

**A Grocery Store Intervention Designed to Increase Fruit, Vegetable, and Healthy Snack
Purchases among Parents of Young Children**

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ABSTRACT

Objective: The aim of this study was to develop and evaluate a 12-week multi-faceted, child-focused intervention that included a point-of-purchase kiosk featuring fresh fruits, vegetables, and healthy grab-and-go snacks; and a sampling pod, comprised of food items from the kiosk.

Design: An observational uninterrupted time-series design was used in one intervention grocery store. The intervention consisted of two components, a Healthy Kids Kiosk and food sampling.

Subjects/Setting: Patrons of Ukrop's Inc. Grocery store in Roanoke, Virginia. May-September 2009

Measures: The study measures consist of three components: 1) examination of changes in sales data for featured products, provided by the grocery chain; 2) candid, unobtrusive, blind observations of customers near and around the intervention; and 3) brief questionnaires of customers, who engaged at some level with the Kiosk and sampling pod.

Results: The results yielded an overall increase in the proportion of the sales of the featured items to total store sales during the intervention period. Individual items that increased sales during the intervention period, included whole-wheat mini bagels, bananas, radishes, honey, sunflower, baked tortilla chips, and almond butter ($p < .05$). Parents whose children were arguing, crying/whining, or not in the shopping cart, had higher levels of engagement with the kiosk. Almost two-thirds (61.7%) of the patrons interviewed noticed the healthy kids kiosk, with about one-quarter (28.7%) indicating that they purchased at least one item. Fifty-eight percent reported that the kiosk encouraged them to buy healthier foods.

Conclusion: Promoting healthy foods at point-of purchase locations can result in increased purchases of these foods among families with young children.

Application: These findings have provided insight into the effectiveness of grocery store interventions on purchasing patterns and behaviors of families with young children.

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“There are those who look at things the way they are, and ask why... I dream of things that never were, and ask why not?”

Robert. F. Kennedy

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Chapter 1: Introduction

a) Childhood Overweight

With the notable increase in overweight and obesity in the United States, there are numerous emotional and health concerns, particularly among children. Approximately one-third of youth are overweight, a significant increase in prevalence rates from the 1980s.^{1,2} Children share the same co-morbidities and complications that overweight adults experience, with about 60% of overweight children have at least one cardiovascular risk, such as high blood pressure, and incidences of type 2 diabetes are also increasing at alarming rates.^{3,4} These staggering statistics illuminate childhood obesity as one of the most imperative public health concerns currently facing the United States.^{5,6} Failing to address obesity in children may equate with overweight or obesity in adulthood, resulting in numerous medical consequences with considerable economic costs.⁷⁻⁹ The list of contributors is extensive and the solution extends beyond simply the energy imbalance of diet and exercise in isolation of social, physical, economic, policy perspectives.¹⁰ Multi-component population-based interventions that address the multitude of contributors to obesity, have been found to be effective.¹¹ Sustainable behavior changes that positively influence diet and physical activity are needed to reverse this impending public health threat.¹²⁻¹⁴

b) The Potential of Grocery Stores as an Intervention Site for Addressing Healthy Eating

The ecological framework outlines factors that contribute to childhood overweight, characterized by individual, social, physical, and macro-level environmental factors.¹⁵⁻¹⁷ Individual factors encompass biology and demography, as well as cognition, motivation, self-efficacy, and behavior capability, all of which can affect behavior. Social factors include interactions with friends, family, and others in the community. Physical and macro-level environmental factors include built physical settings like home, worksites, schools, restaurants, and grocery stores where food is consumed or acquired or movement possible, as well as policies in these settings and beyond.¹⁵⁻¹⁷ It has been hypothesized that population-based interventions that influence physical and macro-level environmental factors can be more effective than

individual behavior-change strategies in their expense and labor-intensity, considering the number of people who are successfully influenced.^{12,23-25} Further, they divert the emphasis from personal health behaviors to factors in society that can lead to unhealthy practices.²⁶

Environmental interventions related to nutrition typically focus on availability, access, incentives, and/or awareness campaigns.^{13,24}

Grocery stores represent a unique opportunity to integrate availability, access, incentives, and awareness campaigns in a single setting or location. Family households average two visits to the grocery store per week, spending an average of \$93 a week, based on data from 2006.²¹ The presence and availability of healthy food products and outlets have been found to be representative of the healthfulness of their neighboring communities.¹⁸⁻¹⁹ Several published studies have linked supermarket access with healthier diets of nearby residents; however disparities do exist with low-income communities and rural regions as fewer supermarkets are found in these locations, often described as food deserts.¹⁸⁻²⁰

Grocery stores have the ability to manipulate the availability, access, pricing, promotion and information of food products sold.¹³ Encouraging grocery stores to be a vehicle for utilizing its influence towards more healthful food purchase has been strongly suggested by researchers and government regulating agencies, such as the Food and Drug Administration. Nevertheless grocery stores aim to make a profit. As a result, they employ known industry tactics¹² that increase purchases, particularly commodity-driven items with a higher profit margin, which generally are more processed and have lower nutritional quality²⁷ and rely on in-store decision-making, unplanned and impulse purchases, which represent at least 65% of purchases in the grocery store.³⁵ Tactics include deliberate placement of products on shelves and throughout the store, prompting such as colorful displays, and incentive-based strategies such as coupons.¹² In other words, consumers are targeted by food and beverage companies through a variety of channels in an attempt to influence their purchases.¹² These strategies may compete with efforts to help consumers purchase healthier foods.

Still, a survey by the Food Marketing Institute found that the majority of shoppers in their study were concerned about the nutritional quality of their food, whereby contributing to a greater consumer demand for more point-of-purchase nutrition information.²⁸⁻³¹ As a result, grocery stores may be more likely to adopt an approach modifying these strategies in favor of more healthy food promotion, especially since previous research demonstrated that consumers

have an increased confidence and overall image of a store that offers consumer information related to its products.¹³

Although conducted over 20 years ago, a study by Pennington, et al.³¹ found that 64% of chains had no in-store nutrition information programs, while 36% of the chains had or were planning to provide in-store information. They surveyed the corporate headquarters of 83 grocery store chains inquiring about the store's use of in-store nutrition information programs. This information was applied to multiple food groups including fresh produce and meat, as well as special diet-related information. The special "diet" information focused on labeling products with reduced calories, fat, cholesterol, and sodium. This information was disseminated through a variety of mediums such as cards, posters, and stickers on food packages. The researchers commended grocery store chains in their efforts in developing in-store nutrition information programs to aid customers in their purchase decisions.

Since that study, the Food Label has been developed and is mandated for most food products. The Food Label features nutrient information, ingredient lists, nutrient and health claims, which allow consumers the opportunity to choose foods based on the composition of the food and nutrition quality of the product.³⁶ This may be an important tool for allowing consumers to make healthier food purchases especially in an environment confounded by low-priced foods with poor nutritional quality, competing promotions and advertising, and varied food availability.³³

Nonetheless, it is well noted in the literature that positive health messages should still be interposed on food products and at restaurants to allow for consumers to be well-informed; they should be designed to compete with superior advertising from companies with often considerable marketing budgets. Noting the desire for nutrition information and the need for inventive promotion of healthy foods, several programs have been developed by health educators, corporate dieticians, and researchers to supplement food labels with displays, posters, shelf tags, and flyers highlighting nutrition information related to a single product or a whole product category.³¹ Providing this nutrition information in grocery stores creates the opportunity for action by empowering consumers at the point where food is purchased.¹³

There are other behaviorally-motivated strategies available at grocery stores too, although point-of-purchase (POP) information like food labels and other shelf labeling appear to be the most popular, based on Glanz and colleagues review of literature.³⁷ To date, research indicates

that while providing point-of-purchase information has, for the most part, been successful in increasing knowledge, it is falling short in achieving a targeted behavior change.^{30,33,38-41}

In other words, consumers are stating that this information is desired, but the ability to perceive and comprehend the plethora of information and translate it into positive decision-making yield contradictory findings.⁴¹ It has been posed that providing information to increase knowledge in the interest of the consumer is eclipsed by its minimal sensory impact and failure to address other barriers to healthier eating such as cost, convenience, and taste.³³ Additionally diet-related health issues develop over time and do not pose any immediate threats to health thus lacking motivation for people to make habitual food changes for a long-term approach to chronic disease risk reduction.¹³ Other possible grocery strategies that may enhance the impact of POP include: reduced prices on targeted foods; increased availability & convenience; and advertising.³⁷ Nutrition intervention programs that increase the space of a targeted food as well as make more convenient for the consumer to eat or prepare are implemented less often than POP interventions. Previous studies have found this to be effective when applied to fruits and vegetables.⁴² The use of advertising in nutrition interventions can be easily implemented with poster and other multi-media sources and are usually present in one component of a multi-faceted intervention.^{30,33} Price reduction involves coupons and discounts for healthy food choices to encourage their purchase by shoppers.^{43,44}

Most of the grocery store nutrition interventions that have been reported to date have been specific to certain health conditions and related nutritional implications and are fairly outdated. Examples of this are reduced calories and/or fat for weight loss; low sodium, low cholesterol, and low saturated fat for management of heart disease; and carbohydrate composition and sugar content for individuals with diabetes.¹¹ Each published program varied in duration, target population, dosage and types of strategies, and measure of outcomes. The published results indicate varied levels of success. In general, grocery store-based interventions have been minimally evaluated and/or reported on. Those that have documented moderate success have commanded attention from researchers to update the body of literature by addressing the limitations established by preceding studies. Each article has offered insightful recommendations for future research to improve the body of literature related to this topic and are reviewed comprehensively herein.

