Behavioral Intervention Strategies to Reduce Childhood Obesity Risk

September 21, 2012
Obesity & Nutrition in a Changing World Symposium
CSU, Fullerton

Mical Kay Shilts, PhD
Associate Professor
CSU, Sacramento
Overview

- Review key strategies implemented in a pediatric obesity prevention intervention
  - Targeting ethnically diverse, low-income parents of preschool age children
Key Strategies

• Define behaviors to target
• Establish theoretical framework
• Identify intervention components
• Tailor education materials
• Pilot test and evaluate effectiveness with target audience
Student Learning Outcomes

• The learner will be able to identify key behaviors related to pediatric overweight

• The learner will be able to understand how Social Cognitive and Goal Setting theories can be applied in a community setting

• The learner will be able to provide examples of how to tailor education materials to low-income, low-literate audiences
Activity

• Select a behavior you have attempted to change (successful or not)
  – What skills & resources did you need to make the change?
  – What got in the way of change (barriers)?
  – What supported your change?
  – Were you able to maintain change?
    • Why or why not?
Define behaviors to target
Literature review identified 12 Determinants & 23 behaviors related to pediatric obesity.

### Determinants

**Table 2. Behaviors associated with each of 12 diet, lifestyle and parenting-related determinants a,b**

<table>
<thead>
<tr>
<th>BEHAVIOR</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>16</th>
<th>17</th>
<th>18</th>
<th>19</th>
<th>20</th>
<th>21</th>
<th>22</th>
<th>23</th>
<th>24</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diet</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>+</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fat</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>+</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dietary fiber</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fiber/vegetable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dairy products</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sweetened beverages</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Restaurant-prepared foods</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Breakfast</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Energy density</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lifestyle</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical activity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Television</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parenting style</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- indicates a positive association; + indicates a negative association.


Childhood Obesity Risk Assessment Tools

• Focuses on eating, physical activity, screen time & sleep

Content, face and factor validity established.
Childhood Obesity Risk Assessment Tools

Parenting - Focuses on child feeding practices
Content, face and factor validity established.
Example of how identified behaviors were integrated into the intervention

• Behavior
  – Model behavior
    • Sample risk assessment questions
      – My child sits and eats with an adult.
      – I play outside with my child ___ days a week.
      – My child sees me eat vegetables.

    • Sample intervention component
      – Goal options: *Play outside with your child 3 days this week* or *Sit and eat a meal with your child 3 times this week*.
      – Each lesson incorporated physically active games that the parent could do with their child
Example of how identified behaviors were integrated into the intervention

• Behavior
  – Plan meals
    • Sample risk assessment question
      – I plan meals.
    • Sample intervention component
      – Goal options: Use your favorite recipe book to plan 2 meals this week.
      – Participants practice planning a meal according to MyPlate guidelines and using a weekly grocery ad flyer.
Establish theoretical framework

1. Social Cognitive Theory
2. Goal Setting Theory
How can a Theory Help Make Behavioral Interventions More Effective?

• Research has shown that nutrition interventions based on an appropriate behavioral theory are better at promoting behavior change.

• Theories can explain behavior and suggest strategies to achieve behavior change.

Social Cognitive Theory

• Behavior changes result from interaction between the
  – personal factors (cognitions),
  – behavior and
  – environment (family, friends, peers, coworkers, physical environment, too);

• Application: Involve the individual and relevant others; work to change the environment.

• The strength of this model is that it focuses on certain target behaviors rather than on knowledge.

Selected **Constructs/Strategies of SCT**

- **Outcome Expectations**
- **Self-efficacy**
  - Skills mastery
  - Social support
- **Self-regulation**
  - Self-monitoring
  - Goal setting
  - Contracting
  - Barrier counseling
  - Reinforcement
Examples of how SCT was applied to our obesity prevention intervention

• **Self efficacy** - task specific confidence
  - Practice playing active games (balloon toss, musical chairs)
  - Recipe preparation and tasting
  - Label reading
  - Meal planning
Examples of how SCT was applied to our obesity prevention intervention

- **Self-monitoring**: Use of a technique such as a food record to promote awareness of one’s dietary actions
  - Healthy Kids obesity risk assessment tools used to identify strengths and weaknesses
SCT Components

- **Barriers** - Something that would prevent an individual from a desired behavior
  - Barrier discussion and activity
Examples of how SCT was applied to our obesity prevention intervention

• Reinforcement - response to a behavior that increase the likelihood of reoccurrence
  – Reward goal achievement activity
Establish theoretical framework

1. Social Cognitive Theory
2. Goal Setting Theory
What is goal setting?

• Strategy for organizing information and skills into manageable steps.

• Goal setting can elicit motivation, effort, persistence & concentration
Goal Setting Theory

• Effective goals are
  – Specific
  – Proximal
  – Challenging
  – Attainable

• Tracking goal progress, focusing on accomplishments = increased confidence

Goal Setting Framework

Goal Setting Theory

• Types
  Self-set; Participatory; Assigned

• Designed new type to meet developmental needs of adolescents for autonomy…Guided

• Reduces inappropriate goal selection;
  – goal choices have attributes for optimal effectiveness …specificity, proximity, difficulty, attainability.
Adapted our intervention work on guided goal setting as a behavioral strategy


Goals are customized to parent
Goal Setting

- Contract

**NUTRITION Goal Contract**

Writing what you plan to do and sharing it with others will help you reach your goal.

