



HHS Public Access

Author manuscript

J Am Diet Assoc. Author manuscript; available in PMC 2015 December 07.

Published in final edited form as:

J Am Diet Assoc. 2010 January ; 110(1): 80–90. doi:10.1016/j.jada.2009.10.002.

Using Qualitative Methods to Improve Questionnaires for Spanish Speakers: Assessing Face Validity of a Food Behavior Checklist

JINAN C. BANNA, PhD [Graduate student], LUZ E. VERA BECERRA, MAE [Graduate student], LUCIA L. KAISER, PhD, RD [Nutrition specialist], and MARILYN S. TOWNSEND, PhD, RD [Nutrition specialist]

Department of Nutrition, University of California, Davis

Abstract

Development of outcome measures relevant to health nutrition behaviors requires a rigorous process of testing and revision. Whereas researchers often report performance of quantitative data collection to assess questionnaire validity and reliability, qualitative testing procedures are often overlooked. This report outlines a procedure for assessing face validity of a Spanish-language dietary assessment tool. Reviewing the literature produced no rigorously validated Spanish-language food behavior assessment tools for the US Department of Agriculture's food assistance and education programs. In response to this need, this study evaluated the face validity of a Spanish-language food behavior checklist adapted from a 16-item English version of a food behavior checklist shown to be valid and reliable for limited-resource English speakers. The English version was translated using rigorous methods involving initial translation by one party and creation of five possible versions. Photos were modified based on client input and new photos were taken as necessary. A sample of low-income, Spanish-speaking women completed cognitive interviews (n=20). Spanish translation experts (n=7) fluent in both languages and familiar with both cultures made minor modifications but essentially approved client preferences. The resulting checklist generated a readability score of 93, indicating low reading difficulty. The Spanish-language checklist has adequate face validity in the target population and is ready for further validation using convergent measures. At the conclusion of testing, this instrument may be used to evaluate nutrition education interventions in California. These qualitative procedures provide a framework for designing evaluation tools for low-literate audiences participating in the US Department of Agriculture food assistance and education programs.

Production of valid and reliable evaluation and survey tools involves a complex process of ensuring adequate content, comprehension by the target audience, correlation with other measures evaluating the same constructs, and consistency over time (1). Although many studies report assessment of validity and reliability using quantitative techniques, relatively few discuss validation procedures using qualitative measures. Even fewer report collection

Address correspondence to: Marilyn S. Townsend, PhD, RD, Department of Nutrition, University of California, One Shields Ave, Davis, CA 95616-8669. mstownsend@ucdavis.edu.

STATEMENT OF POTENTIAL CONFLICT OF INTEREST: No potential conflict of interest was reported by the authors.

of qualitative data in low-income Latino populations, where literacy level presents a challenge for educators.

A review of the literature found no rigorously validated Spanish-language food behavior evaluation tools to assess diet quality. Tools for low-literacy populations are especially lacking (2). Tools with a low respondent burden that can be administered in a group setting are needed (3–5). Tools that have exhibited adequate validity and reliability in a particular population need to be re-evaluated for use in another population that differs significantly in terms of cultural background, country of origin, or language (6).

Evaluation of US Department of Agriculture (USDA) nutrition education programs such as the Expanded Food and Nutrition Education Program and the Supplemental Nutrition Assistance Program (formerly known as Food Stamp Nutrition Education) is essential to ensure effectiveness of education interventions and continued funding (5). An ideal evaluation instrument for these USDA programs should exhibit adequate validity and reliability in the target population (5). In addition, it should be sufficiently brief to avoid detracting from the education portion of the intervention and should include key behaviors discussed in the education sessions (4,5,7). An appropriately low reading level is also an important characteristic for tools designed for low-income audiences (3). Predominantly Spanish-speaking Latinos, in particular, are often less educated than their counterparts in the United States and require instruments adapted to meet their literacy level (2).

There are currently no existing instruments used to assess food behaviors in low-literate Spanish-speaking populations; however, several short dietary assessment tools (ie, food behavior checklists or food checklists) have previously been developed to evaluate various other aspects of dietary intake. These include Townsend and colleagues' Food Behavior Checklist (3,4,7), the National Cancer Institute's 5-A-Day for better health fruit and vegetable screener (8), Kristal and colleagues' Food Behavior Checklist (9), Connor and colleagues' Diet Habits Survey (10), and Wakimoto and colleagues' brief dietary screeners (short food frequency questionnaires) (2). Of these tools, two included cognitive testing procedures as an assessment of face validity (2,4), one used focus groups with the aim of ascertaining questionnaire acceptability in the target audience (9), and two made no mention of this step in the validation procedure (8,10).

