AbSTRACT  Health-related behaviors, including food choices, are culturally determined. Culture is the medium through which people interpret their world and the tool individuals use to guide decisions. Recognition of the effect of culture on health-related behaviors has led public health investigators, including nutritionists, to address the concepts of cultural relevancy as applied to intervention strategies and assessment techniques. Drawing on a project involving the development of food-frequency questionnaires for Native American communities, I provide definitions of cultural awareness, cultural sensitivity, cultural appropriateness, and cultural competency. Cultural competency, which involves working within the cultural context of a culturally distinct population, is the approach most likely to reduce miscommunication between investigators and participants and to yield reliable and valid data. Step-by-step guidelines for creating a culturally competent food-frequency questionnaire have been developed. Am J Clin Nutr 1997;65(suppl):1173S–8S.

KEY WORDS  Food-frequency questionnaire, dietary assessment, culture, cross-cultural dietary assessment, cultural competency, Native Americans, cultural awareness, cultural sensitivity, cultural appropriateness

INTRODUCTION  The terms cultural awareness, cultural sensitivity, and cultural appropriateness are frequently used in discussions of public health programs and assessment methods used for populations with cultural behaviors distinct from those of the dominant culture (1, 2). These terms, which are often used interchangeably, indicate recognition of culture’s effect on health-related behaviors. The meanings of these terms are not standardized, however, and operational definitions are not provided in documents advocating the application of the concepts these terms represent (3–5). Thus, their application in the development of intervention strategies or assessment tools is open to interpretation. Presumably, the intent in applying these concepts is to address and record culturally distinct behaviors that may influence health outcomes. Yet the extent and nature of the application varies according to the cultural background and cross-cultural knowledge and experiences of the research or intervention team. If members of the team are also members of the target population, the approach may be quite different from that if the team must rely on ethnographic reports and observations. One approach may not be “better” than another but the data collected or the intervention designed will be different.

This paper has two purposes: to provide working definitions of cultural awareness, cultural sensitivity, and cultural appropriateness and to introduce and advocate the term cultural competency as a more relevant concept and goal in the development of culture-specific public health programs and assessment tools. Nutritionists may find a discussion of these concepts particularly useful. A MEDLINE search of articles published in 1990 to 1996 found fewer than five abstracts that used any of these terms.

The stimulus and supportive examples for this paper are drawn from a project under way in four Native American communities in the southwestern part of the United States. The objective of the project is to develop culture-specific semiquantitative food-frequency questionnaires (SFFQs) to aid in understanding diet-disease associations and assessing nutrition education programs. Collection of data and testing of the validity and reliability of these questionnaires is in progress and will be reported on in the future.

FOOD-FREQUENCY QUESTIONNAIRES  Food-frequency questionnaires (FFQs), the most frequently used instruments for assessing dietary intake, are precoded forms that supply respondents with a list of 60–120 food lines. A food line may consist of a single food item, eg, white bread, or a group of foods having similar nutrient composition, eg, English muffins, bagels, or rolls. These lines are grouped into food categories, eg, breads, dairy products, fruit, and meats. For each food line, respondents are asked to report frequency of consumption on average (ie, usual or typical intake) or relative to a specific time period (eg, during the past month or during the past year). Precoded forms allow rapid data collection and easy data entry because most can be optically scanned. Rapid data handling, however, is achieved at the cost of less complete infor-
mation (6–8). Precoded forms limit respondents’ ability to provide details about foods not listed on the questionnaire, food-preparation techniques, and food combinations. To compensate for the restrictions imposed by the FFQ format, global questions about fats used in food preparation and blank spaces for reporting foods not listed are generally provided at the end of the questionnaire.

SFFQs are FFQs that ask respondents to estimate the usual portion size in addition to the frequency of consumption of a food. Most often, a medium portion size is described for each food line (eg, one-half cup or 1 slice) and respondents are asked to judge whether they eat a small, medium, or large portion relative to the medium reference portion. The reference portion is derived from 24-h dietary recall data collected from national surveys of persons of the same age and sex but not necessarily the same cultural background (6, 9). For some foods, the description of medium is vague (eg, a medium bowl). Such descriptions do not provide an adequate definition of medium and leave its quantification open to individual interpretation.

FFQs and SFFQs have become the principal dietary survey tools in epidemiologic studies of chronic disease for the following reasons: 1) disease-diet links develop over a long time and FFQs allow assessment of long-term or usual food intake over a month or year, thereby reducing errors introduced by estimating usual intake from the day-to-day variability in 24-h recalls; 2) FFQs can be administered in <1 h; and 3) several standardized and scannable FFQs and SFFQs that have been tested for validity and reliability are readily available.

The two most widely used FFQs, the Health Habits and History Questionnaire (HHHQ) (9) and the Harvard Diet Assessment Form (10), were validated in predominantly Euro-American adults living in urban and suburban areas in the United States. In some instances, cultural background or ethnicity is not reported, and women tend to dominate validation samples (6, 9–11). These FFQs were not designed to record frequency of food consumption in culturally diverse or culturally distinct populations and the validity of these questionnaires in epidemiologic studies in such populations has not been thoroughly tested (12–14). The use of these FFQs in minority, multicultural, and non-US populations raises questions about their cultural relevancy and provides a reason to address the role of cultural awareness, cultural sensitivity, cultural appropriateness, and cultural competency in nutrition research and intervention.

