Project Overview

The Smarter Lunchroom Movement utilizes principles of behavioral economics to make small, low or no-cost environmental changes in school lunchrooms to improve the selection of healthful foods by students.

The current research project aims to build upon findings from several successful pilot studies, and test these environmental changes on a larger scale in several urban and rural public middle school lunchrooms in New York.

- **Year 2**: Test single lunchroom changes
- **Year 3**: Test combination lunchroom changes
- **Year 4**: Test “ownership” of lunchroom intervention

In Year 4, the research objective was to test the impact of 1.) implementing fewer Smarter Lunchrooms protocol items, and 2.) food service ownership of Smarter Lunchrooms intervention, on the selection and consumption of fruits, vegetables, and white milk in middle schools.

These objectives were based on previous process evaluation findings of varying implementation fidelity.

Methods

Treatment schools implemented the intervention protocols for a period of 8-weeks with the assistance and support of Cornell Cooperative Extension nutrition education staff.

Selection, waste, and consumption of food items were measured pre and post intervention by trained researchers using the quarter-waste method of visual estimation.

Quarter Waste Method of Visual Estimation: measures the percent of each item that was wasted on a tray. Researchers visited the cafeterias pre- and during-intervention to record the selection and waste of students who purchased a school lunch. Researchers observed whether 0%, 25%, 50%, 75%, or 100% of each food item was left on the tray.

Process evaluation was conducted to determine treatment implantation, and investigate barriers and facilitators.

All schools were visited pre, during, and post-intervention to assess fidelity.

Year 3: Intervention Overview

12 middle schools from suburban and rural districts in Upstate New York participated in the project during the Spring 2016 semester.

Schools were allocated into 3 groups: selection, matched/assigned, and control

1. **Selection**: created their own intervention from a list of protocols (described below).
2. **Matched/assigned**: matched with a “selection” school based on existing lunchroom practices, and were assigned the same protocols to implement.
3. **Control**: made no changes to existing set up

The schools either selected or were assigned two protocols from each category (6 total):

1. **Promotion of fruits**: locating fruit first on the line, locating fruit in multiple locations, using large fruit bowl to display fruit, using attractive serving cups for fruits, labeling fruit with creative names, displaying fruit factoid posters.
2. **Promotion of vegetables**: locating vegetables after entrée, labeling vegetables at multiple locations, using attractive serving cups for raw/cut vegetables, labeling vegetables with creative names, displaying vegetable factoid posters.
3. **Promotion of low-fat white milk**: displaying low-fat white milk in front of flavored milk, displaying “icy cold white milk” signs, displaying low-fat white milk as 1/3 of visible beverages.

Each protocol targeted the convenience, visibility, and attractiveness of fruits, vegetables, and white milk.

Year 3: Results

The selection and consumption of items were analyzed averaging food servings across all the trays for the respective category. The results will show the treatment effect on the consumption and selection of healthy items.

However, due to the limitations of the experiment’s design as a result of a limited number of schools/school/ researcher/ day specific characteristics may impact the selection and consumption of fruits, vegetables, and white milk as well.

As a result, we used a mixed logit model that will allow us to observe the impact of these characteristics in the results. The model will help us to measure the probability of a selection of an item given the treatment and category groups that the schools are assigned in.

We also used a mixed effects model that will allow us to capture the difference-in-difference measurements of a specific intervention on the selection and consumption of healthy items.

For more information, visit: [http://www.smarterlunchrooms.org](http://www.smarterlunchrooms.org)

### Table 1: School demographic characteristics

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Schools per treatment</th>
<th>Enrollment (n students)</th>
<th>Sex (%) of enrollment</th>
<th>Race/Ethnicity (%) of enrollment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Female</td>
<td>Male</td>
</tr>
<tr>
<td><strong>Self-selection</strong></td>
<td>n=3</td>
<td>2392</td>
<td>50.9</td>
<td>49.1</td>
</tr>
<tr>
<td><strong>Assigned</strong></td>
<td>n=5</td>
<td>3419</td>
<td>51.1</td>
<td>48.9</td>
</tr>
<tr>
<td><strong>Control</strong></td>
<td>n=4</td>
<td>3433</td>
<td>51.6</td>
<td>48.4</td>
</tr>
</tbody>
</table>

Acknowledgements

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