The aforementioned food behavior checklist for low-income English speakers was previously developed as an evaluation tool for nutrition education interventions implemented through USDA programs (4,7). Using visual information processing theories, researchers improved the readability of the checklist, increasing its ability to accurately capture existing changes in dietary behavior (3,11). This tool underwent rigorous validation procedures in an English-speaking, low-income population, including assessment of criterion validity using a serum measure, convergent validity using multiple 24-hour dietary recalls, content validity and face validity, as well as internal consistency of subscales, test-retest reliability, and sensitivity to change (3,4,7). We sought to adapt this tool (12) and its accompanying instruction guide (13) for a Spanish-speaking, low-income population in California, an audience with high chronic disease risk (14). This article describes assessment of face validity of a Spanish-language diet quality food behavior checklist with a low-literate

audience through a multistep method involving the use of a novel process of translation as well as techniques based on cognitive science.

These procedures may serve as a framework for other researchers collecting qualitative data for questionnaire validation for USDA's education and food assistance programs where readability and response burden are primary concerns.

PROCEDURES

A bilingual native Spanish speaker performed five translations and suggested appropriate accompanying photographs. Extensive cognitive testing of text and visuals in the target population resulted in modifications. A bilingual panel of experts (n=7) in the field of nutrition of Latino populations, including Public Health Institute personnel, a registered dietitian, a bilingual University of California Cooperative Extension Advisor, and the university's official translator, conducted a final review. The Institutional Review Board of the University of California at Davis provided approval for this study.

Translation

In lieu of the potential problems associated with the back translation method (6), we chose a three-step alternate method. First, a Mexican scholar with an advanced degree in nutrition visiting our university campus performed the preliminary translations. To create options for this audience, she created five translated versions of the original English checklist, deemed necessary due to the fact that five different translations were possible for many questions. These versions differed in terms of word choice (ie, expressing vegetables as *verduras* vs *vegetales*), phrases used to express desired concepts (ie, expressing regular soda as *refrescos regulares* vs *refrescos no de dieta*), as well as other aspects affecting question meaning. Second, these five versions were taken to members of our target population and tested for clarity, appropriateness and preferences of translation using cognitive interviewing procedures described subsequently (15). Third, after members of the target audience selected preferred translations, a group of experts provided final approval. They reviewed item wording and response options, taking into consideration optimal diction with regards to word length and frequency of use in the target population. Modifications were made, and a team of Public Health Institute Spanish-speaking experts then reviewed the current text.

Modification of Photographs

Color photographs included in the original food behavior checklist were modified or replaced to reflect food choices of Spanish speakers in California. The visiting Mexican scholar guided the selection of foods. Many items were simply replaced; others were presented in a different form (16).

Cognitive Testing of Text

Cognitive testing is a form of structured interviewing designed to improve face validity of a survey or evaluation tool (15). Willis (15) developed three strategies that may be used to uncover the cognitive processes that occur as respondents think about and develop answers to survey questions. The first is the concurrent think-aloud technique, in which respondents

are asked to verbalize their thought processes as they respond to the question. This requires some practice, as the procedure does not come naturally. The second is the use of paraphrasing, which requires respondents to restate the item using their own words in response to this question: “What does this question mean to you in your own words?” For example, if the question is “Do you drink regular soda?” the paraphrase might be “This question is asking me if I drink soft drinks that are not diet.” The third strategy is the use of probes, a set of questions the interviewer uses to prompt respondents to further elucidate their responses. Examples of probes include, “Is there a better word we could use?” or, “Can you think of a better way to ask this question so that it would be clearer to other clients?” and, “Are there any words in the question that other clients may find confusing?”

Cognitive testing of other aspects of the questionnaire was also conducted. The aforementioned procedures were applied to the title, instructions, and response options.

Cognitive Testing of Photographs

Cognitive testing procedures were also applied to the photographs. Specific probes for the photographs included, “What do you see in this photo?” and, “Looking at this photo, is there a better way we might illustrate this question for other clients at this food bank?” Given that our goal was an improved readability score compared to a text only version, we also asked, “Are there any words in the question we might remove and illustrate in a photo?”

