Instrument	
Name	"26-item FFQ"
Type	FFQ
Developer	Unknown
Original audience	Adults
Topic and number of items	Fruit (12) and vegetable (14) intake
Survey Administration	
Year	(1) Not reported
Study population and size	(1) n = 1,255 low-income adults aged 18 to 24 years old
Modification	(1) Not reported
Mode	(1) Interviewer-administered via telephone
Length of administration	(1) 26-item FFQ
Other languages	(1) Not reported
Measurement Properties	
Cognition	(1) Not reported
Reliability (internal consistency, test-retest)	(1) Not evaluated
Validity (convergent validity, criterion validity)	(1) Compared to 24-hr recall, r_{fruits} = 0.43 (p < 0.04) and $r_{vegetables}$ = 0.65 (p < 0.001)
Sensitivity to change	(1) At completion, the experimental group vs. the control group had significantly greater total intake of fruits (2.73 ± 0.09 vs. 2.33 ± 0.11 cups, p < 0.01) and vegetables (1.87 ± 0.10 vs. 1.62 ± 0.01 cups, p < 0.001).
References	(1) Do et al., 2008
Notes	(1) None

Instrument	
Name	"31-item FFQ"
Type	FFQ
Developer	Unknown
Original audience	Adults
Topic and number of items	Fruit and vegetable intake (31)
Survey Administration	
Year	(1) Not reported
Study population and size	(1) n = 70 household food preparers of 3rd, 4th, and 5th graders in Atlanta, GA
Modification	(1) None
Mode	(1) Interviewer-administered via telephone
Length of administration	(1) 31-item FFQ
Other languages	(1) Not reported
Measurement Properties	
Cognition	(1) Not reported
Reliability (internal consistency, test-retest)	(1) Not reported
Validity (convergent validity, criterion validity)	adjusted coefficients for first administration of FFQ were 0.06 for fruit juice, 0.29 for fruit excluding juice, 0.15 for fruit and fruit juice, 0.45 for vegetables, and 0.28 for total fruit, fruit juice, and vegetables, and for second administration of FFQ were 0.47 for fruit juice, 0.36 for fruit excluding juice, 0.49 for fruit and fruit juice, 0.53 for vegetables, and 0.43 for total fruit, fruit juice, and vegetables.
Sensitivity to change	(1) No intervention
References	(1) Warneke et al., 2001
Notes	(1) None

Instrument	
Name	"107-item FFQ"
Type	FFQ
Developer	Unknown
Original audience	Adults
Topic and number of items	Fruit and vegetable intake (number of items not reported)
Survey Administration	
Year	(1) Not reported
Study population and size	(1) n = 77 low-income Hispanic, African-American and white mothers of children aged 1 to 3 years old living in the Southwestern United States.
Modification	(1) FFQ derived from an adult version that was previously validated in a sample of low-income Hispanic, African-American, and white mothers from same area, which was derived from the Health Habits and History Questionnaire but was extensively modified. The adult FFQ was modified to include age-appropriate food items and portion sizes.
Mode	(1) Administered by dietitian
Length of administration	(1) 107-item FFQ, 9 food categories
Other languages	(1) Not reported
Measurement Properties	
Cognition	(1) Expert panel review of questions.
Reliability (internal consistency, test-retest)	(1) Spearman test-retest correlations were significant for all 9 food categories; $r_{fruits,\ fruit\ juices} = 0.67$ (p < 0.001), $r_{vegetables\ (not\ starchy)} = 0.84$ (p < 0.001), and $r_{vegetables\ (starchy)} = 0.74$ (p < 0.001).
Validity (convergent validity, criterion validity)	(1) Spearman correlations between FFQ and diet records were significant for all food groups except starchy vegetables; $r_{fruit\ and\ fruit\ juices} = 0.40$ (p < 0.01), $r_{vegetables\ (not\ starchy)} = 0.57$ (p < 0.001), and $r_{vegetables\ (starchy)} = 0.10$.
Sensitivity to change	(1) No intervention
References	(1) Klohe et al., 2005
Notes	(1) The FFQ yielded excellent reliability and acceptable validity and can be used to assess food choices in a triethnic sample of low-income children aged 1 to 3 years old.

Instrument	
Name	All-Day and By-Meal Fruit and Vegetable Screeners
Type	Screener
Developer	National Cancer Institute (NCI)
Original audience	Adults
Topic and number of items	All-Day (9 FV food items) By-Meal (similar, except for 2 foods are asked in terms of mealtime)
Survey Administration	
Year	(1) 1999
Study population and size	(1) n = 1,500 adults aged 20-70 in contiguous U.S.
Modification	(1) New instruments
Mode	(1) Mail survey
Length of administration	(1) 9 items for All-Day screener and 13 items for By-Meal screener
Other languages	(1) Not reported
Measurement Properties	
Cognition	(1) Cognitive testing with 30 men and women.
Reliability (internal consistency, test-retest)	(1) Not reported
Validity (convergent validity, criterion validity)	(1) Estimated correlations between the test instruments and true intake were as follows: For men: All-Day screener (0.66), By-Meal screener (0.67); for women: All-Day screener (0.51), By-Meal screener (0.53).
Sensitivity to change	(1) No intervention
References	(1) Thompson et al., 2002
Notes	(1) More research is needed before using the screeners in ethnic or low-literacy populations.

Instrument	
Name	Behavioral Risk Factor Surveillance System (BRFSS) questionnaire (fruit and vegetable module)
Type	FFQ
Developer	CDC
Original audience	Adults
Topic and number of items	Module for fruit (2) and vegetable (4) intake
Survey Administration	
Year	(1) Not reported (2) 1991-1994 (3) Not reported (4) 1995
Study population and size	(1) n_1 = 553 middle-aged and older adults from Beaver Dam, WI; n_2 = 252 middle-aged and older women living in WI; n_3 =150 parents of school children in Augusta, GA; n_4 = 73 low-income, Hispanic mothers in Chicago; n_5 = 51 older adults in AZ. (2) n = 94 adults aged 30 to 74 years old living in MN (3) n = 690 low-income parents (4) n =1,557 English-speaking high school students
Modification	(1) None (2) None (3) Modified from telephone to a self-administered format. Used 4 of the 6 items and modified those 4 items. (4) Modified from telephone to a self-administered format.
Mode	(1) Interviewer-administered via telephone (2) Not reported (3) Self-administered (4) Self-administered
Length of administration	(1) 6 items for FV, total instrument administered in 25 minutes (2) 6 items (3) 4 items (4) 6 items
Other languages	(1) Spanish, Chicago only (2) Not reported (3) Spanish (4) Not reported
Measurement Properties	
Cognition	(1) Not reported (2) Not reported (3) Pilot tested, readability analysis calculated reading level at 4th grade. (4) Not reported

Reliability (internal consistency, test-retest)	(1) Not reported (2) Reproducibility correlation for total fruit and vegetable was 0.49, with individual correlations ranging from 0.33 to 0.77. (3) Internal consistency alpha coefficient was 0.77, and the corrected item-total correlation was greater than 0.4, showing that the 4 questions could be combined into one measure. (4) Not reported
Validity (convergent validity, criterion validity)	(1) Correlation coefficients between total fruit and vegetable intake as measured by BRFSS and other FFQs ranged from 0.47 to 0.57. Correlation coefficients between total fruit and vegetable intake as measured by BRFSS and diet records or recalls were 0.29 (AZ), 0.46 (Chicago), and 0.54 (Beaver Dam, WI). (2) For most fruit and vegetable items, the module underestimated intake compared with FFQ and diet records. Criterion correlation coefficients for total fruit and vegetables were 0.53 between module and diet records and 0.63 between module and FFQ. (3) Not conducted for modified version. (4) Spearman correlation coefficients comparing the yesterday version of the BRFSS module and the mean of three 24-hr recalls were as follows: $r_{fruit\ only} = 0.33$, $r_{fruit\ juice} = 0.30$, $r_{fruit\ and\ juice} = 0.34$, $r_{vegetables} = 0.14$, and $r_{fruit,\ fruit\ juice,\ and\ vegetables} = 0.30$. Spearman correlation coefficients comparing the past-year version of the BRFSS module and the mean of three 24-hr recalls were as follows: $r_{fruit\ only} = 0.36$, $r_{fruit\ juice} = 0.36$, $r_{fruit\ and\ juice} = 0.35$, $r_{vegetables} = 0.33$, and $r_{fruit,\ fruit\ juice,\ and\ vegetables} = 0.43$. The DFFQ significantly underestimated the proportion of students consuming at least 5 servings of fruit and vegetables.
Sensitivity to change	(1) No intervention (2) No intervention (3) The difference between self-reported fruit and vegetable intake between participants in the intervention (2.9) and control groups (2.4) was not significant. (4) No intervention
References	(1) Serdula et al., 1993 (2) Smith-Warner et al., 1997 (3) Weaver et al., 1999 (4) Field et al., 1998
Notes	(1) None (2) None (3) None (4) None

Instrument	
Name	Block fat and fruit/vegetable/fiber screener
Type	FFQ/screener
Developer	Block Dietary Data Systems, Berkeley, CA
Original audience	Adults
Topic and number of items	Fruit and vegetable intake (26)
Survey Administration	
Year	(1) Not reported
Study population and size	(1) n = 307 adult women receiving WIC benefits in NC
Modification	(1) modified from 25-items to 26-items
Mode	(1) Self-administered
Length of administration	(1) 15 minutes
Other languages	(1) NA
Measurement Properties	
Cognition	(1) Cognitive testing and formative research
Reliability (internal consistency, test-retest)	(1) Not reported
Validity (convergent validity, criterion validity)	(1) Not reported
Sensitivity to change	(1) No significant differences between intervention and control groups' fruit and vegetable consumption at follow-up based on F tests, adjusted for baseline values.
References	(1) Campbell et al., 2004.
Notes	(1) Instrument used to evaluate CD-ROM program

Instrument	
Name	Block Kids Questionnaire
Type	FFQ
Developer	Block Dietary Data Systems, Berkeley, CA
Original audience	Children aged 8 to 13 years old
Topic and number of items	Fruit (29) and vegetable (24) intake
Survey Administration	
Year	(1) 2004 (2) Not reported
Study population and size	(1) n = 83 youth aged 10-17 years old (2) n = 33 third graders in 3 elementary schools on reservation
Modification	(1) None (2) None
Mode	(1) Self-administered, with questions read to participants (2) Not reported
Length of administration	(1) 72-item FFQ (all foods) (2) 53-item FFQ (FV only)
Other languages	(1) Not reported (2) Not reported
Measurement Properties	
Cognition	(1) Not reported (2) Not reported
Reliability (internal consistency, test-retest)	(1) Test-retest reliability coefficients were 0.01 for vegetable, -0.17 for fruit, and 0.48 for fruit juices. (2) Not reported
Validity (convergent validity, criterion validity)	(1) Compared to 24-hr recall, mean daily consumption values were higher, with Pearson adjusted deattenuated correlations equal to 0.17 for vegetable ($p < 0.01$), 0.52 for fruit (NS), and 0.16 for fruit juices (NS). (2) Not reported
Sensitivity to change	(1) No intervention (2) The change in intake from baseline to completion between groups was significantly different for total fruit and vegetable (2.7 ± 1.0 servings per day, $p < 0.01$) and total vegetables (2.2 ± 0.3 serving per day, $p \leq 0.0001$) but not for total fruit.
References	(1) Cullen et al., 2008 (2) Govula et al., 2007
Notes	(1) Results suggest that the BKQ has validity for some nutrients but not most food groups for adolescents older than 12 years old. (2) This study indicates that culturally appropriate educational intervention is a potential tool to increase fruit and vegetable intake and nutrition knowledge in American Indian children.

Instrument	
Name	Block rapid food screener
Type	Screener
Developer	Block Dietary Data Systems, Berkeley, CA
Original audience	Adults
Topic and number of items	Fruit and vegetable intake (7)
Survey Administration	
Year	(1) Not reported
Study population and size	(1) n = 208 adults aged 20-70 years old employed by one company in the San Francisco Bay area
Modification	(1) 25-item screener was modified to 7-items
Mode	(1) Self-administered
Length of administration	(1) 5 minutes or less, 1 page
Other languages	(1) Not reported
Measurement Properties	
Cognition	(1) Not reported
Reliability (internal consistency, test-retest)	(1) Not evaluated
Validity (convergent validity, criterion validity)	(1) Compared with the 1995 Block 100-item FFQ, $r_{fruit/vegetable\ servings}$ = 0.71 (p < 0.0001)
Sensitivity to change	(1) No intervention
References	(1) Block et al., 2000
Notes	(1) None

Block Rapid Food Screener

Instrument	
Name	Building Mealtime Environments and Relationships (BMER)
Type	Observation tool
Developer	Fletcher et al., University of Idaho
Original audience	Children aged 24 months - 5 years
Topic and number of items	12 topic areas and 3 clusters (mealtime setting, children's development, and guiding individuals and groups at mealtime)
Survey Administration	
Year	(1) No information available on use of instrument
Study population and size	(1) No information available on use of instrument
Modification	(1) No information available on use of instrument
Mode	(1) Direct observation
Length of administration	(1) No information available on use of instrument
Other languages	(1) No
Measurement Properties	
Cognition	(1) Not evaluated
Reliability (internal consistency, test-retest)	(1) Not evaluated
Validity (convergent validity, criterion validity)	(1) Not evaluated
Sensitivity to change	(1) No intervention
References	(1) Instrument available at http://www.ag.uidaho.edu/feeding/pdfs/BMER.pdf
Notes	(1) Provides USDA Child Care Meal Pattern Guidelines

BMER

Instrument	
Name	The Child and Diet Evaluation Tool (CADET)
Type	24-hr food tick list
Developer	University of Leeds, Leeds, UK
Original audience	Children aged 3 to 7 years old
Topic and number of items	Fruit (12) and vegetable (10) intake
Survey Administration	
Year	(1) Not reported
Study population and size	(1) n = 180 children aged 3 to 7 years old who were enrolled in 6 primary schools in England
Modification	(1) New instrument
Mode	(1) Self-administered in 3 parts by parent/guardian; school lunch volunteer; and children
Length of administration	(1) "A few minutes to complete" each of 3 parts of the 24-hr tick list
Other languages	(1) Not reported
Measurement Properties	
Cognition	(1) Not reported
Reliability (internal consistency, test-retest)	(1) 30 children completed 2 CADETs and 27 of these children completed a repeat diary. The first CADET gave higher results by 10% than the second CADET. The second CADET gave values slightly closer to second diary, implying a learning effect on completing the CADET.
Validity (convergent validity, criterion validity)	(1) Correlations comparing the diary and tick list were high for fruit and vegetables, with r ranging from 0.44 to 0.89, and nutrients, with r ranging from 0.41 to 0.68.
Sensitivity to change	(1) No intervention
References	(1) Cade et al., 2006
Notes	(1) Parent and teacher evaluation of the tick list was very positive. Parents felt the tick list was easy and quick to complete. The tool performed better than many FFQs in comparison to food diaries. Tool is currently being used to evaluate the UK's National School Fruit and Vegetable Scheme.

