Combating childhood obesity among Spanish speaking families: 
new valid evaluation & education tools 
for practitioners & researchers

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Introductions
Niños Sanos Overview & Cultural Adaptation
Niños Sanos Validation
Mi Niño a la Hora de Comer Validation
Medical Clinic Intervention & Education Tools/Website
Questions Discussion

learning objectives
By the end of the session you will be able to...
Discuss the needs of the audience and the purpose of tools presented.
Describe how the evaluation tools were validated for low-income, low-literate Spanish speaking families.
Use the tools to tailor and evaluate nutrition education interventions to improve the family feeding environment.

Niños Sanos Overview & Motivation
Adaptation of obesity risk assessment tools for low-literate Spanish speaking parents

race/ethnicity distribution

language spoken at home

12

ability to speak English

100%

47%

47%

31%

47%

32%

8%

13%

13%

38%

17%

12%

6%

5%

13%

17%

62%

39%

12%

6%

5%

13%

17%

62%

39%
adaptation

Is the vegetable well represented by the pictures? What pictures would better represent this vegetable?

I don’t use cans, I cook from scratch. I rarely use peppers that way.

Summary

Accurate data collection requires:

1. Accounting for linguistic and cultural characteristics of target respondents.
2. Verification equivalence with original version.

Adaptation

English

- Peppers
- Beans
- Tomato
- Avocado

Spanish

- Frijoles
- Tomate
- Aguacate
- Chiles

SNEB 2019

Marilyn Townsend, PhD, RD

Niños Sanos Validation

1. Prove your tool has meaning.
2. Prove it means what you say it does.
3. Assess its accuracy.
4. Establish the trustworthiness of tool.

Administration Mode

- Interview
  - Guided group
  - One-on-one on paper + pencil
  - One-on-one on phone
- Self-administered
  - Online, electronic
- Guided group

content validity


dietary parenting

vegetables availability vegetables as snack vegetables in main meal vegetable variety fruit intake fruit availability fruit accessibility fruit as snack soda frequency sport drinks/punch freq energy dense foods dairy fat energy dense snacks meat fat milk frequency modelling at mealtime television other screen use

play, sedentary time bedtime

study 1

45 items

study 2

19 items

45 items

176

204

niños sanos

lista de habitos alimenticios

• vegetable snacks • vegetable variety • soda • fat • dairy • fruit • label reading • diet quality

nutrient intakes d [child]

• vitamin c • vitamin a • β-carotene • folate • fiber

child health • weight status • diabetes risk • cardiovascular risk • health profile

child food & activity diary d [child]

• sleep • physical activity • television • video game/computer

ninos sanos [other behaviors] c [child]

• parent modelling • fruit veg availability • fruit veg accessibility • parent meal planning • child's diet

parent mediators a

child biochemical & anthropometric markers e [child] • bmi percentile

biochemical markers of health status e [child] • anti-inflammation index • metabolic index • pro-inflammation index

food intake d [child] • cup equivalents, vegetables • sugar sweetened beverages • fats, fruit, dairy

validity

validation framework

testing development
townsend ms. j nutr educ behav. 2006;38:18-24

tool purpose

evaluation	tutoring	risk prediction	 surveillance	program planning

tool development

identify & select content domains—behaviors relevant to target clientele

initial $$

tailor to incorporate client's vocabulary and context

initial $$

for scales with no objective measures [eg, attitudes, beliefs, self-efficacy]

stages 1-6

$$

$$

$$

$$

determine link to diet post-initial

$$

$$

$$

$$

does the item give same response over time for the same client?

mid $$

$$

$$

$$

does the items in the scale all contribute to the construct?

mid $$

$$

$$

$$

conceptual

content

face

criterion

convergent

divergent

criterion

discrimination analysis

temporal stability

internal consistency

stability

sensitivity to change

qualitative

quantitative

reliability

validity

25

26

27

28

29

30
item reduction

Began validation process with more test items than wanted in final version
Then chose best items and jettisoned the non-performers
How to select for reduction
- duplication
- not related to BMI
- does not discriminate (100% eat breakfast)

results

parent-child

WIC & Head Start

207

parent
child

English speakers

204

Spanish speakers

176

31

Parent vs. Child BMI

<table>
<thead>
<tr>
<th>category</th>
<th>BMI</th>
<th>%tile for age &amp; sex</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>&lt; 25</td>
<td>20.3</td>
</tr>
<tr>
<td>Overweight</td>
<td>25 – 30</td>
<td>36.2</td>
</tr>
<tr>
<td>Obesity</td>
<td>&gt; 30</td>
<td>63.2</td>
</tr>
</tbody>
</table>