Cognitive testing sessions took place at the agencies where subjects were recruited. Interviews were mainly conducted in Spanish, and the interviewer (first author) took brief notes during the session. Interviews were generally one-on-one, with each one lasting 40 minutes to 1 hour. The interviewer referred to a pre-prepared interview guide to provide consistency among interviews (available from the first author). The interview process was iterative until all disparities and disagreements were resolved.

Subjects

Subjects for cognitive testing procedures were recruited from agencies serving Expanded Food and Nutrition Education Program and the Supplemental Nutrition Assistance Program. All were women who met the requirements for classification as low-income (ie, household income 185% or less of the US poverty income guidelines).

Instruction Guide for Field Staff

To address any questions that might arise during the administration of the checklist in the field, a comprehensive instruction guide was developed including checklist items, food products in each photograph, potential client inquiries regarding items, and answers to inquiries (17). After initial translation of the English guide with the help of the Mexican scholar, an expert panel of California Department of Health Services personnel reviewed the guide. Discrepancies were resolved by conference call.

Readability

Readability of questionnaire text was estimated using the Fernández-Huerta formula (18), the equivalent of the Flesch Reading Ease for English text (19). Both formulas consider

word length and count the number of syllables per word. In addition, the Flesch formula considers number of words per sentence (19), whereas the Fernández-Huerta uses number of sentences per 100 words as an indicator of difficulty.

FINDINGS

Subjects (n=20) were recruited from Head Start sites, a food bank, a YMCA day care center, and university Cooperative Extension offices. All subjects were fluent in Spanish and reported Spanish as their first language. Most also spoke some English. The majority of subjects were of Mexican origin (95%) and all were women.

Cognitive testing was performed as an iterative process, with each interview building upon previous client suggestions. Cognitive interviewing procedures revealed several broad issues with the text and photographs (Figure 1). These sessions uncovered differences in language use among the Spanish speakers interviewed, possibly attributable to varying levels of acculturation and years spent in the United States. Client preferences for photographic content revealed client dietary habits, which are also sensitive to acculturation. An example of changes made to the photograph for one item using cognitive testing procedures is shown in Figure 2. This item, which assesses intake of fruit drinks, sport drinks and punch, originally contained a photograph of American drinks such as Gatorade (Quaker Oats Company, Chicago, IL) and Kool Aid (Kraft Foods Company, Chicago, IL). This photograph was replaced with predominantly Mexican drinks such as Jumex (Jumex Group, Mexico City, Mexico) and Del Valle (Coca-Cola Company, Atlanta, GA) in an effort to more accurately reflect intake of new immigrants. American soft drinks were replaced with Jarritos (Novamex, Guadalajara, Mexico) Mexican soda and Manzanita Sol (PepsiCo, Purchase, NY). During cognitive testing, participants reported consumption of not only Mexican beverages, but also American beverages. Clients preferred to have the final photograph contain a split cell with both Mexican and American beverages. Other changes to photographs included simple replacement of items based on client preferences. Fish sticks were replaced with a whole fish. Baby carrots were exchanged for carrot sticks. In addition, the Asian female model was replaced with a Mexican woman, and a Spanish-language version of the Nutrition Facts label was added. The result of these procedures was a tool that had been evaluated by the target audience and modified in an iterative process until clients expressed satisfaction with the outcome.

A readability index calculation using the Fernández-Huerta formula for Spanish text (18) revealed a score of 93 (range 0 to 100), indicating low reading difficulty. The aforementioned accompanying instruction guide, used to resolve any questions that arise during the process of questionnaire administration, was developed to address the fact that the checklist was designed using very limited text (17).

DISCUSSION

The lack of standardized methods for questionnaire development and pretesting using qualitative methods is reflected in the absence of these procedures in many validation studies. A review of the literature did not reveal any studies that have used cognitive testing

procedures for assessment of translations and visuals by Spanish speakers. Our study demonstrates an iterative process used to modify an evaluation tool based on client input. The example presented here may be used as a model for assessment of face validity of questionnaire text and visuals for low-income and often low-literate populations. The first phase of questionnaire development rendered a culturally adapted food behavior checklist that clients in our sample deemed to have adequate face validity (Figure 3) (20).