CADET

Instrument	
Name	Not specified; reported in Campbell et al., 2008
Type	Single question
Developer	Not known
Original audience	Adults
Topic and number of items	Self-efficacy (1)
Survey Administration	
Year	(1) Not reported
Study population and size	(1) n ≈ 7,090 adults living in AZ, WA, MA, NC, and MD
Modification	(1) Not known
Mode	(1) Not reported
Length of administration	(1) One question
Other languages	(1) Not reported
Measurement Properties	
Cognition	(1) Not reported
Reliability (internal consistency, test-retest)	(1) Not evaluated
Validity (convergent validity, criterion validity)	(1) Not evaluated
Sensitivity to change	(1) Self-efficacy was positively associated with higher fruit and vegetable consumption. Self-efficacy increased in participants who received intervention.
References	(1) Campbell et al., 2008
Notes	(1) None

Instrument	
Name	Not specified; reported in Cason, 2001
Type	Questionnaire
Developer	Cason, Pennsylvania State University
Original audience	Pre-school children enrolled in FSNEP and parents
Topic and number of items	Willingness to try (1)
Survey Administration	
Year	(1) Not reported
Study population and size	(1) n = 6,102 pre-school children attending 229 daycare facilities in 36 counties in a Southern state
Modification	(1) New instrument
Mode	(1) Interviewer-administered in group settings
Length of administration	(1) 4-page pictorial instrument
Other languages	(1) Not reported
Measurement Properties	
Cognition	(1) Face validity by expert panel and pilot tested with children
Reliability (internal consistency, test-retest)	(1) Determined by test-retest method, 79% of responses to each item were consistent.
Validity (convergent validity, criterion validity)	(1) Not evaluated
Sensitivity to change	(1) Children indicated an increased willingness to taste foods at the post-test (p ≤ 0.001).
References	(1) Cason, 2001
Notes	(1) Instrument also collected children's identification of fruits and vegetables

Cason, K.

Instrument	
Name	Not specified; reported in Perry et al, 2002
Type	Questionnaire
Developer	Perry et al., University of Minnesota
Original audience	Children
Topic and number of items	Food choice (9), knowledge (10), and recall (14)
Survey Administration	
Year	(1) 2000
Study population and size	(1) n = 2,166 first thru third graders and 1,927 fourth thru sixth graders aged 5 to 12 years old enrolled in 20 elementary schools in Minneapolis-St. Paul, MN
Modification	(1) Adapted from prior studies (see ref 10, 11, 21)
Mode	(1) Self-administered (with questions read to respondents)
Length of administration	(1) Not reported
Other languages	(1) Not reported
Measurement Properties	
Cognition	(1) Not reported
Reliability (internal consistency, test-retest)	(1) To estimate internal consistency of the three scales, Cronbach's alphas were computed. Each scale fell in the acceptable to moderately high range. Scales on the surveys for student in grades 1-3 included Food Choice and Knowledge. Both scales included 10 questions and alpha coefficients of 0.77 and 0.75, respectively. Scales on surveys for students in grades 4-6 included Food Choice, Knowledge, and Food Recall. The Food Choice scale included 9 questions and alpha coefficient of 0.71. The Knowledge scale included 10 questions and alpha coefficient of 0.78. The Food Recall scale included 14 questions and alpha coefficient of 0.75.
Validity (convergent validity, criterion validity)	(1) Not evaluated
Sensitivity to change	(1) Pre-post differences for the Food Choice scale for students grades 1-6 ($p < 0.001$) and Knowledge scale for students 1-3 ($p < 0.001$) and for students 4-6 ($p < 0.019$) were significantly different. The difference for the Food Recall scale approached significance ($p < 0.061$) for students grades 1-6.
References	(1) Perry et al., 2002
Notes	(1) The questionnaire evaluated the All's Well That Eats Well initiative. Teachers rated the educational value of the program at a 6.3 level on a scale from 1 to 7.

Instrument	
Name	The Cruciferous Vegetable Food Frequency Questionnaire
Type	FFQ
Developer	Arizona Diet, Behavior, and Quality of Life Assessment Center
Original audience	Adults
Topic and number of items	Vegetable intake (24)
Survey Administration	
Year	(1) Not reported
Study population and size	(1) n = 106 adults aged 18-70 years old
Modification	(1) New instrument
Mode	(1) Self-administered
Length of administration	(1) 6-page, 79-item questionnaire, 20 minutes
Other languages	(1) Not reported
Measurement Properties	
Cognition	(1) tested in focus groups
Reliability (internal consistency, test-retest)	(1) FFQ demonstrated good reliability, with a correlation coefficient for all vegetables of 0.69 (p ≤ 0.01).
Validity (convergent validity, criterion validity)	(1) Compared to AZ FFQ, reported intakes were significantly correlated, with r ranging from 0.44 to 0.79 (p < 0.01). Compared to 24-hr recall, reported intakes showed significantly lower correlation, with r ranging from 0.09 to 0.37. Compared to urinary metabolites, r = 0.26 (p < 0.01)
Sensitivity to change	(1) No intervention
References	(1) Thomson et al., 2007
Notes	(1) None

Cruciferous Veggie FFQ

Instrument	
Name	The Day in the Life Questionnaire (DILQ)
Type	Dietary recall questionnaire
Developer	Edmunds and Ziebland
Original audience	Youth aged 7 to 9 years olds
Topic and number of items	Uses words and pictures to encourage recall of previous day, including FV intake
Survey Administration	
Year	(1) 1999 (2) Not reported (3) Not reported
Study population and size	(1) n = 255 children aged 7 to 9 years old in 4 schools in England (2) n = 195 youths aged 9 to 11 years olds in 8 schools in Wales and England (3) n =374 students aged 9 to 11 years old enrolled in schools in low-income areas in Wales
Modification	(1) None (2) Computerized with further modifications (3) Not reported
Mode	(1) Self-administered, with questions read to participants (2) Computerized interview (3) Self-administered, with questions read to participants
Length of administration	(1) Not reported (2) Not reported (3) Not reported
Other languages	(1) Not reported (2) Not reported (3) Not reported
Measurement Properties	
Cognition	(1) Conducted six focus groups. (2) Not reported (3) Not reported
Reliability (internal consistency, test-retest)	(1) For test-retest reliability, fruit intake means were 0.77 on first visit vs. 0.78 on second visit (NS), and vegetable intake means were 0.92 on first visit vs. 0.84 on second visit (NS). (2) Children reported lower levels of intake on the second occasion; these declines were statistically significant for all food categories. (3) Group level reliability statistics compared school-level mean intakes at baseline and follow-up, correlation was 0.31 for fruit and 0.53 for vegetables (cross-sectional) and 0.33 for fruit and 0.39 for vegetables (longitudinal)
Validity (convergent validity, criterion validity)	(1) Compared to direct observations, children's DILQ reports of the fruit and vegetable intake approached 70% agreement. (2) Compared to the recall interview, the computerized questionnaire gave higher estimates of fruit intake (kappa coefficient = 0.29). (3) Compared to dietary interview, Spearman rank coefficients were 0.39 for fruit and 0.41 for vegetables in terms of types of foods eaten throughout the day (excluding breakfast)
Sensitivity to change	(1) At one school, mean daily fruit consumption at baseline was 0.96 and 1.43 at follow-up (p = 0.04). In addition, mean fruit consumption at morning break at baseline was 0.31 and 0.96 at follow-up (p ≤ 0.000). (2) No intervention (3) No intervention
References	(1) Edmunds and Ziebland, 2002 (2) Moore et al., 2005 (3) Moore et al., 2007
Notes	(1) Children enjoyed completing DILQ and teachers thought it appropriate for age group. (2) The computerized questionnaire was popular with the children and held their attention in a way that a traditional paper-based questionnaire would not. (3) None

Instrument	
Name	ERS Dietary Behavior Questionnaire
Type	Questionnaire
Developer	USDA, ERS
Original audience	18 - 60 years old women participating in FSP
Topic and number of items	Fruit and vegetable intake (9) and availability (3)
Survey Administration	
Year	(1) May - June 2006 (2) August - September 2006
Study population and size	(1) n = 34 female adults participating in FSP in PA, SC, and CA (2) n = 453 FSP 18 - 60 years old women participating in FSP in PA, SC, WI, AZ
Modification	(1) Questions selected from ERS Prototype Notebook (2) Modifications made to some questions based on cognitive interviews.
Mode	(1) 3 waves of in-person cognitive interviews (2) Field test: interviewer administered via telephone
Length of administration	(1) 14.5 minutes/96 items (total) (2) 22.3 minutes/83 items (total); mean of 1.6 minutes for FV questions
Other languages	(1) No (2) No
Measurement Properties	
Cognition	(1) 40 cognitive interviews, 34 respondents (2) Analysis of 453 telephone interviews: interviewer observation; response evaluation and statistics on % with refused and "don't know" responses; internal consistency; associations between diet, food availability, and BMI; factor analysis; and administration times. In addition, behavioral coding of the number and types of problems for 62 telephone interviews--readability understandability, and comprehension.
Reliability (internal consistency, test-retest)	(1) Not evaluated (2) Based on factor analysis, Kaiser's overall MSA is 0.73, indicating that the partial correlations are relatively small to the original correlations. Two factors explain 86% of the common variance according to a principle factor analysis (see pages 29 to 31 for additional information).
Validity (convergent validity, criterion validity)	(1) Not evaluated (2) Not evaluated
Sensitivity to change	(1) No intervention (2) No intervention
References	(1) USDA, ERS, 2006. (2) USDA, ERS, 2007.
Notes	(1) None (2) None

Instrument	
Name	Dietary Observation System
Type	Direct observations
Developer	University of North Carolina, Chapel Hill, NC
Original audience	Day care centers
Topic and number of items	Not applicable
Survey Administration	
Year	(1) Not reported
Study population and size	(1) n = 58 for treatment and n = 44 for control, licensed child-care centers in NC
Modification	(1) New instrument
Mode	(1) Direct Observations
Length of administration	(1) 21-item Diet Observation Form
Other languages	(1) Not reported
Measurement Properties	
Cognition	(1) training and certifying data collectors
Reliability (internal consistency, test-retest)	(1) The Spearman-Brown adjusted IRRC (average ICC of the 5 observers) was 0.992, suggesting strong agreement among observers and strong accuracy between observer and measured portion.
Validity (convergent validity, criterion validity)	(1) Not evaluated
Sensitivity to change	(1) No intervention
References	(1) Ball et al., 2007
Notes	(1) None

Instrument	
Name	Dole "Fruits and Vegetables You Ate Yesterday" Survey
Type	Dietary intake questionnaire
Developer	Dole
Original audience	Unknown
Topic and number of items	Fruit and vegetable intake (2)
Survey Administration	
Year	(1) 2005
Study population and size	(1) n = 86 low-moderate income children aged 6 to 9 years old living outside of Boston
Modification	(1) Modified original survey to add pictures.
Mode	(1) Interviewer-administered in person
Length of administration	(1) Not reported
Other languages	(1) Not reported
Measurement Properties	
Cognition	(1) Not reported
Reliability (internal consistency, test-retest)	(1) Test-retest reliability was very high for recall of having a fruit (girls 93.3% and 94.1% in boys; p < 0.001) or vegetable (girls 90.0%; p < 0.01 and 76.5% in boys; p < 0.05).
Validity (convergent validity, criterion validity)	(1) Percent agreement between observed fruit intake and reported fruit intake was 77.5% for girls (p < 0.001) and 76.2% for boys (p < 0.01). Percent agreement between observed vegetable intake and reported vegetable intake was 61.2% for girls (p < 0.001) and 67.9% for boys (p < 0.001).
Sensitivity to change	(1) No intervention
References	(1) Economos et al., 2008
Notes	(1) Instrument provided in article.

