

Opportunities in the Classroom or Cafeteria for a “Tasting Challenge” to Influence First Grade Students’ Willingness to Try New Foods

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ABSTRACT

Purpose/Objective

To develop and implement a ‘Tasting Challenge’ activity that is feasible for schools to influence and measure the willingness of elementary students to try new foods.

Methods

The Tasting Challenge was as part of a classroom activity. Children were individually offered jicama and edamame to taste and rate (yummy, ok, yucky). The protocol was pilot tested with first graders at one school (n=79) and, after modifications, implemented in four schools (n=311). Children’s tastes or refusals were recorded to determine willingness to try the foods offered, as were taste ratings. Descriptive statistics and chi square tests were performed. To provide a different school perspective, qualitative interviews were performed with foodservice personnel in-person with small groups of staff and by telephone individually with directors. Interviews ascertained their attitudes, knowledge and beliefs about introducing new foods onto the school lunch menu. Analyst triangulation was performed on written notes for themes.

Results

Children were generally willing to try jicama and edamame (91.3% and 88.3%, respectively). Most liked both jicama (77.5%) and edamame (61.2%). No significant differences existed by school. Interviews (four group, two individual; n=11) with foodservice personnel revealed that food waste is a prominent issue and concern when making decisions about introducing new foods and promotional materials are very seldom used to encourage children to try new foods. Respondents displayed interest in promotion techniques, believed that giving children the opportunity to taste test new foods would be very helpful, and favored strategies that would link the classroom and cafeteria.

Applications to Child Nutrition Professionals

The Tasting Challenge is a practical activity aimed at influencing children’s willingness to try new foods and assist school foodservice in successfully introducing new foods onto the school menu; thus providing a potential link between classroom nutrition education and foods served in the cafeteria.

Keywords: child nutrition, tasting, novel foods, qualitative methods, school food service

INTRODUCTION

The National School Lunch Program, which serves approximately 62% of students annually, strives to improve the nutritional intake of students (U.S. Department of Agriculture [USDA], 2012). The school environment is where children consume almost half of their daily calories, making it a prime location to improve children's nutritional status (Briefel, Wilson & Gleason, 2009). It is also a feasible setting to stimulate positive eating behaviors and preferences (Kubik, Lytle & Story, 2005). Children's food preferences are shaped by both taste preferences and familiarity, with familiarity being the dominant force (Guenther, Dodd, Reedy, & Krebs-Smith, 2006). Repeated exposure can enhance familiarity of the food, which can then impact food preferences (Birch, 1979; Zajonc, 1968). In addition to multiple exposure opportunities, it is possible to increase preference and acceptance of foods through positive eating experiences (Savage, Fisher, & Birch, 2007; Birch, McPhee, Shoba, Pirok, & Steinberg, 1987; Wardle, et al., 2003).

As part of the 2010 Healthy, Hunger-Free Kids Act, the National School Lunch Program has adopted new dietary standards, providing school children with increased availability of fruits, vegetables and whole grains (USDA, 2013). With the increased availability of these foods, preference and acceptance are important to ensure students are consuming these foods. Only a few interventions have included cafeteria-based food tastings, and they have shown to be an effective way to increase children's liking for previously disliked foods (Lakkakula, Geaghan, Zanovec, Pierce, & Tuuri, 2010; Lakkakula et al., 2011). While the school cafeteria is an obvious venue for taste testing, it is critical to understand food service personnel's perceived role in introducing new foods in the cafeteria, and their ability to provide educational opportunities that build familiarity with new foods. The joint position of the American Dietetic Association, School Nutrition Association, and Society for Nutrition Education for comprehensive school nutrition services states that more nutrition education efforts are needed to link the cafeteria and classroom (Briggs, Fleischhacker, & Mueller, 2010). Taste testing is one potential and feasible strategy to link the two and enhance children's exposures to healthful new foods.

This study reports the results of a mixed methods evaluation for a school-based "Tasting Challenge", which utilized observational and qualitative data to: 1). Test a 'tasting challenge' activity for elementary students to influence and measure their willingness to try new foods, and 2). Understand food service directors' and staffs' current practices, attitudes and beliefs about introducing new foods as part of school lunch with an aim of identifying potential linkages between the classroom and cafeteria environments. This study was approved by the Institutional Review Board at Colorado State University.