Translation

Several options were considered in determining the best method of translating the English-language food behavior checklist. Back translation is often the method of choice in adapting measures for culturally diverse audiences (6). This procedure involves allowing an original translator to render items from the current language to the second language and then asking a second translator to translate the items back into the first language. The original and back-translated versions are then compared, and any discrepancies in wording are resolved. While this method is frequently used, several potential problems may arise (6). First, translators who are aware that their work will be subject to back translation often use wording that would unquestionably reproduce the original translation instead of the most appropriate word in the target language (21). In addition, back translation does not allow for the substitution of item content for cultural reasons. In order to avoid these problems, a potentially more effective technique involving expert review has been suggested (6). This procedure involves translation by one party and subsequent review by a panel of experts in the field in question who are fluent in both languages and familiar with both cultures. This review may take the form of a group meeting or individual reviews by each of the group members (6). In lieu of the potential problems associated with back translation, we used an alternate three-step method consisting of translation by one party, cognitive interviewing, and final approval by a group of experts.

Readability

In considering the validity of a particular tool in a specific segment of the population, it is essential to consider the characteristics of the group in which the tool was validated. Many brief tools have been validated using a middle-class population with a relatively high level of education. Of the short dietary assessment tools mentioned previously (2,4,7–10), only two were validated in a low-income audience (2,4,7), and only one (4,7) mentioned the readability score of the instrument. For English text, the Flesch Reading Ease formula (19) is a well-known method for measuring readability. The Flesch Reading Ease formula indicates level of reading ease using the same scale of 0 to 100, with higher scores indicating greater reading ease. The Huerta Reading Ease (18) used in this study is the equivalent formula for Spanish text. Neither of these formulas assesses readability of photographs. Post hoc, the Flesch Reading Ease for English text (19) was applied, producing a score of 39.5 (also range 0 to 100). The contrasting results indicated that one of these two formulas was in error. We suggest that the error lies in applying the English text formula to the Spanish text. The difference in these scores explains the existence of different formulas for the two languages. Generally, translation into Spanish yields both longer words and sentences, necessitating use of a formula specifically designed for the Spanish language.

The inclusion of images in the questionnaire also reflected the effort to enhance understanding in this low-literacy population. Past studies have indicated that color photographs are favored by Expanded Food and Nutrition Education Program and the Supplemental Nutrition Assistance Program clients compared to black-and-white photographs, black-and-white drawings or text-only questions (3). Client reasons included improved understanding of the behaviors in the question (ie, cognitive function) (22,23), enhanced readability by reducing the word count (19), as well as more cues to understanding the text (ie, compensatory function) (24). The cognitive and compensatory functions of the color photographs were particularly important for clients whose primary language was not English (3).

Response Burden

One final consideration for tools intended for use with a low-income audience in a community setting is the ease with which they may be administered. Many existing evaluation methods such as the 24-hour recall and food frequency questionnaire require considerable amounts of time and effort on the part of the participant and the instructor, resulting in a loss of instruction time available in community classes (5). The current 16-item questionnaire may be self-administered in a group setting in a short time period (approximately 15 minutes) with the supervision of one community health worker per group, leaving ample time for the education session.

Limitations

The resulting version of the questionnaire is primarily appropriate for Spanish speakers of Mexican descent. The food behavior checklist evaluated here may not exhibit acceptable face validity beyond the sample of Spanish-speaking limited-resource women participating in this study.

Next Steps

To assess convergent validity of this food behavior checklist with other measures as well as reliability, further testing of the instrument is planned (Phase 2). Assessment of convergent validity will involve comparison of questionnaire responses to mean nutrient intakes from multiple 24-hour recalls, and reliability will be assessed through administration of the questionnaire on two occasions without an intervention.

CONCLUSIONS

Nutrition educators working in USDA education programs such as Expanded Food and Nutrition Education Program; the Supplemental Nutrition Assistance Program; the Special Supplemental Nutrition Program for Women, Infants, and Children; and Head Start may find the description of our process and our observations useful for developing instruments that are culturally appropriate.

Acknowledgments

FUNDING/SUPPORT: Funding for this study was provided by the USDA Food Stamp Program via the *Network for a Healthy California*, University of California Cooperative Extension, and the Gustavus and Louise Pfeiffer Research Foundation through the Program in International and Community Nutrition, UC Davis.

