Using teach-back to understand participant behavioral self-monitoring skills across health literacy level and behavioral condition

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Objectives

At the end of this webinar, participants will be able to

- identify how participant health literacy can impact the outcomes and implementation of a behavioral intervention
- describe the purpose of teach-back and teach-to-goal strategies and to incorporate them into behavioral interventions
- recognize the importance and utility of universally including health literacy strategies – particularly teach-back and teach-to-goal – in behavioral interventions.

Background

Behavioral Self-Monitoring
Health Literacy
Teach-Back & Teach-to-Goal
Talking Health Study

- Behavior change technique
- Supports behavioral self-regulation by building awareness of current behaviors through systematic observation and recording of behaviors
- Known effective technique to encourage behavior change (Michie et al, 2009)
- Uses
  - support behavior change (participant)
  - source of intermediate outcome data (researcher, program staff)
Background
Behavioral Self-Monitoring
Health Literacy
Teach-Back & Teach-to-Goal
Talking Health Study

- the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions
  - written literacy
  - oral literacy
  - numeracy
  - media literacy
- a “two-way street”
  - organizational health literacy: the extent to which health organizations and systems support individuals as they seek, receive and use information and services
  - Universal Health Literacy Precautions

Background
Behavioral Self-Monitoring
Health Literacy
Teach-Back & Teach-to-Goal
Talking Health Study

- Teach-back: a technique that allows participants to use their own words to recall key messages from an encounter with a health care provider
  - 60% of patients reported being asked to repeat physicians instructions (Jager, et al 2014)
  - Greater odds if African American; non-English language preference, less education, and increased age (Jager, et al 2014)

- Teach-to-goal: a technique through which patients (participants) are self-care (behavior-related) skills until they know them and/or change their behavior
### Background

**Behavioral Self-Monitoring**

**Health Literacy**

**Teach-Back & Teach-to-Goal**

**Talking Health Study**

- **Baker (2011)**
  - Self-care for heart failure among older adults (n=601)
  - Teach-to-goal (5-8 phone calls) following a brief educational and behavioral program
  - Greater improvements in behavior specific knowledge and self-care behaviors
  - Health literacy status did not influence changes

- **Negarandeh (2013)**
  - Knowledge and medication/dietary adherence in LHL patients with DM2 (n=127)
  - Teach-back over three, 20-min weekly sessions
  - Significant changes in knowledge, medication adherence, and dietary adherence compared to a control group

### Study Purpose

- Evaluate findings of a teach-back call immediately following the first class of SIPsmartER and MoveMore
  - reported accuracy in self-monitoring their behavior
  - performance recalling key messages by health literacy status

- Explore completion rates, call length, and perceptions
Methods
Talking Health
Recruitment
Implementation of Teach-Back & Teach-to-Goal
Data Collection & Measures
Data Analysis

- RE-AIM-based, effectiveness-implementation hybrid trial
- Assessed the effectiveness of SIPsmartER to reduce sugar-sweetened beverage intake against a matched contact comparison condition (MoveMore)

Figure 3: Theoretical and conceptual framework

Methods
Talking Health
Recruitment
Implementation of Teach-Back & Teach-to-Goal
Data Collection & Measures
Data Analysis

- Class 1
  - Teach-back
  - IVR #1
- Class 2
  - IVR #2
- Class 3
  - IVR #3
- IVR #4
- IVR #5
- IVR #6
- IVR #7
- IVR #8
- IVR #9
- IVR #10
- IVR #11

Month 1
Month 2
Month 3
Month 4
Month 5
Month 6
Methods

Talking Health
Recruitment
Implementation of Teach-Back & Teach-to-Goal
Data Collection & Measures
Data Analysis

- SIPsmartER was found to be effective to
  - ↓ SSB intake
    - **Baseline**: 43 ounces (496 kcals)
    - **6-months**: 24 ounces (268 kcals)
  - ↑ SSB behavioral intentions
  - ↑ SSB perceived behavioral control
  - ↑ SSB attitudes
  - ↑ SSB media literacy
  - ↓ Total energy intake
  - ↓ BMI

- Targeted 8 counties in Southwest Virginia
Methods
Talking Health
Recruitment
Implementation of Teach-Back & Teach-to-Goal
Data Collection & Measures
Data Analysis