Dole

Instrument	
Name	Eating Habits Questionnaire (EHQ)
Type	FFQ
Developer	Unknown
Original audience	Middle school students
Topic and number of items	Fruit (5) and vegetable (6) intake
Survey Administration	
Year	(1) 1994
Study population and size	(1) n = 446 sixth and eighth graders from 3 middle schools in NC
Modification	(1) Adapted from the Health Habits Questionnaire from the Bogalusa Heart Study
Mode	(1) Administered by research assistant in groups/classrooms
Length of administration	(1) 83 food item questionnaire
Other languages	(1) Not reported
Measurement Properties	
Cognition	(1) Not reported
Reliability (internal consistency, test-retest)	(1) Cronbach $\alpha_{vegetables}$ = 0.83 and Cronbach $\alpha_{fruits/juice}$ = 0.72. Test-retest correlations for the 48-hr retest was 0.67 for vegetables and 0.77 for fruit/fruit juice.
Validity (convergent validity, criterion validity)	(1) The percentage of perfect agreement for the vegetables and fruit category by two methods (FFQ and 24-hr recall) was 53.5%.
Sensitivity to change	(1) No intervention
References	(1) Speck et al., 2001
Notes	

Instrument	
Name	Fat and Fiber Behavior-related Questionnaire (FFBQ)
Type	Questionnaire
Developer	Shannon et al.
Original audience	Unknown
Topic and number of items	Fruit and vegetables intake (5-item subscale)
Survey Administration	
Year	(1) Not reported
Study population and size	(1) n = 623 adult patients in 2 rural counties
Modification	(1) None
Mode	(1) Telephone
Length of administration	(1) Not reported
Other languages	(1) Not reported
Measurement Properties	
Cognition	(1) Not reported
Reliability (internal consistency, test-retest)	(1) $\alpha_0 = \alpha_{1mo} = \alpha_{12mos} = 0.6$ and $\alpha_{6mos} = 0.5$
Validity (convergent validity, criterion validity)	(1) Compared with the NCI FFQ, $0.40 \leq r \geq 0.46$
Sensitivity to change	(1) Significant changes were reported between intervention and control groups by specific demographics (see Table 2).
References	(1) Carcaise-Edinboro et al., 2008
Notes	(1) None

Instrument	
Name	5-A-Day Screener
Type	Screener
Developer	National Cancer Institute (NCI)
Original audience	Adults
Topic and number of items	Fruit and vegetable intake (7)

Survey Administration	
Year	(1) 1994 - 1996 (2) Not reported (3) Not reported (4) 1997 (5) Not reported (6) Not reported (7) Not reported
Study population and size	(1) n = 1,026 women employed at 22 community health centers (2) n = 76 household food preparers of 3rd, 4th, and 5th graders in Atlanta, GA (3) n = 260 adults employed at 33 worksites in Seattle, WA (4) n = 436 adults aged 50 to 69 years old living in six states and two major U.S. cities (5) n= 56 urban African American children and 25 parents or guardians (6) n = 413 Native American, Hispanic, and non-Hispanic white women living in rural WA (7) n = 1,674 third graders enrolled in 16 elementary schools in the Southeast
Modification	(1) None (2) None (3) None (4) None (5) None (6) Translated into Spanish (7) None
Mode	(1) Self administered (2) Interviewer-administered via telephone (3) Self administered (4) Self administered (5) Not reported (6) Interviewer-administered in person (7) Interviewer-administered in person
Length of administration	(1) 7 items (2) 7 items (3) 7 items (4) 7 items (5) 7 items (6) 7 items (7) 7 items
Other languages	(1) Not reported (2) Not reported (3) Not reported (4) Not reported (5) Not reported (6) Spanish (7) Not reported

Measurement Properties	
Cognition	(1) Not reported (2) Not reported (3) Not reported (4) Not reported (5) Not reported (6) Pilot study and focus groups (7) Not reported
Reliability (internal consistency, test-retest)	(1) Not reported (2) Not reported (3) Not reported (4) $r_{men} = 0.47$ and $r_{women} = 0.39$. For 16-item FFQ, $r_{men} = 0.48$ and $r_{women} = 0.35$. (5) Not reported (6) Not reported (7) Not reported

Validity (convergent validity, criterion validity)	(1) Compared to the 61-item semi-quantitative FFQ (Willet et al., 1985), daily consumption of fruits and vegetables was more than a serving less (4.7 vs. 3.5 servings per day). The correlation between the two assessments was 0.52 (95% confidence limits = 0.46 to 0.57). Mean servings of fruit and vegetables were approximately within range of the response categories to the behavioral questions for all categories, except "9 or more." The correlation between response categories to the behavioral questions and servings calculated by screener was 0.56.

(2) Compared to 24-hr recall, Spearman rank correlation coefficients for first administration of FFQ were 0.40 for fruit juice, 0.18 for fruit excluding juice, 0.41 for fruit and fruit juice, 0.69 for vegetables, and 0.72 for total fruit, fruit juice and vegetables, and for second administration of FFQ were 0.67 for fruit juice, 0.68 for fruit excluding juice, 0.77 for fruit and fruit juice, 0.69 for vegetables, and 0.70 for total fruit, fruit juice and vegetables.

(3) Compared to 24-hr recall, $r_{fruit\ and\ vegetable}$ = 0.50 (p < 0.001), $r_{fruit\ and\ juice}$ = 0.57 (p < 0.001), and $r_{vegetables}$ = 0.33 (p < 0.001).
(4) The correlation between 24-hr recall and FFQ was 0.50 (NS). The attenuation coefficient between 24-hr recall and FFQ was 0.52 (NS).
(5) Not reported

(6) Compared to serum carotenoids, r ranged from -0.08 to 0.17
(7) Compared to 7-day records, $r_{fruit\ and\ vegetables}$ = 0.221, $r_{fruit\ and\ juices}$ = 0.284, and $r_{vegetables}$ 0.186. All correlations were statistically significant. |
| Sensitivity to change | (1) Reported elsewhere (Sorensen et al., 1999)
(2) No intervention
(3) No intervention
(4) No intervention

(5) Pre-post pair wise t tests revealed that both children and their parents/guardians showed an increase in fruit consumption and a reduction in diastolic blood pressure (p < 0.05)
(6) No intervention
(7) No intervention |
| **References** | (1) Hunt et al., 1998
(2) Warneke et al., 2001
(3) Kristal et al., 2000
(4) Thompson et al. 2000
(5) Engels et al., 2005
(6) Neuhouser et al., 2007
(7) Baranowski et al., 1997 |
| **Notes** | (1) None
(2) None
(3) None
(4) None
(5) FFQ used to evaluate the Students and Parents Actively Involved in Being Fit after-school initiative
(6) FFQ was poor indicator of fruit and vegetable intake in this sample of ethnically diverse rural women.

(7) Study concludes that there is little justification for using the 7-item FFQ with elementary-aged children. Results indicate severe over-estimation of fruit and vegetable consumption. |

Instrument	
Name	Food Behavior Checklist (FBC) and Fruit and Vegetable Checklist (FVC); FVC is subset of FBC
Type	Checklist
Developer	Townsend, UC Davis
Original audience	Low-income women
Topic and number of items	FBC (16) and FVC (7)
Survey Administration	
Year	(1) 1997 (2) Not reported (3) Not reported (4) Not reported
Study population and size	(1) n=100 low-income women participating in FSNEP in 8 CA counties (2) n = 100 low-income women participating in FSNEP in 9 CA counties (3) n = 87 low-income women participating in FSNEP in 8 CA counties (4) n_1 = 25 low-income adults, n_2 = 18 low-income adults in 4 groups, n_3 = 7 professionals, n_4 = 10 paraprofessionals
Modification	(1) Reduced original 39-item FBC to 22-item FBC (2) Reduced 22-item FBC to 16-item FBC (3) Reduced 16-item FBC to 7-item FVC (4) Modified text and added visuals to 16-item FBC
Mode	(1) Interviewer-administered in group setting (2) Self-administered in group setting (3) Self administered (4) Interviewer-administered individually and in groups
Length of administration	(1) 10-15 minutes (2) 10-20 minutes (3) 10 minutes (4) Not reported
Other languages	(1) Not reported (2) Not reported (3) Not reported (4) Not reported
Measurement Properties	
Cognition	(1) Focus groups, cognitive interviews, and pilot study (2) Pilot study. Reading level of less than 4th grade. (3) Not reported (4) Cognitive testing and expert review. Readability scores improved by more than 2 grades with addition of visuals.
Reliability (internal consistency, test-retest)	(1) The internal consistency of the fruit and vegetable category was high (α = 0.79). (2) For fruit and vegetable subscale, α = 0.80 (3) Reliability coefficients for the 7 items ranged from 0.35 ($p < 0.05$) to 0.65 ($p < 0.0001$). (4) Not evaluated
Validity (convergent validity, criterion validity)	(1) Correlation between serum carotenoids and fruit and vegetable behavior items were significantly correlated, with r ranging from 0.27 to 0.48. See Table 2 for recall nutrient and food group correlations. (2) The fruit and vegetable subscale showed a significant correlation with serum carotenoid values (r = 0.44, $p < 0.001$). Compared to 24-hr recalls, r_{fruit} = 0.36 and $r_{vegetables}$ = 0.33. (3) All 7 items were significantly and positively correlated to both serum carotenoids (r = 0.35) and recall variables (r = 0.44). (4) Not evaluated
Sensitivity to change	(1) No intervention (2) Demonstrated sensitivity to change for items expected to change. (3) From baseline to follow-up, the intervention group reported significant improvements in the three fruit questions. The control group did not report any significant changes for fruits or vegetables. (4) Not evaluated
References	(1) Murphy et al., 2001 (2) Townsend et al., 2003 (3) Blackburn et al., 2006 (4) Townsend et al., 2008
Notes	(1) None (2) 16-item FBC is easy to administer to a client group, has a 4th grade reading level, and has low respondent burden as well as meeting requirements for validity, reliability, and sensitivity to change. (3) None (4) Changed reading level from fourth to first grade level. Respondents recommended eliminating words and replacing them with visual content for 7 of 16 items and simplifying text for 10 of 16 items.

Instrument	
Name	Feeding Infants and Toddlers Study (FITS)
Type	24-hour recall with supplemental questions
Developer	Devaney et al. (sponsored by Gerber)
Original audience	Parents of infants and toddlers
Topic and number of items	NDS-R used to collect 24-hour recalls, additional questions on child's characteristics, child care use, participation in WIC, breastfeeding status and history, initiation of solid foods, motor development questions, and information on parents
Survey Administration	
Year	(1) 2002
Study population and size	(1) n = 3,022 parents of infants and children, national random sample
Modification	(1) None
Mode	(1) Telephone
Length of administration	(1) Not reported
Other languages	(1) Spanish
Measurement Properties	
Cognition	(1) Not evaluated
Reliability (internal consistency, test-retest)	(1) Not evaluated
Validity (convergent validity, criterion validity)	(1) Not evaluated
Sensitivity to change	(1) No intervention
References	(1) Devaney et al., 2004
Notes	(1) None

FITS

Instrument	
Name	Fruit, Juice, and Vegetable (FJV) Availability Questionnaire
Type	Questionnaire
Developer	Baylor College of Medicine
Original audience	Parents of elementary and middle school children
Topic and number of items	Fruit and vegetable availability (34)
Survey Administration	
Year	(1) 1998 (2) 1998 (3) 2003 (4) 2004
Study population and size	(1) n = 48 parents of fourth and sixth graders in schools in Houston, TX (2) n = 137 parents of fourth through sixth graders in 9 schools in Houston, TX (3) n = 473 boys aged 11- to 14-years old, living in Houston, TX (4) n = 162 parents of children aged 18 years or younger
Modification	(1) New instrument (2) None (3) Not reported (4) One extra vegetable was added to original survey
Mode	(1) Self-administered (2) Interviewer-administered via telephone (3) Not reported (4) Interviewer-administered via telephone
Length of administration	(1) Not reported (2) 34 items (3) 48-items (4) 35 items
Other languages	(1) Not reported (2) Not reported (3) Not reported (4) Spanish
Measurement Properties	
Cognition	(1) Not reported (2) Not reported (3) Not reported (4) Not reported
Reliability (internal consistency, test-retest)	(1) Not reported (2) Internal consistencies of 0.67 were obtained for the parent-reported items and 0.83 for the child-reported items. (3) Not reported (4) The Cronbach's α was 0.68 and 0.67 for the fruit items, 0.40 and 0.41 for the 100% juice items, and 0.69 and 0.67 for the vegetable items, for the first and second administrations respectively. The test-retest ICC was 0.74 for home fruit availability, 0.58 for home 100% juice availability, and 0.68 for home vegetable availability.
Validity (convergent validity, criterion validity)	(1) Cohen's kappa indicated significant ($p < 0.05$) agreement between self-reported and observed inventories for all 3 juices, 10 of 13 fruits, and 15 of 18 vegetables. Significant Spearman correlations were found between parent-reported and observed total fruit availability ($r = 0.56$, $p < 0.001$), total 100% juice availability ($r = 0.52$, $p < 0.001$), and total fruit, juice, and vegetable ($r = 0.55$, $p < 0.001$). Significant Spearman correlations were found for all individual items except 3 fruits (banana, orange, plum) and 3 vegetables (mashed potato, corn, cole slaw). (2) Reported same results found in study #1. (3) Not reported (4) Not reported
Sensitivity to change	(1) No intervention (2) FJV availability was a significant predictor of child FJV consumption ($p < 0.05$). (3) Home availability was a significant predictor of fruit, 100% fruit juice, and vegetable consumption ($p < 0.001$). Home availability was associated with daily fruit and 100% fruit juice consumption ($p = 0.04$) and vegetable consumption ($p = 0.01$). (4) No intervention
References	(1) Marsh et al., 2003 (2) Cullen et al., 2003 (3) Gallaway et al., 2007 (4) Baranowski et al., 2008
Notes	(1) None (2) None (3) None (4) Study included development of scale for pantry management practices
	Note: Modification of this instrument used by Baranowski in 2000 GEMS study (45 items); unable to find published article with study results, but instrument is available online

Instrument	
Name	Fruits, Fruit Juices, and Vegetables (FJV) Food Frequency Questionnaire (FFQ)
Type	FFQ
Developer	Cullen et al.
Original audience	Inner city African American boys and 17 to 20 year old males
Topic and number of items	Fruit and vegetable intake (24)
Survey Administration	
Year	(1) 1997
Study population and size	(1) $n_1 = 56$ males aged 17 to 20 years old and $n_2 = 32$ boys aged 9 to 14 years from the inner city, mostly African American
Modification	(1) New instrument
Mode	(1) Self-administered by boys aged 9 to 14 years olds and interviewer-administered via telephone to boys aged 17 to 20 years old
Length of administration	(1) Not reported
Other languages	(1) Not reported
Measurement Properties	
Cognition	(1) Not reported
Reliability (internal consistency, test-retest)	(1) Spearman coefficients between the first and second FFQ were as follows: for the 9 to 14 years old, 0.42 for juice ($p < 0.05$), 0.71 for fruit ($p < 0.0001$), 0.53 for vegetables ($p < 0.01$), and 0.54 for fruit, juice, and vegetables ($p < 0.01$), and for the 17 to 20 years old, 0.53 for juice ($p < 0.001$), 0.45 for fruit ($p < 0.0001$), 0.49 for vegetables ($p < 0.0001$), and 0.44 for fruit, juice, and vegetables ($p < 0.001$).
Validity (convergent validity, criterion validity)	(1) The first FFQ recorded more servings and a larger standard deviation (especially vegetables) than the second FFQ and the 24-hr recall. Compared to the 24-hr recall, Spearman coefficients for the first FFQ were as follows: for 9 to 14 years old, 0.-0.13 for juice, 0.35 for fruit, 0.28 for vegetables, and 0.51 for fruit, juice, and vegetables, and for 17 to 20 years old, 0.25 for juice, 0.33 for fruit ($p < 0.05$), 0.23 for vegetables, and 0.21 for fruit, juice, and vegetables. Compared to the 24-hr recall, Spearman coefficients for the second FFQ were as follows: for 9 to 14 years old, 0.-0.17 for juice, 0.40 for fruit ($p < 0.01$), 0.21 for vegetables, and 0.34 for fruit, juice, and vegetables, and for 17 to 20 years old, 0.57 for juice ($p < 0.001$), 0.46 for fruit ($p < 0.001$), 0.28 for vegetables ($p < 0.05$), and 0.22 for fruit, juice, and vegetables.
Sensitivity to change	(1) No intervention
References	(1) Cullen et al., 1999
Notes	(1) The 24 fruit, fruit juice, and vegetable items were identified in the 1994 CSFII.