The authors thank Sharon Sugerman for her work on the study protocol and budget; Myriam Grajales-Hall and Gloria Espinosa-Hall for their work on questionnaire translations; and Kathryn Sylva and Lynn-Kai Chao for the questionnaire photographs. They also thank Andy Fourney, Monica Perez, Carmen C. Heredia, Ignacio Romero, Virginia Chaidez, and Joan Gonen for their assistance with the Spanish translations for the instruction guide, and Christine Davidson and Larissa Leavens for their review of the guide.

References

1. Lessler, J.; Tourangeau, R.; Salter, W. Questionnaire design in the cognitive research laboratory: Results of an experimental prototype. Washington, DC: National Center for Health Statistics; 1989. Series 6, No. 1
2. Wakimoto P, Block G, Mandel S, Medina N. Development and reliability of brief dietary assessment tools for Hispanics. *Prev Chronic Dis*. 2006; 3:1–12.
3. Townsend MS, Sylva K, Martin A, Metz D, Wooten-Swanson P. Improving readability for an evaluation tool for low-income clients using visual information processing theories. *J Nutr Educ Behav*. 2008; 40:181–186. [PubMed: 18457787]
4. Townsend MS, Kaiser LL, Allen LH, Joy AB, Murphy SP. Selecting items for a food behavior checklist for a limited resource audience. *J Nutr Educ Behav*. 2003; 35:69–82. [PubMed: 12725713]
5. Townsend MS. Evaluating food stamp nutrition education: Process for development and validation of evaluation measures. *J Nutr Educ Behav*. 2006; 38:18–24. [PubMed: 16595274]
6. Geisinger K. Cross-cultural normative assessment: Translation and adaptation issues influencing the normative interpretation of assessment instruments. *Psychol Assess*. 1994; 6:304–312.
7. Murphy SP, Kaiser LL, Townsend MS, Allen LH. Evaluation of validity of items for a food behavior checklist. *J Am Diet Assoc*. 2001; 101:751–756. 761. [PubMed: 11478471]
8. Thompson F, Kipnis V, Subar A, Krebs-Smith S, Kahle L, Midthune D, Potischman N, Schatzkin A. Evaluation of 2 brief instruments and a food-frequency questionnaire to estimate daily number of servings of fruit and vegetables. *Am J Clin Nutr*. 2000; 71:1503–1510. [PubMed: 10837291]
9. Kristal A, Abrams B, Thornquist M, Disogra L, Croyle R, Shattuck A, Henry H. Development and validation of a food use checklist for evaluation of community nutrition interventions. *Am J Public Health*. 1990; 80:1318–1322. [PubMed: 2240297]
10. Connor S, Gustafon J, Sexton G, Becker N, Artaud-Wild S, Connor W. The Diet Habits Survey: A new method of dietary assessment that relates to plasma cholesterol changes. *J Am Diet Assoc*. 1992; 92:41–47. [PubMed: 1728622]
11. Townsend MS, Sylva K, Martin A, Metz D, Wooten-Swanson P, Follett J, Keim N, Sugerman S. Visually enhanced evaluation for low-income clients. *J Nutr Educ Behav*. 2005; 37(suppl):S49.
12. Sylva, K.; Townsend, MS.; Martin, A.; Metz, D. [Accessed September 1, 2008] Food Stamp Program Food Behavior Checklist (English, 16 items reflecting the Food Guide Pyramid guidelines; Visually enhanced food behavior checklist in 4-page booklet designed for clients with limited literacy skills). Townsendlab Web site. <http://Townsendlab.ucdavis.edu>. Posted 2006. Updated July 9, 2008
13. Townsend, MS.; Davidson, C.; Leavens, LL.; Metz, D.; Martin, A. [Accessed September 1, 2008] Administering the Food Stamp Program Food Behavior Checklist: Instruction Guide. Townsendlab Web site. <http://Townsendlab.ucdavis.edu>. Published 2006. Updated July 9, 2008
14. [Accessed September 1, 2008] Heart Disease and Stroke Statistics—2005 [database online]. American Heart Association Web site. <http://www.americanheart.org/>. Updated October 15, 2008
15. Willis, G. Cognitive Interviewing and Questionnaire Design: A Training Manual. Hyattsville, MD: Centers for Disease Control and Prevention, National Center for Health Statistics; 1994. Working Paper Series No. 7