➢ Targeted 8 counties in Southwest Virginia

➢ Recruitment strategies
  ❖ Active: flyers, newspaper and radio advertisements, and word of mouth
  ❖ Passive: booths at health departments, free clinics, child care centers, libraries, and local festivals

➢ Inclusion criteria
  ❖ ≥18 years old
  ❖ English speaking
  ❖ consume ≥ 200 kcals/day of sugar sweetened beverages
  ❖ no contraindications to physical activity
  ❖ access to a telephone

➢ Received incentives at baseline and 6-month screenings

➢ Randomized at baseline

Methods
Talking Health
Recruitment
Implementation of Teach-Back & Teach-to-Goal
Data Collection & Measures
Data Analysis

Month 1
• Class 1
• Teach-back
• IVR #1
• IVR #2

Month 2
• Class 2
• IVR #3

Month 3
• Class 3
• IVR #4

Month 4
• IVR #5
• IVR #6
• IVR #7

Month 5
• IVR #8
• Class 3
• IVR #9
• IVR #10

Month 6
• IVR #11
Methods

Talking Health
Recruitment
Implementation of Teach-Back & Teach-to-Goal

Data Collection & Measures
Data Analysis

- **Demographics:**
  - Gender, race, age, educational attainment
  - *When:* Screening

- **Health Literacy**
  - Newest Vital Sign: validated; 6-items; based on a food label
  - 0-3 (low health literacy); 4-6 (high health literacy)
  - *When:* Interview administered at baseline assessment

- **Teach-back call**
  - By phone one week after the group class
  - *When:* 3 attempts to reach each participant at preferred times

- **Perceptions**
  - 3 specially developed summative evaluation questions
  - 10-point Likert agreement scale
  - *When:* 6-month assessment

**Methods**

Talking Health
Recruitment
Implementation of Teach-Back & Teach-to-Goal

Data Collection & Measures
Data Analysis

- **SPSS 22.0**

- **Chi-Square tests**
  - Demographic differences
  - Individual responses to diary and behavioral questions

- **Proportions**
  - Of 4 diary completion indicators
  - Of 5 or 8 behavioral questions answered correctly on first round

- **Generalized linear models** (*condition, health literacy*)
  - Proportion of diary completed correctly
  - Proportion correct on the first round of teach-back
  - Number of rounds of teach-back
  - Satisfaction
81.4% female
93.0% White
41.8 years old
29.9% ≤ high school education
66.1% ≤ $25,000
49.8% employed
32.9% low health literate

69% of participants completed teach-back call
54% of participants completed both teach-back and 6-month summative evaluation
<table>
<thead>
<tr>
<th>Overall Mean (SD)</th>
<th>SIPsmartER Mean (SD)</th>
<th>MoveMore Mean (SD)</th>
<th>F-statistic (p-value)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LHL</td>
<td>HHL</td>
<td>LHL</td>
</tr>
<tr>
<td></td>
<td>n=208</td>
<td>n=40</td>
<td>n=64</td>
</tr>
<tr>
<td>Proportion reporting accurate diaries completion</td>
<td>.87 (.20)</td>
<td>.73 (.28)</td>
<td>.89 (.17)</td>
</tr>
</tbody>
</table>

### SIPsmartER

<table>
<thead>
<tr>
<th></th>
<th>Overall n (%)</th>
<th>LHL n (%)</th>
<th>HHL n (%)</th>
<th>( \chi^2 ) statistic^b^ (p-value)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>D1: Only listed SSBs</strong></td>
<td>n=104</td>
<td>n=40</td>
<td>n=64</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>69 (66.3%)</td>
<td>18 (45.0%)</td>
<td>51 (79.7%)</td>
<td>13.27 (&lt;.001)</td>
</tr>
<tr>
<td><strong>D2: Did not forget any consumed SSB</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>92 (88.5%)</td>
<td>33 (82.5%)</td>
<td>59 (92.2%)</td>
<td>NS</td>
</tr>
<tr>
<td><strong>D3: Correctly described how estimated portion size.</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>96 (92.3%)</td>
<td>36 (90.0%)</td>
<td>60 (93.8%)</td>
<td>NS</td>
</tr>
<tr>
<td><strong>D4: Correctly described how to average weekly SSB intake.</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>86 (82.7%)</td>
<td>29 (72.5%)</td>
<td>57 (89.1%)</td>
<td>4.72 (.03)</td>
</tr>
</tbody>
</table>