Chapter 2: Literature Review

a) Review of Literature Pertaining to Grocery Store Interventions

Scott and colleagues,³³ published in 1991, developed a 15-week nutrition education intervention titled Lifestyle 2000. Lifestyle 2000 was directed at adults aged 25-45 and was based in a chain of supermarkets in Australia. The project aimed to change eating behaviors, targeting goals outlined by the Dietary Guidelines for Australians such as reducing fat intake and increasing fruit, vegetable, and grain intake. Objectives specific to this program included promoting the selection and purchase of low-fat dairy, fresh fruit, vegetables, and whole grains, as well as provide nutrition information about foods that support healthy eating and providing environmental support for aiding consumers who wanted to adopt a healthier diet.

A proposal outlining the programs objectives and plans for implementation was presented to the corporate offices overseeing the store's operations for approval. Of the 10 grocery stores in the Australian city of Bunbury, six participated in the program. Focusing primarily on promoting low-fat dairy the resea

rchers relocated the low-fat versions of staple dairy products in one section of the dairy case. This approach was used to simplify the selection process as all low-fat dairy were in one location. Additionally, the dairy products were grouped according to fat content instead of product type (milk, yogurt, cheese).

Inclusion criteria required the products to have less than 5 grams of fat per serving or were 25% lower in fat than its regular counterpart. The program promoted fresh fruits and vegetables using large mobiles hung from the ceiling in the produce section of the store, vinyl stripping for produce bins, and shelf tags. An additional supplement to the program included flyers located in the dairy case with tips, coupons, and recipe ideas for all targeted food groups. All of the program materials featured the Lifestyle 2000 logo. Other promotions executed during the program included taste testing and cooking demonstrations. Further promotional support came from television, radio, and newspaper advertisements.

The program was evaluated through the administration of questionnaires inquiring about customer awareness of the program. The questionnaire also included basic demographic

questions. The questionnaire was administered two weeks after the program concluded during times recommended by store managers. Members of the target population were approached randomly for a 10-minute interview.

Of the 310 surveyed 259 women and 50 men, about half (52%) of the total customers surveyed were aware of the supermarket promotion with 20% of customers reporting changes in their own food purchasing behavior in regards to the specific items promoted in the program. Researchers also interviewed each store manager and catalogued their responses to the promotion. Overall, the response was positive and indicated they thought the promotion was eye-catching and attractive. While anecdotal, store managers reported increased sales of low-fat dairy during the promotion. Although no sales data was obtained to support this declaration, the Lifestyle 2000 program was significantly more successful in increasing awareness but not eliciting a targeted change in behavior.

In light of this conclusion, the authors cite several important limitations. In order to more clearly decipher self-reported behavior changes both a pre and post-intervention interview would have been desirable and the limited interview times may not have been representative of all the supermarket's customers. Additionally, sales data was not available, as only one of the stores used a computerized check-out system at the time of the program. Even with the availability of sales data, it is denoted that it is difficult to interpret and is convoluted by non-intervention factors that are impossible to control for such as seasonal availability and price discounts.

The authors also highlighted several recommendations in regards to working with each of the store managers and employees. Increased time should be allotted for planning and learning how each store operates as well as assessing how the employees can be involved in the program implementation, such as designating one person to oversee monitoring, ensuring program materials were always available. Overall the store managers were supportive of the program; however, with stores often being very busy, it was difficult to train employees regarding their role in the implementation of the program. Despite these minor implementation problems, the program researcher's recommended point-of-purchase interventions be further evaluated with extended intervention periods as well as sales data collection before, during, and after the program completion.

A similar study by Rodgers and co-workers⁴⁰ involved a 2-year multi-component supermarket nutrition program titled “Eat for Health.” The program aimed to increase knowledge and alter purchasing behavior in accordance with cancer risk reduction guidelines stipulated by the National Cancer Institute. The “Eat for Health” program highlighted dietary recommendations such as decrease fat and increasing fiber-rich foods like fruits and vegetables for cancer risk reduction.

The program featured shelf price labels, a food guide with calorie, fat, sodium, fiber, and cholesterol for each food item with a shelf label. Other elements included signs in the produce section of the store, monthly newsletters with nutrition information and recipes. The program was also supplemented by other multimedia promotions.

The “Eat for Health” project took place in the Washington D.C. and Baltimore area Giant Food Inc. grocery stores. Thirty Baltimore stores served as comparison to 105 Washington D.C. treatment stores. In-store monitoring was conducted in both 20 control and treatment stores matched on age, income, and racial distribution.

In-store monitoring protocol included nine visits to each treatment store where an interview with managers was conducted as well as an assessment of available program materials. Customers were also interviewed with inclusion criteria of: performing 50% of the household shopping, shop at Giant more than 50% of the time, ate less than 50% of meals away from home, as well as being 21-75 years old and not following a special diet for the management of a medical condition. The survey was an adapted version of the NCI’s Health Habits and History Questionnaire food frequency section. Sales data was collected for a baseline period of 1 year prior to the program and throughout the 2-year program. The targeted fiber-containing foods were analyzed in eight food categories: dry cereal, baked goods, fresh produce, frozen vegetables, canned vegetables, canned and frozen beans, dried beans, and dried fruit. The data were analyzed using a cross-sectional time series regression.

The results revealed the overall stores compliance rate of 80% with program elements meeting research protocols. The author denotes this success of implementation to the shelf labels and booklets being computer generated and not moved after placed in their designated location. Signs throughout the store were found to be the least compliant with research protocol

as they were often moved when products were changed in their respective departments. The customer survey results failed to support three of the five hypotheses stated, however, survey data successfully supported an increased awareness between diet and chronic disease as well as an increased awareness of the “Eat for Health” program. The survey data failed to support increases in self-reported purchasing and subsequent intake of high fiber foods and low-fat foods, changes in preparation methods based on “Eat for Health” recommendations, and increases in knowledge about the link between food and cancer risk reduction.

The analysis of the sales data yielded a negative intervention effect for dry cereal, baked goods, and canned & frozen beans, but at a level of statistical significance. Positive intervention effects were noted with fresh produce, frozen vegetables, canned vegetables, dried beans, and dried fruit although not statistically significant. The authors commend the ability of the program to be successfully carried out in over 100 stores for an extended period of two years reaching hundreds of thousands of customers. This success is attributed to a formal agreement between the National Cancer Institute and Giant Foods stipulating each partner’s role and responsibilities. The authors recognize the limitations of using sales data to support the conclusions made about the changes in purchasing patterns of the targeted foods citing the high variability and inherent complexity of analyzing the sales data. As with the Lifestyle 2000 project, the authors recommended further evaluation of supermarket-based nutrition interventions.

A comparable study conducted by Ernst, et al.³⁰ evaluated the feasibility of a supermarket nutrition education program, titled Foods for Health (FFH). The program’s objectives aimed to disseminate nutrition information related to cardiovascular disease. Similar to the Rodgers et al. study, this program was conducted in 90 Giant Food, Inc stores in Washington D.C. with Baltimore area stores serving as comparison to the FFH program.

The program consisted of the dissemination of cardiovascular health themed messages through a variety of media channels. These included a brochure titled Eaters’ Almanac with new editions available every two weeks, newspaper, radio, and television advertisements, and shelf tags near targeted foods that reinforced the suggestions provided in the brochure. The overarching theme for the promotional materials was reducing fats, cholesterol and calories.

Program evaluation consisted of telephone surveys to assess customer knowledge and food behavior changes. Weekly sales data was systematically collected using computerized checkout sales data on 294 items from cash registers in ten matched Washington treatment stores and the Baltimore control stores. The reported results in regards to program awareness were contradictory in nature. The telephone survey was conducted prior, during, and after the FFH program. The pre-intervention surveys, included that about one-third of respondents reported seeing FFH related information, but the program had not been initiated. The researchers attribute this disparity to customers confusing FFH with other nutrition-related information present in grocery stores. The remaining two surveys indicated higher percentages of FFH awareness in the Washington D.C. treatment stores than the control stores. In terms of knowledge changes in the survey respondents, there was a 9% increase in fat and cholesterol content of foods as well as an 11% increase in dietary fat and cholesterol levels in the Washington stores compared to the Baltimore stores. Additionally, the researchers linked the respondent's characteristics with their responses to the survey using cross-tabulations and regression analyses to detect any associations. The researchers concluded that higher knowledge scores were associated with females, older individuals, higher educated persons, and families that had a member on a special diet. The sales data indicated minimal week-to-week change and no subsequent statistically significant differences attributable to the intervention. Despite, unsuccessfully eliciting food purchasing changes, the FFH project had notable successes in increasing awareness and knowledge in addition to the feasibility of supermarket nutrition education program. The researchers highlight some challenges and suggested a more unique logo for the program; less reading intensive promotional materials; focusing promotional materials on individual foods instead of food categories. While recognizing the value in systematic data collection, it is important to realize the multitudes of influences on food purchases that are difficult to control for such as price reductions, store promotions, as well as established preferences may be difficult to modify. Finally, they recommend evaluating nutrition education programs for longer than one year may be necessary for behavior changes to become apparent.

Another study conducted by Soriano and colleagues³⁸ evaluated whether in-store nutrition education program could be effective in influencing consumer buying behavior. The program titled the Supermarket Information Project (SIP), was conducted in a Fresno, California-based supermarket chain and sponsored by the American Heart Association.

The programs goals outlined were to provide nutrition information in the supermarket, increase consumer awareness and knowledge through the dissemination of heart-healthy related information, and to motivate consumers to initiate healthy buying behavior. The program was implemented in two treatment stores and one control store for a period of 4 months. The four months chosen for implementation was based on store records that indicated this time period was the most stable and representative in week-by-week purchasing patterns.

Implementation consisted of in-store media with the guiding principles that it aimed to be a program would not require maintenance by store employees, was learning-based intervention rather than a marketing promotion. The program media targeted four food categories: general nutrition, table spreads, dairy, and cooking oils. Index brochures intended for home use were developed and available at checkout counters. Reinforcement components were considered and two different approaches were implemented in each of the test stores. Test store 1 featured an immediate large-scale reinforcement design and test store 2 featured new and continuous reinforcement design. The content of the brochures aimed to be informational and reputable as opposed to persuasive and promotional.