16. Levie W, Lentz R. Effects of text illustrations: A review of research. *Educ Comm Technol J.* 1982; 30:195–232.
17. Banna, JC.; Townsend, MS.; Vera Becerra, LE.; Fourney, A.; Perez, M.; Heredia, C.; Romero, I.; Grajales-Hall, M.; Davidson, C.; Leavens, LL. [Accessed September 1, 2008] Administering the Food Stamp Program Lista de hábitos alimenticios (Food Behavior Checklist) for Spanish speakers: Instruction Guide. English and Spanish. Townsendlab Web site. <http://Townsendlab.ucdavis.edu>. Published 2008. Updated July 9, 2008
18. Fernández-Huerta J. Medidas sencillas de lecturabilidad. *Consigna.* 1959; 214:29–32.
19. Kincaid, J.; Fishburne, RP.; Rogers, RL.; Chissom, BS. Derivation of New Readability Formulas (Automated Readability Index, Fog Count and Flesch Reading Ease Formula) for Navy Enlisted Personnel. Millington, TN: Naval Technical Training, US Naval Air Station; 1975.
20. Banna, JC.; Townsend, MS.; Sylva, K. [Accessed September 1, 2008] Food Stamp Program Lista de hábitos alimenticios (Food Behavior Checklist) for Spanish speakers (Spanish, 16 items reflecting Food Guide Pyramid guidelines; visually enhanced food behavior checklist in 4-page booklet designed for clients with limited literacy skills). Townsendlab Web site. <http://Townsendlab.ucdavis.edu>. Published 2007. Updated July 9, 2008
21. Hambleton, R. Technical standards for translating tests and establishing test score equivalence. Presented at 101st Annual Convention of the American Psychological Association; Toronto, Ontario, Canada. 1993;
22. Sweller J, Van Merrienboer J, Paas F. Cognitive architecture and instructional design. *Educ Psychol Rev.* 1998; 10:251–296.
23. Mayer, R. *Multimedia Learning.* New York, NY: Cambridge University Press; 2001.
24. Berry, L. An Exploratory Study of the Relative Effectiveness of Realistic and Non-realistic Color in Visual Instructional Materials [dissertation]. State College, PA: The Pennsylvania State University; 1974. p. 7717a

Original item/photo	Translated item/ revised photo	Problems identified by clients with translation/photo during cognitive testing interviews	Solution proposed by clients and/or experts and confirmed by clients	Final version
Lack of familiarity with or variable interpretation of specific terms				
Do you take the skin off chicken?	¿Quita el pellejo del pollo?	While some clients ^a reported that this translation was appropriate, others were unfamiliar with the word <i>pellejo</i> and reported that they had never heard this word.	Clients suggested the word <i>piel</i> , which translates more generally to skin. While this word is also used to describe human skin and may not be used by all clients to describe chicken skin, clients reported that this word, along with the visual, conveyed the intended message.	¿Quita la piel del pollo?
Do you drink regular soda?	¿Bebe refrescos regulares?	The word <i>beber</i> , used often to refer to consumption of alcoholic beverages, is less commonly used in everyday language than the word <i>tomar</i> . The word <i>regular</i> was not perceived uniformly, as many clients did not consider <i>regular</i> beverages to exclude diet drinks.	The word <i>tomar</i> was selected as a more common word used to refer to non-alcoholic beverage consumption. The word <i>regular</i> was removed, and a reference to soda <i>de dieta</i> was included, as all clients indicated that this expression clearly referred to diet soda.	¿Toma refrescos que no son de dieta?
Do you eat more than one kind of vegetable each day?	¿Come diferentes vegetales cada día?	Some clients indicated that they generally use the word <i>vegetales</i> to refer only to plants and herbs that are not consumed.	The word <i>verduras</i> was selected instead, which many clients used to refer to edible vegetables in general.	¿Come diferentes verduras cada día?
Do you eat fruits or vegetables as snacks?	¿Come frutas o verduras de merienda?	Some clients reported that <i>merienda</i> signified a snack typically consumed between lunch and dinner.	Since we wished to encompass snacks eaten at any time of day, not just the afternoon, we used the expression <i>entre comidas</i> , or <i>between meals</i> . Clients interpreted this to mean anything eaten between the main meals of the day.	¿Come frutas o verduras entre comidas?
Ambiguous response options				
Ten questions include the following response options: -no -yes, sometimes -yes, often -yes, always	-no -sí, a veces -sí, con frecuencia -sí, siempre	Clients deemed the word <i>sí</i> in the last three options to be extraneous. Clients felt uncomfortable choosing the response option <i>siempre</i> , as the word leaves little room for possible variation. The term was also perceived to be very nonspecific, with variable definitions.	The word <i>sí</i> was removed to render simplified response options. The word <i>siempre</i> was replaced with <i>todos los días</i> , which was interpreted much more uniformly across clients.	-no -a veces -con frecuencia -todos los días
Misunderstanding the instructions				
Please mark the circle that best answers each question.	Por favor, marque el círculo que corresponde mejor a sus hábitos de alimentación.	Clients indicated that thinking about the best answer to each question led them to think about the ideal diet and how they should respond to each question.	We eliminated the word <i>mejor</i> to make the instructions neutral, and also shortened the sentence to make it easier to read.	Elija una respuesta para cada pregunta.

