**Focus on Snacks: Reliability and Validity**

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**ABSTRACT**

Background: Snacking is a significant source of calories for preschool children. Nutrition education programs could target snacks in an effort to improve child health behaviors. However, many federal programs promote healthy behaviors for obesity prevention, and valid assessment tools are needed, particularly for participants of federal food assistance and educational programs in the U.S. These federal programs include Head Start, WIC, SNAP and EFNEP. These programs could benefit from tools targeting parents’ limited literacy.

**PURPOSE**

This paper describes the efforts to establish Focus on Snacks’ reliability and validity with families of low socioeconomic status. Our hypothesis was that Focus on Snacks scores would show consistency over time, relationships with child’s dietary energy density and micronutrients and parent food behaviors, and predictive validity with child BMI.

**METHODS**

Low-income, English speaking parent-child pairs (n=141) were recruited from Head Start (n=111) and WIC (n=30) centers. Data collection included parent completion of Focus on Snacks assessment tool, University of California food behavior checklist and interviewer-administered 24-hour snack scores, physical activity, school time, diet and sleep. Parent/child log collected on three separate days including one weekend day. Measures and microelements were calculated using the log for each snack time for a potential of 9 snacks on the 3 days. Children’s heights and weights were measured.

Focus on Snacks was created with 12 items representing parent and child behaviors in the child’s snacking environment. The content includes chips, vegetable and fruit accessibility, vegetable and fruit availability, eating with friends and siblings, eating out, including fruit, chips, candy and cookies availability, drinking water, snacks and other sweetened beverages.

The items were recoded to the health direction with a maximum score of five points per item. Scores were summed for the 12 items. In addition, a subset of parents (n=86) of preschool children provided self-administered Focus on Snacks at two times 5 weeks apart as part of intervention in order to assess stability/reliability.

**Parent behaviors**

The parent’s child quality behaviors were assessed using the University of California Food Behavior Checklist [Suchly et al. 2006]. Parent responses were used to validate these parent vegetable/fruits behavior (r=.46, p<.001) [Bourg et al. 2003, Townend et al. 2005]. Our hypothesis was that parent behaviors would be positively related to scores on Focus on Snacks.

**24 Hour Diet Recalls**

Recalls (n=121) were collected by trained researcher staff in person and by telephone. The USDA 5-step multi-pass method [Townsend MS, Shilts MK, Styne D. 2006] included: 1. quick look of foods eaten the previous day, 2. time and eating occasion of each food, 3. probes for missing foods, 4. detailed description and account of each food; and 5. review of the recall. Food recall data was entered into ESHA’s Food Processor Nutrition Analysis Software [http://www.esha.com]. Salkin, OR 97065 using the best possible match to the items reported by parents. ESHA’s reports were generated to include a child’s food intake from 24-hour recalls and child’s food intake from one or more of the recalls, and three child diet recays. Children’s heights and weights were measured. With children dressed in light clothing, no jackets or outerwear, and no shoes, height was measured twice to the nearest 0.1 centimeter with the child fully erect, feet together without shoes and head in the Frankfort Plane, and the end of the stadiometer positioned above the ear lobe. Body Mass Index (BMI) was calculated as a continuous variable using the means of the height and weight measurements. Measurements were taken at baseline, and 12 and 24 months.

**RESULTS**

**Demographics**

Parent’s self reported race/ethnicity as: 20% Hispanic, 7% Latinos, 30% African American, 20% white, 5% Asian, 2% American Indian, 16% multi-race, 2% other. Families enrolled in the study participate in at least one USDA assistance program, with WIC (79%), Head Start (70%), and SNAP (61%) being reported most frequently. Parents (n=141) on average were 31.8 years old with children (n=99) female predominating by 1.2:1.5 years on average living in a household of 4.2±1.0 persons. Parents (n=99) earned a household income of $20,000 or less.

**Description**

Of the 141 children, 59 (41%) had at least one sugar sweetened beverage (SSB) including soda during one or more of the snacks times with a total time per child of 475 fluid ounces with 662±146 of the volume from SSB. Of the 510 reported snacking occurrences during the 3 days, 99 (19%) were from SSB. 50% of these amounts were in 1-2 Oz and 16% were from 3-5 oz or sugar sweetened beverages. The average amount of sugar sweetened beverage was 62±27 oz or 164 oz servings. Of 510 snacking occurrences, roughly 20% (59 servings) or 40% were soda or sugar sweetened beverages.

**Convergent validity**

A negative correlation was found between child’s dietary energy density during three days of snacks and micronutrients, and parent food behaviors, and a positive correlation to the child’s BMI percentile 2 years later and the child’s Focus on Snacks score, the lower the child’s snacking behavior score, the lower the child’s dietary energy density during three days of snacks and the lower the child’s Focus on Snacks score, the lower the child’s BMI percentile 2 years later. With ANCOVA adjusting for BMI, child’s dietary energy density was negatively related to the child’s BMI percentile 2 years later and the child’s Focus on Snacks score, the lower the child’s BMI percentile 2 years later.

**Convergent validity**

A significant negative correlation was found between child’s dietary energy density during three days of snacks and micronutrients, and parent food behaviors, and a negative correlation to the child’s BMI percentile 2 years later and the child’s Focus on Snacks score, the lower the child’s Focus on Snacks score, the lower the child’s BMI percentile 2 years later. With ANCOVA adjusting for BMI, child’s dietary energy density was negatively related to the child’s BMI percentile 2 years later and the child’s Focus on Snacks score, the lower the child’s BMI percentile 2 years later. With ANCOVA adjusting for BMI, child’s dietary energy density was negatively related to the child’s BMI percentile 2 years later and the child’s Focus on Snacks score, the lower the child’s BMI percentile 2 years later. With ANCOVA adjusting for BMI, child’s dietary energy density was negatively related to the child’s BMI percentile 2 years later and the child’s Focus on Snacks score, the lower the child’s BMI percentile 2 years later.