Instrument	
Name	Fruits, Fruit Juices, and Vegetables (FJV) Preference Measure
Type	Questionnaire
Developer	Jaramillo et al.
Original audience	African American and Hispanic preschoolers
Topic and number of items	Fruit (15) and vegetable (15) intake
Survey Administration	
Year	(1) Not reported
Study population and size	(1) n = 198 African-American and Hispanic preschool children enrolled in 12 Head Start Centers in Houston
Modification	(1) New instrument
Mode	(1) Self administered on computer
Length of administration	(1) 15 minutes
Other languages	(1) Spanish
Measurement Properties	
Cognition	(1) Expert panel review and pilot tested with children
Reliability (internal consistency, test-retest)	(1) For internal consistency, Cronbach $\alpha_{overall}$ = 0.87, Cronbach α_{fruit} = 0.77, Cronbach $\alpha_{fruit\ juices}$ = 0.58, Cronbach $\alpha_{vegetables}$ = 0.82. The overall coefficient for test-retest was 0.73 (p < 0.001); 0.49 for fruit (p < 0.0001); 0.37 for fruit juices (p < 0.01); and 0.73 for vegetables (p < 0.0001).
Validity (convergent validity, criterion validity)	(1) Not evaluated
Sensitivity to change	(1) Not evaluated
References	(1) Jaramillo et al., 2006.
Notes	(1) Mean fruit and vegetable consumption was significantly higher in children who reported higher preferences for fruit and vegetables compared to those who reported lower fruit and vegetable preferences (p < 0.02).

Instrument	
Name	Fruits and Vegetable Food Frequency Questionnaire (F+V FFQ)
Type	FFQ
Developer	Unknown
Original audience	Unknown
Topic and number of items	Fruit (15) and vegetable (30) intake
Survey Administration	
Year	(1) 1991
Study population and size	(1) n = 179 fourth and fifth graders at one elementary school in Augusta, GA
Modification	(1) Variation of Willet FFQ. Weekly and monthly versions developed.
Mode	(1) Interviewer administered
Length of administration	(1) Not reported
Other languages	(1) Not reported
Measurement Properties	
Cognition	(1) Not reported
Reliability (internal consistency, test-retest)	(1) Spearman coefficients between the week 1 and week 2 FFQs were as follows: 0.50 for fruit total ($p < 0.001$), 0.48 for vegetable total ($p < 0.001$), and 0.54 for fruit and vegetable total ($p < 0.001$). Spearman coefficients between the month 1 and month 2 FFQs were as follows: 0.43 for fruit total ($p < 0.001$), 0.37 for vegetable total ($p < 0.001$), and 0.47 for fruit and vegetable total ($p < 0.001$)
Validity (convergent validity, criterion validity)	(1) Spearman coefficients between the week 1 FFQ and dietary record were as follows: 0.18 for fruit total ($p < 0.05$), -0.01 for vegetable total (NS), and 0.00 for fruit and vegetable total (NS). Spearman coefficients between the week 2 FFQ and dietary record were as follows: 0.18 for fruit total ($p < 0.05$), 0.11 for vegetable total (NS), and 0.05 for fruit and vegetable total (NS). Spearman coefficients between the month 1 FFQ and dietary record were as follows: 0.12 for fruit total (NS), -0.04 for vegetable total (NS), and 0.05 for fruit and vegetable total (NS). Spearman coefficients between the month 2 FFQ and dietary record were as follows: 0.17 for fruit total ($p < 0.05$), 0.02 for vegetable total (NS), and -0.01 for fruit and vegetable total (NS).
Sensitivity to change	(1) No intervention
References	(1) Domel et al., 1994
Notes	(1) None

Instrument	
Name	Fruit and Vegetable Motivation Scale
Type	Questionnaire
Developer	Wilson et al., University of South Carolina
Original audience	African-American adolescents aged 11-15 years
Topic and number of items	Willingness to try (6)
Survey Administration	
Year	(1) Not reported (2) Not reported
Study population and size	(1) n = 53 African-American adolescents aged 11-15 years (2) n = 39 fourth and fifth graders from 2 schools and their parents
Modification	(1) Measures adapted from a study by Eitel and Friend 1999 and Leake et al. 1999 (2) Not reported
Mode	(1) Not reported (2) Self-administered
Length of administration	(1) 6 items (2) 6 items
Other languages	(1) Not reported (1) Not reported
Measurement Properties	
Cognition	(1) Reviewed by expert panel and pilot-tested (2) Not reported
Reliability (internal consistency, test-retest)	(1) Reliability coefficients were 0.53 for the fruit and vegetable motivation scale (2) Reliability coefficients were 0.59 for the fruit and vegetable motivation scale
Validity (convergent validity, criterion validity)	(1) Correlated with the Lifestyle Profile Scale, coefficients were 0.43 to 0.44 ($p < 0.05$) for the fruit and vegetable motivation scales (2) Not reported
Sensitivity to change	(1) Although intervention group showed increases in motivation to try fruit and vegetables, there were no significant group differences. (2) ANCOVA results indicated significant difference on the motivation scale (p , 0.05) between the 2 groups at post-intervention.
References	(1) Wilson et al., 2002 (2) Evans et al., 2006
Notes	(1) None (2) None

F&V Motivation Scale

Instrument	
Name	Fruit and Vegetable Self-Efficacy Questionnaire (FVSEQ)
Type	Psychosocial Questionnaire
Developer	Domel et al.
Original audience	Forth and fifth grade students
Topic and number of items	Fruit and vegetable self-efficacy (34)
Survey Administration	
Year	(1) Not reported (2) 1994 (3) Not reported
Study population and size	(1) n = 206 fourth and fifth graders (2) n = 1,398 third graders (3) n = 1,477 fourth graders in Houston, TX
Modification	(1) After pilot study, 2 items were modified (2) The scale was modified by reducing the number of items to 22. (3) Response items were modified from original instrument and used 24 items
Mode	(1) Self-administered (1) Not reported (1) Not reported
Length of administration	(1) 34 items (2) 22 items (3) 24 items
Other languages	(1) Not reported (1) Not reported (1) Not reported
Measurement Properties	
Cognition	(1) Pilot tested (2) Not reported (3) Not reported
Reliability (internal consistency, test-retest)	(1) For pilot test, Cronbach's alphas for the 34 items were 0.88 and 0.92 within the first and second administrations. Test-retest reliability correlation between the two administrations was 0.70. For full-scale-study, Cronbach's alphas for the four subscales were high and ranged from 0.72 to 0.87 for all three schools combined. Test-retest reliabilities ranged from 0.52 to 0.67 in one school and from 0.35 to 0.63 in another. (2) Cronbach's alphas for the two self-efficacy subscales were 0.78 (asking-shopping) and 0.89 (selection). (3) The Cronbach's alpha was 0.90
Validity (convergent validity, criterion validity)	(1) Correlations between self-efficacy subscales and fruit and vegetable consumption ranged from -0.02 to 0.17. (2) The 2 self-efficacy subscales were significantly correlated with fruit and vegetable consumption ($r = 0.12$, $p < 0.01$). (3) Not evaluated
Sensitivity to change	(1) No intervention (2) No intervention (3) No intervention
References	(1) Domel et al., 1996 (2) Resnicow et al., 1997 (3) Watson et al., 2006
Notes	(1) None (2) None (3) Study applies item response modeling.

FVSEQ

Instrument	
Name	Fruit and Vegetable Inventory
Type	Psychosocial fruit and vegetable tool
Developer	Townsend, UC Davis
Original audience	Low-income women
Topic and number of items	Psychosocial constructs, including fruit and vegetable self-efficacy (6)
Survey Administration	
Year	(1) 1997 (2) Not reported
Study population and size	(1) n = 111 low-income women participating in FSNEP in 9 CA counties (2) n = 93 low-income women participating in FSNEP in 8 CA counties
Modification	(1) Reduced original 29-item tool with 9 constructs to 13-item tool with 6 constructs (2) Used 13-item tool with 6 constructs
Mode	(1) Self-administered in group setting (2) Not reported
Length of administration	(1) Not reported (2) Not reported
Other languages	(1) NA (2) NA
Measurement Properties	
Cognition	(1) Pilot tested (2) Not reported
Reliability (internal consistency, test-retest)	(1) Cronbach alpha correlation for 7 self-efficacy items indicated moderately high internal consistency (0.77); however, the alpha was essentially identical at 0.76 with 6 items. The test-retest coefficients were all significant, with r ranging from 0.30 to 0.47 for self efficacy items. (2) Not evaluated.
Validity (convergent validity, criterion validity)	(1) Compared to serum carotenoid, the 7 self-efficacy items had a correlation equal to 0.18 ($p < 0.10$). Construct was NS compared to dietary recall and HEI. (2) Not evaluated.
Sensitivity to change	(1) No intervention (2) Controlling for energy intake at baseline and change in energy intake, the change scores for the tool were correlated with reported changes in fruit and vegetable behaviors ($r = 0.28$, $p = 0.01$), vitamin C ($r = 0.25$, $p = 0.02$), and the biomarker serum carotenoids ($r = 0.31$, $p = 0.02$).
References	(1) Townsend et al., 2005 (2) Townsend et al., 2007
Notes	(1) None (2) None

FVI

Instrument	
Name	Not specified
Type	Psychosocial questionnaire
Developer	Hagler, San Diego State University
Original audience	Youth aged 11 to 15 years old
Topic and number of items	Fruit and vegetable self-efficacy (7)
Survey Administration	
Year	(1) Not reported
Study population and size	(1) n = 76 youth aged 11 to 15 years old
Modification	(1) Questions adapted from Sallis et al., 1988
Mode	(1) Self-administered via computer
Length of administration	(1) Not reported
Other languages	(1) Not reported
Measurement Properties	
Cognition	(1) Not reported
Reliability (internal consistency, test-retest)	(1) The average internal consistency for six of seven fruit and vegetable intake related scales was 0.77 for the paper test. 0.83 for the paper retest, 0.86 for the computer test, and 0.88 for the computer retest
Validity (convergent validity, criterion validity)	(1) Not reported
Sensitivity to change	(1) No intervention
References	(1) Hagler et al., 2005
Notes	(1) No significant differences between the computer- and paper-based tests were found for any fruit and vegetable intake scales.

Instrument	
Name	Harvard Food Frequency Questionnaire
Type	FFQ
Developer	Harvard
Original audience	Adults
Topic and number of items	Fruit (12) and vegetable (15) intake
Survey Administration	
Year	(1) 1995
Study population and size	(1) n =1,557 English-speaking high school students at urban school in Northeast
Modification	(1) None
Mode	(1) Self-administered
Length of administration	(1) 27 items
Other languages	(1) Not reported
Measurement Properties	
Cognition	(1) Not reported
Reliability (internal consistency, test-retest)	(1) Not evaluated
Validity (convergent validity, criterion validity)	(1) Spearman correlation coefficients comparing the Harvard FFQ and the mean of three 24-hr recalls were as follows: $r_{fruit\ only}$ = 0.33, $r_{fruit\ juice}$ = 0.29, $r_{fruit\ and\ juice}$ = 0.33, $r_{vegetables}$ = 0.32, and $r_{fruit,\ fruit\ juice,\ and\ vegetables}$ = 0.41. FFQ significantly underestimates the proportion of students consuming at least 5 servings of fruit and vegetables.
Sensitivity to change	(1) No intervention
References	(1) Field et al., 1998
Notes	(1) None

Harvard FFQ

Instrument	
Name	Unknown
Type	Questionnaire
Developer	Hearn et al., 1998
Original audience	non-Hispanic black and white parents of children
Topic and number of items	Fruit and vegetable availability (32)
Survey Administration	
Year	(1) 2004 - 2005
Study population and size	(1) n = 228 parents of adolescents aged 10-19 years old enrolled in wellness program
Modification	(1) Used instrument developed by Hearn et al. but limited to foods sold at local supermarkets
Mode	(1) Interviewer-administered
Length of administration	(1) 40 to 60 minutes
Other languages	(1) English only
Measurement Properties	
Cognition	(1) Not reported
Reliability (internal consistency, test-retest)	(1) Not reported
Validity (convergent validity, criterion validity)	(1) Not reported
Sensitivity to change	(1) Home availability of fruits and home availability of vegetables were strongly correlated (r = 0.47). Home availability was significantly correlated with consumption of fruit but not with consumption of vegetables.
References	(1) Befort et al., 2006
Notes	(1) None

Hearn et al

Instrument	
Name	Healthy Eating Self-Monitoring Tool (HEST)
Type	A computer-mediated food record
Developer	Di Noia et al.
Original audience	Black adolescents
Topic and number of items	Food intake
Survey Administration	
Year	(1) Not reported
Study population and size	(1) n = 60 economically disinvited black adolescents aged 11 to 14 years old living in NYC metro area
Modification	(1) New instrument
Mode	(1) Self-administered via computer
Length of administration	(1) Not reported
Other languages	(1) Not reported
Measurement Properties	
Cognition	(1) Focus groups
Reliability (internal consistency, test-retest)	(1) Not evaluated
Validity (convergent validity, criterion validity)	(1) Compared to direct observations reported correlation coefficients were as follows: r_{apple} = 0.61 (p < 0.001), r_{orange} = 0.52 (p < 0.001), r_{grapes} = 0.47 (p < 0.001), $r_{broccoli}$ = 0.41 (p < 0.01), r_{corn} = 0.52 (p < 0.001), $r_{carrots}$ = 0.65 (p < 0.001), $r_{orange\ juice}$ = 0.57 (p < 0.001), $r_{apple\ juice}$ = 0.04 (NS), $r_{100\%\ juice\ blend}$ = 0.24 (NS), and $r_{total\ servings}$ = 0.51 (p < 0.001).
Sensitivity to change	(1) No intervention
References	(1) Di Noia et al., 2007
Notes	(1) None

HEST

Instrument	
Name	Unknown
Type	Questionnaire
Developer	Jamelske et al., University of Wisconsin
Original audience	4th, 7th, and 9th graders
Topic and number of items	Willingness to try (4)
Survey Administration	
Year	(1) 2006
Study population and size	(1) n = 1,127 4th, 7th, and 9th graders from 20 schools
Modification	(1) Original instrument
Mode	(1) Self-administered
Length of administration	(1) Unknown
Other languages	(1) Not reported
Measurement Properties	
Cognition	(1) Not reported
Reliability (internal consistency, test-retest)	(1) Not reported
Validity (convergent validity, criterion validity)	(1) Not reported
Sensitivity to change	(1) Compared to controls, intervention students reported an increased willingness to try new fruits and vegetables at school (p < 0.01).
References	(1) Jamelske et al., 2008
Notes	(1) None

Jamelske et al

Instrument	
Name	Kids Kartoons
Type	FFQ
Developer	Townsend, UC Davis
Original audience	Youth aged 9-12 years old
Topic and number of items	fruit and vegetables (4)
Survey Administration	
Year	(1) 1998-1999
Study population and size	(1) n = 5,111 low-income youth aged 9 to 12 years participating in EFNEP in 10 counties in CA
Modification	(1) New instrument, wordage changed and questions deleted after cognitive analysis
Mode	(1) Interviewer-administered
Length of administration	(1) 8-page booklet, with 2 items per page
Other languages	(1) Not reported
Measurement Properties	
Cognition	(1) Expert reviewed, cognitive interviews (n = 8), field test in 1996 (n = 750), and field test in 1997 (n = 700); readability analysis indicated 3rd grade reading level
Reliability (internal consistency, test-retest)	(1) The instrument is sufficiently sensitive and reliable at r = 0.62 (test-retest).
Validity (convergent validity, criterion validity)	(1) Not evaluated
Sensitivity to change	(1) Treatment participants made significant gains on the post-test compared to the control participants for 3 out of 4 indicators ($p < 0.008$ to $p < 0.0001$).
References	(1) Townsend et al., 2006
Notes	(1) To evaluate the "Eating Right Is Basic for 9-11 year olds" (ERIB); 3rd grade reading level; survey items and responses are presented in article.