(continued)

Original item/photo	Translated item/ revised photo	Problems identified by clients with translation/photo during cognitive testing interviews	Solution proposed by clients and/or experts and confirmed by clients	Final version
Inadequate photographic accompaniment with text				
Original photograph for the question, "Do you drink fruit drinks, sport drinks, or punch?" contained common American drinks.	Revised photograph is of American and Mexican drinks.	Clients indicated that while the Mexican fruit drinks are popular, they also drink American drinks frequently. Thus, some of the original content of the photograph is appropriate for the Spanish version.	In an effort to represent all frequently consumed fruit drinks, we decided to include both photographs.	Current photograph contains a split cell with both photographs shown.
Original photograph for the question "Do you drink milk each day?" contained a gallon and carton of milk along with several labels of buttermilk, chocolate, low-fat, fat-free and whole milk.	Revised photograph contains a can of milk powder common in Mexico instead of the chocolate and buttermilk.	Clients expressed a great deal of confusion about what buttermilk is, as this is not commonly used in the population. In addition, they reported that chocolate milk is not popular.	To better represent frequently consumed items, we replaced the chocolate and buttermilk with a can of milk powder that is mixed with water. The majority of clients expressed familiarity with this product and had used it before.	Current photograph contains a can of milk powder instead of the chocolate and buttermilk.
Original photograph for the question "Do you eat fruits or vegetables as snacks?" contained an Asian woman eating an apple, hands with baby carrots, and hands with grapes.	Revised photograph contains a Latina woman eating an apple, hands with whole cut-up carrots, and hands with grapes.	Clients indicated that since the checklist was being adapted for Spanish speakers, it would be more appropriate to have a Latina woman in the photo. They also reported that baby carrots are not typically consumed, but that whole carrots are often cut up and eaten as a snack.	The Asian woman was replaced with a Latina woman so that clients would better identify with the photo. The baby carrots were replaced with whole cut-up carrots. Clients confirmed that this is a more typical way of consuming this food.	Current photograph contains a Latina woman eating an apple, hands with whole cut-up carrots, and hands with grapes.
^a Client is a low-income respondent participating in cognitive testing interviews at a Head Start, Expanded Food and Nutrition Education Program, or Supplemental Nutrition Assistance Program site. Spanish is her first language.				

Figure 1.
Four issues identified with the Spanish-language food behavior checklist by respondents during cognitive testing sessions at community sites during a study to test validity of a low-literacy Spanish-language dietary assessment tool.

a. Photograph of American fruit drinks



¿Toma bebidas de fruta, bebidas deportivas o ponches?

- no
 a veces
 con frecuencia
 todos los días

b. Photograph of Mexican fruit drinks



¿Toma bebidas de fruta, bebidas deportivas o ponches?

- no
 a veces
 con frecuencia
 todos los días

c. Split photograph with American and Mexican fruit drinks as final version of text and photograph



¿Toma bebidas de fruta, bebidas deportivas o ponches?

- no
 a veces
 con frecuencia
 todos los días

Figure 2. Three versions of one evaluation item demonstrate changes made to photographs through cognitive testing interviews with low-income Spanish-speaking clients: original photograph of American fruit drinks (panel a), new photograph of mainly Mexican fruit drinks (panel b), and split photograph with both American and Mexican fruit drinks as final version of text and photograph per clients’ recommendations (panel c). (Figure was created by Jinan Banna, Marilyn Townsend, and Kathryn Sylva, and is used with their permission.)