Copy the goal you selected from your quiz. Sign the contract. Then ask a classmate to sign it, too.

I will try my best to:

______________________________

______________________________

Your signature ___________________

A friend's signature ________________

**New and Improved Goals**

Week 2

Week 3

Week 4

- Tracking

**Track Your Goal**

**Nutrition**

- Did it
- Tried
- Didn't get to it

**Parenting**

- Did it
- Tried
- Didn't get to it

**Start**

Nutrition Parenting
Tailor education materials

Assessment tools
Guided Goal Setting
My Healthy Plate
• Many of the survey photos were taken with client’s permission in their homes and using their children as models.

• Survey photos represent the target audience
Assessment tools

• To meet the needs of low-literate parents
  – Parent feedback was used to simplify text and develop content relevant photographs.
  – Increased font size
  – Short sentences
  – Limited multi-syllable words
  – Pictures added

• Readability 1.3
Guided Goal Setting

- Tailored to parent motivators for goal attainment
  - Children
  - Health

- Parents indicated goal content should focus on their child, meal planning and shopping
  - Plan and prepare 3 meals at home this week instead of eating out.
  - Have your child help choose fruit and vegetables at your next shopping trip.
Guided Goal Setting

- Magazine style workbook
  - Parents indicated wanting flexibility in goal selection
  - Photographs
  - Reading level 3.8
Dietary Guidelines applied to a concrete visual
Key Messages for My Healthy Plate

• Aim for half of your plate to be fruits and vegetables.

• Aim for one quarter of your plate to be whole grains.

• Aim for one quarter of your plate to be meat and beans.

• Use a 9-inch plate.
Hands-on activity: Make your own My Healthy Plate
My Healthy Plate

- Tailored for low-income parents of young children
  - Visual alone was not effective
  - Photographs of commonly consumed foods were taken.
• Commonly eaten foods were identified from a review of EFNEP participant 24-hour recalls (n=165).

• Depicted foods were adjusted based on feedback from low-income adults (n=227) participating in WIC.
My Healthy Plate

• Messages and visuals tailored to target audience preferences
  – In-depth interviews were conducted (n=64) regarding preferences for messages to accompany Plate photos
My Healthy Plate

• To facilitate behavior change at home, a handout and goal setting sheet were developed.

**Major Goal**
Use My Healthy Plate to plan meals for my family.

**Minor Goals**
- Use My Healthy Plate to plan 2 dinners this week.
- Plan a meal with your child using My Healthy Plate.
- Use My Healthy Plate to plan 2 lunches this week.
My Healthy Plate

- Activities tailored to target audience
  - Child-centered activity to practice concepts covered during intervention
Pilot test and evaluate effectiveness with target audience

Guided Goal Setting
My Healthy Plate
Guided Goal Setting

• Post intervention, parents (n=20) provided feedback in 1-hr individual interviews:
  – Parents reported that the personalized goal setting gave them ideas to work on that they “never really thought of” and that it gave them “a wake up call”.

Guided Goal Setting

• Parents reported a high level of goal effort (91%) and goal achievement (78%).

• Parents reported preference for goal personalization & goal options.

• The goal contract and weekly goal tracking were least motivating.
My Healthy Plate

• Evaluated feasibility of integrating My Healthy Plate (MHP) concepts into a childhood obesity prevention intervention.
  – Parents (n=20) participated in in-depth interviews.
• Participants were able to recall major MHP themes, “Less meat, more vegetables”.

![My Healthy Plate Image]
Parents reported that the MHP visuals/photos gave them ideas of what to serve:

- “Before with pizza, I just gave pizza as a meal, but now I put other things with it like fruit or carrots. I got the idea from the pictures in class”
Challenges were applying MHP when eating away from home and serving fruit on the same plate as a warm or savory dish.

Parents suggested that additional educational materials would be helpful:
- MHP refrigerator magnet
- shopping list pad
- text message reminders
Review

Student Learning Outcomes

• The learner will be able to identify key behaviors related to pediatric overweight

• The leaner will be able to understand how Social Cognitive and Goal Setting theories can be applied in a community setting

• The learner will be able to provide examples of how to tailor education materials to low-income, low-literate audiences
Thank you!

Mical Kay Shilts
shiltsm@csus.edu
Credits

• Funding
  – USDA NIFA 2010-85215-20658
  – USDA NRI 2009-55215-05019

• Collaborators
  – Marilyn Townsend, PhD, RD-UC Davis
  – Lenna Ontai, PhD-UC Davis
  – Stephanie Stinick, PhD-University of Pittsburgh
  – Kathryn Slyva, MFA-UC Davis
  – Cathi Lamp, MS, MPH, RD-UCCE
  – Margaret Johns, MPA, RD-UCCE
  – Connie Schneider, PhD, RD-UCCE
  – Lindsay Allen-PhD-USDA WHNRC
  – Dennis Styne, MD-UC Davis Medical Center
  – Christine Davidson-UC Davis
  – Larissa Leavens-UC Davis