The results were organized into a three-category sequence known as Knowledge-Attitude-Performance (KAP) model. In terms of knowledge the SIP campaign was successful in providing customers with heart-healthy information at the point-of-purchase as evidenced by the distribution of 35,000 pieces of literature with numerous requests by customers for additional copies. According to the KAP model, successfully linking knowledge with behavior change requires a change in attitude towards more healthful eating. The attitude component was not directly measured with SIP, but anecdotal inferences were reported by store managers. The store managers' referenced positive feedback they had received from customers including comments related to their health concerns and request for more nutrition related materials. Lastly, the performance function was measured using store warehouse records to inference any changes in consumer purchasing behavior.

Despite disseminating information on a variety of food categories, milk was the primary focus of sales data analysis as preliminary research indicated that milk sales were less variable compared to other targeted items. In both test stores, there was no significant change with the

desired purchasing pattern. The authors associate this shortfall to a missing component that helps customers immediately recognize foods that are heart-healthy.

Citing the complexity of decision-making process in regards to healthy food purchases, the authors attribute customers' failure to taking time to complete this process as the missing connection from knowledge attainment to behavior change. Despite customers satisfaction with the availability of nutrition related information, actual application of nutrition-cognizant purchasing patterns are not being initiated. The researchers recommended developing a system of easily recognizable symbols that identify healthy foods for more effective targeted behavior change.

Lastly, a study by Hunt et al.,³⁹ evaluated a nutrition education program at the point of purchase titled Four Heart Program. The Four Heart Program represented foods that were tasty as well as lower in fat, sodium, and cholesterol. The program was initiated in three different supermarkets of different ownership by placing uniform color labels to price tags of targeted brand-specific items. The labels stated "low-fat", "low-sodium", "low-fat/low-sodium", and "fat ratio OK." The program was supplemented by large signs with "Look for the Labels" and other promotional events such as blood pressure and cholesterol screenings. Foods were chosen for label based on US Dietary Guidelines for Americans.

The program's effectiveness was evaluated through customer interviews conducted upon their exit from the store, appeared to be 18 years or older and had purchased at least one item from the store. The customers were shown 4 sets of shelf labels, three of which were inaccurate. If the customer stated they had seen any of the labels in the store, they were asked to identify which labels they had seen.

The interviews were conducted over four years and yielded 1,807 responses. From initiation to the conclusion of the program, there was an increase from 11% to 24% in customers who could identify the correct label. This awareness was correlated to gender as 23% of the time, females correctly identified labels compared to 12% of the time for males.

The authors note the significant reach of supermarket interventions, the feasibility of implementation of nutrition-based programs, and effective in increasing consumer awareness

over time, but note the need for future research to address the ambiguous results from other studies in regards to customer purchase behavior.

b) Summary of Literature

Based on the review available literature, grocery stores represent a promising venue for the dissemination of nutrition-related information, with noteworthy successes in increasing awareness and knowledge. However, actual purchase behavior modification results are minimal and require a innovative approach to behavior change. The majority of the published studies focus on general labeling procedures, which according to a review of the *Impact of nutrition environmental interventions on point-of-purchase behavior in adults* by Seymour and co-workers¹¹, these techniques cannot be expected to elicit behavior change in regards to dietary patterns.

Additionally, Seymour notes that grocery store-based interventions need improved methods which include longer intervention duration, better assessment tools, and targeting more diverse populations.¹¹ Previous studies have targeted adults and were typically focused on a specific disease or health condition, not necessarily public health in nature. Evaluations of each program used customer interviews and surveys to determine awareness, knowledge, and self-reported behavior change. Many of the programs also reported sales data to support influences on purchasing behavior but have often failed to report magnitude and percentages derived from sales data. This could be attributed to the proprietary nature of sales data information.

Also noted in Seymour's review is the need for more focus on access, availability, and incentives in promoting healthier foods with evaluations of the program's sustainability and costs analysis of program implementation. Most of the previous studies have not addressed maintenance beyond the intervention of the program. Even fewer studies have specifically reported on cost-effectiveness of the programs.

Finally, in previous studies, minimal consideration was given to important role of taste and satisfaction associated with food consumption, despite taste having been found to be the most important factor in food selection.¹¹ Seymour concludes that to achieve success in

environmental interventions, that the element of taste must not be ignored. Refer to *Table 1* for a summary of each grocery store intervention study previously outlined.

The proposed intervention is unique to previous studies in many important regards. First, the study evaluation not only includes customer surveys but also blind, candid observations of customers while in the grocery store. Second, the main intervention feature is the sampling of the targeted food items to bring forth a sensory impact as taste has been identified as the most important indicator of intake.⁴⁵ Third, this campaign targets young children and their parents using dietary recommendations delineated by MyPyramid guidelines for Kids. This distinctive approach attempts to assess the interaction between the child and parent at the point-of-purchase and identify any barriers and/or facilitators of healthy food purchase. Also distinguishing itself from previous studies is the transformation of a section of the store featuring all the targeted foods in one kid-friendly location with signage denoting that each of the foods are healthy snacks for kids. This approach attempts to increase the availability and accessibility to the targeted food items. Lastly the study's location is considerably more rural area than most of the previous studies conducted in large urban cities.

Table 1: Summary of Environmental Grocery Store Intervention Studies

Reference/ Program Title	Sample/ Location	Design	Results
Scott et al. 1991 Lifestyle 2000	6 Intervention stores Bunbury, Australia	Objectives: Promote the selection and purchase of low-fat foods and assess awareness of program Intervention: Dairy display featuring low-fat dairy, supplemented by brochures available near display with recipes and tips. Mobiles and other signage located in produce and dry good sections of stores. Additional multimedia delivered such as TV, radio, newspaper ads. Duration: 15 weeks	Awareness: of 161 shoppers surveyed 52% were aware of program with 22% of those aware reported promotion influenced food purchases with 35% reporting no influence of food purchases.
Rodgers et al. 1994 Eat for Health	20 Intervention stores 20 Control stores Washington, DC (Intervention location) and Baltimore, Maryland (Control location)	Objective(s): Increase knowledge and influence sales of high-fiber, low-fat foods with nutrition information provided at the POP Intervention: Shelf labels indicating recommended for cancer risk reduction, signs near produce, food guide with information (fiber, fat, cholesterol, and sodium content) of shelf-labeled food items Duration: 1-year Baseline, 2-year Intervention	Sales: Sales of 8 fiber-containing food categories were analyzed with positive intervention effects on fresh produce, frozen vegetables, canned vegetables, dried beans, and dried fruit; with negative intervention effects on dry cereals, baked goods, canned/frozen beans (each with varied levels of significance) Surveys: Positive intervention effects on increased awareness between diet and chronic disease and awareness of Eat for Health project.
Ernst et al. 1986 Foods for Health (FFH)	10 Intervention stores 10 Control stores 2399 Subjects (telephone survey participants) Washington, DC (Intervention location) & Baltimore, Maryland (Control location)	Objective(s): Increase knowledge and influence sales of low-calorie, low-fat, and low cholesterol by providing nutrition information at the POP Intervention: Shelf-tags with heart-healthy messages placed near targeted food items, brochure (Eater's Almanac), and new every 2-weeks with recipes, tips, & coupons. Duration: 1 year	Sales: Of 246 food items analyzed, no differences attributable to the intervention Knowledge: Gain in correct knowledge score compared to control for food fat & cholesterol content (9%) and for the relationship between dietary fat & cholesterol (11%)

Reference/ Program Title	Sample/ Location	Design	Results
Soriano et al. 1978 Supermarket Information Project (SIP)	2 Intervention stores 1 Control store Fresno, California	Objectives: Increase sales of targeted foods using POP information Intervention: 5 brochures featuring information regarding targeted foods (general nutrition, table spreads, dairy, milk, and cooking oils) placed near items in store and at checkout. Intervention store 1: immediate delivery of all 5 brochures available during intervention. Intervention store 2: ongoing delivery of 1 brochure-available for 2 weeks, then new one delivered. Duration: 4 months	Sales: No significant changes in either intervention or control stores.
Hunt et al. 1990 Four Heart Program	4 Intervention stores Pawtucket, Rhode Island	Objectives: Increase awareness of heart-healthy foods and positively influence purchase behavior in regards to these foods Intervention: Shelf labels attached to price sticker on targeted foods with messages “low-fat”, low-sodium, “fat ratio OK.” Supplemental signage around store also present Duration: 4 years	Awareness: 15% more shoppers were reported seeing labels in 1988 than 1984. 35% shoppers reported that label encouraged purchase over 4 year intervention.

Chapter 3: Methods

a) Overview of Proposed Program

The Ukrop's for Healthy Kids Campaign study will test potential avenues and strategies that could be profitable for grocery stores, while partially addressing dietary factors that may contribute to the childhood obesity epidemic. The intervention will feature a sampling pod highlighting healthy snacks and a Healthy Kids Kiosk featuring fruits and vegetables, as well as processed grab-and-go healthy snacks, placed within the kiosk. The overarching goal of this multi-faceted intervention is to 'market' healthy foods using the same techniques industry uses and are known to be effective. The anticipated results include: an overall increase in sales of the featured items; observed behaviors that document an interest in and purchase of the featured items; positive observed interactions between parents and children surrounding the 'healthy' intervention; and positive feedback and reported changes based on the intervention, across demographic characteristics.

