The Text2BHealthy program is a nutrition and physical activity outreach effort that links existing FSNE youth education provided in the classroom to the home in order to influence behavior change for the entire family. The program is grounded in the social ecological model, which stresses the importance of intervening at multiple levels of influence to create sustained behavior change. The Text2BHealthy program works at the individual (student), interpersonal (parent) and community (schools, surrounding stores, recreation centers) levels to promote systemic changes in healthy eating and physical activity behaviors. The program targets parents of elementary school children already enrolled in FSNE school-based youth programming, and is part of the FSNE School Community Sites initiative. Text2BHealthy adds another layer of intervention within this initiative by reaching students’ families and home environments, in an attempt to reinforce behavior change on the individual level. During FY15, Maryland FSNE collected data from the third full school year (2014-2015) of program implementation.*

Project Goals

- Do parents make more nutritious and healthy lifestyle choices for themselves and their families?
- Do parents encourage their children to consume more fruits and vegetables and engage in more physical activity?
- Do parents/children consume more fruits and vegetables?
- Do parents/children engage in more physical activity?

Evaluation Method

The Text2BHealthy program evaluation uses a quasi-experimental design in which schools are assigned to intervention and control groups. A total of 17 schools (15 program schools and 2 control schools), from 6 counties and Baltimore City, participated in the program during the 2014-2015 school year. Enrollment numbers decreased from 2,446 parents in the previous school year to a total of 2,297 parents enrolled during this school year. This may be due to a decrease in the number of schools participating in Text2BHealthy - in the 2013-2014 school year, 19 schools throughout Maryland were involved in the program, as compared to only 15 schools during the 2014-2015 school year.

The program content was offered by both text and email. Among the 2,297 parents enrolled in Text2BHealthy in FY15, approximately 75% of participating parents (N = 1,714) received text messages, while 25% (N = 583) received email messages. In total, 152,256 text messages and 54,078 email messages were sent to parents enrolled in the program. Spanish messages were offered to two participating schools with high Spanish-speaking populations. Approximately 10% (N=168) of Text2BHealthy parents opted to receive messages in Spanish.

Parents who were enrolled in Text2BHealthy were recruited to voluntarily participate in the Text2BHealthy evaluation plan. The evaluation was incentivized based on completion of the pre-test, post-test, and evaluation text messages. Participants could earn up to $75 if they completed all components of the evaluation. SNAP-Ed funds were not used for the purchase of evaluation incentives. New Text2BHealthy participants could enroll in the evaluation when they enrolled in the Text2BHealthy program. Existing participants were sent an invitation via text message and could

* The Text2BHealthy pilot was conducted from January-May 2012 and was subsequently implemented for the next three full school years. The 2014-2015 school year was the third full school year, or fourth program year, of implementation.
enroll in evaluation by responding to that text. A total of 364 parents were randomly selected to participate in the evaluation based on their length of participation in the Text2BHealthy program (in order to recruit a sample with varying participation lengths). The Text2BHealthy evaluation plan included a pre- and post-test survey (offered on paper or online), and 10 texted evaluation messages.

**Pre-Post Survey**
Parents enrolled in the evaluation could choose to complete either paper or online versions of the pre- and post-test evaluation surveys. Spanish versions of the survey were distributed to the two schools receiving Spanish Text2BHealthy text messages.

For the intervention group, a total of 171 pre-tests and 142 post-tests were returned. For the pre-test, the survey return rate was 49.7% among those who originally signed up for participation in the intervention group. For the post-test, the return rate was 83.4% among those in the intervention group who had completed a pre-test. A total of 142 matched pairs for pre and post surveys were collected from the intervention group.

For the control group, a total of 10 pre-tests and 9 post-tests were collected, for a total of 9 matched pairs of survey data. Recruitment for control group participants posed certain challenges, including limited opportunities for in-person recruitment events (which have been found to be most effective) and low recruitment numbers in response to recruitment newsletters and fliers distributed in the control schools. Due to low response rates, the data obtained from parents in control schools was insufficient for inclusion in the data analysis.