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Child BMI & Waist Circumference

<table>
<thead>
<tr>
<th>BMI</th>
<th>Waist Circumference (cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>17.1</td>
</tr>
<tr>
<td>Overweight</td>
<td>37.2</td>
</tr>
<tr>
<td>Obesity</td>
<td>57.3</td>
</tr>
</tbody>
</table>

33

results

study 1

176

English speakers

204

Spanish speakers

study 2

results

19

16
**Results**

16 items

204 Spanish speakers

**Ninos Sanos**

Score & Child BMI

[BMI percentile for age & sex]

**p < 0.021**

**Biomarkers**

- Blood Biomarkers
  - Leptin
  - Interleukin-6
  - Interleukin-8
  - TN Factor-α
  - Retinol Binding Protein-4
  - C-Reactive Protein
  - Inflammatory Adiponectin
  - Interleukin-10
  - IGF Binding Protein-
  - Anti-Inflammatory Insulin
  - Glucose
  - TG:GLU

**Metabolic**

- Retinol
- β-Carotene
- HDL-C
- LDL-C (calc)
- CHOL: HDL-C
- TG: HDL-C

**Carotenes**

- Cholesterol
- Triglycerides

**Lipid**

- Cholesterol index: LDL-C + NONHDL-C + CHOL:HDL-C + 1/HDL-C
- Metabolic index: glucose + TG:glucose

**p < 0.001**

**p < 0.05**

**Consistent**

**Accuracy**

**Convergent**

**Predictive**

**Convergent**

**Item Difficulty**

**Item Discrimination**

**Temporal Stability**

**Internal Consistency**

**Coefficient of Variation**

**Key Messages**

A validation study establishes the trustworthiness of a tool.

Using multiple approaches increases the trustworthiness of the tool.

Aiding and adapting before creating, do not reinvent the wheel!

Remember the Evaluator’s Division of Responsibility, involve your target audience early on.

Our 16-item Ninos Sanos tool is related to child BMI (p < 0.021)
Measuring Parent Food-Related Behaviors with Spanish-speaking Parents of Preschool Aged Children: Validation of Mi Niño a la Hora de Comer-Year 4

Methods

Test Structure

Confirmatory Factor Analysis (CFA) of items validate test association with mealtime behaviors

Validation

I get my child to eat by explaining that the food is good for him.
I struggle with my child to get her to eat (pick her up and put her in the chair).
I tell my child that I do not like it that he is not eating.
I warn my child he will not get a treat if he does not eat.
I hand-feed my child to get her to eat.
I say to my child, “Hurry up and eat your food.”
I tell my child I do not like it that he is not eating.
I remind my child to keep eating her food.
I say good things about the food my child is eating.
I ask my child to try a little bit of a new food.
I prepare at least one food that I know my child will eat.
I praise my child for eating.
I help my child with eating (cut food, cool the food).
I get my child to eat by making food fun.
I let my child serve himself.
My child eats dinner at about the same time every day.
My child eats a snack at about the same time every day.
I say to my child, “Eat your chicken.”
I ask my child questions about the food she is eating.
I let my child know I am happy about her eating.
I ask my child to pick from foods already cooked.
I beg my child to eat his food.
I tell my child she will get a treat for eating.
I ask my child to keep eating, even if she is not hungry.
I tell my child she needs to eat an item on her plate (“Eat your chicken”).
I ask my child to try a little bit of a new food.
I plan meals.
I let my child know I am happy about her eating.
I get my child to eat by explaining that the food is good for him.
I struggle with my child to get her to eat (pick her up and put her in the chair).
I tell my child she will get a treat for eating.
I remind my child to keep eating her food.
I have tried to make food fun to eat for my child.
I get my child to eat by explaining that the food is good for him.
I struggle with my child to get her to eat (pick her up and put her in the chair).
I tell my child she will get a treat for eating.
I remind my child to keep eating her food.
I get my child to eat by explaining that the food is good for him.
I struggle with my child to get her to eat (pick her up and put her in the chair).
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I remind my child to keep eating her food.