CULTURE, THE PERCEPTUAL FILTER

Social scientists working in culturally distinct populations have long questioned the quality of data collected from subjects answering questions that are culturally inappropriate or irrelevant (15–19). The response of individuals to questions is based on their interpretation of the intent of the question, and culture is the medium through which people interpret intent. Culture is a tool that serves the same function for an individual as a lens filter does for a camera (20). The perception of reality—in this case, the interpretation of the question—is altered by the characteristics of the lens. If the people who design and answer a questionnaire share a cultural background, they have a similar cultural lens and their perceptions and interpretations are alike.

Little miscommunication occurs. If the questionnaire’s designers and respondents do not share a cultural background, the questions are filtered through different cultural lenses. Interpretations may not be comparable and the rate of miscommunication may be high. Moreover, neither the investigators nor the respondents may realize that the response provided does not match the intent of the question.

In epidemiologic studies that depend on individuals’ reports of their behavior, misinterpretation of questions and subsequent miscommunication decreases the quality of the data collected. The goal of examining the cultural relevancy of assessment methods is to decrease miscommunication and improve the validity of the data.

RECOGNITION OF CULTURAL DIFFERENCES AND FFQs

Cultural awareness

Cultural awareness implies recognition of culturally unique behaviors. It does not dictate that different behaviors be awarded the same status or validity as parallel behaviors in the dominant culture. Awareness is primarily a cognitive function (21).

In Native American communities in the Southwest, some people consume culturally and regionally unique foods, including frybread, mutton stew, fruit from prickly pear cacti, and wild spinach. Such foods are not listed on a standard FFQ. One culturally aware approach to ensuring that consumption of such foods is recorded would encourage respondents to use the blank spaces provided on the back of the questionnaire under the heading, “Other foods you eat at least once a week.” This approach demonstrates an awareness that other foods are eaten but does not assign the same status to frybread and wild spinach as is ascribed to white bread and domesticated spinach. The message that may be conveyed to Native American respondents is that the other foods are not sufficiently important, either culturally or nutritionally, to appear on the printed page.

This culturally aware approach is methodologically flawed because it relies on respondents’ abilities to recall not only the consumption of uncommon food items but also the frequency with which they were eaten. In contrast, for the more common Euro-American foods, such as white bread and domesticated spinach, respondents must remember only the frequency of consumption. This task difference can lead to underreporting of consumption of other foods.

Cultural sensitivity

Cultural sensitivity implies not only recognition of but also accommodation to culturally unique behaviors. Sensitivity is a cognitive and affective function (21). A culturally sensitive FFQ would retain the Euro-American fruit, vegetable, meat, and bread categories and add a list of “other or traditional foods” at the end of the form. This approach would reduce the recall discrepancies caused by asking respondents to remember both food items and the frequency of their consumption but it would still not group culture-specific foods with other fruit, vegetables, meats, and breads. As a result, respondents must think about wild spinach consumption separately from vegetable consumption. The approach may suggest to respondents that prickly pear cactus fruit, wild spinach, and frybread are not a true fruit, vegetable, and bread, respectively.
In both the culturally aware and culturally sensitive approach, the placement of all "other" foods on the back page of an FFQ suggests that those items are not a part of a normal diet and, perhaps, that they are inferior with respect to either nutritional content or socioeconomic status.

Cultural appropriateness

Cultural appropriateness implies an inoffensive quality and potential utility. A culturally appropriate FFQ modified from the HHHQ or Harvard diet assessment tool and designed to assess long-term intake in all minority populations in the United States might provide blank lines at the end of each food group for recording culture-specific foods. Minority respondents are unlikely to be offended by a questionnaire that is flexible and open to modification (22); however, the questionnaire demonstrates no familiarity or knowledge of culture-specific foods. This modified FFQ has potential utility for recording intake of culture-specific foods from respondents who understand the intent of the questionnaire and the characteristics of the food groups. It does not reflect a knowledge of culture-specific foods or an ability to work within the conceptual universe of the culture.

Inadequacy of a culturally incompetent approach

Cultural awareness, cultural sensitivity, and cultural appropriateness do not require working within the conceptual universe of the culturally distinct population. Instead, questionnaire developers with these approaches require respondents to report food intake according to the Euro-American system of food classification. The task of reporting food consumption according to culturally unfamiliar categories, however, is difficult and may lead to miscommunication, inaccurate reporting, and frustration.

The Euro-American food-classification system groups foods with respect to macronutrient content. High-protein foods are grouped together as meats and meat analogues; high-complex-carbohydrate foods as breads, cereals, and grains; and so forth. These categories are culture bound. In Euro-American culture, macronutrient content is an important characteristic of food. In other cultures, however, foods may be classified according to their digestibility or medicinal qualities (17, 23–26). If respondents are unsure of the nature of the Euro-American categories, they may have difficulty reporting their food-consumption behavior.