Kids Kartoons

Instrument	
Name	Unknown
Type	Questionnaire
Developer	Kratt et al., 2000
Original audience	Fourth graders and their parents
Topic and number of items	Fruit and vegetable availability (31)
Survey Administration	
Year	(1) 1994 (2) Not reported
Study population and size	(1) n = 1,196 fourth graders and their parents residing in AL (2) n = 39 fourth and fifth graders from 2 schools and their parents
Modification	(1) Original instrument (2) The first 5-items of the Kratt et al. instrument
Mode	(1) Self-administered (2) Self-administered
Length of administration	(1) 31 items (2) 5 availability items and 4 accessibility items
Other languages	(1) Not reported (2) Not reported
Measurement Properties	
Cognition	(1) Not reported (2) Not reported
Reliability (internal consistency, test-retest)	(1) Not reported (2) Not reported
Validity (convergent validity, criterion validity)	(1) Not reported (2) Not reported
Sensitivity to change	(1) Not reported (2) Results from the t test indicated significant effects in fruit and vegetable and accessibility ($p < 0.05$). Intervention parents scored 9.78 on the FV availability and accessibility index, while control parents scored 10.65 (lower score indicates greater availability and accessibility).
References	(1) Kratt et al., 2000 (2) Evans et al., 2006
Notes	(1) Results suggest that homes with more FV available had a richer and generally stronger set of motivating factors for parent and child FV consumption than homes with low FV availability. (2) None

Instrument	
Name	Unknown
Type	Questionnaire
Developer	Mississippi Department of Education Child Nutrition Program
Original audience	5th, 8th, and 10th graders
Topic and number of items	Willingness to try (not specified)
Survey Administration	
Year	(1) 2004 - 2005
Study population and size	(1) n = 660 5th, 8th, and 10th graders in 5 schools in MS
Modification	(1) New instrument
Mode	(1) Not reported
Length of administration	(1) Not reported
Other languages	(1) Not reported
Measurement Properties	
Cognition	(1) Not reported
Reliability (internal consistency, test-retest)	(1) Not reported
Validity (convergent validity, criterion validity)	(1) Not reported
Sensitivity to change	(1) The variety of fruits and vegetables ever eaten increased among students in all three grades; however, only 8th grade students had significant increases in their willingness to try new fruits ($p < 0.01$).
References	(1) MMWR, 2006
Notes	(1) None

Instrument	
Name	Multifactor Screener, National Health Interview Survey
Type	Screener
Developer	National Cancer Institute (NCI)
Original audience	Adults
Topic and number of items	Fruit and vegetable intake (3)
Survey Administration	
Year	(1) 1999 (2) 2000
Study population and size	(1) n =Adult men and women in three studies, n = 484, 462, and 416 (2) n ≈ 30,000 adults
Modification	(1) New instrument (2) None
Mode	(1) Not reported (2) CAPI
Length of administration	(1) 17-items total (2) 17-items total
Other languages	(1) Not reported (2) Not reported
Measurement Properties	
Cognition	(1) cognitive testing (2) Not reported
Reliability (internal consistency, test-retest)	(1) Not reported (2) Not reported
Validity (convergent validity, criterion validity)	(1) In the various validation studies, the correlations between screener estimates and estimated true intake were 0.5 - 0.8. In general, the performance of the screener and the full FFQ were similar; estimates of attenuation were lower for screeners than for full FFQs. (2) Not reported
Sensitivity to change	(1) No intervention (2) No intervention
References	(1) Thompson et al., 2004 (2) Thompson et al., 2005
Notes	(1) None. (2) When used in conjunction with external reference data, screener provides reasonable estimates for three dietary factors (FV intake, % energy from fat, and grams of fiber) and suggests relationships between intake and other characteristics that are consistent with other data.

Multifactor Screener

Instrument	
Name Type Developer Original audience Topic and number of items	Nutrition and Physical Activity Self-Assessment for Child Care (NAP SACC) Questionnaire University Of North Carolina - Chapel Hil Child care centers Fruit and vegetable intake (6)
Survey Administration	
Year	(1) 2004 (2) not reported (3) 2001-2002
Study population and size	(1) n = 69 child care centers in NC (2) n = 16 child care centers in NC (3) n = 19 child care centers in NC
Modification	(1) None (2) Not reported (3) Not reported
Mode	(1) Self administered (2) Self administered (3) Self administered
Length of administration	(1) Not reported (2) 26 minutes (29 nutrition and 15 physical activity questions) (3) 44 questions
Other languages	(1) None (2) None (3) None
Measurement Properties	
Cognition	(1) Reviewed by national experts and revised based on reviewer recommendations (2) Not reported (3) Focus groups with parents, interviews with child care center personnel, national expert review
Reliability (internal consistency, test-retest)	(1) Test-retest reliability yielded kappa statistics that ranged from 0.07 to 1.00 across all questions; $\kappa_{fruit\,(not\,juice)}$ = 0.35, with 57% agreement; $\kappa_{100\%\,fruit\,juice}$ = 0.44, with 60% agreement; $\kappa_{vegetables}$ = 0.39, with 65% agreement; and $\kappa_{dark\,green,\,red,\,orange,\,or\,yellow\,vegetables}$ = 0.09, with 50% agreement. (2) Not reported (3) Not performed
Validity (convergent validity, criterion validity)	(1) For criterion validity, kappa statistics across all questions ranged from -0.01 to 0.79, while percent agreement ranged from 0 to 94%. $\kappa_{fruit\,(not\,juice)}$ = 0.31, with 44% agreement; $\kappa_{100\%\,fruit\,juice}$ = 0.23, with 42% agreement; $\kappa_{vegetables}$ = 0.06, with 48% agreement; and $\kappa_{dark\,green,\,red,\,orange,\,or\,yellow\,vegetables}$ = 0.08, with 13% agreement. (2) Not reported (3) Not performed
Sensitivity to change	(1) No intervention (2) The intervention group median self-assessment score and median baseline nutrition score improved after the intervention (p < 0.001). (3) Not reported
References	(1) Benjamin et al., 2007a (2) Benjamin et al., 2007b (3) Ammerman et al., 2007
Notes	(1) Authors recommend a more robust, less subjective measure for researchers seeking outcome measure to assess intervention impact. (2) Directors reported the self-assessment instrument was either fairly easy or very easy to use. (3) None

Instrument	
Name	Food and Nutrition Questionnaire (NATFAN - C7 - Child)
Type	Questionnaire
Developer	Not known
Original audience	Parents of children aged 1 to 5
Topic and number of items	Fruit and vegetable intake (5)
Survey Administration	
Year	(1) No information available on use of instrument
Study population and size	(1) No information available on use of instrument
Modification	(1) No information available on use of instrument
Mode	(1) Self administered
Length of administration	(1) No information available on use of instrument
Other languages	(1) No
Measurement Properties	
Cognition	(1) Not evaluated
Reliability (internal consistency, test-retest)	(1) Not evaluated
Validity (convergent validity, criterion validity)	(1) Not evaluated
Sensitivity to change	(1) No intervention
References	(1) None
Notes	(1) Instrument provided by NYS Dept of Health

Instrument	
Name	National Cancer Institute (NCI) Fruit and Vegetable Screener (FVS) -- 5 factor screener
Type	Screener
Developer	National Cancer Institute (NCI)
Original audience	Adults
Topic and number of items	Fruits and vegetables (9)
Survey Administration	
Year	(1) Not reported (2) Not reported
Study population and size	(1) n = 519 adults in 5 sites in Northeast, Midwest, and South (2) n = 315 adults in 5 sites in Northeast, Midwest, and South
Modification	(1) None (2) None
Mode	(1) Not reported (2) Not reported
Length of administration	(1) 19 items (2) 19 items
Other languages	(1) Not reported (2) Not reported
Measurement Properties	
Cognition	(1) Not reported (2) Not reported
Reliability (internal consistency, test-retest)	(1) Not evaluated (2) Not evaluated
Validity (convergent validity, criterion validity)	(1) Correlations between FVS and 24-hr recall were positively and statistically significant at 2 of 3 sites for men and at all 4 sites for women, ranging from 0.31 ($p = 0.07$) to 0.47 ($p < 0.01$) in men and from 0.43 to 0.63 ($p < 0.01$) for women. (2) The FVS significantly overestimated fruit and vegetable intake compared with 24-hr recall. Deattenuated correlation between FVS and 24-hr recall were 0.40 at baseline and 0.48 at follow-up.
Sensitivity to change	(1) No intervention (2) No intervention
References	(1) Greene et al., 2008 (2) Peterson et al., 2008 See link for more information: http://appliedresearch.cancer.gov/surveys/nhis/5factor/
Notes	(1) None (2) None

Instrument	
Name	NHANES Diet Behavior and Nutrition (DBQ)
Type	Questionnaire
Developer	CDC
Original audience	Adults
Topic and number of items	Fruit and vegetable intake (2)
Survey Administration	
Year	(1) 2001-2002
Study population and size	(1) Question for 60+ years of age only; full survey sample size n ≈ 7,000 all ages
Modification	(1) None
Mode	(1) In-person interview; trained interviewer using CAPI; individual setting at respondent's home.
Length of administration	(1) Not specified
Other languages	(1) Spanish
Measurement Properties	
Cognition	(1) Not reported
Reliability (internal consistency, test-retest)	(1) Some items underwent reliability testing.
Validity (convergent validity, criterion validity)	(1) Not evaluated
Sensitivity to change	(1) Not reported
References	(1) instrument available at: http://www.cdc.gov/nchs/data/nhanes/nhanes_01_02/sp_dbq.pdf
Notes	(1) None

Instrument	
Name	NHANES Flexible Consumer Behavior Survey (FCBS) Module
Type	Questionnaire
Developer	CDC
Original audience	Adults
Topic and number of items	Fruit and vegetable availabilty (2)
Survey Administration	
Year	(1) 2007-2008
Study population and size	(1) National survey
Modification	(1) None
Mode	(1) Interviewer-administered
Length of administration	(1) Not specified
Other languages	(1) Unknown
Measurement Properties	
Cognition	(1) Not specified
Reliability (internal consistency, test-retest)	(1) Not specified
Validity (convergent validity, criterion validity)	(1) Not specified
Sensitivity to change	(1) Not specified
References	(1) Instrument available at: http://www.cdc.gov/nchs/data/nhanes/nhanes_07_08/cbq07_08_eng.pdf
Notes	(1) None

NHANES FCBS module

Instrument	
Name	NHANES FFQ (formerly called the Food Propensity Questionnaire)
Type	FFQ
Developer	National Cancer Institute (NCI)
Original audience	Individuals aged 2 years and older (parents report childrens' consumption)
Topic and number of items	Fruit and vegetable intake (56)
Survey Administration	
Year	(1) 2003-2004
Study population and size	(1) n = 8,847 individuals aged 2 years and older
Modification	(1) Article describes the development of the Food Propensity Questionnaire (now called the NHANES Food Frequency Questionnaire), which was used for the 2003-2006 NHANES. Some portion size questions were removed and some changes and modifications were made to the original Diet History Questionnaire (DHQ).
Mode	(1) Mail, self-administered
Length of administration	(1) Not specified, total of 139 items
Other languages	(1) Spanish
Measurement Properties	
Cognition	(1) Not reported
Reliability (internal consistency, test-retest)	(1) Instrument was validated for use as a covariate in usual food intake.
Validity (convergent validity, criterion validity)	(1) Not evaluated
Sensitivity to change	(1) No intervention
References	(1) Subar et al., 2006
Notes	(1) Concludes that respondents with low literacy will find it difficult to complete the FPQ unassisted. Available at: http://riskfactor.cancer.gov/diet/FFQ.English.June0304.pdf

NHANES FFQ

Instrument	
Name	PACE+
Type	FFQ
Developer	Prochaska and Sallis, San Diego State University
Original audience	Adolescents
Topic and number of items	Fruit and vegetable intake (2)
Survey Administration	
Year	(1) Not reported
Study population and size	(1) n = 138 middle school children in San Diego
Modification	(1) New instrument
Mode	(1) Self-administered via computer
Length of administration	(1) 2 items
Other languages	(1) Not reported
Measurement Properties	
Cognition	(1) pilot testing
Reliability (internal consistency, test-retest)	(1) Overall test-retest ICC between paper and computer versions was 0.68 (ranging from 0.80 for a same day retest and 0.47 for a retest up to 1 month). The overall kappa (56%) was moderate, ranging from 59% (same day) to 44% (up to 1 month).
Validity (convergent validity, criterion validity)	(1) Compared with food record, $r_{fruit\ and\ vegetable\ servings}$ = 0.23 (p < 0.008).
Sensitivity to change	(1) No intervention
References	(1) Prochaska and Sallis, 2004
Notes	(1) Study findings conclude that the measure is recommended, although improvements in classification are still needed.