This study has three components, the primary outcome: examination of changes in sales data for featured products, this will be provided by the grocery chain, with no identifying, classified, and/or sensitive information included in the files. Additionally, two process outcomes: Candid, unobtrusive, blind observations of customers near and around the intervention locations (sampling pods and Healthy Kids Kiosk) and brief interview (or survey) of customers, as they leave or walk by the intervention site.

b) Study Design

An observational uninterrupted time-series design was used in one intervention grocery store. The quasi-experimental design took place in Ukrop's Inc. grocery store in Roanoke, Virginia. A comparison store was not available as the intervention store was the chain's only location in the proximal geographical area. The participating store was selected by the chain's management due to its ability to accommodate the intervention and the proximity of the store to the researchers. The intervention was conducted over a 12-week period, beginning in June and concluding in August.

i) Healthy Kids Kiosk Component

The location of the intervention kiosk was placed based on the availability of space in the store as well as the need for a refrigerated case for the perishable dairy and produce. Also, the intervention kiosk was chosen because the case's shelving was low to the ground, making access easier for children. After the location was established, the specific food items to be featured in the intervention were selected. The general food items were pre-determined, directed by MyPyramid guidelines for Kids. Food item choices focused on MyPyramid selection tips such as: make have your grains whole, go lean on protein, vary your veggies, focus on fruit, and get calcium from low-fat dairy.³⁶ Several food items from each food group that met the selection tip criteria were included. Both common and novel food items were considered for selection, and a total of thirty-two food items were featured based on the available space in the intervention kiosk. Refer to Appendix A for the complete list of food items featured.

With the type of food item determined, the researchers and store manager then selected the specific brands of the food item to be featured in the intervention. Upon the suggestion of the manager, a walk-through the store was conducted to determine the available products of a food item. Each available product was evaluated individually on both established criteria and the store manager's recommendations (e.g. low or high sales). In regards to selection criteria, many of the food products were available in one brand and one package size and thus were chosen. When there were multiple brands available of single food item, the product with the lowest price was selected. Both fruits and vegetables have a Product Look-Up (PLU) code that is not brand or size specific. The source of the produce is contingent of the availability and price from various companies the store purchases from which can be attained from multiple distributors. Therefore, fruits and vegetables were chosen in absence of brand or price criteria. Once all the specific food items were identified, the placement of each item in the kiosk was determined and the Universal Product Codes (UPCs) were documented. Food items that required refrigeration were placed in the case and the remaining items were placed on shelving located on either side of the refrigerated case. Food items were arranged by food group and then stocked by both the researchers and the store employees for the initiation of the intervention. The featured food items also remained in their original location, so it possible to have picked up a particular product from another location than the Healthy Kids Kiosk.

The intervention kiosk featured the logo of the study designed by the researcher and was created by Ukrop's in-house graphic designer. The campaign sign was displayed above the kiosk throughout the intervention as well as colorful balloons were also displayed to attract attention to the kiosk. (See Figures 1-3)

Figure 1: Healthy Kids Kiosk



Figure 2: Healthy Kids Kiosk



Figure 3: Healthy Kids Kiosk



ii) Food Sampling Component

Samples of the food items to be featured in the intervention were designed to feature two to three items from the kiosk to give customers ideas of how they could use these items in snacks or meals and to give the customer an opportunity to try the items without having to purchase them. The sampling of foods was aligned with the current practices at the store. The store provided sampling pods, sample cups, spoons, and labels for this component of the intervention. The sample recipes and schedule were developed by the researchers and approved by store management. Store employees were made aware of the sampling recipes and were to prepare them on the designated days. It was requested by the manager, that the researchers prepare the samples in times the store employees are too busy to prepare the samples. The items used in preparing the samples were ‘scanned out’ to document their use and were not included in the sales data provided by the store. Six different sample recipes were created and were featured twice during the 12-week intervention. *Table 2* for lists each sample and the corresponding featured food items and Figures 4 and 5 for food sampling component images.

Table 2: Food Sample Schedule

Weeks Featured	Sample Name	Intervention Items Featured
1,7	Berry Banana Parfait	Blueberry/Strawberry Light Yogurt Fresh Banana Slices Cinnamon Graham Crackers
2,8	Almond Butter & Jelly Bagels	Almond Butter Reduced-Sugar Grape Jelly 100% Whole Wheat Mini Bagels
3,9	Chicken & Ranch Pita	Pita Pockets Light Ranch Dressing Chicken Slices
4,10	Tostitos Tacos	Baked Tostitos Scoops 2% Shredded Mozzarella Cheese Fresh Diced Tomatoes Fat-free Refried Beans
5,11	Pepperoni Pita Pizzas	Vegetarian Pepperoni 2% Shredded Mozzarella Cheese Pita Pockets Marinara
6,12	Fresh Fruit	Mango Kiwi

Figure 4: Food Sampling Pod



Figure 5: Food Sampling Pod



c) Subjects

The subject pool consisted of patrons of Ukrop's Supermarket's Roanoke location who were adult customers and not Ukrop's employees. This population was chosen as the study aimed to examine the effects of a healthy point-of-purchase intervention in a grocery store on attitudes, behaviors, and purchasing of related food. As a result, it is important to collect data directly from grocery store customers who are exposed to the intervention in order to gain a better understanding of the overall impact of this type of intervention.

Based on information provided by the store manager, it was determined to observe, interview, and offer samples on Mondays, Fridays, and Saturdays between 10:00 AM-2:00 PM as these are times when the store is most frequented by the target population. All customers who were in close proximity to the Healthy Kids Kiosk were observed. When members of the target population made use of the kiosk, they were approached following their experience at the kiosk and the researcher requested voluntary consent and permission from the customer to complete a short survey. If the customer declined, they were offered the survey to take home and return to the store at their leisure. A collection box for surveys was located at the store's customer service desk. If the customer accepted the interview request, the short interview commenced. Eighty-two patrons of the 641 patrons observed (12.8%) met interview criteria and agreed to complete the written questionnaire, all of which were included in statistical analyses. The majority of survey respondents were female, between ages of 30 and 60 years old (mean=47.3 years), had an annual household income of over \$80,000, and were white/Caucasian. Characteristics of the sample are included in Table 3.

The study protocol was approved by the Virginia Tech Institutional Review Board for Research involving human subjects (IRB 09-499 approved on 5-27-2009).

Table 3: Demographic Characteristics of Questionnaire Respondents

Characteristic	n (%)
Gender	
Male	14 (18.2%)
Female	63 (81.8%)
Age	
20 – 29 years old	8 (10.0%)
30 – 39 years old	18 (22.5%)
40 – 49 years old	20 (25.0%)
50 – 59 years old	20 (25.0%)
>60 years old	14 (17.5%)
Number of Children Under 18	
0	34 (43.0%)
1	9 (11.4%)
2	16 (20.3.7%)
3	13 (16.5%)
4 or more	6 (7.6%)
Income	
\$0-\$19,999	3 (4.5%)
\$20,000-39,999	11 (16.4%)
\$40,000-59,999	13 (19.4%)
\$60,000-79,999	10 (14.9%)
> than \$80,000	30 (44.8%)
Ethnicity	
White/Caucasian	76 (96.2%)
Black/African American	1 (1.3%)
Asian American	2 (2.5%)
Other	0 (0%)
Hispanic or Latino	0 (0%)

d) Measures

Beginning in June, the 12-week campaign launched with the initiation of observational and sales data collection. The observation instruments included a daily report and a rapid assessment tool (RAT) observational tool. The daily report included information including date and times of observation, weather condition, sample of the day, prices of each targeted items,

and any notes regarding the intervention. On each day of observation, the researcher completed a daily report.

The rapid assessment tool was developed for observing customers when they were in the vicinity of the Healthy Kids kiosk. This tool was tested for reliability between two independent evaluators in the store setting to ensure consistency in reporting; only two discrepancies were noted of all possible observations and the tool modified accordingly. Patrons were observed who came into proximity of the healthy kids kiosk, walked past the kiosk, and/or stopped at the kiosk. All patrons, regardless of their level of engagement with the kiosk, were observed and the following possible predictors of engagement factors were documented: gender of adult, number of children present, perceived age of child(ren), gender of child(ren), the presence of shopping list and/or coupons, and whether a child was in the shopping cart, parent was carrying child, child was crying/whining, parent and child were arguing. Additional data were collected on patrons who engaged at some level with the Healthy Kids Kiosk. The levels of engagement were no engagement (patron did not notice kiosk or saw kiosk but did not stop); engaged (patron stopped at kiosk and interacted with kiosk in at least of the following ways: trying sample, reading labels, touching featured items, examining foods in kiosk; and purchase, the highest level of engagement, was determined by a patron putting an item in their shopping cart. The duration of the shopping experience is documented with RAT observational tool as well as any interaction between the parent and child: positive, negative, or no response. Lastly, the RAT observation tool included information regarding the sampling pod. This information included: parent or child picks up sample, and whether they appear to like, dislike, or have a neutral response to eating the sample. Also included, whether parent gives sample to child or child gives sample to parent. Space was available for documentation of comments made by the customers regarding the Healthy Kids Kiosk or sampling.

In addition to the observation tool, a questionnaire was developed for customers who were members of the target population and also stopped and looked in the kiosk, picked up items from the kiosk, and/or consumed samples. After an engaged patron, left the kiosk, they were approached for an interview. Interview criteria included having stopped at the healthy kids kiosk and had some level of engagement beyond just picking up and eating sample, then immediately walking away with the kiosk. Questions asked, regarded their awareness of the Healthy Kids Kiosk, their thoughts about it, if they bought anything from it, whether it influenced their

shopping behavior, as well as several non-identifying demographic questions. For more detailed information regarding these assessment tools, please refer to Appendix B, C, and D for the daily report, RAT observational tool and customer questionnaire respectively.

Lastly, sales data was collected as a measure of the primary outcome. This data was provided by the store's headquarters on week-by-week basis. The data available was not specific to the items sold from the Healthy Kids Kiosk, but of the entire store inventory of each of the items.

e) Statistical Analysis

All data from observation check sheets and questionnaires were entered into Microsoft Excel (2007), then converted into JMP statistical software, version 8.0 (SPSS Inc., Chicago, IL, 2009). Of the 668 observations that were conducted, 641 were used in the final statistical analysis. Observational data were not included in the analysis if missing data on engagement. Questionnaire data was entered into Microsoft Excel (2007) and descriptive statistics were obtained for interview data.