The survey assessed the following parent-reported nutrition- and health-related constructs:

- Parent and child fruit and vegetable consumption
- Parent and child snacking/dietary habits
- Child physical activity behaviors
- Parent grocery shopping habits

**Evaluation Text Messages**
Data were also collected via evaluation text messages sent to program participants during the year. Ten text messages, sent from November through May, asked participants to report actual behaviors related to program message content. These messages assessed outcomes related to fruit and vegetable consumption, physical activity, and parental role modeling of healthy behaviors. For responses to each evaluation text, participants received small, individual cash-equivalent incentives in an attempt to increase response rates. This strategy substantially increased response rates to texted evaluation questions from the previous years.

**Evaluation Results**
This section highlights impacts of this program on both text and email message participants. Outcome analysis was conducted on matched survey pairs from participants who had completed both a pre-test and post-test. It is important to highlight, however, that evaluation is based on pre-post data from the intervention group only. Insufficient data was collected from control schools and, thus, was not included in the data analysis.

**Survey Demographic Data**
Table 1 highlights basic demographic data collected from matched pre- and post-test pairs (those from whom FSNE received both a pre-survey and a post-survey) for text and email message program participants. Note that the sample sizes for each demographic category may differ due to missing data.
Control | Intervention
---|---
Gender | N=9 | N=140
% Male | -- | 6.4%
% Female | 100% | 93.6%
Age | N=9 | N=138
Mean (SD) | 35.22 (6.9) | 36.99 (8.6)
Race (categories not exclusive) | N=9 | N=139
% African-American | 11.1% | 20.9%
% Hispanic | 22.2% | 2.9%
% White | 66.7% | 75.5%
% Asian | 11.1% | 2.2%
% American Indian | -- | 2.2%
Education | N=9 | N=140
Less than 12th grade | -- | 2.1%
12th/GED | -- | 23.6%
Technical School | -- | 5.0%
Some college | 33.3% | 30.0%
Associate's/2 year degree | 22.2% | 15.0%
Bachelor's/4 year degree | -- | 11.4%
Graduate degree | 44.4% | 12.9%
Employment (categories not exclusive) | N=9 | N=139
Full Time | 55.6% | 57.6%
Part Time | 11.1% | 15.8%
Homemaker | -- | 14.4%
Unemployed | 33.3% | 9.3%
Retired | -- | 3.6%
Student | -- | 3.65
WIC Participation | N=9 | N=139
Yes | 44.4% | 19.4%
No | 55.6% | 80.6%
SNAP Participation | N=9 | N=139
Yes | 22.2% | 23.7%
No | 77.8% | 76.3%
Free or Reduced Price Meal Participation | N=9 | N=138
Yes | 55.6% | 59.4%
No | 44.4% | 40.6%

Table 1. Demographic data for Text2BHealthy parent participants and control group participants

**Outcome Data**

**Significant Within-Group Differences**
When comparing the pre- and post-test surveys for the intervention group, there was significant improvement for several items related to children's and parents' fruit and vegetable consumption, snack food / sugared beverage consumption, physical activity and sedentary behaviors, and food shopping behaviors.
**Daily Fruit and Vegetable Consumption**

- After participating in *Text2BHealthy*, there was a 13% increase in the number of parents who reported that their child ate both fruits and vegetables everyday (Figure 1).
- When asked to report the number of vegetables their child ate with his/her main meal, 42% of parents on the pre-test indicated that their child ate at least 2 vegetables with the main meal, compared to 53% of parents reporting the same on the post-test.
- Before *Text2BHealthy*, 44% of parents reported that their child ate more than 1 type of vegetable per day on most or all days, whereas 53% of parents reported the same after *Text2BHealthy*.

![Figure 1. Increase in the number of parents who reported that their child ate fruits and vegetables everyday.](image)

**Snacking Behaviors**

- Children who drink soda or sugared drinks most or all days decreased from 18% before the program to 11% after the program.
- Figure 2 represents the increase in parents who reported that their child ate fruits and vegetables as snacks, and the decrease in parents who reported that their child ate candy, chips and cookies as snacks.

![Figure 2. Changes in children’s snacking behaviors from pre-test to post-test.](image)
Availability of Fruits and Vegetables

- Parents who keep vegetables ready for their children to eat most or all days increased from 70% to 79%.
- Parents who keep fruit ready for their children to eat most or all days increased from 81% to 87%.

Modeling Fruit and Vegetable Consumption (Figure 3)

- Parents who often or always talk about the fruits and vegetables children eat at school increased from 45% to 51%.
- The percentage of parents who reported eating vegetables in front of their child most or every day increased from 82% on the pre-test to 88% on the post-test.
- The percentage of parents who reported eating fruits in front of their child most or every day increased from 70% on the pre-test to 81% on the post-test.

