Introduction and Purpose

- A Smarter Lunchroom randomized controlled trial (RCT) was redesigned to examine effectiveness of environmental strategies promoting fruit, vegetable, and unsweetened milk consumption in New York State (NYS) middle schools that self-selected intervention components, compared with schools that were assigned an intervention protocol.
- The purpose of this study was to conduct process evaluation in order to: 1) monitor protocol fidelity, 2) determine maintenance post-intervention, and 3) identify facilitators and barriers to implementation.

Intervention Description

- 12 NYS public middle were randomized into 1 of 3 groups:
  - Self-selection (n=3): chose 6 protocol items (2 fruit, 2 vegetable, 2 milk)
  - Assigned (n=5): assigned the 6-item protocol of a matched self-selection school
  - Control (n=4): no intervention
- With weekly support from Cooperative Extension, schools implemented the 6-week long intervention in Spring 2016.
- Figure 1 includes a description of protocol items, including the number of schools implementing each item.

Process Evaluation Methods

Reach
- Description of students exposed to intervention

Effectiveness
- Potential external influences on intervention effectiveness (e.g., contamination)

Adoption
- Number of schools participating, number of staff trained & their preparedness

Implementation
- Fidelity to the intervention protocol

Maintenance
- Extent of adherence beyond the intervention end date

Recruitment notes
- School demographic information, including:
  - Enrollment
  - Free & reduced lunch participation

Environmental assessments
- Completed by Cooperative Extension
- Documented nutrition education, food advertising, food provision, etc.

Training records
- Completed by Cooperative Extension
- Weekly logs used to communicate challenges, concerns, & requests

Contact logs
- Conducted pre-, during, & post-intervention & included:
  - Field notes
  - Fidelity checklists**
  - Photographs

Lunchroom audits
- Semi-structured interviews with Cooperative Extension & food service to assess barriers, facilitators

Interviews
- Demonstrations of protocol items of a matched self-selection school

*Training evaluations included Likert scales, scores averaged within Cooperative Extension and food service groups
**Fidelity checklist data converted into compliance scores. Compliance with each protocol item scored 0-2 (0 for non-, 1 for partial, and 2 for full compliance). Scores summed (0-12) for each treatment school after each lunchroom audit, then averaged across schools of the same treatment type (self-selection or assigned).

Qualitative data were analyzed thematically using ATLAS.ti software.

Results

Reach
- 5811 6th-8th graders enrolled in treatment schools
- ~40% (2499 students) receiving free or reduced-price meals

Table 1. School demographic characteristics

<table>
<thead>
<tr>
<th>Treatment (n schools)</th>
<th>Enrollment (n students)</th>
<th>Reach (enrollment % free/reduced lunch participation)</th>
<th>Sex (% of enrollment)</th>
<th>Race/Ethnicity (% of enrollment)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-selection (n=3)</td>
<td>2392</td>
<td>1029</td>
<td>50.9</td>
<td>49.1</td>
</tr>
<tr>
<td>Assigned (n=5)</td>
<td>3419</td>
<td>1470</td>
<td>51.1</td>
<td>48.9</td>
</tr>
<tr>
<td>Control (n=4)</td>
<td>3433</td>
<td>None</td>
<td>51.6</td>
<td>48.4</td>
</tr>
</tbody>
</table>

Effectiveness
- School environmental assessments revealed potential sources of contamination among participating schools (e.g., education department courses, wellness policy activities, and other food service department efforts like promotional signage).

Adoption
- 12 schools (9 urban, 3 rural) in 4 New York State counties (Figure 3): 1) Recruitment notes highlighted factors impacting participation decisions: previous research experience, administrator buy-in, internal and external reviews

Cooperative Extension and Food Service staff:
- Training records indicated 4 interventions and 125 providers received training throughout the year.
- Training records indicated both Cooperative Extension and food service staff were satisfied with trainings and prepared to execute changes

Implementation
- Lunchroom audits revealed both self-selection and assigned schools implemented most protocol items. Compliance scores dropped following the intervention end date.

Maintenance
- Contact logs, lunchroom audits, and interviews highlighted barriers and facilitators to protocol implementation and maintenance (Figure 6).

Conclusions and Implications
- Self-selection treatment did not guarantee substantially improved fidelity scores during or after the intervention
- Leveraging staff motivation and providing support to overcome barriers proved effective in enhancing implementation fidelity
- Data will inform analyses of intervention outcomes and may prove valuable for other environmentally-focused interventions in school cafeterias