Sales data was also collected to supplement the observational data. Of the thirty-two food items featured in the Healthy Kids Campaign, 30 items were included in statistical analyses. Raw weekly total store sales, weekly sales and units of the 30 items, and weekly patron counts were provided by Ukrop's, Inc. and were obtained in Microsoft Excel (2007). Insufficient data for the entire study period was provided by the grocery chain for snap peas and 100% natural white meat chicken; therefore, these items are not included. The thirty food items were analyzed using analysis of variance (ANOVA) with the proportions of mean weekly sales of the intervention items to totals store sales compared for baseline, intervention, and post-intervention periods. Using this proportion controlled for the general economic decline and overall activity at the store.

Chapter 4: Results

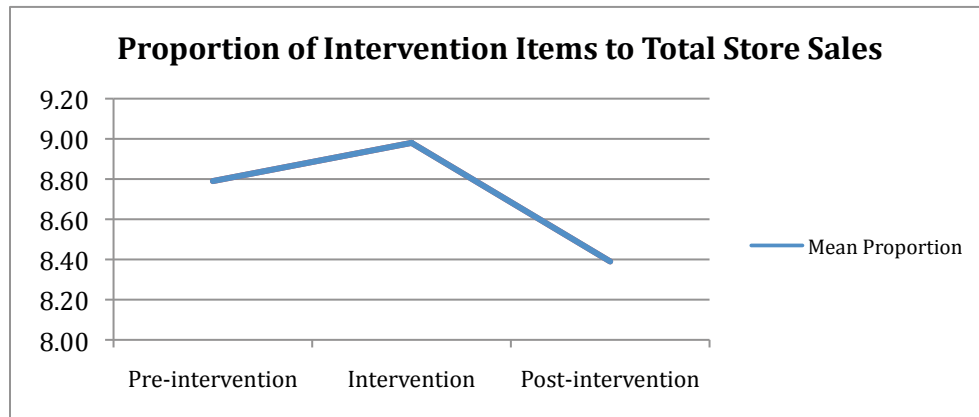
a) Sales Data

Sales of the featured items ranged from \$1,597 to \$2,346 per week. Total store sales declined substantially from the start of the study to the end with the mean weekly store sales for the pre-intervention being \$236,506, during intervention \$214,776, and post-intervention \$200,776. Patron count also decreased slightly. The mean weekly count was 9392, 9339, and 8891, respectively, for pre-intervention, intervention, and post-intervention. The mean proportion of intervention items to total sales pre-intervention was 8.79, during intervention was 8.98, and post-intervention 8.39 (see Table 4 & Figure 6)

Table 4: Sales of Intervention Products and Store Sales

	Week Number	Total Dollar Sales (\$) of 30 Items	Total Dollar Store Sales (\$)	Patron Count	Proportion of Intervention Items to Total Sales (X1000)
Pre-intervention	1	2,383.98	225,660.00	8,168	10.56
	2	2,013.28	248,368.00	10,364	8.11
	3	1,704.21	236,517.00	9,825	7.21
	4	2,603.46	255,431.00	10,246	10.19
	5	1,707.32	216,555.00	8,357	7.88
Intervention	6	2,202.96	238,933.46	9,934	9.22
	7	2,177.96	237,984.76	9,802	9.15
	8	2,346.54	251,252.72	9,924	9.34
	9	2,255.92	217,352.91	9,639	10.38
	10	2,318.21	223,898.53	9,473	10.35
	11	2,068.21	213,551.62	9,582	9.68
	12	1,811.19	205,727.84	9,411	8.80
	13	1,597.34	197,876.05	8,748	8.07
	14	1,641.13	204,317.78	9,243	8.03
	15	1,625.37	193,276.25	8,779	8.41
	16	1,640.62	193,202.37	8,725	8.49
	17	1,576.21	199,694.11	8,812	7.89
Post-Intervention	18	1,470.04	189,742.00	8,846	7.75
	19	1,949.95	231,236.00	10,158	8.43
	20	1,397.83	162,768.00	7,278	8.59
	21	1,715.00	200,900.00	8,979	8.54
	22	1,897.89	219,235.00	9,194	8.66

Figure 6: Proportion of Intervention Items to Total Store Sales for Entire Study



Of the 30 items, seven (23%) items yielded increases in sales during the intervention period ($p < .05$), based on proportional computations: 100% whole-wheat mini bagels, baked tortilla chips, sunflower seeds, almond butter, honey, bananas, and fresh radishes (see Table 5). Eleven other food items yielded increases during the intervention, but were not statistically significant: skim milk, soy milk, vegetarian pepperoni, low-fat refried beans, strawberry yogurt, carrots, kiwi, yellow pepper, apples, and lemons. Three items - fresh broccoli, tomatoes, low-fat string cheese – actually yielded decreases in sales during the intervention period ($p < .05$).

Table 5: Mean Proportion of Sales of Intervention Items to Total Store Sales

MyPyramid Food Group	Food Item	Pre-Intervention: Mean proportion of sales to total sales	Intervention: Mean proportion of sales to total sales	Post-Intervention: Mean proportion of sales to total sales	p-value*
Grains	Whole Wheat Mini Bagels, 17 oz	87.57	124.86	90.76	0.026†
	Popcorn, 35 oz	97.25	79.60	98.80	0.617
	Wheat Squares Cereal, 13 oz	55.43	34.94	45.08	0.4504
	Cinnamon Grahams, 14.4 oz	39.97	32.44	43.12	0.646
	Whole Wheat Pita, 5'S	71.80	68.83	71.68	0.987
	Baked Tostitos™ Scoops, 9 oz	130.19	206.86	146.13	0.017†
Fruits	Kiwi	183.74	187.53	181.65	0.990
	Red Delicious Apples	296.62	314.50	403.50	0.095
	Lemon	447.68	556.00	480.28	0.060
	Pineapple	94.36	73.30	38.64	0.066
	Mangos, Kent, 7 CT	186.26	169.45	138.54	0.389
	Oranges, Calif Navel 56 CT, EACH	674.93	536.50	654.13	0.194
	Banana	2603.43	3337.77	3348.93	0.000506†
	Carrots, 2.25 oz	87.18	96.77	112.29	0.669
Vegetables	Broccoli Florets, 8 oz	178.55	132.39	88.50	0.023†
	Yellow Pepper	163.28	170.37	147.12	0.599
	Radishes, 6 oz	38.23	80.30	71.84	0.001†
	Tomatoes, Vine Cluster,	1958.52	1208.79	766.65	0.049†
	Plain Soy Milk, 32 oz	28.85	40.28	31.63	0.342
Milk	Lite Blueberry Yogurt, 6 oz	36.07	36.54	31.51	0.919
	String Cheese, 12 oz	82.49	79.05	167.45	0.015†
	2% Shredded Mozzarella, 8 oz	112.63	75.57	100.54	0.451
	Ukrops Nonfat Milk, 1/2 GAL	767.69	810.20	889.01	0.230
	Lite Strawberry Yogurt, 6 oz	27.52	31.73	16.44	0.176
	Sunflower Seeds, 7.25 oz	52.99	131.87	25.82	0.0000281†
Meats and Beans	Vegetarian Pepperoni, 4oz	15.64	21.77	15.96	0.825
	Fat-Free Refried Beans, 16 oz	12.56	23.91	20.26	0.242
	Almond Butter, 12 oz	56.42	117.48	46.54	0.009†
	Ranch Low-fat Dressing, 16 oz	50.28	48.23	47.63	0.999
Discretionary Calories	Reduced Sugar Jelly, 18.8 oz	12.92	26.24	35.37	0.159
	Honey, 12 oz	31.36	105.06	36.52	0.0000391†

*based on ANOVA † = significant at $p < .05$ level. Values multiplied by 1 million to more easily compare

b) Observational Data

Predictors of Engagement

Based on ANOVA analysis, several factors were found to be associated with engagement of the patrons with the kiosk. For example, the presence of shopping lists reduced rates of engagement, but not significantly. See Table 6. Patrons with coupons, children crying/whining, arguing among patron and child, children not in the cart, and those not carrying their children were more likely to engage ($p < .05$). The more children present, the more likely the family was to stop and engage at the kiosk. Gender of the adult patron, male, female, or both a male and female present did not play a role.

Table 6: Predictors of Engagement

Factor		N (%)	Mean (of a score of 0 – 2)*	P-value
Shopping list Visible	No	523 (81.6%)	.34	.589
	Yes	90 (14.4%)	.32	
Presence of Coupons	No	539 (84.1%)	.34	.004
	Yes	77 (12.1%)	.30	
Child in cart	No	76 (11.9%)	.57	.042
	Yes	75 (11.7%)	.33	
	No Child	465 (72.5%)	.3	
Child whining or crying	No	144 (22.5)	.44	.002
	Yes	6 (.009%)	.67	
	No Child	465 (72.5%)	.3	
Arguing	No	147 (22.9%)	.44	.004
	Yes	4 (.006%)	1.25	
	No Child	465 (72.5%)	.30	
Parent carrying a child	No	146 (22.8%)	.45	.001
	Yes	4 (.006%)	.25	
	No Child	466 (72.7%)	.30	

* 0: no engagement; 1: engagement; 2: observed purchase

Engagement

Of the 641 patrons observed during the intervention, 184 (28.7%) patrons engaged at some level at the Healthy Kids kiosk. If individuals did engage, 50 (27.2%) placed the items in the cart. A total of thirty-two items were observed being picked up and an additional 62 items were observed being placed in the cart (see Table 7). The range of times an individual item was observed being picked up, but not put in a patron's shopping cart, was 0 to 4, with nonfat milk and string cheese being the most frequently observed items being picked up. Fourteen of the 30 (46.67%) featured items were never observed being picked up at all. These items included wheat square cereal, popcorn, baked Tostitos™, carrots, tomatoes, snap pea, radishes, yellow pepper, oranges, mango, refried beans, soymilk, jelly, and honey. In terms of observed purchases, the range of times an item was observed being put in a patron's shopping cart was 0 to 8. Bananas, kiwi, lemons were the most popular items. Nine (30%) of the featured items were never observed being put in a patron's shopping cart. These items included wheat square cereal, popcorn, radishes, yellow pepper, apples, chicken, mozzarella, jelly, and ranch dressing.