METHODOLOGY

Tasting Challenge Design

To provide a positive and fun environment for children to try new foods, a Tasting Challenge activity was developed utilizing elements of mere exposure theory (Zajonc, 1968) and the reciprocal determinism construct of Social Cognitive Theory (Bandura, 1986). Reciprocal determinism theorizes the bidirectional interactions among an individual's behavior, personal factors and environment. In this study, children were provided with an opportunity in school (environment) to participate in tasting new foods (behavior), adding to their knowledge of and

The self-efficacy for healthful eating (personal factors; see Figure 1). The protocol, developed with consultation from school principals and administrators, was created to be practical and feasible for replication in the future.

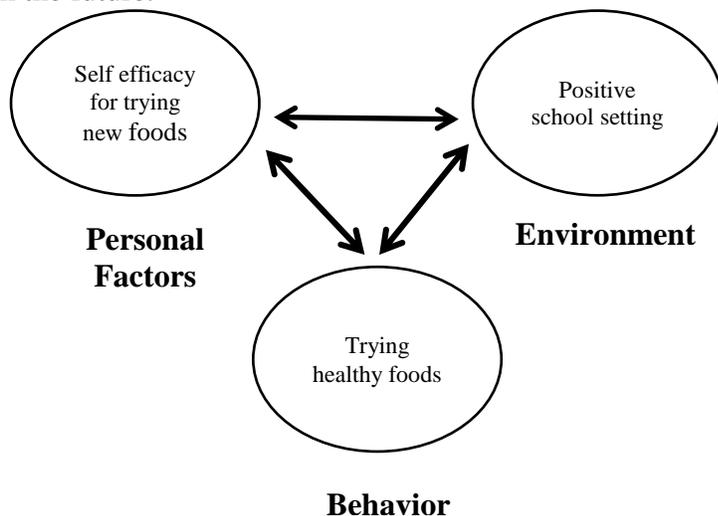


Figure 1. Model of reciprocal determinism in a school-based tasting challenge for trying new foods in which personal factors, the environment and behaviors are mutually interactive and influential (Adapted from Bandura, 1986).

The Tasting Challenge, designed to be conducted during the school day, consisted of two tasting tables decorated with colorful tablecloths, food characters, and balloons. Each table had a set of tasting jars and three tasting stations, consisting of a placemat and tasting cups. Two bite-sized pieces of jicama and edamame, vegetables chosen for their novelty (Young, Anderson, Beckstrom, Bellows, & Johnson, 2004), were placed in separate, small, opaque cups for tasting. Four tasting jars, labeled with words and graph **Behavior** 'ummy' (smiling face), 'ok' (neutral face), 'yucky' (sad face), or 'did not try' ('x') allowed children to select their preference for each food (Figure 2A).



Figure 2. Tasting Challenge A) Design; B) Implementation

Implementation

Prior to participating, a five minute instructional presentation about the Tasting Challenge was given to the children in each classroom. This included an introduction of the two foods being offered, descriptions of the affective ratings (e.g. faces and 'x'), and instructions on how to complete the activity. After the presentation, each student was given two tasting tickets: one yellow for jicama and one green for edamame. Children were then lined up and directed to the Tasting Challenge tables set up in the hallway outside of the classroom. After having the opportunity to taste (or refuse to taste) each of the foods, children were instructed to place their tickets into the corresponding jars based on their preference for each food. A "taste" was counted if the participant touched the food to their mouth, even if they proceeded to spit it out. Researchers recorded whether each child tasted the food and their corresponding affective ranking (Figure 2B).

The protocol for the Tasting Challenge was developed and pilot tested at one Colorado elementary school with first grade students (n=79). Following the pilot, minor modifications (e.g. placement of staff and tables, and placing tickets together in small plastic bags to make it easier for children to manage them) were made to the protocol. It was subsequently implemented in 14 first grade classrooms at four other elementary schools. Data collected included number of tastes and refusals and frequency of the affective responses (yummy, ok, yucky) for jicama and edamame. Demographic characteristics were not collected on individual children. However, school level data for the four participating schools indicate that between 43 and 76% of children participated in free and reduced lunch; 5-35% are Hispanic; and slightly more girls than boys are enrolled.

Qualitative Interviews

Brief interviews were performed with foodservice personnel to gain insight into their current practices, attitudes, and beliefs related to introducing new foods through the school lunch program. In-person interviews were conducted with on-site foodservice staff in groups of two to three staff/site (seven questions; 10-15 minutes in length). Additionally, individual phone interviews were performed with school district foodservice directors (six questions; five to eight minutes in length). Questions were tested for content validity prior to interviews (Krueger & Casey, 2000).

