suggest that the two-step data collection procedure, interviews followed by a survey, complemented each other and that the survey findings reinforced many of the interview findings (Steckler et al., 1992). Most of the survey responses were significantly different due to large sample sizes and, as a result, a difference of 10% was determined as meaningful. Although there was no pre-testing of the survey, it was modified based on responses reported during individual interviews.

### Conclusions And Applications

Inadequate intake of fruit, juice, and vegetables is associated with increased risks for cancer (Willett & Trichopoulos, 1996). While the availability of fruit and vegetables in middle school snack bars is low, the students in this study were able to indicate which items they most likely would purchase. At the same time, they acknowledged competition from more desirable high-fat entrees, snacks, and dessert items. The best format for marketing materials was less clear, but the results suggest that peer role models were important, and that pre-testing of specific materials is necessary. Targeting of messages based on gender may be important. Social marketing techniques that encourage the consumption of fruit and vegetables might create a more positive environment for eating them in middle school cafeterias. Successful environmental intervention and social marketing strategies in middle school cafeterias does not require class time. The findings from this study should be applicable to middle schools where snack bars are available.

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