Observations and Sales

Based on sales data during the observational time periods, there was a strong correlation between placing items in the cart and actual purchases with an R-value of .537 and $p=.002$.

Table 7: Comparison of Observational and Sales Data for Intervention Items

MyPyramid Food Groups	Food Item	Total Items Picked Up by Adult or Child During Observations for Entire Intervention Period	Total Items Placed in the Cart by Adult or Child During Observations for Entire Intervention Period	Sales of Items During Observation Period (Units)
Grains	Whole Wheat Mini Bagels, 17 oz	1	1	15
	Wheat Squares Cereal, 13 oz	0	0	7
	Popcorn, 35 oz	0	0	7
	Whole Wheat Pita, 5'S	1	2	18
	Cinnamon Grahams, 14.4 oz	2	2	5
	Baked Tostitos™ Scoops, 9 oz	0	1	35
Fruit	Bananas	2	8	1891*
	Red Delicious Apples	1	0	77
	Oranges, Calif Navel 56 CT,EACH	0	1	232
	Pineapple	2	2	72
	Mango, Kent, 7Ct	0	4	78
	Kiwi	1	7	243
	Lemon	2	7	2
Vegetables	Carrots, 2.25 oz	0	4	37
	Tomatoes, Vine Cluster,	0	1	291*
	Broccoli Florets, 8 oz	2	1	36
	Radishes, 6 oz	0	0	28
	Yellow Pepper	0	0	43
Milk	Ukrops Nonfat Milk, 1/2 GAL	4	2	237
	String Cheese, 12 oz	3	1	8
	Lite Blueberry Yogurt, 6 oz/ Lite Or Strawberry Yogurt, 6 oz	1	4	56
	Plain Soy Milk, 32 oz	0	1	12
	2% Shredded Mozzarella, 8 oz	1	0	18
	Almond Butter, 12 oz	2	2	13
Meat and Beans	Sunflower Seeds, 7.25 oz	2	1	41
	Vegetarian Pepperoni, 4oz	1	5	9
	Fat-Free Refried Beans, 16 oz	0	3	8
	Reduced Sugar Jelly, 18.8 oz	0	0	5
Discretionary Calories	Honey, 12 oz	0	1	26
	Ranch Low-fat Dressing, 16 oz	2	0	16
	Total	32	62†	3626†

Note: *Unit sales for these produce refer to pounds (e.g. bananas) whereas observations refer to the food being placed in the cart (an banana being observed being placed in cart would receive a 1, but the amount the person purchased was 5 lbs. thus the large discrepancies in observational units and sales units for these items)

†Correlation between total items placed in the cart and sales of items was significant, $p < .01$.

c) Questionnaire Data

Of those surveyed, 30 (37.5%) indicated that they were spending *less* money that day than they usually do. Thirty-nine (48.8%) of respondents indicated that they were spending about the *same* money that day as they usually do. Eleven (13.8%) respondents indicated that they were spending *more* money that day than they usually do. In regards to whether this was a typical shopping day, 48 (60.0%) respondents indicated that this was not a typical shopping day while 32 (40.0%) of respondents indicated that it was a typical shopping day.

In regards to patron's awareness of the healthy kids kiosk, almost two-thirds (50, 61.7%) of respondents noticed the healthy kids kiosk compared to 31 (38.3%) who did not notice it. More respondents reported noticing the sampling pod with 62 (80.5%) versus 15 (18.3%) not. In regards to whether patrons purchased items from the healthy kids kiosk, only about one-quarter (28.7%) indicated that they did purchase at least one item from the healthy kids kiosk compared to 57 (71.3%) of respondents indicating that they did not purchase at least one item from the healthy kids kiosk. In regards to the foods featured in the sampling pod, 8 (11.0%) of respondents indicated that they did purchase at least one item that was featured in the sampling pod, compared to 65 (89.0%) respondents indicating that they did not purchase anything. Further, 47 (58.0%) of respondents agreed with the statement, "These new features encouraged you to buy healthier items for *yourself*," and 43 (55.1%) with the statement, "These new features encouraged you to buy healthier items for *your children or grandchildren*." Overall, based on the new healthy kid features, 57 (74.0%) of respondents indicated that they would recommend this store to a friend who has young children.

Twelve (14.6%) respondents indicated they shop exclusively at Ukrop's compared to 70 (85.4%) respondents indicating that they do not shop exclusively at Ukrop's. Of those who responded that they do not shop exclusively at Ukrop's, 30 (45.5%) respondents indicated that these new features would encourage them to shop more at Ukrop's compared to 36 (54.5%) respondents indicating that the new features did not encourage them to shop more at Ukrop's.

Chapter 5: Discussion

a) Sales Data

The Healthy Kids Campaign aimed to increase the purchase of featured healthy fruits, vegetables and healthy snacks by parents of young children. These foods were chosen using MyPyramid as a framework for children and featured foods from each of the food groups. The featured foods were displayed by increasing their exposure in the store with a one-stop-shop kiosk, as well as offering samples of these foods so shoppers can taste food items without having to purchase them.

The mean proportion of featured items to the total store sales increased from the pre-intervention period to the intervention and subsequently the sales declined during the post-intervention period. The magnitude of this effect is small, but still illustrates that the featured items represented an increased proportion of the total store sales while the Healthy Kids Kiosk was in the store. This increase in sales could be attributed to the increased shelf exposure, labeling, and sampling of the featured food items.

Sales data was examined for significant changes increases in sales for each featured food items across pre-intervention period, intervention period, and post-intervention period. With respect to the intervention's effect on food purchasing behavior, the intervention had an influence of statistical significance on sales of mini-bagels, baked tortilla chips, sunflower seeds, almond butter, honey, fresh radishes, broccoli, bananas, tomatoes, and string cheese. This influence was positive in regards to all items excluding broccoli, tomatoes, and string cheese.

It should be noted that it is difficult to compare sales over time and make concrete inferences from the changes in sales as there were large fluctuations in the sales data. This variability makes it inherently difficult to detect any intervention effect and whether the differences were a direct result of the intervention or other confounding variables.⁴⁶ Nonetheless, the examination and analysis of sales data is still important to report.

Despite these limitations, some changes in purchasing behavior were observed, which more novel foods appear to have more significant changes in sales. This effect could be attributed to the established expectation of good taste through creative sampling as well as increased exposure and labeling of the food as being healthy to increase awareness of these

unfamiliar foods. A study by Martins and colleagues⁴⁷, found that nutrition information alone had no impact on willingness to taste unfamiliar foods, but taste exposure and nutrition-plus-availability information positively influenced subjects willingness to try unfamiliar foods. Alternatively, a study by McFarlane and colleagues⁴⁸ found that stating that a novel food is ‘good for you’ increased willingness to try the novel food in individuals who rated good nutrition as an important indicator their daily food intake. Other studies have found promising strategies that increase willingness to try novel foods such as exposure to a novel food and exposure to other good-tasting novel foods.⁴⁷⁻⁵⁰ While findings vary in regards to nutrition information on willingness to consume more novel foods, the majority of studies conclude that taste exposure is effective in increasing willingness to consume foods that are unfamiliar to the subject. The increases in sales of some of the featured items, notably more novel foods, could be attributed to the sampling, increased exposure, and labeling the featured items as healthy within the intervention.

b) Observational Data

Predictors of Engagement

There were several potential facilitators or barriers examined as predictors of a patron’s engagement with the Healthy Kids Kiosk. If a patron was holding a coupon, he/she was less likely to engage with the kiosk. The presence of a shopping list and its influence on shopping behavior has been broadly examined both in academic and in retail marketing publications. According to Thomas and colleagues⁵¹, a shopping list represents tangible evidence of out-of-store planning which can significantly reduce the opportunity for the store environment to influencing purchasing. The authors further describe that having a shopping list and/or coupons as a form of scripted behavior that reduces the impact of environmental cues on amount of time and money spent in the grocery store. The authors concluded from the study that shoppers that used a shopping list bought fewer items, spent less money, and less time in the store. These findings could explain the reduced level of engagement with the Healthy Kids Kiosk when patrons possessed a shopping list and coupons. The Healthy Kids Kiosk aimed to provide a supportive store environment for the purchase of healthy foods for children, however, there is evidence that a patron who had previously planned their purchases are less likely be influenced or alter their purchasing behavior.⁵¹

The family was significantly more likely to be highly engaged at the Healthy Kids Kiosk if a child was present, the child was not being carried by the parent or not sitting in the shopping cart as well as when a child was disconcerted, by either crying, whining, or arguing with their parent. There is little available literature addressing to the presence of child and their influence on shopping behaviors of their parents. Retail marketing journals have published research that discusses the increases the amount of time and money spent in the store when a child is present. These increases are more significant with the more children who are present.⁵¹⁻⁵² The findings of this study contribute to a somewhat null body of literature. When a child was being carried by a parent or in a shopping cart, the family was less likely to engage. This relationship could be attributed to the parent being unable to easily stop, pick up an item to examine, put item in their cart, or take a sample. With the child being in the cart, the child is unable to initiate engagement with the kiosk as it is difficult for them to notice the kiosk, especially when they are facing away from the direction they are going. Additionally, the results of this study indicated that when a child was crying/whining or arguing with their parent, the family was more likely to engage with the Healthy Kids Kiosk. This association could be a result of the parent noticing a child oriented display with food samples and encouraging the child to eat a sample and look at the kiosk in an attempt to calm the child or serve as a diversion.