### MoveMore

<table>
<thead>
<tr>
<th></th>
<th>Overall n (%)</th>
<th>LHL n (%)</th>
<th>HHL n (%)</th>
<th>( \chi^2 ) statistic^b^ (p-value)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>D1: Only listed eligible PA.</strong></td>
<td>n=104</td>
<td>n=35</td>
<td>n=69</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>101 (97.1%)</td>
<td>33 (94.3%)</td>
<td>68 (98.6%)</td>
<td>NS</td>
</tr>
<tr>
<td><strong>D2: Did not forget to add any completed PA.</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>98 (94.2%)</td>
<td>33 (94.3%)</td>
<td>65 (94.2%)</td>
<td>NS</td>
</tr>
<tr>
<td><strong>D3: Correctly described how estimated time spent in PA.</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>95 (91.3%)</td>
<td>29 (82.9%)</td>
<td>66 (95.7%)</td>
<td>4.81 (.03)</td>
</tr>
<tr>
<td><strong>D4: Correctly described how to average weekly PA time.</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>88 (84.6%)</td>
<td>24 (68.6%)</td>
<td>64 (92.8%)</td>
<td>10.43 (.001)</td>
</tr>
</tbody>
</table>
## Results

### Participants

#### Accuracy of Diary Completion

**Teaching-Back Key Messages**

**Teach-Back Call Completion & Perceptions**

<table>
<thead>
<tr>
<th></th>
<th>Overall Mean (SD)</th>
<th>SIPsmartER Mean (SD)</th>
<th>MoveMore Mean (SD)</th>
<th>F-statistic (p-value)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>LHL n=208</td>
<td>HHL n=40</td>
<td>LHL n=64</td>
<td>HHL n=35</td>
</tr>
<tr>
<td>Proportion behavioral questions correct on first round</td>
<td>.79 (.20)</td>
<td>.75 (.23)</td>
<td>.93 (.11)</td>
<td>.65 (0.22)</td>
</tr>
<tr>
<td>Number of rounds need</td>
<td>1.77 (.65)</td>
<td>1.75 (.59)</td>
<td>1.33 (.47)</td>
<td>2.17 (.71)</td>
</tr>
<tr>
<td></td>
<td>Overall</td>
<td>LHL</td>
<td>HHL</td>
<td>χ² statistic* (p-value)</td>
</tr>
<tr>
<td>------------------</td>
<td>---------</td>
<td>-----</td>
<td>-----</td>
<td>-------------------------</td>
</tr>
<tr>
<td><strong>SIPsmartER</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B1: Recalled daily SSB recommendation.</td>
<td>n=104</td>
<td>n=40</td>
<td>n=64</td>
<td></td>
</tr>
<tr>
<td></td>
<td>82 (75.8%)</td>
<td>27 (67.5%)</td>
<td>55 (85.9%)</td>
<td>5.02 (.03)</td>
</tr>
<tr>
<td>B2: Named 3 SSBs.</td>
<td>102 (98.1%)</td>
<td>38 (95.0%)</td>
<td>64 (100.0%)</td>
<td>NS</td>
</tr>
<tr>
<td>B3: Named 3 non-SSBs.</td>
<td>97 (93.3%)</td>
<td>34 (85.0%)</td>
<td>63 (98.4%)</td>
<td>7.08 (&lt;.01)</td>
</tr>
<tr>
<td>B4: Identified if a drink is SSB or non-SSB.</td>
<td>72 (69.2%)</td>
<td>18 (45.0%)</td>
<td>54 (84.4%)</td>
<td>17.92 (&lt;.001)</td>
</tr>
<tr>
<td>B5: Stated 3 health risks of excessive SSB intake.</td>
<td>94 (90.4%)</td>
<td>33 (82.5%)</td>
<td>61 (95.3%)</td>
<td>4.65 (.03)</td>
</tr>
<tr>
<td><strong>MoveMore</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B1: Recalled 4 traits of aerobic activity.</td>
<td>n=104</td>
<td>n=35</td>
<td>n=69</td>
<td></td>
</tr>
<tr>
<td></td>
<td>18 (17.3%)</td>
<td>6 (17.1%)</td>
<td>12 (17.4%)</td>
<td>NS</td>
</tr>
<tr>
<td>B2: Recalled recommended weekly aerobic activity minutes.</td>
<td>68 (65.4%)</td>
<td>20 (57.1%)</td>
<td>48 (69.6%)</td>
<td>NS</td>
</tr>
<tr>
<td>B3: Identified whether or not an activity is aerobic activity.</td>
<td>85 (81.7%)</td>
<td>27 (77.1%)</td>
<td>58 (84.1%)</td>
<td>NS</td>
</tr>
<tr>
<td>B4: Recalled recommended weekly days of strength training.</td>
<td>87 (83.7%)</td>
<td>26 (74.3%)</td>
<td>61 (88.4%)</td>
<td>NS</td>
</tr>
<tr>
<td>B5: Recalled recommended number of sets.</td>
<td>77 (74.0%)</td>
<td>21 (60.0%)</td>
<td>56 (81.2%)</td>
<td>5.41 (.02)</td>
</tr>
<tr>
<td>B6: Recalled recommended number of reps.</td>
<td>97 (93.3%)</td>
<td>31 (88.6%)</td>
<td>66 (95.7%)</td>
<td>NS</td>
</tr>
<tr>
<td>B7: Identified whether or not an activity is strength training.</td>
<td>63 (60.6%)</td>
<td>22 (62.9%)</td>
<td>41 (59.4%)</td>
<td>NS</td>
</tr>
<tr>
<td>B8: Named 3 health benefits of PA.</td>
<td>98 (94.2%)</td>
<td>30 (85.7%)</td>
<td>68 (98.6%)</td>
<td>7.04 (.01)</td>
</tr>
</tbody>
</table>