![PARENTAL ROLE MODELING](image)

Figure 3. Number of parents who reported role modeling healthy eating behaviors after participating in Text2BHealthy.

Physical Activity and Sedentary Behaviors

- After participating in Text2BHealthy, most parents reported that their children were meeting or exceeding CDC daily physical activity recommendations (Figure 4), with 90% of parents reporting that their child engaged in more than 60 minutes of physical activity per day during the week and 93% reporting the same during the weekend.
• After participating in Text2BHealthy, most parents reported that their child watched significantly less TV per day (Figure 5).

Food Shopping Behaviors

• Parents who always buy fruits increased from 62% before Text2BHealthy to 71% after Text2BHealthy.
• Parents who reported often or always buying fruits and vegetables from farmers’ markets increased from 40% to 44%.
• Parents who reported often or always buying chips, candy, or cookies for their families decreased from 32% before the program to 24% after the program.

Table 2 provides a summary of the percentage of Text2BHealthy parents who reported improvements in various nutrition and health-related constructs after participating in the program.
<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Percentage of Participants that Improved</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Children were significantly more likely to...</em></td>
<td></td>
</tr>
<tr>
<td>Eat vegetables</td>
<td>31%</td>
</tr>
<tr>
<td>Eat fruits</td>
<td>29%</td>
</tr>
<tr>
<td>Eat fruits or vegetables as snacks</td>
<td>33%</td>
</tr>
<tr>
<td>Eat vegetables as main meals</td>
<td>27%</td>
</tr>
<tr>
<td>Eat more than one type of vegetable per day</td>
<td>37%</td>
</tr>
<tr>
<td>Be more physically active during the week</td>
<td>42%</td>
</tr>
<tr>
<td>Be more physically active during the weekend</td>
<td>39%</td>
</tr>
<tr>
<td>Watch less TV</td>
<td>35%</td>
</tr>
<tr>
<td><em>Children were significantly less likely to...</em></td>
<td></td>
</tr>
<tr>
<td>Eat snack foods like cookies, chips and candy</td>
<td>31%</td>
</tr>
<tr>
<td>Drink soda or sugared drinks</td>
<td>30%</td>
</tr>
<tr>
<td><em>Parents were significantly more likely to...</em></td>
<td></td>
</tr>
<tr>
<td>Keep fruits and vegetables ready for their children to eat</td>
<td>29%</td>
</tr>
<tr>
<td>Model eating fruits for their children</td>
<td>35%</td>
</tr>
<tr>
<td>Model eating vegetables for their children</td>
<td>23%</td>
</tr>
<tr>
<td>Talk with children about the fruits and vegetables they eat at school</td>
<td>37%</td>
</tr>
<tr>
<td>Buy fruits</td>
<td>20%</td>
</tr>
<tr>
<td>Buy fruits and vegetables for their families at a farmers’ market</td>
<td>29%</td>
</tr>
<tr>
<td>期间</td>
<td></td>
</tr>
<tr>
<td><em>Parents were significantly less likely to...</em></td>
<td></td>
</tr>
<tr>
<td>Buy chips, candy or cookies for their families</td>
<td>33%</td>
</tr>
</tbody>
</table>

Table 2. Percentage of respondents who improved on various health-related indicators from pre- to post-Text2BHealthy participation.

Overall, *Text2BHealthy* seems to have a positive impact on both children’s and parents’ fruit and vegetable consumption, parents’ food buying and feeding practices, and children’s physical activity. However, it is important to keep in mind study limitations. As control group data could not be used in the analyses, we are unable to determine whether these improvements were exclusive to the intervention group.

**Texted Evaluation Questions**

*Text2BHealthy* uses bidirectional texting by sending evaluation questions in text messages, to which participants respond. During this year, *Text2BHealthy* sent out 10 evaluation messages. In an effort to improve response rates, participants received a small cash-equivalent incentive (from non-FSNE funds) for responding to each evaluation text. Evaluation text response rates for this program year were higher than in previous years.