Instrument	
Name	Not specified
Type	Psychosocial Questionnaire
Developer	Not specified
Original audience	Fifth grade students
Topic and number of items	Fruit (9) and vegetable (10) self-efficacy
Survey Administration	
Year	(1) 1998 - 1999
Study population and size	(1) n = 262 fifth graders in one middle school in Houston, TX
Modification	(1) Adapted from existing self-efficacy and social norm measures and questionnaires
Mode	(1) self-administered
Length of administration	(1) 27-item questionnaire
Other languages	(1) Not reported
Measurement Properties	
Cognition	(1) Flesch/Kincaid readability score was 6.4.
Reliability (internal consistency, test-retest)	(1) Cronbach's alphas were 0.90 for fruit self-efficacy, 0.88 for vegetable self-efficacy. Pearson test-retest coefficients were 0.72 for fruit self-efficacy and 0.77 for vegetable self-efficacy.
Validity (convergent validity, criterion validity)	(1) Comparing the questionnaire and food records, the fruit self-efficacy scale was positively correlated with fruit (r = 0.19, p < 0.01) and low-fat vegetables (r = 0.12, p < 0.05) intakes. The vegetable self-efficacy scale was positively correlated with low-fat vegetables (r = 0.18, p < 0.01) and fruit (r = 0.12, p < 0.05) intakes and negatively correlated to high-fat vegetables intake (r = 0.13, p < 0.05)
Sensitivity to change	(1) No intervention
References	(1) Thompson et al., 2007
Notes	(1) Questionnaire measures self-efficacy and social norms for consuming fruit and vegetable consumption during school lunch; instrument is available in referenced article.

Thompson et al

Instrument	
Name	School-Based Nutrition Monitoring (SBNM) Questionnaire (2 versions-elementary and secondary level)
Type	FFQ
Developer	University of Texas Health Center at Tyler
Original audience	Elementary and secondary school children
Topic and number of items	Fruit (2) and vegetable (1) intake
Survey Administration	
Year	(1) Not reported (2) 1996
Study population and size	(1) n = 254 eighth graders enrolled in 8 secondary schools in central TX (2) n = 322 fourth graders aged 9 to 12 years old who were enrolled in 3 elementary schools in 2 area school districts
Modification	(1) New instrument (2) Questions were modified for each grade level, considering reading level and cognitive ability.
Mode	(1) Self-administered (2) Self-administered in group setting
Length of administration	(1) 30 to 45 minutes (2) Not reported
Other languages	(1) Not reported (2) Not reported
Measurement Properties	
Cognition	(1) Expert panel review (content validity), focus groups, and cognitive interviews. The readability of questionnaire, tested using the Dale-Chall formula, was calculated to be 4.98, approximately the reading level of a 9 to 10 years old. (2) Expert panel review (content validity), focus groups, and cognitive interviews. The readability of questionnaire, tested using the Dale-Chall formula, was calculated to be 5.41, approximately the reading level of child aged 10 to 11.
Reliability (internal consistency, test-retest)	(1) For the overall instrument, Spearman rank order (test-retest) correlations were greater than or equal to 0.70 for the majority of questions, with r_{fruit} = 0.78, $r_{fruit\ juice}$ = 0.69, and $r_{vegetables}$ = 0.79. Additionally, 39 of the 43 questions had moderate to superior reproducibility, based on guidelines for rating κ coefficients, with $κ_{fruit}$ = 0.60, $κ_{fruit\ juice}$ = 0.61, and $κ_{vegetables}$ = 0.65, with 70.3%, 73.3%, and 74.3% agreement respectively. (2) The reproducibility of question items varied, depending on the type of food surveyed. Spearman rank order (test-retest) correlations were 0.87 for fruit juice, 0.79 for fruit, and 0.73 for vegetables. κ statistics were 0.71 for fruit juice, 0.61 for fruit, and 0.60 for vegetables, with 81%, 73%, and 72% agreement respectively.
Validity (convergent validity, criterion validity)	(1) Not evaluated (2) Correlation coefficients for agreement with single 24-hour recall ranged from 0.32 to 0.68, with r_{fruit} = 0.53, $r_{fruit\ juice}$ = 0.40, and $r_{vegetables}$ = 0.57. κ statistics were 0.33 for fruit juice, 0.33 for fruit, and 0.32 for vegetables, with 54%, 55%, and 51% agreement respectively.
Sensitivity to change	(1) No intervention (2) No intervention
References	(1) Penkilo et al., 2008 (2) Hoelscher et al., 2003
Notes	(1) None (2) None

Instrument	
Name	Self-Efficacy for Eating Behavior Scale
Type	Questionnaire
Developer	Sallis et al., 1988
Original audience	Unknown
Topic and number of items	Fruit and vegetable self-efficacy (30 item scale includes 3 factors: preventing relapse, target behaviors, and behavioral skills)
Survey Administration	
Year	(1) Not reported
Study population and size	(1) n = 39 fourth and fifth graders from 2 schools and their parents
Modification	(1) Developed by Sallis et al., 1988
Mode	(1) Self-administered
Length of administration	(1) 30 items
Other languages	(1) Not reported
Measurement Properties	
Cognition	(1) Not reported
Reliability (internal consistency, test-retest)	(1) Modest test-retest reliability ranging from 0.43 to 0.64 and acceptable internal consistency ranging from 0.85 to 0.93 reported by Sallis.
Validity (convergent validity, criterion validity)	(1) Not reported
Sensitivity to change	(1) Fruit and vegetable self-efficacy did not improve following the intervention (p = 0.619)
References	(1) Evans et al., 2006
Notes	(1) None

Instrument	
Name	St. Louis University for Kids Food Frequency Questionnaire (SLU4Kids FFQ)
Type	FFQ
Developer	Linneman et al., St. Louis University
Original audience	Parents aged 20-59 years old and young children aged 2 to 5 years old
Topic and number of items	Fruit and vegetable intake (29)
Survey Administration	
Year	(1) Not reported (2) Not reported (3) Not reported
Study population and size	(1) n = 61 parent-child pairs from MO; children aged 2 to 5 years old (2) n = 127 parents of preschoolers aged 2 to 5 years old in 8 counties in SE MO (3) n = 1,306 parents of preschoolers
Modification	(1) New instrument, adapted from another FFQ (2) None (3) Not reported
Mode	(1) Interviewer-administered via telephone (2) Interviewer-administered via telephone (3) Not reported
Length of administration	(1) 29-item FFQ - 15 minutes (2) 29 items (3) 27 items
Other languages	(1) Not reported (2) Not reported (3) Not reported
Measurement Properties	
Cognition	(1) Not reported (2) Not reported (3) Not reported
Reliability (internal consistency, test-retest)	(1) Not reported (2) The test-retest reliability for the summed measures of fruit and vegetable intake showed excellent reliability, with an intraclass correlation coefficient (ICC) = 0.82. The test-retest reliability for the measures of determining factors also showed good reliability, with a 76% agreement. (3) Not reported
Validity (convergent validity, criterion validity)	(1) Compared to direct observations, parents accurately reported their children's intake on most fruits and vegetables (kappa = 0.59 - 0.61). Parents were the least accurate in recalling the consumption of raisins from oatmeal cookies (kappa = 0.05) and 100% fruit juice (kappa = 0.17) (2) Not reported (3) Not reported
Sensitivity to change	(1) No intervention (2) Not reported (3) When compared to control, parents significantly improved intake of fruit (p = 0.04) and fruit and vegetables (p = 0.05) following intervention
References	(1) Linneman et al., 2004 (2) Nanney et al., 2007 (3) Haire-Joshu et al., 2008
Notes	(1) Results suggest that parents are accurate reporters of fruit and vegetable intake as well as the intake of their 2 to 5 year old children. (2) None (3) None

SLU4 Kids FFQ

Instrument	
Name	School Physical Activity and Nutrition Survey (SPANS)--elementary-level and secondary-level questionnaires
Type	FFQ
Developer	University of Texas, Dell Center for Healthy Living
Original audience	Elementary school children
Topic and number of items	Fruit and vegetables (3)
Survey Administration	
Year	(1) 2004 (2) 2000-2002
Study population and size	(1) n = 110 fourth-graders in 5 elementary schools in IN (2) n_1 = 6,235 fourth-graders, n_2 = 5,362 eighth-graders, and n_3 = 3,576 eleventh-graders from TX
Modification	(1) None (2) None
Mode	(1) Interviewer-administered (2) Not reported
Length of administration	(1) 54 items, 10 pages total (2) Not reported
Other languages	(1) Not reported (2) Not reported
Measurement Properties	
Cognition	(1) Reading level appropriate for a 9 years old according to Dale-Chall formula. (2) Not reported
Reliability (internal consistency, test-retest)	(1) Not evaluated (2) Not evaluated
Validity (convergent validity, criterion validity)	(1) Compared to 24-hr recall, the Spearman rank correlations were as follows: $r_{100\%fruit\ juice}$ = 0.47, r_{fruit} = 0.40, and $r_{vegetables}$ = 0.34 (2) Not evaluated
Sensitivity to change	(1) No intervention (2) No intervention, but tatistically significant differences in food choice behaviors were evident among 4th-, 8th-, and 11th-grade students using SPANS.
References	(1) Thiagarajah et al., 2008 (2) Perez et al., 2007
Notes	(1) None (2) None

Instrument	
Name	Yesterday's Food Choices (YFC)
Type	Brief food selection instrument
Developer	University of New Mexico
Original audience	Children
Topic and number of items	Fruits and vegetables intake (unknown)
Survey Administration	
Year	(1) 1992
Study population and size	(1) n = 120 American Indian children in fifth and seventh grade classes in 9 schools in the NM
Modification	(1) New instrument based on the Eating Behavior Checklist (Kristal et al., 1990)
Mode	(1) Self-administered, with questions read to students
Length of administration	(1) 33 items
Other languages	(1) Not reported
Measurement Properties	
Cognition	(1) Reviewed by expert panel and pilot-tested
Reliability (internal consistency, test-retest)	(1) Not evaluated
Validity (convergent validity, criterion validity)	(1) For most items, the percentage reporting consumption on the YFC was greater than on the 24-hr recall. Compared to 24-hr recall, kstatistic was 0.29 for fresh fruit, 0.28 for cooked vegetables, 0.18 for raw (crunchy) vegetables.
Sensitivity to change	(1) Not evaluated
References	(1) Koehler et al., 2000
Notes	(1) None

Instrument	
Name	Youth/Adolescent Food Frequency Questionnaire (YAQ)
Type	FFQ
Developer	Harvard
Original audience	Youth aged 9 to 19 years old
Topic and number of items	Fruit and vegetable intake (not specified)
Survey Administration	
Year	(1) 1993-1994 (2) Not reported (3) 1992
Study population and size	(1) n = 261 youths aged 9-18 years old (2) n = 89 African-American and Hispanic seventh and eighth grade students from predominantly low-income schools in Houston, TX (3) n = 179 children aged 9 to 18 years old
Modification	(1) The number of foods changed from 151 to 131 with some foods being added, deleted, and combined with other food items on the questionnaire. (2) None (3) None
Mode	(1) Telephone (2) Interviewer-administered (3) Self-administered
Length of administration	(1) 131 items (2) 152 items (3) 151 items
Other languages	(1) Not reported (2) Not reported (3) Not reported
Measurement Properties	
Cognition	(1) Not reported (2) Not reported (3) Pilot tested
Reliability (internal consistency, test-retest)	(1) Not evaluated (2) Reliability coefficients ranged from 0.37 to 0.67, with a total fruit, fruit juice, and vegetable coefficient of 0.67 (p < 0.001) (3) Intake of fruit and vegetables were statistically lower in the second questionnaire compared with the first questionnaire (YAQ administered twice). The mean Pearson coefficient between the 2 questionnaires was 0.49. The Pearson coefficient for food groups between the 2 questionnaires was the following: 0.48 for fruit and vegetables, 0.49 for fruit, and 0.48 for vegetables.
Validity (convergent validity, criterion validity)	(1) After correction for within-person error assessed by recalls, the average Pearson correlation coefficient was 0.54 for three 24-hr recalls and 2 YAQs. (2) Validity coefficients between YAQ and food records were low (r = -0.06 for high-fat vegetables to 0.38 for regular vegetables for Hispanic students and 0.002 for fruit to 0.25 for fruit juice for African-American students). (3) When compared to NHANES II data, the mean absolute nutrient intakes reported in the YAQ were generally higher than those of NHANES II.
Sensitivity to change	(1) No intervention (2) No intervention (3) No intervention
References	(1) Rockett et al., 1997 (2) Cullen and Zakeri, 2004 (3) Rockett et al., 1995
Notes	(1) A simple self-administered questionnaire completed by older children and adolescents can provide nutritional information about this age group. (2) Study concluded that the YAQ may not be a valid measure of consumption for seventh and eighth grade low-income African and Hispanic youth. (3) None

Instrument	
Name	Youth Risk Behavior Surveillance System (YRBSS) questionnaire
Type	Questionnaire
Developer	CDC
Original audience	Youth
Topic and number of items	Fruit and vegetable intake (4)
Survey Administration	
Year	(1) 1995
Study population and size	(1) n =1,557 high school students
Modification	(1) None
Mode	(1) Self-administered
Length of administration	(1) 4 items
Other languages	(1) No
Measurement Properties	
Cognition	(1) Not reported
Reliability (internal consistency, test-retest)	(1) Not reported
Validity (convergent validity, criterion validity)	(1) Compared to 24-hour recalls, YRBSS significantly underestimated the proportion of students consuming at least 5 servings of fruit and vegetables. Spearman correlation coefficients were as follows: $r_{fruit\ only} = 0.17$, $r_{fruit\ juice} = 0.07$, $r_{fruit\ and\ juice} = 0.21$, $r_{vegetables} = 0.24$, and $r_{fruit,\ fruit\ juice,\ and\ vegetables} = 0.28$.
Sensitivity to change	(1) Not reported
References	(1) Field et al., 1998
Notes	(1) None

Instrument	
Name	"107-item FFQ"
Type	FFQ
Developer	Unknown
Original audience	Adults
Topic and number of items	Dairy intake (number of items not reported)
Survey Administration	
Year	(1) Not reported
Study population and size	(1) n = 77 low-income Hispanic, African-American and white mothers of children aged 1 to 3 years old living in the Southwestern United States.
Modification	(1) FFQ derived from an adult version that was previously validated in a sample of low-income Hispanic, African-American, and white mothers from same area, which was derived from the Health Habits and History Questionnaire but was extensively modified. The adult FFQ was modified to include age appropriate food items and portion sizes.
Mode	(1) Administered by dietitian
Length of administration	(1) 107-item FFQ, 9 food categories
Other languages	(1) Not reported
Measurement Properties	
Cognition	(1) Expert panel review of questions.
Reliability (internal consistency, test-retest)	(1) Spearman test-retest correlations were significant for all 9 food categories; $r_{dairy} = 0.63$ (p < 0.01).
Validity (convergent validity, criterion validity)	(1) Spearman correlations between FFQ and diet records was = 0.51 for dairy (p < 0.001).
Sensitivity to change	(1) No intervention
References	(1) Klohe et al., 2005
Notes	(1) The FFQ yielded excellent reliability and acceptable validity and can be used to assess food choices in a triethnic sample of low-income children aged 1 to 3 years old.