Engagement

Of the patrons observed, patrons that were considered engaged and had observed purchases from the Healthy Kids Kiosk represented only a small proportion. This modest rate of observed patron engagement and purchase from the kiosk, despite notable increases in the sales of the some items that were never observed being purchased, could be attributed to observations only being conducted 12 hours per week, which equates to 13% of the time the store is open to customers. Additionally, the intervention store was experiencing a severe decline in overall sales that resulted in the store closing shortly after the conclusion of the study. Observation periods, Monday, Friday, and Saturday from 10 am to 2 pm were determined based on recommendations from store managers, however, many of the store employees anecdotally suggested that observations should be conducted from 5pm -8pm because the highest patron traffic was in the store during these times. The kiosk's location in the back of the store could have contributed to the lack items observed being placed in cart from the kiosk as the customer may have already put

an item in their cart that was featured in the kiosk, but picked it up in its usual location earlier in their shopping trip.

The sampling pod component of the intervention was successful in attracting patrons to the Healthy Kids Kiosk; however, often patrons simply took a sample and walked away, not noticing and not engaging with kiosk, thus ultimately making it impossible for them to put an item in their cart.

Observations & Sales

The correlation of the observed purchases and actual items sold during the observation period was .537. This correlation further validates that if an item was observed being placed in a shopping cart that it was also likely purchased during the observational period. The large differences in the observed purchases versus the units sales purchases, again is attributed to that the sales data is representative of the total store sales of the featured items and not exclusively the sales of the featured items taken from the kiosk. In cases where an item was observed being put in the shopping cart but not actually purchased can be attributed to the customer putting the item back in another part of the store or deciding at the check-out that they were not going to purchase the item.

c) Questionnaires

The Health Kids Campaign study not only aimed to increase the purchase of the featured healthy foods, but to observe patron interactions with the kiosk and examine levels of awareness of the kiosk as well as self-reported purchase of the featured foods from the healthy kids kiosk. Patrons who had higher levels of engagement were approached for interviews regarding their experience with the kiosk.

The survey results yielded that two-thirds of patrons interviewed were aware of the Healthy Kids Kiosk and that about eighty percent of patrons were aware of the taste pod featuring samples of the healthy foods in the kiosk. The levels of awareness are noteworthy and could be attributed to the large, color display sign, brightly colored balloons framing the kiosk, and the kiosk's location in the store. The patrons who were not aware of the campaign despite having engaged at some level with the kiosk, anecdotally indicated that they were concentrating

on finding certain items, were distracted by other things, or that the display sign was too high to be noticed when standing directly in front of the kiosk.

In regards to self-reported purchase of items from the healthy kids kiosk, about one-third of patrons indicated that they did purchase at least one item from the kiosk. Further, eleven percent of patrons indicated that they purchased food items that were featured in the sample taste pod. Patrons who purchased items from kiosk and sample taste pod noted that they liked the sample, which prompted them to purchase the item as well as the sample combinations provided healthy snack ideas. Also important to note is that fifty-eight percent of patrons surveyed indicated that these new features encourage them to buy healthier items for themselves and that fifty-five percent of patrons indicated these features encourage them to buy healthier items for their children or grandchildren. Of those who indicated that these features did not encourage them to buy healthier for themselves or grandchildren, the most common response was they buy healthy foods anyway. This could be a contributing factor to the modest self-reported purchases of food items from the kiosk because they had already picked up the same food items or similar healthy foods earlier in their shopping trip.

d) Limitations

While the Healthy Kids Kiosk intervention could have contributed to the moderate increase of sales of targeted items and providing descriptive information on the extent of certain influences on engagement and food purchasing behavior such as shopping lists, coupons, presence and behavior of children, novelty of food items, several limitations should be addressed. Using sales data as measure of food purchasing patterns, has been examined by researchers and its value in assessing food purchasing changes has been established. Sales data is an objective, free of bias measure that can provide detailed and accurate information of individual items purchased, brand, quantity, price, and is readily accessible given a store has consented the release of the proprietary sales data information.⁴⁶ However, sales data has several identified issues pertaining to its use, such as generalizability, reliability, and difficulty in interpreting sales data.⁵³ The method of using the percentage of each featured food item to total store sales, to control for stark difference in sales and number of patrons from the beginning to the end of the study, presents difficulties with variations in sales, prices, seasonal fluctuations, non-intervention promotions, and purchase substitutions.^{13,33} Despite this limitation, interpreting and reporting sales data can be informative and coupled with the observation data some more

tangible conclusions can be made as a result of this study. Sales data on the specific movement of the food items in the intervention kiosk was not available; therefore the sales data used in analysis was representative of the entire store sales of each item, which contributes to the difficulty in interpreting the effects of the intervention in isolation. Lastly, It should be noted that the researchers were provided the sales data by Ukrops's. As a result, the researchers did not have control over that data and assumed it was accurate.

Several logistical and implementation problems were experienced during this study. While the store administration and management were overall very supportive of the intervention, there were a few issues pertaining to the cooperation of employees in regards to the implementation of the intervention. While the employees were aware of the intervention, often times featured items were not adequately stocked, nearly expired produce was not removed, and while rare, inappropriate items were stocked in the intervention kiosk. Prior to the initiation of the study, it was established between the researchers and the store managers that on days of observation, the researcher would restock items and discard produce that was approaching expiration. During the remaining days of the week, various employees of produce department were responsible for the intervention's maintenance. The employees were often not compliant with this request, perhaps because it was an additional task to their already burdening responsibilities. Managers often failed to check on the intervention as well and were not aware of the lack of employee responsibility until it was brought to their attention by the researchers. Employee compliance continued to be minimal most of the intervention. This same issue was prevalent with the preparing of samples. It was established that the store chefs would prepare the samples on days of observation, but often they were too busy to have the samples prepared before 10 am. Another limitation to this study was the notably analogous demographic characteristics of the subjects. While this study has significant reach, it is not representative of the surrounding community.

Chapter 6: Conclusions

The multi-faceted Healthy Kids Campaign aimed to increase the sale of featured foods to families with young children using well-known industry strategies, but focused on the promotion of healthy foods framed in the recommendations of MyPyramid for Kids. This study's finding contributes to the research on grocery store intervention as well as highlights several limitations and challenges with this body of research. While concrete conclusions cannot be made, the noteworthy increases in sales of several individual items as well as the increased proportion of the featured items to the total store sales indicates an effective grocery store environmental intervention. Improved methods in sales data collection and analysis could improve the validity and applicability of sales data use in nutrition-related interventions. In addition, the observations and questionnaire components yielded informative data on predictors of engagement including the influence of shopping lists, coupons, and children; awareness of the intervention in the store, and self-reported changes in purchasing behavior. Further research is needed to examine the effects of the barriers on healthful food purchases and ways to overcome these barriers. While there were a few implementation problems, these issues were minor and could be alleviated with more pre-intervention planning, role establishment with the store employees, and mutual understanding and accountability of individual responsibilities.

a) Implications

The Healthy Kids Campaign has important implications for grocery stores, nutrition educators, and researchers. In regards to grocery stores, this study exhibits the potential of a grocery store to serve as a site for an environmental nutrition intervention that promotes the purchase of fruits, vegetables, and healthy snacks, with minimal cost and labor, that results in profitability for the store. Grocery stores typically employ a nutritional professional who possess the knowledge and skills as well as can attain the necessary resources to build such an environmental intervention. Also, grocery store environmental interventions like this one could be adapted to other nutrition-related conditions such as diabetes, heart-healthy, low-sodium diets, etc. The implementation of such interventions require minimal alterations to standard retailing procedures, as grocery stores already aim to increase the sales of targeted items, often more unhealthy items. There should be continued advocacy for grocery stores to become agents of change in their community by promoting healthy foods for purchase to their customers.

For nutrition educators, this study represents a new avenue for improving the built food environment and encouraging the purchase of healthier foods with significant reach and effectiveness. Highlighting healthy choices in grocery stores provides the opportunity to influence food choices at the point at which food is purchased. Successes in increasing more healthful food purchases can undoubtedly contribute to successes in increasing more healthful food intake.

To the knowledge of the researchers, there have been no published grocery store interventions that have targeted young children and their families. Future research efforts should focus on conducting grocery store nutrition intervention studies for a longer duration, in multiple stores, using alternate study designs such as interrupted time-series, while perhaps combining with social marketing efforts.

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Appendices

Appendix A: Featured Food List

Appendix B: Daily Report

Appendix C: Consent Script

Appendix D: Observation RAT

Appendix E: Questionnaire tool

Appendix F: IRB Approval

Appendix A: Featured Foods List

List of Foods Featured in Healthy Kids Kiosk

Thomas Mini Whole Grain Bagels
Full Circle Cereal
Popcorn (100 calorie packs)
Pita Pockets
Low-fat Cinnamon Graham Crackers
Baked Tortilla Chips
Baby Carrots
Vine Ripe Tomatoes
Snap Pea
Broccoli Crowns
Radishes
Yellow Pepper
Bananas
Red Delicious Apple
Orange
Pineapple
Mango
Kiwi
Lemon
Almond Butter
Sunflower Seeds
Vegetarian Pepperoni
Chicken
Refried Beans
Skim Milk
String Cheese
Yogurt
Soy Milk
Shredded Mozzarella
Welch's Jelly
Honey
Kraft Light Ranch Dressing

Appendix B: Daily Report

Ukrop's Healthy Kids Campaign: Rapid Assessment Tool

Daily Report

Today's Date: _____

Observer Name _____

Time(s) of observation: _____

Weather Condition _____ (Sunny, Rainy, Storming, Cloudy, etc)

Proximity to Holiday _____

Construction Obstructions/Notes: _____

Pod Recipe/Sample of the Day: _____

Any changes in the intervention site, etc. that should be noted:

Other Notes:

Food Item	Price	On Sale?
Thomas Mini Whole Grain Bagels		
Full Circle Cereal		
Popcorn (100 calorie packs)		
Pita Pockets		
Low-fat Cinnamon Graham Crackers		
Baked Tortilla Chips		
Baby Carrots		
Vine Ripe Tomatoes		
Snap Pea		
Broccoli Crowns		
Radishes		
Yellow Pepper		
Bananas		
Red Delicious Apple		
Orange		
Pineapple		
Mango		
Kiwi		
Lemon		
Almond Butter		
Sunflower Seeds		
Vegetarian Pepperoni		
Chicken		
Refried Beans		
Skim Milk		
String Cheese		
Yogurt		
Soy Milk		
Shredded Mozzarella		
Welch's Jelly		
Honey		
Kraft Light Ranch Dressing		

Appendix C: Consent Script

Healthy Marketing Strategies for Grocery Stores to Address Childhood Overweight (IRB #09-499)

Script for Consent Process of Subjects (Patrons of Ukrop's Supermarkets, Roanoke, Virginia)

Observer: "Hi. My name is Ashley Holmes. I am a graduate student at VT. I am here conducting a study

and was wondering if you would take 5 minutes to answer just a few questions for me. It is completely voluntary and all your information will be kept confidential and will be anonymous. If helpful, I am happy to walk with you as I ask you questions."