This year, participants were also sent a reminder text 10 minutes before the evaluation message was sent (e.g., “*Text2BHealthy* checking in again! We will be texting you a question in about 10 minutes. We want to hear from you!”). Participants did not receive this reminder before the first evaluation message, however the subsequent nine evaluation questions were preceded by a reminder text. Evaluation texts sent after the reminder had higher response rates than the text sent without any reminder, suggesting that participants may be more likely to engage with evaluation text messages when given a time-sensitive reminder to do so.
Figure 6 shows the response rates of texted evaluation questions for the four years of the Text2BHealthy evaluation.

![Texted Question Response Rates](image)

**Figure 6: Evaluation text message response rates across all four Text2BHealthy program years.**

**Use of Text2BHealthy Messages**

General program data collected from FY15 post-test text participants indicated that 69% of Text2BHealthy participants felt that the information in the text messages applied to their lives most or all of the time. Figure 7 represents the number of Text2BHealthy participants who regularly did something suggested in the text messages.

![Almost all Text2BHealthy participants report regularly engaging in healthy behaviors suggested in the text messages](image)

**Figure 7: Number of Text2BHealthy participants who engaged in healthy behaviors suggested in the text messages.**

**Narrative Feedback**

On the post-test survey, participants were asked to indicate what they liked most about the program. Overall, participants indicated that they most liked the following aspects of the program:
• Activity/exercise suggestions for their family
• Healthy meal ideas and recipes
• Fruit/vegetable sale reminders for their local grocery store
• Local community event announcements
• General reminders encouraging a healthy lifestyle

Participants’ narrative responses to text messages have also been recorded as program feedback and provide evidence that participants often engage in the activities suggested in the messages.

<table>
<thead>
<tr>
<th>Text2BHealthy Message</th>
<th>Sample Participant Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>April is national garden month! Did you know seeds can be purchased with EBT cards?</td>
<td>“We planted basil, thyme, oregano and rosemary today!”</td>
</tr>
<tr>
<td>Celebrate the month by planting fruit or veggie seeds with the kids.</td>
<td></td>
</tr>
<tr>
<td>Spend time as a family without screen time! Limit TV time to 30 min. &amp; be creative</td>
<td>“We are moving and eat well! Thanks for the tips.”</td>
</tr>
<tr>
<td>to get your family moving! Check our blog for ideas.</td>
<td></td>
</tr>
<tr>
<td>Start early with 2015 healthy choices. Choose healthy dips like hummus or salsa.</td>
<td>“Thank you for all the great ideas, we love hummus now!”</td>
</tr>
<tr>
<td>Swap out chips for veggies like carrots &amp; celery. Don't forget to be active.</td>
<td></td>
</tr>
</tbody>
</table>

Opt-out Data

Approximately 92% of enrolled parents remained in the Text2BHealthy program for the duration of the 2014-2015 school year, which is comparable to the previous year’s retention rate (90%). Over the course of the year, 176 participants opted out of the program. FSNE conducted phone interviews with parents who opted out, in an effort to obtain feedback about the program and to discover potential reasons for participant opt-outs. Of the 74 participants (42% of total opt-outs) who were able to be reached for phone interviews, 6 participants (8%) decided to re-enroll in the program. These interviews suggested that the most common reason participants opted out was because their child no longer attended the elementary school (he/she attended middle school or switched to a different elementary school). Other less frequently cited reasons included that the information in the texts did not apply to them, or that the participant did not like receiving the text messages (he/she was receiving too many texts messages in general, or they were receiving the Text2BHealthy messages at inconvenient times during the day).

Two “STOP” messages were sent during the 2014-2015 school year, one in January and one in June. Almost one-third of the total opt-outs for this year were prompted to opt out of the program after receiving these “STOP” messages – 10 participants opted out after the January message and 46 participants opted out after the June message. Of the opt-outs who were able to be reached for a phone interview (45% of the “STOP” message opt-outs), only 2 participants decided to re-enroll. However, the majority of these “STOP” message opt-outs (73% of participants that were reached for a phone interview) reported that their child no longer attended the same elementary school, or would be transitioning to middle school next year and were prompted to opt-out since the information would no longer pertain to them.

Exploratory Analyses

Exploratory analyses suggest that when Text2BHealthy is combined with other FSNE in-school youth programming, behavioral changes are greater. Specifically, when comparing outcomes for youth in Text2BHealthy intervention schools (Text2BHealthy + in-school nutrition education) with those in Text2BHealthy control schools (in-school nutrition education only), youth fruit and vegetable consumption, taste preference, physical activity behaviors, and fruit and vegetable self-efficacy show greater improvement.