Instrument	
Name	1% or Less Campaign Pre/Post Survey
Type	Questionnaire
Developer	Reger et al., West Virginia University
Original audience	Adults
Topic and number of items	Milk intake and other milk related questions (23)
Survey Administration	
Year	(1) 1995 (2) 1996 (3) 1997 (4) 2004
Study population and size	(1) n = 505 adults living in 3 cities in WV (2) n = 543 adults living in 2 cities in WV (3) n = 826 living in 3 rural cities in WV (4) n = 600 adults living in HI
Modification	(1) New instrument (2) Increased the number of questions in pre-survey from 21 to 35 and increased number of questions in post-survey from 23 to 29. (3) Used survey instrument similar to those used above. (4) Used questions from Reger et al., 1998.
Mode	(1) Interviewer-administered via telephone (2) Interviewer-administered via telephone (3) Interviewer-administered via telephone (4) Interviewer-administered via telephone
Length of administration	(1) 10 minutes (2) 10 minutes (3) 5 to 8 minutes (4) 30 minutes
Other languages	(1) No (2) No (3) No (4) No
Measurement Properties	
Cognition	(1) Not reported (2) Not reported (3) Not reported (4) Not reported
Reliability (internal consistency, test-retest)	(1) Not evaluated (2) Not evaluated (3) Not evaluated (4) Internal consistency for attitude questions (4) was α = 0.64 and social norms questions (3) was α = 0.54.
Validity (convergent validity, criterion validity)	(1) Not evaluated (2) Not evaluated (3) Not evaluated (4) Not evaluated
Sensitivity to change	(1) 38.2% of intervention respondents who reported being whole or 2% milk drinkers at pre-survey reported drinking low-fat milk at post-survey compared to 10.2% of control respondents ($p < 0.00001$). 48% switched from 2% milk to low-fat milk, compared with 10.5% in control group ($p < 0.00001$). 36.4% of whole milk drinkers reported switching to a milk with lower fat content, compared with 15.6% in the control group ($p < 0.05$). (2) 34.1% of high-fat milk drinkers in intervention group switched to low-fat milk, compared with 3.6% in control group ($p < 0.0001$). 43.6% switched from 2% milk to low-fat milk, compared with 3.2% in control group ($p < 0.0001$). (3) 19.6% of high-fat milk drinkers in intervention group switched to low-fat milk, compared with 6.8% in control group ($p < 0.0001$). (4) Attitude significantly increased from M = 13.99 to M = 14.45 ($p < 0.01$).
References	(1) Reger et al., 1998 (2) Reger et al., 1999 (3) Reger et al., 2000 (4) Maddock et al., 2007
Notes	(1) None (2) Although survey was not validated, changes from high-fat to low-fat were assessed by supermarket milk sales. (3) None (4) None

Instrument	
Name	Block Kids Questionnaire
Type	FFQ
Developer	Block Dietary Data Systems, Berkeley, CA
Original audience	Children aged 8 to 13 years old
Topic and number of items	Milk and dairy products intake (3)
Survey Administration	
Year	(1) 2004
Study population and size	(1) n = 83 youth aged 10-17 years old
Modification	(1) None
Mode	(1) Self-administered, with questions read to participants
Length of administration	(1) 72-item FFQ (all foods)
Other languages	(1) Not reported
Measurement Properties	
Cognition	(1) Not reported
Reliability (internal consistency, test-retest)	(1) Test-retest reliability coefficient was 0.43 for milk, yogurt, and cheese.
Validity (convergent validity, criterion validity)	(1) Compared to 24-hr recall, mean daily consumption values were higher, with Pearson adjusted deattenuated correlations equal to 0.74 for milk, yogurt, and cheese (p < 0.01).
Sensitivity to change	(1) No intervention
References	(1) Cullen et al., 2008
Notes	(1) Results suggest that the BKQ has validity for some nutrients but not most food groups for adolescents older than 12 years old.

Instrument	
Name	Not specified, reported in Campbell et al
Type	Questionnaire
Developer	Not specified
Original audience	Adults
Topic and number of items	Low-fat dairy self-efficacy (1)
Survey Administration	
Year	(1) Not reported
Study population and size	(1) n = 307 adult women receiving WIC benefits in NC
Modification	(1) modified from 25-items to 26-items
Mode	(1) Self-administered
Length of administration	(1) 15 minutes
Other languages	(1) NA
Measurement Properties	
Cognition	(1) Not reported
Reliability (internal consistency, test-retest)	(1) For the 5-item self-efficacy scale, α = 0.80. Cronbach alpha coefficients showed excellent reliability of low-fat knowledge items (α = 0.94).
Validity (convergent validity, criterion validity)	(1) Not reported
Sensitivity to change	(1) The intervention groups increased their overall self-efficacy immediately after post-intervention. At 1 to 2-month follow-up, self-efficacy for consuming low-fat foods was still significantly greater among intervention group compared with control. There was no intervention effect on movement through stages of change between baseline and follow-up.
References	(1) Campbell et al., 2004.
Notes	(1) Instrument used to evaluate CD-ROM program

Campbell et al.

Instrument	
Name	ERS Dietary Behavior Questionnaire
Type	Questionnaire
Developer	USDA, ERS
Original audience	18 - 60 years old women participating in FSP
Topic and number of items	Milk intake (5) and availability (1)
Survey Administration	
Year	(1) May - June 2006 (2) August - September 2006
Study population and size	(1) n = 34 female adults participating in FSP in PA, SC, and CA (2) n = 453 FSP 18 - 60 years old women participating in FSP in PA, SC, WI, AZ
Modification	(1) Questions selected from ERS Prototype Notebook (2) Modifications made to some questions based on cognitive interviews.
Mode	(1) 3 waves of in-person cognitive interviews (2) Field test: interviewer administered via telephone
Length of administration	(1) 14.5 minutes/96 items (total) (2) 22.3 minutes/83 items (total)
Other languages	(1) No (2) No
Measurement Properties	
Cognition	(1) 40 cognitive interviews, 34 respondents (2) Analysis of 453 telephone interviews: interviewer observation; response evaluation and statistics on % with refused and "don't know" responses; internal consistency; associations between diet, food availability, and BMI; factor analysis; and administration times. In addition, behavioral coding of the number and types of problems for 62 telephone interviews--readability understandability, and comprehension.
Reliability (internal consistency, test-retest)	(1) Not evaluated (2) Based on factor analysis, Kaiser's overall MSA is 0.73, indicating that the partial correlations are relatively small to the original correlations. Two factors explain 86% of the common variance according to a principle factor analysis (see pages 29 to 31 for additional information).
Validity (convergent validity, criterion validity)	(1) Not evaluated (2) Not evaluated
Sensitivity to change	(1) No intervention (2) No intervention
References	(1) USDA, ERS, 2006. (2) USDA, ERS, 2007.
Notes	(1) None (2) None

Instrument	
Name	Test Diet History Questionnaire (Test-DHQ)
Type	FFQ
Developer	National Cancer Institute
Original audience	Adults
Topic and number of items	Milk intake (9)
Survey Administration	
Year	(1) 1996
Study population and size	(1) 623 individuals, aged 25 to 70 years, from metro Washington D.C.
Modification	(1) Study tested whether changing a FFQ on the basis of cognitive theory and testing results in greater validity. Study explored four design issues, including asking about differing forms of food as multiple separate questions on the NCI-Block Health Habits and History Questionnaire (HHHQ) vs. a nesting approach on the test-DHQ.
Mode	(1) Mail
Length of administration	(1) Not specified
Other languages	(1) No
Measurement Properties	
Cognition	(1) Not evaluated
Reliability (internal consistency, test-retest)	(1) Not evaluated
Validity (convergent validity, criterion validity)	(1) Spearman correlation was 0.74 for Daily Food Report and HHHQ--used multiple separate questions to assess milk consumption. Spearman correlation was 0.87 for Daily Food Report and test-DHQ--used nesting approach to assess milk consumption.
Sensitivity to change	(1) No intervention
References	(1) Thompson et al., 2002
Notes	(1) Study concluded that the nesting approach was effective in enhancing the accuracy of reported consumption of such main foods as bread, milk, cold cereals, and soups. For participants who reported consuming several subordinate forms of a main food (e.g., whole vs. 1% milk) accuracy with the nesting approach was generally equal or superior to that with the HHHQ's separated foods approach.

Instrument	
Name	Eating Habits Questionnaire (EHQ)
Type	FFQ
Developer	Unknown
Original audience	Middle school students
Topic and number of items	Dairy intake (9)
Survey Administration	
Year	(1) 1994
Study population and size	(1) n = 446 sixth and eighth graders from 3 middle schools in NC
Modification	(1) Adapted from the Health Habits Questionnaire from the Bogalusa Heart Study
Mode	(1) Administered by research assistant in groups/classrooms
Length of administration	(1) 83 food item questionnaire
Other languages	(1) Not reported
Measurement Properties	
Cognition	(1) Not reported
Reliability (internal consistency, test-retest)	(1) Cronbach α_{dairy} = 0.74 and Cronbach $\alpha_{butter,margarine}$ = 0.79. Test-retest correlations for the 48-hr retest was 0.46 for dairy and 0.57 for butter, margarine.
Validity (convergent validity, criterion validity)	(1) The percentage of perfect agreement for the dairy category by two methods (FFQ and 24-hr recall) was 79.2%.
Sensitivity to change	(1) No intervention
References	(1) Speck et al., 2001
Notes	

Instrument	
Name	Food Behavior Checklist (FBC)
Type	Checklist
Developer	Townsend, UC Davis
Original audience	Low-income women
Topic and number of items	Milk intake (2)
Survey Administration	
Year	(1) Not reported (2) 1997
Study population and size	(1) n = 100 low-income women participating in FSNEP in 9 CA counties (2) n = 100 low-income women participating in FSNEP in 8 CA counties
Modification	(1) Reduced 22-item FBC to 16-item FBC (2) Reduced original 39-item FBC to 22-item FBC
Mode	(1) Self-administered in group setting (2) Interviewer-administered in group setting
Length of administration	(1) 10-20 minutes (2) 10-15 minutes
Other languages	(1) Not reported (2) Not reported
Measurement Properties	
Cognition	(1) Pilot study. Reading level of less than 4th grade. (2) Focus groups, cognitive interviews, and pilot study
Reliability (internal consistency, test-retest)	(1) For milk subscale, $\alpha = 0.47$ ($p < 0.01$). (2) The internal consistency of the dairy items was ($r = 0.67$).
Validity (convergent validity, criterion validity)	(1) Compared to 24-hr recalls, $r_{dairy} = 0.33$ ($p < 0.0001$). (2) Correlations between dietary recalls and dairy items were all significant, with r ranging from 0.21 to 0.32.
Sensitivity to change	(1) Demonstrated sensitivity to change for items expected to change. (2) No intervention
References	(1) Townsend et al., 2003 (2) Murphy SP et al., 2001
Notes	(1) 16-item FBC is easy to administer to a client group, has a 4th grade reading level, and has low respondent burden as well as meeting requirements for validity, reliability, and sensitivity to change. (2) None

Instrument	
Name	The Meats, Eggs, Dairy, Fried foods, Fat in baked goods, Convenience foods, Fats added at the table, and Snacks (MEDFICTS) Questionnaire
Type	Questionnaire
Developer	Not specified
Original audience	Adults
Topic and number of items	Dairy intake (6)
Survey Administration	
Year	(1) 2003-2004 (2) 1998-1999
Study population and size	(1) n = 184 African-American women (2) n = 164 active military personnel aged 39-45 years old
Modification	(1) Not reported (2) Not reported
Mode	(1) Interviewer-administered via telephone (2) Self-administered
Length of administration	(1) Not reported (2) 3-5 minutes
Other languages	(1) Not reported (2) Not reported
Measurement Properties	
Cognition	(1) Not reported (2) Not reported
Reliability (internal consistency, test-retest)	(1) Not reported (2) Not reported
Validity (convergent validity, criterion validity)	(1) The correlation of MEDIFICTS and the AZ FFQ raw scores was significant but weak. The dichotomized MEDIFICTS was a significantly accurate predictor of 30% or greater dietary fat consumption. The sensitivity of MEDIFICTS to detect those consuming 30% fat or greater was 57.3%. The research noted that MEDIFICTS performed best in predicting high fat consumption (as assessed by the AZ FFQ), which is consistent with a previous study. (2) There were significant correlations between MEDIFICTS and Block FFQ for the percentage of fat intake (r = 0.52, p < 0.0001), saturated fat (r = 0.52, p <0.0001), and cholesterol (r = 0.55, p < 0.0001). Subjects within the different diet categories did significantly differ with respect to fat intake.
Sensitivity to change	(1) No intervention (2) Not reported
References	(1) Teal et al., 2007 (2) Taylor et al., 2003
Notes	(1) MEDIFICTS was originally developed as a rapid dietary fat screener for assessing adherence to the National Cholesterol Education Program Step 1 and Step 2 diets. (2) None

MEDIFICTS

Instrument	
Name	Multifactor Screener, National Health Interview Survey
Type	Screener
Developer	National Cancer Institute (NCI)
Original audience	Adults
Topic and number of items	Milk intake (3)
Survey Administration	
Year	(1) 1999 (2) 2000
Study population and size	(1) n =Adult men and women in three studies, n = 484, 462, and 416 (2) n ≈ 30,000 adults
Modification	(1) New instrument (2) None
Mode	(1) Not reported (2) CAPI
Length of administration	(1) 17-items total (2) 17-items total
Other languages	(1) Not reported (2) Not reported
Measurement Properties	
Cognition	(1) cognitive testing (2) Not reported
Reliability (internal consistency, test-retest)	(1) Not reported (2) Not reported
Validity (convergent validity, criterion validity)	(1) In the various validation studies, the correlations between screener estimates and estimated true intake were 0.5 - 0.8. In general, the performance of the screener and the full FFQ were similar; estimates of attenuation were lower for screeners than for full FFQs. (2) Not reported
Sensitivity to change	(1) No intervention (2) No intervention
References	(1) Thompson et al., 2004 (2) Thompson et al., 2005
Notes	(1) Instrument available in article. (2) When used in conjunction with external reference data, screener provides reasonable estimates for three dietary factors (FV intake, % energy from fat, and grams of fiber) and suggests relationships between intake and other characteristics that are consistent with other data.