Data Analysis

Descriptive statistics, including frequency and percentages of tastes, refusals and affective ratings, and chi square analysis to examine differences among sites were calculated using IBM SPSS Statistics for Windows v. 21.0, (IBM Corp., Armonk, NY, 2012). For interviews, field notes were taken, transcribed, and examined for similarities by two researchers, who compared their notes and identified themes (Krueger & Casey, 2000).

RESULTS AND DISCUSSION

Tasting Challenge

A total of 311 first grade students participated, and the vast majority tasted jicama (91.3%; n=284) and edamame (88.3%; n=273). As displayed in Table 1, most liked both jicama (77.5%) and edamame (61.2%).

Table 1. First Graders' Affective Ratings of New Foods during a Tasting Challenge at School

New Food	Tasted		Yummy		OK		Yucky	
	n	%	n	%	n	%	n	%
Jicama	284	91.3	220	77.5	36	12.7	14	4.9
Edamame	273	88.3	167	61.2	44	16.1	38	13.9

Note: No statistical differences ($p < 0.05$) between sites were found with chi square analysis.

Qualitative Interviews

Four group interviews (n=11) were conducted with on-site foodservice staff and two, of three potential, individual phone interviews were performed with foodservice directors. Many respondents shared that fruits and vegetables are the most frequently introduced foods to the menu and that food waste is a prominent issue and concern when deciding to introduce new menu items. Most noted that they use little to no promotional materials when new foods appear on the lunch menu. Food service staff stated that more promotion techniques should be incorporated when new foods are added to the menu, but efforts have been minimal because of time limitations for children at lunch and limited staff time and budget. Further, respondents expressed that linking the classroom and cafeteria would be helpful to promote new foods and viewed the Tasting Challenge as a feasible strategy.

Discussion

Many interventions aiming to elicit healthy behavior changes in school aged children have utilized either the school cafeteria or the classroom. To enhance children's exposures to new foods, nutrition education efforts linking the cafeteria and classroom are needed (Briggs, Fleischhacker, & Mueller, 2010). School personnel, including foodservice employees and teachers, have a unique opportunity to influence the foods consumed by school-aged children (Briefel, et al., 2009; Hartline-Grafton, Rose, Johnson, Rice, & Webber, 2009). Children are more likely to change eating behaviors with the support of adults who provide the food (Dollahite, Hosig, White, Rodibaugh, & Holmes, 1998).

Promoting new foods in a fun and exciting manner, in which adult and peer role modeling occurs, can enhance children's acceptance of new foods. Social influences, in conjunction with repeated positive experiences with new foods, can be critical to moving children towards food acceptance (Adnessi, Galloway, Visalberghi, & Birch, 2005). Adnessi et al. (2005), in a study of social influences on young children's eating behavior, reported that children are more likely to eat new food if others are eating the same type of food. Taste testing activities in schools provide opportunities for positive influences from both adults and peers, while building familiarity and promoting new foods in a child-friendly manner.

Promotion of new foods throughout the school environment are needed. Expecting children to select a new food from the lunch line without prior exposure and low familiarity, may be unrealistic. As noted by food service staff in this study, few promotional materials are routinely available to introduce and facilitate acceptance of new foods. With schools' limited resources, it becomes even more important to maximize the effectiveness of promotional approaches (Jamelske & Bica, 2014). Taste testing activities can be one feasible, relatively inexpensive promotional strategy to build familiarity with new foods.

Strengths and Limitations

Pilot testing prior to implementation and interviews with food service staff and school administrators enhanced the success of the Tasting Challenge as a viable nutrition education approach for increasing children's willingness to try new foods in the school setting. Another strength is that observational data was collected by trained research staff versus self-report by children. As with all studies, this research project had several limitations. The Tasting Challenge was conducted with a relatively small sample size in regards to children, schools, and classrooms. The study was conducted with only one grade level (first grade); thus the results observed in the tasting booth may not be generalizable to older children. While jicama and edamame may not be novel to children of other ethnicities or living in different regions of the U.S., the process of the Tasting Challenge is replicable with different foods which may be novel to those audiences.

CONCLUSIONS AND APPLICATION

The Tasting Challenge provides an opportunity to connect classroom-based nutrition education with foods served in the school cafeteria through additional, low-burden, opportunities for experiential learning. This activity can be utilized by schools through teachers, foodservice staff or parent volunteers as a way to introduce new foods to children prior to them appearing on the school lunch menu. The exposure to new foods in a fun and positive environment could potentially increase intake, and lower food waste, a main concern of food service personnel when introducing new foods to the menu. Future studies are needed to examine how taste tastings translate into food consumption in the cafeteria.

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