Results

RMSEA (90% CI) = 0.078 (0.071-0.086);
SRMR = 0.084; CFI = 0.763; TLI = 0.742

Parent centered

Items: 12
α = 0.81

Child centered

Items: 14
α = 0.80
**Methods**

Validate test positions with validation behaviors

**families**

60

**Results**

Validate test association with mealtime behaviors

**Average meal time = 29 minutes**

**Score splits for each behavior**

- **Above mean = 2**
- **At / below mean = 1**
- **No occurrence = 0**

**Parent Centered Behaviors**

Scores > 8

**Scores 1 – 7**

**Mean splits for each behavior**

- **Above mean = 2**
- **At / below mean = 1**
- **No occurrence = 0**

**Child Centered Behaviors**

Scores = 1 - 7
Feasibility of a community nutrition program embedded into a medical clinic

Description of Niños Sanos education package
**Background**

EFNEP pediatricians refer parents to intervention. Parent contacted & enrolled EFNEP educator delivers intervention in medical clinic.

**Intervention**


**Data Collection**

Parents Receive Tailored Goals in English or Spanish delivered by bilingual EFNEP educators in Spanish or English-speaking audience. Income-eligible parents of children at risk of obesity are Spanish or English speaking and enrolled in pediatric medical clinics. Content includes 8 Session ESBA Healthy Happy Families, Motivational Modeling, My Healthy Plate, Guided Goal Setting. Parents Receive Tailored Goals in English or Spanish.

**Results**

<table>
<thead>
<tr>
<th>Data Collection</th>
<th>Parents</th>
<th>Physicians</th>
<th>Process</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Parents</strong></td>
<td>Demographics</td>
<td>Enrollment</td>
<td>Intervention</td>
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<tr>
<td><strong>Parents</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Process</strong></td>
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<td></td>
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<tr>
<td><strong>Data Collection</strong></td>
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<tr>
<td><strong>Intervention</strong></td>
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<tr>
<td><strong>Analysis</strong></td>
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</tbody>
</table>
### Results

**Parents Goal Setting Behaviors**

<table>
<thead>
<tr>
<th>Goal Setting Behaviors</th>
<th>Spanish Speakers</th>
<th>English Speakers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nutrition Goal Effort &amp; Achievement</td>
<td>104</td>
<td>49</td>
</tr>
<tr>
<td>Parenting Goal Effort &amp; Achievement</td>
<td>104</td>
<td>49</td>
</tr>
<tr>
<td>Nutrition Goal Effort &amp; Achievement</td>
<td>55</td>
<td>0</td>
</tr>
<tr>
<td>Parenting Goal Effort &amp; Achievement</td>
<td>55</td>
<td>0</td>
</tr>
</tbody>
</table>

**Guided Goals Selected**

- Let your child choose a fruit and vegetable on your next shopping trip
- Offer your family 2 vegetables at dinner 3 times this week
- Fix a fruit or vegetable snack with your child 2 times this week

**Self-Selected Goals**

- Eat fruits and vegetables
- Do exercise
- Offer vegetables at dinner 3 times this week
- Serve fruit or veggies for after school snacks 3 days this week

Parents reported buying, serving, and modeling vegetable intake more often.

Mean Pretest=33.8, SD=6.74; Mean Posttest=38.11, SD=7.54; t(78)=6.38, p < 0.0001

### Conclusion & Next Steps

Feasibility was supported.

Physicians and parents found value in the intervention.

Spanish and English speaking parents attended classes and engaged in GGS activities, leading to increased vegetable intake.

**Limitations**

- Turnover with physician interns
- Participant enrollment more time intensive vs. program with captive audience

**Next steps include**

- Local community nutrition program taking lead
- Embed referral system into EMR
- Future research should include a larger sample size with randomization

### Niños Sanos Education Package

**Nutrition, PA, Screen & Sleep**

**Parenting & Mealtime**

### Intervention Feasibility online survey

- Physician feasibility online survey
  - 28 residents, 82%
  - Pediatric Resident: I think it's a great opportunity to get patients nutritional counseling! I would expect other doctors to be excited about this opportunity as well.

- 89% useful to parent/patient
- 86% useful to physician
Using children as models (with parents’ permission) in a natural setting

diet quality tool

Mix vegetables

My Veggies

I sit and eat a meal with my child.

some
most
almost every
every
rarely

goal setting

Photo Customization – Samples

African American
Asian / Pacific Islander
Hispanic / Native American

retrospective tools

Shilts et al, 2013. Shilts et al, 2018

Parent Workbook

Parenting Nutrition, PA, sleep & screens

Website

Generate tailored goals

Healthykids.ucdavis.edu

Website

Generate tailored goals

Healthykids.ucdavis.edu

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Questions?

thank you!
for questions, contact:

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