If customer declines: "Would you be willing to fill out a short survey and return to the customer service desk?"

Customer: "Yes" –Observer: "Thank you."

Customer: "No" – Observer: "Thank you for considering. Have a nice day!"

If customer accepts: Observer will proceed with survey (attached)

Appendix D: Observation RAT

Ukrop's Healthy Kids Campaign: Rapid Assessment Tool

Parent(s) Present	☐ Female/Mother	☐ Male/Father		
Number of Children Present:	_____			
Children Gender	Child 1 ☐ Male ☐ Female	Child 2 ☐ Male ☐ Female	Child 3 ☐ Male ☐ Female	Child 4 ☐ Male ☐ Female
Children Age (approx)	☐ Toddler/Pre-school ☐ School Age ☐ Adolescent	☐ Toddler/Pre-school ☐ School Age ☐ Adolescent	☐ Toddler/Pre-school ☐ School Age ☐ Adolescent	☐ Toddler/Pre-school ☐ School Age ☐ Adolescent
Shopping List Visible?	☐ Yes	☐ No	Coupons?	☐ Yes ☐ No
Child in Cart?	☐ Yes	☐ No	Parent carrying a child?	☐ Yes ☐ No
Child crying or whining?	☐ Yes	☐ No	Arguing between parent and child?	☐ Yes ☐ No

Intervention/Kiosk

What happened?

- ☐ Saw the kiosk but did not stop
☐ Did not notice the kiosk
☐ Parent initiated the stop
☐ Child initiated the stop

Food Item	Parent: Touch/Pick U/D	Parent: Put in Cart	Child: Touch/Pick U/D	Child: Put in Cart
Thomas Mini Whole Grain Bagels	☐	☐	☐	☐
All Circle Cereal	☐	☐	☐	☐
pcorn (100 calorie packs)	☐	☐	☐	☐
ia Pockets	☐	☐	☐	☐
nnamon Graham Crackers	☐	☐	☐	☐
iked Tortilla Chips	☐	☐	☐	☐
iby Carrots	☐	☐	☐	☐
ne Ripe Tomatoes	☐	☐	☐	☐
ap Pea	☐	☐	☐	☐
occoli Crowns	☐	☐	☐	☐
idishes	☐	☐	☐	☐
llow Pepper	☐	☐	☐	☐
manas	☐	☐	☐	☐
d Delicious Apple	☐	☐	☐	☐
ange	☐	☐	☐	☐
neapple	☐	☐	☐	☐
ango	☐	☐	☐	☐
wi	☐	☐	☐	☐
mon	☐	☐	☐	☐
mond Butter	☐	☐	☐	☐
nflower Seeds	☐	☐	☐	☐
getarian Pepperoni	☐	☐	☐	☐
icken	☐	☐	☐	☐
fried Beans	☐	☐	☐	☐
im Milk	☐	☐	☐	☐
ring Cheese	☐	☐	☐	☐
gurt	☐	☐	☐	☐
y Milk	☐	☐	☐	☐
redded Mozzarella	☐	☐	☐	☐
elch's Jelly	☐	☐	☐	☐
ney	☐	☐	☐	☐
aft Light Ranch Dressing	☐	☐	☐	☐

Duration of shopping experience at intervention (Taste Pod & Kiosk)	☐ Less than a minute	☐ 1-5 minutes	☐ 5-10 minutes	☐ More than 10 minutes
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Demographic s

Child Response to Intervention

- ☐ Positive
 ☐ Negative
 ☐ No Response
 ☐ Not Applicable

Parent Response to Intervention		☐ Positive	☐ Negative	☐ No Response	☐ Not Applicable
Comments made about intervention		☐ Yes	☐ No		
Including (sign, kiosk, price, purchasing)		Specific Comments _____			

<u>Taste Pod</u>					
Parent picks up	Eats sample	☐ Yes ☐ Likes	☐ No ☐ Dislikes	☐ Neutral	☐ Grabs another one?
	Gives a sample to Child	☐ Yes ☐ Likes	☐ No ☐ Dislikes	☐ Neutral	☐ Grabs another one?
Child picks up	Eats sample	☐ Yes ☐ Likes	☐ No ☐ Dislikes	☐ Neutral	☐ Grabs another one?
	Gives a sample to Parent	☐ Yes ☐ Likes	☐ No ☐ Dislikes	☐ Neutral	☐ Grabs another one?

Reaction to Taste		☐ Nothing (did not try to purchase the items) ☐ Picked up corresponding items from kiosk after tasting ☐ Not Applicable (If all NOs checked above)			
Comments made about sample including (wants to purchase it)?		☐ Yes	☐ No		
		Specific Comments _____			

Other notes, observations, comments

Appendix E: Questionnaire Tool

Ukrop's Healthy Kids Initiative

Ukrop's and Virginia Tech are testing out some new features in this store. We are asking all customers to comment on these, so we can better understand how we can meet your needs. Thank you!

Today, did you spend: ☐ More money than usual ☐ Less money than usual ☐ About the same as usual
Was this a typical shopping day? ☐ Yes ☐ No. Why? _____

As part of a new campaign, we created a Healthy Kids initiative to promote tasty, easy, nutritious snacks to families with young children. What did you think about the following new features?

Kid-friendly kiosk (with assorted foods)	☐ I liked it	☐ I did not like it	☐ I didn't notice it
Free samples of kids' foods	☐ I liked it	☐ I did not like it	☐ I didn't notice it
In-aisle promotions	☐ I liked it	☐ I did not like it	☐ I didn't notice it

Comments:

Did you buy anything from...

Kid-friendly kiosk (with assorted foods)	☐ Yes	☐ No	☐ I don't know
Free samples of kids' foods	☐ Yes	☐ No	☐ I don't know
In-aisle promotions	☐ Yes	☐ No	☐ I don't know

Comments:

Did these new features encourage you to buy healthier items for your children?

☐ Yes ☐ No ☐ I do not have children

Do you typically shop with your children? ☐ Yes ☐ No ☐ I do not have children

Based on these new features, would you recommend this store to a friend? ☐ Yes ☐ No

What is your household income?

☐ \$0 - \$19,999 ☐ \$20,000-39,999 ☐ \$40,000-59,999 ☐ \$60,000-79,999 ☐ >\$80,000

What is your ethnicity (you may check more than one box):

- ☐ Caucasian/White
- ☐ African American/Black
- ☐ Asian American
- ☐ Other

Are you:

☐ Hispanic/Latino ☐ Non-Hispanic/Latino

What is your age? ____ years What is your gender? ☐ Female ☐ Male

How many children do you have? ☐ I don't have children ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ more than 4

What is their age and gender?

____ years ☐ Female ☐ Male
 ____ years ☐ Female ☐ Male
 ____ years ☐ Female ☐ Male
 ____ years ☐ Female ☐ Male

Any other comments? **THANK YOU FOR YOUR TIME!**

Appendix F: IRB Approval



Office of Research Compliance
Institutional Review Board
2000 Kraft Drive, Suite 2000 (0497)
Blacksburg, Virginia 24061
540/231-4991 Fax 540/231-0959
e-mail moored@vt.edu
www.irb.vt.edu

FWA00000572(expires 1/20/2010)
IRB # is IRB00000667

DATE: May 27, 2009

MEMORANDUM

TO: Elena L. Serrano
Ashley Holmes
Stephanie Riviere

FROM: David M. Moore 

Approval date: 5/27/2009
Continuing Review Due Date: 5/12/2010
Expiration Date: 5/26/2010

SUBJECT: **IRB Expedited Approval:** "Healthy Marketing Strategies for Groceries Store to Address Childhood Overweight", IRB # 09-499

This memo is regarding the above-mentioned protocol. The proposed research is eligible for expedited review according to the specifications authorized by 45 CFR 46.110 and 21 CFR 56.110. As Chair of the Virginia Tech Institutional Review Board, I have granted approval to the study for a period of 12 months, effective May 27, 2009.

As an investigator of human subjects, your responsibilities include the following:

1. Report promptly proposed changes in previously approved human subject research activities to the IRB, including changes to your study forms, procedures and investigators, regardless of how minor. The proposed changes must not be initiated without IRB review and approval, except where necessary to eliminate apparent immediate hazards to the subjects.
2. Report promptly to the IRB any injuries or other unanticipated or adverse events involving risks or harms to human research subjects or others.
3. Report promptly to the IRB of the study's closing (i.e., data collecting and data analysis complete at Virginia Tech). If the study is to continue past the expiration date (listed above), investigators must submit a request for continuing review prior to the continuing review due date (listed above). It is the researcher's responsibility to obtain re-approval from the IRB before the study's expiration date.
4. If re-approval is not obtained (unless the study has been reported to the IRB as closed) prior to the expiration date, all activities involving human subjects and data analysis must cease immediately, except where necessary to eliminate apparent immediate hazards to the subjects.

Important:

If you are conducting **federally funded non-exempt research**, please send the applicable OSP/grant proposal to the IRB office, once available. OSP funds may not be released until the IRB has compared and found consistent the proposal and related IRB application.

cc: File

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