**Results**

Participants

Accuracy of Diary Completion

Teaching-Back Key Messages

Teach-Back Call Completion & Perceptions
<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>LHL</td>
<td>HHL</td>
<td>LHL</td>
</tr>
<tr>
<td>Reviewing material personally with staff on the telephone helped me learn it better</td>
<td>8.40 (2.15)</td>
<td>8.91 (1.94)</td>
<td>8.19 (2.67)</td>
<td>8.84 (1.49)</td>
</tr>
<tr>
<td>Answering the questions was difficult</td>
<td>2.72 (2.40)</td>
<td>2.59 (2.67)</td>
<td>2.30 (2.25)</td>
<td>3.04 (2.39)</td>
</tr>
<tr>
<td>I would recommend staff call to personally review class materials</td>
<td>8.59 (2.15)</td>
<td>8.78 (1.75)</td>
<td>8.36 (2.63)</td>
<td>8.84 (1.68)</td>
</tr>
<tr>
<td>Length of Teach- Back call (min)</td>
<td>18.6 (5.57)</td>
<td>20.4 (6.59)</td>
<td>17.1 (5.11)</td>
<td>20.5 (5.59)</td>
</tr>
</tbody>
</table>

Discussion

- Majority of participants report accurate self-monitoring behaviors (87%)
- Key differences by health literacy level, particularly related to numeracy related skills
- Ability to recall key messages varied by health literacy levels
- Self-monitoring abilities may be impacted by behavioral target
- Suggest potential to use teach-back in non-clinical settings
- Suggest that teach-back is an acceptable technique across behavioral targets and health literacy
- Suggest that teach-back can be used to extend beyond knowledge and into behavior-specific skills
Limitations

- Homogeneous sample
- Cross-sectional design: no ability to assess changes in self-monitoring skills
- Completion rates
  - 69% teach-back call
  - 54% teach-back and 6-month summative
- Using Newest Vital Sign to assess health literacy
- Self-reported data

Implications

- Teach-back may provide nutrition educators with a tool to
  - Support both high and low health literate populations
  - Identify areas of weakness in intervention design and teaching
- If self-monitored behaviors are part of outcome or process data, using teach-back in tandem with the first self-monitoring activity may be helpful to reinforce correct way to self-monitor
- Nutrition educators should consider how differences in behavioral target may impact ability to self-monitor
<table>
<thead>
<tr>
<th>Next steps</th>
</tr>
</thead>
<tbody>
<tr>
<td>➢ Longitudinal studies to determine impact of teach-back on quality of self-monitoring</td>
</tr>
<tr>
<td>➢ Exploration of teach-back and teach-to-goal performance on outcomes</td>
</tr>
<tr>
<td>➢ Exploration of ways to make teach-back and teach-to-goal effective, cost efficient, and well received.</td>
</tr>
</tbody>
</table>