DRAFT September 17, 2007

Food Stamp Program

Lista de hábitos alimenticios

Estas preguntas son sobre cómo usted escoge y prepara la comida.
Piense en lo que usualmente hace.

Nombre _____ Fecha _____ ID# _____ Entrada
 Salida

Elija una respuesta para cada pregunta.

1.



¿Come frutas o verduras entre comidas?

- no
 a veces
 con frecuencia
 todos los días

2.



¿Toma bebidas de fruta, bebidas deportivas o ponches?

- no
 a veces
 con frecuencia
 todos los días

3.




¿Toma refrescos que no son de dieta?

- no
 a veces
 con frecuencia
 todos los días

4. 

¿Toma leche?

no a veces con frecuencia todos los días

5. 

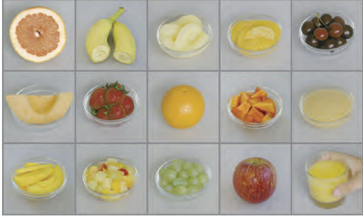
La semana pasada, ¿tomó leche o puso leche en su cereal?

sí no

6. 


La semana pasada, ¿comió frutas cítricas como naranja, mandarina o toronja o tomó jugo de esas frutas?

sí no

7. 






¿Cuántas porciones de fruta come cada día?

(Cada uno de estos representa una porción)

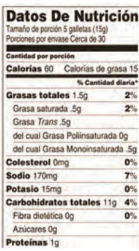

8. 

Durante el día, ¿come diferentes frutas?

no a veces con frecuencia casi siempre

9.  ¿Come diferentes verduras cada día?
- no a veces con frecuencia casi siempre
-
10.  ¿Cuántas porciones de verduras come cada día?
-
- (Cada uno de estos representa una porción)
-
11.  ¿Quita la piel del pollo?
- no a veces con frecuencia siempre
-
12.  La semana pasada, ¿comió pescado?
- sí no
-
13.  ¿Come dos verduras o más en su comida principal?
- no a veces con frecuencia todos los días


Author Manuscript

14.  

¿Considera la información nutritiva de la etiqueta al momento de seleccionar los alimentos que comprará?

no a veces con frecuencia casi siempre

Author Manuscript

15. 

¿Se le acaba la comida antes del fin del mes?

no a veces con frecuencia casi siempre

16. ¿Cómo cree que son sus hábitos de alimentación? Marque un número.

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩

malos regulares buenos excelentes

Gracias.

9172007

- * An instruction guide is available to help you administer this tool.
- * Research and development for this illustrated checklist were a joint effort of University of California (UC) Cooperative Extension, UC Davis Design Program and the UC Davis Nutrition Department. Authors: Jinan Banna, Marilyn Townsend, Kathryn Sylva. Translators: Luz Elvia Vera Becerra, Gloria Espinosa-Hall, Myriam Grajales-Hall.
- * The quantitative and qualitative research for this tool is reported in:
 - Townsend Marilyn S, Kaiser Lucia L, Allen LH, Joy AB, Murphy SP. Selecting items for a food behavior checklist for a limited resource audience. *Journal for Nutrition Education and Behavior*. 2003;35:69-82.
 - Murphy S, Kaiser LL, Townsend MS, Allen L. Evaluation of Validity of Items in a Food Behavior Checklist. *Journal of the American Dietetic Association*. 2001;101:751-756, 761.
 - Townsend MS, Sylva KG, Martin A, Metz D, Wooten-Swanson P, Follett J, Keim N, Sugerman S. Visually Enhanced Evaluation for Low-income Clients. *J Nutr Educ Behav*. 2005; 37 (1):S49.
 - Townsend MS, Sylva K, Martin A, Metz D, Wooten-Swanson P. Improving readability for an evaluation tool for low-income clients using visual information processing theories. *J Nutr Educ Behav*. 2008;40:181-186.
- * Funded by the USDA Food Stamp Program via the Network for a Healthy California, UC Cooperative Extension, and the Gustavus and Louise Pfeiffer Research Foundation through the Program in International and Community Nutrition, UC Davis.

<http://www.ca5aday.com>



Figure 3. Food behavior checklist (Lista de hábitos alimenticios) resulting from assessment of face validity in sample of low-income Spanish-speaking women in California. (Figure was created by Jinan Banna, Marilyn Townsend, and Kathryn Sylva, and is used with their permission.)

Author Manuscript

Author Manuscript