Youth in Text2BHealthy intervention schools report more frequent fruit and vegetable consumption – specifically,
83% of youth in schools with both Text2BHealthy and other nutrition education programming reported at least sometimes eating vegetables at lunch, with 30% reporting that they always or almost always ate vegetables with their lunchtime meal. In comparison, 71% of youth at schools offering only FSNE direct nutrition education reported at least sometimes eating vegetables with lunch, with 17% indicating that they always or almost always ate vegetables at their lunchtime meal. Additionally, 68% of youth in Text2BHealthy+nutrition education schools reported eating fruit 2 or more times on the day prior to completing the survey, as compared to 64% of youth in nutrition education-only schools. Further, the percentage of youth who reported eating vegetables multiple times the previous day was 10% greater among youth in Text2BHealthy intervention schools - 52% of youth in Text2BHealthy intervention schools reported eating vegetables 2 or more times on the previous day, while 42% of youth in Text2BHealthy control schools reported the same.

Youth in Text2BHealthy intervention schools also reported increased taste preferences for the following 10 healthy foods, compared to those children who were in Text2BHealthy control schools who also received in-school programming:

- Broccoli
- Carrots
- Cauliflower
- Onions
- Peaches
- Peppers
- Spinach
- Milk (fat-free and low-fat)
- Brown (wheat) bread
- Whole-grain cereal

In addition to preferring healthy foods more, children in Text2BHealthy intervention schools had tried significantly more new foods (almost 50% more) by the time of the post-test, compared to children in Text2BHealthy control schools. On average, children in Text2BHealthy intervention schools had tried .55 more new foods by the time of post-test, compared to only 0.29 new foods in the control group.

Youth in Text2BHealthy intervention schools also report significantly greater improvements in physical activity behaviors than do their non-Text2BHealthy counterparts. Figure 8 highlights the percentage of youth in Text2BHealthy+nutrition education schools versus youth in nutrition education-only schools that reported engaging in physical activity behaviors 7 or more times in the past week at the time of the post-test.
By the time of the post-test, children in Text2BHealthy intervention schools who received in-school programming also reported significantly greater self-efficacy in selecting fruits and vegetables outside of the home environment. Specifically, 82% of youth in Text2BHealthy intervention schools reported feeling confident that they could select healthy foods when eating away from home, as compared to 75% of youth in Text2BHealthy control schools.

The aforementioned data indicates that youth in all conditions of interaction with FSNE programming showed improvements in their health behaviors. In many instances, though, youth who were enrolled in schools that offered both Text2BHealthy and other classroom-based nutrition education demonstrated even greater impacts. It is important to mention that the information gathered on FSNE surveys does not verify whether the parents of youth participants are enrolled in the Text2BHealthy program; rather, it indicates only whether the youth respondents are enrolled at a school that offers multiple levels of intervention. Regardless, these results, although preliminary and not without limitation, seem to suggest that an additional layer of intervention beyond direct education uniquely bolsters nutrition and health-related behavior changes.

**Looking Forward**

Looking forward to the 2015-2016 school year, FSNE has added an additional Text2BHealthy school in another Maryland county, and seeks to continue to increase program enrollment within existing schools, primarily through in-person enrollment events.

Further, a new evaluation structure and modified evaluation tool are in place for the 2015-2016 school year. FSNE will be conducting a broader evaluation of all parents with children in schools receiving FSNE programming, in order to analyze impacts of general FSNE programming. Thus, FSNE will be evaluating parents who are enrolled in Text2BHealthy, as well as parents who are not. Any parents with children enrolled in selected FSNE schools are qualified to participate in the evaluation, and will complete a short online survey. FSNE is using the validated Healthy Kids Survey, developed for low-literacy audiences by the University of California Davis Extension, for the parent evaluation component in FY16. FSNE adapted this survey for use with parents of elementary-aged children. This survey was used for the Text2BHealthy evaluation in FY15, and was further modified (a few items were combined or eliminated to reduce respondent fatigue) for use in FY16 based on data received on these items from FY15. The evaluation has been incentivized in an attempt to increase response rates for the surveys and texted evaluation questions, and, thus, increase the number of matched pre/post survey pairs for a more complete analysis in FY16.