Multifactor Screener

Instrument	
Name	Nutrition and Physical Activity Self-Assessment for Child Care (NAP SACC)
Type	Questionnaire
Developer	University Of North Carolina - Chapel Hill
Original audience	Child care centers
Topic and number of items	Milk intake (1)
Survey Administration	
Year	(1) 2004 (2) Not reported (3) 2001-2002
Study population and size	(1) n = 69 child care centers in NC (2) n = 16 child care centers in NC (3) n = 19 child care centers in NC
Modification	(1) None (2) Not reported (3) Not reported
Mode	(1) Self administered (2) Self administered (3) Self administered
Length of administration	(1) Not reported (2) 26 minutes (29 nutrition and 15 physical activity questions) (3) 44 questions
Other languages	(1) None (2) None (3) None
Measurement Properties	
Cognition	(1) Reviewed by national experts and revised based on reviewer recommendations (2) Not reported (3) Focus groups with parents, interviews with child care center personnel, national expert review
Reliability (internal consistency, test-retest)	(1) Test-retest reliability yielded kappa statistics that ranged from 0.07 to 1.00 across all questions. $\kappa_{type\ of\ milk}$ = 0.75, with 83% agreement (2) Not reported (3) Not performed
Validity (convergent validity, criterion validity)	(1) For criterion validity, Kappa statistics across all questions ranged from -0.01 to 0.79, while percent agreement ranged from 0 to 94%. $\kappa_{type\ of\ milk}$ = 0.73, with 82% agreement (2) Not reported (3) Not performed
Sensitivity to change	(1) Not reported (2) The intervention group median self-assessment score and median baseline nutrition score improved after the intervention (p < 0.001). (3) Not reported
References	(1) Benjamin et al., 2007a (2) Benjamin et al., 2007b (3) Ammerman et al., 2007
Notes	(1) None (2) Directors reported the self-assessment instrument was either fairly easy or very easy to use. (3) None

Instrument	
Name	Food and Nutrition Questionnaire (NATFAN - C7 - Child)
Type	Questionnaire
Developer	Not known
Original audience	Parents of children aged 1 to 5
Topic and number of items	Milk intake (3) and willingness to serve reduced or low fat milk (3)
Survey Administration	
Year	(1) No information available on use of instrument
Study population and size	(1) No information available on use of instrument
Modification	(1) No information available on use of instrument
Mode	(1) Self administered
Length of administration	(1) No information available on use of instrument
Other languages	(1) No
Measurement Properties	
Cognition	(1) Not evaluated
Reliability (internal consistency, test-retest)	(1) Not evaluated
Validity (convergent validity, criterion validity)	(1) Not evaluated
Sensitivity to change	(1) No intervention
References	(1) None
Notes	(1) Instrument provided by NYS Dept of Health

Instrument	
Name	NHANES Diet Behavior and Nutrition (DBQ)
Type	Questionnaire
Developer	CDC
Original audience	Adults
Topic and number of items	Milk intake (7)
Survey Administration	
Year	(1) 2005-2006, 2001-2002
Study population and size	(1) Questions for 1+ years of age
Modification	(1) None
Mode	(1) Interviewer-administered
Length of administration	(1) Not specified
Other languages	(1) Unknown
Measurement Properties	
Cognition	(1) Not available
Reliability (internal consistency, test-retest)	(1) Not available
Validity (convergent validity, criterion validity)	(1) Not available
Sensitivity to change	(1) Not available
References	(1) Instrument available at http://www.cdc.gov/nchs/nhanes.htm
Notes	(1) None

Instrument	
Name	NHANES Flexible Consumer Behavior Survey (FCBS) Module
Type	Questionnaire
Developer	CDC
Original audience	Adults
Topic and number of items	Milk availabilty (1)
Survey Administration	
Year	(1) 2007-2008
Study population and size	(1) Question for 1+ years
Modification	(1) None
Mode	(1) Interviewer-administered
Length of administration	(1) Not specified
Other languages	(1) Unknown
Measurement Properties	
Cognition	(1) Not available
Reliability (internal consistency, test-retest)	(1) Not available
Validity (convergent validity, criterion validity)	(1) Not available
Sensitivity to change	(1) Not available
References	(1) instrument available at http://www.cdc.gov/nchs/nhanes.htm
Notes	(1) None

Instrument	
Name	Not known, reported in Patterson et al., 1997
Type	Questionnaire
Developer	Not specified
Original audience	Adults
Topic and number of items	Milk availability (2)
Survey Administration	
Year	(1) 1992
Study population and size	(1) n = 1,002 adults residing in Washington State
Modification	(1) Not specified
Mode	(1) Interviewer administered by telephone
Length of administration	(1) Not specified
Other languages	(1) None
Measurement Properties	
Cognition	(1) Not reported
Reliability (internal consistency, test-retest)	(1) Not reported
Validity (convergent validity, criterion validity)	(1) Not reported
Sensitivity to change	(1) Not evaluated
References	(1) Patterson, 1997
Notes	(1) Authors conclude that household food inventories are a practical and valid approach to monitoring dietary behaviors in community-based studies.

Patterson et al.

Instrument	
Name	School-Based Nutrition Monitoring (SBNM) Questionnaire (2 versions-elementary and secondary level)
Type	FFQ
Developer	University of Texas Health Center at Tyler
Original audience	Elementary and secondary school children
Topic and number of items	Milk (1) intake
Survey Administration	
Year	(1) Not reported (2) 1996
Study population and size	(1) n = 254 eighth graders enrolled in 8 secondary schools in central TX (2) n = 322 fourth graders aged 9 to 12 years old who were enrolled in 3 elementary schools in 2 area school districts
Modification	(1) New instrument (2) Questions were modified for each grade level, considering read level and cognitive ability.
Mode	(1) Self-administered (2) Self-administered in group setting
Length of administration	(1) 30 to 45 minutes (2) Not reported
Other languages	(1) Not reported (2) Not reported
Measurement Properties	
Cognition	(1) Expert panel review (content validity), focus groups, and cognitive interviews. The readability of questionnaire, tested using the Dale-Chall formula, was calculated to be 4.98, approximately the reading level of a child 9 to 10 years old. (2) Expert panel review (content validity), focus groups, and cognitive interviews. The readability of questionnaire, tested using the Dale-Chall formula, was calculated to be 5.41, approximately the reading level of a child 10 to 11 years old.
Reliability (internal consistency, test-retest)	(1) For the overall instrument, Spearman rank order (test-retest) correlations were greater than or equal to 0.70 for the majority of questions, with r_{milk} = 0.80. Additionally, 39 of the 43 questions had moderate to superior reproducibility, based on guidelines for rating κ coefficients, with κ_{milk} = 0.64, with 76.0% agreement. (2) The reproducibility of question items varied, depending on the type of food surveyed. Spearman rank order (test-retest) correlations were 0.87 for milk, including chocolate or other flavor, milk on cereal, drinks with milk and 0.87 for type of milk (fat content). κ statistics were 0.77 for milk, including chocolate or other flavor, milk on cereal, drinks with milk and 0.79 for type of milk (fat content), with 83% and 85% agreement respectively.
Validity (convergent validity, criterion validity)	(1) Not evaluated (2) Compared with 24-hour dietary recalls, correlation coefficients ranged from 0.32 to 0.68, with $r_{milk,\ including\ chocolate\ or\ other\ flavor,\ milk\ on\ cereal,\ drinks\ with\ milk}$ = 0.68; κ statistic was 0.46 for milk, including chocolate or other flavor, milk on cereal, drinks with milk, with 61% agreement.
Sensitivity to change	(1) No intervention (2) No intervention
References	(1) Penkilo et al., 2008 (2) Hoelscher et al., 2003
Notes	(1) None (2) None

SBNM

Instrument	
Name	School Physical Activity and Nutrition Survey (SPANS)--elementary-level and secondary-level questionnaires
Type	FFQ
Developer	University of Texas, Dell Center for Healthy Living
Original audience	Elementary school children
Topic and number of items	Milk intake (1)
Survey Administration	
Year	(1) 2004 (2) 2000-2002
Study population and size	(1) n = 110 fourth-graders in 5 elementary schools in IN (2) n_1 = 6,235 fourth-graders, n_2 = 5,362 eighth-graders, and n_3 = 3,576 eleventh-graders from TX
Modification	(1) None (2) None
Mode	(1) Interviewer-administered (2) Not reported
Length of administration	(1) 54 items, 10 pages total (2) Not reported
Other languages	(1) Not reported (2) Not reported
Measurement Properties	
Cognition	(1) Reading level appropriate for a 9 year old according to Dale-Chall formula. (2) Not reported
Reliability (internal consistency, test-retest)	(1) Not evaluated (2) Not evaluated
Validity (convergent validity, criterion validity)	(1) Compared to 24-hr recall, the Spearman rank correlations was 0.56 for milk. (2) Not evaluated
Sensitivity to change	(1) No intervention (2) No intervention, but tatistically significant differences in food choice behaviors were evident among 4th-, 8th-, and 11th-grade students.
References	(1) Thiagarajah et al., 2008 (2) Perez et al., 2007
Notes	(1) None (2) None

Instrument	
Name	Unknown
Type	Psychosocial Questionnaire
Developer	Thompson et al.
Original audience	Fifth graders
Topic and number of items	Milk self-efficacy (7) and milk social norms (3)
Survey Administration	
Year	(1) 1998-1999
Study population and size	(1) n = 262 fifth graders in one middle school in Houston, TX
Modification	(1) Adapted from existing self-efficacy and social norm measures
Mode	(1) Self-administered
Length of administration	(1) 11-item questionnaire
Other languages	(1) Not reported
Measurement Properties	
Cognition	(1) Flesch/Kincaid readability score was 5th grade.
Reliability (internal consistency, test-retest)	(1) Internal consistency was $\alpha = 0.93$ for milk self-efficacy items and 0.65 for milk norms. Test-retest correlations were 0.75 for milk self-efficacy and 0.54 for milk norms.
Validity (convergent validity, criterion validity)	Not evaluated
Sensitivity to change	(1) No intervention
References	(1) Thompson et al., 2008
Notes	(1) Milk self-efficacy was negatively correlated to the consumption of sweetened beverages ($r = -0.34$, $p < 0.01$) and positively correlated to total milk ($r = 0.35$, $p < 0.01$), low-fat milk ($r = 0.30$, $p < 0.01$), and high-fat milk ($r = 0.15$, $p < 0.05$) intake. The milk norms scale was also negatively correlated with sweetened beverage consumption ($r = -0.19$, $p < 0.01$) and positively correlated to total milk ($r = 0.20$, $p < 0.01$) and low-fat milk ($r = 0.18$, $p < 0.01$).

Instrument	
Name	Youth/Adolescent Food Frequency Questionnaire (YAQ)
Type	FFQ
Developer	Harvard
Original audience	Youth aged 9 to 19 years old
Topic and number of items	Milk intake (not specified)
Survey Administration	
Year	(1) 1993-1994 (2) 1992
Study population and size	(1) n = 261 youths aged 9-18 years old (2) n = 179 children aged 9 to 18 years old
Modification	(1) The number of foods changed from 151 to 131 with some foods being added, deleted, and combined with other food items on the questionnaire. (2) None
Mode	(1) Telephone (2) Self-administered
Length of administration	(1) 131 items (2) 151 items
Other languages	(1) Not reported (2) Not reported
Measurement Properties	
Cognition	(1) Not reported (2) Pilot tested
Reliability (internal consistency, test-retest)	(1) Not evaluated (2) The mean Pearson coefficient between the two administrations of YAQ was 0.49. The Pearson coefficient for food groups between the two administrations of YAQ was 0.56 for milk.
Validity (convergent validity, criterion validity)	(1) After correction for within-person error assessed by recalls, the average Pearson correlation coefficient was 0.54 for three 24-hr recalls and 2 YAQs. (2) When compared to NHANES II data, the mean absolute nutrient intakes reported in the YAQ were generally higher than those of NHANES II.
Sensitivity to change	(1) No intervention (2) No intervention
References	(1) Rockett et al., 1997 (2) Rockett et al., 1995
Notes	(1) A simple self-administered questionnaire completed by older children and adolescents can provide nutritional information about this age group. (2) None

YAQ

Instrument	
Name	Yesterday's Food Choices (YFC)
Type	Brief food selection instrument
Developer	University of New Mexico
Original audience	Children
Topic and number of items	Milk intake (unknown)
Survey Administration	
Year	(1) 1992
Study population and size	(1) n = 120 American Indian children in fifth and seventh grade classes in 9 schools in the NM
Modification	(1) New instrument based on the Eating Behavior Checklist (Kristal et al., 1990)
Mode	(1) Self-administered, with questions read to students
Length of administration	(1) 33 items
Other languages	(1) Not reported
Measurement Properties	
Cognition	(1) Reviewed by expert panel and pilot-tested
Reliability (internal consistency, test-retest)	(1) Not evaluated
Validity (convergent validity, criterion validity)	(1) For most items, the percentage reporting consumption on the YFC was greater than on the 24-hr recall. Compared to 24-hr recall, kstatistics were as follows: 0.37 for all milk types, 0.35 for regular milk, 0.68 for low-fat milk, and 0.18 for skim milk.
Sensitivity to change	(1) Not evaluated
References	(1) Koehler et al., 2000
Notes	(1) None