The difficulty of thinking about food intake according to an unfamiliar classification system can be shown by an attempt to think about food consumption in relation to a color-based system. Reporting an average intake or frequency of consumption of red foods, for instance, would require classifying red apples with red beans, red peppers, tomatoes, red licorice, red meat, and red Jell-O (Kraft Foods, White Plains, NY). Green Jell-O would fall into the same category as celery, spinach, green apples, and pesto. The difficulty in reporting food intake in relation to an unfamiliar system may help explain why even culturally aware, culturally sensitive, and culturally appropriate intervention and assessment programs can have high drop-out rates and poor adherence.

Cultural competency

Cultural competency implies not only an understanding of the conceptual universe of the culture but also an ability to use that understanding to work successfully within that context. Cultural competency incorporates cultural awareness, cultural sensitivity, and cultural appropriateness but moves beyond, requiring a mastery of cultural knowledge, perspectives, and behavior (21).

Achieving cultural competency requires rejection of the "blank-slate theory," which assumes that before data collection or implementation of an education program, individuals do not have ideas about and explanations for the issues being addressed in the assessment or education process. This approach presumes that respondents will readily accept, understand, and apply a new conceptual system.

The development of a culturally competent FFQ requires asking about not only culturally unique foods but also cultural definitions of food groups and serving sizes. The culturally competent approach recognizes that ways of thinking about foods may already be in place and does not assume that the food groups in the standard food pyramid are applicable cross-culturally.

Collecting information in a specific cultural context provides investigators with knowledge about how cultural groups think about food and reduces the pressure on respondents to think simultaneously in two conceptual systems. Instead, the burden to function within two conceptual systems is shifted to the investigators. Once respondents and investigators begin to work in the same system, a common ground for understanding can be established and miscommunication reduced (27). Common ground, an essential ingredient of all forms of communication, refers to the assumed body of mutual knowledge, beliefs, and suppositions on which conversations are built. If common ground does not exist, the investigator's question, "how often do you eat bread?", intended to refer only to homemade or commercial yeast-containing bread, may make respondents think of both yeast-containing bread and non-yeast-containing bread, such tortillas or frybread. Clearly, such an interpretation of the question by respondents would result in their overreporting bread intake (from the investigator's perspective).

Assignment of different meanings to the same word by questionnaire designers and respondents is difficult to detect (28). The research tools involved typically pass normal edit checks during data processing and meet normal quality control criteria for surveys. Increasing the cultural competency of a research effort can reduce the risk of collecting quantitative data that pass validity tests but are in fact incorrect.

STEPS IN DEVELOPING A CULTURALLY COMPETENT, CULTURE-SPECIFIC FFQ

Whether development of a culture-specific FFQ is necessary can be determined from previously collected dietary recalls and focus-group discussions. A review of 24-h dietary recalls from earlier studies in the target population can be a starting point for identifying food types and portion sizes, although it should not be the only means used to assess the need for a culture-specific FFQ. If the previously collected 24-h recalls were obtained in a cross-cultural or clinical setting, the respondents may have believed that the interviewer did not approve of certain foods or was unfamiliar with some culture-specific foods. As a result, consumption of those foods may not have been reported.
The applicability of standard FFQs can be assessed by the use of focus groups whose members are asked to complete a standard FFQ and discuss their responses (29, 30). Several focus groups may be needed to address the various aspects of the FFQ, ie, the food lists, portion sizes, and food groups. Each group should have four to eight individuals from the target population who represent the individual and household diversity of the community. Members of focus groups should vary in age, health status, educational level, socioeconomic status, location of residence in the community or country, household size, and familiarity with culture-specific foods.

Once the need for a culturally competent FFQ has been confirmed, the tool is created and tested in seven stages: development of a culture-specific food list, determination of culture-specific food groups, creation of a culture-specific database, definition of culturally defined portion sizes, comprehensive assessment of the questionnaire, validation or comparison with multiple 24-h recalls, and readministration to test reliability.

Development of a culture-specific food list

Lists of foods frequently consumed should be based on dietary recalls previously conducted in the target population and on focus-group responses. Participants in focus groups should be asked whether the standard FFQ gave them an opportunity to talk about all the different kinds of foods they eat. The following are some examples of comments that contributed to the development of appropriate food lists in the Southwest Native American FFQ project.

Example A

Participant: “Well, my family is pretty traditional and I don’t know how others eat, but we collect different greens, sometimes for seasoning, sometimes as part of a main dish.”
Facilitator: “Yes, we want to be able to work with people eating all types of food. What different greens are collected?”
Participant: “Wild spinach, wild asparagus, and some . . . I don’t know the English word.”
Facilitator: “How often does your family eat these foods?”
Participant: “It is different depending on the seasons. It can be a lot in some seasons.”

Example B

Participant: “I don’t know how others eat, but my kids love zucchini gravy and corn gravy.”
Facilitator: “How do you make these gravies?”
Participant: “I fry the zucchini, corn, or whatever in Crisco [Procter and Gamble, Cincinnati] and then add flour and water.”

In example A, an appropriate food list had not been provided on the standard FFQ and wild spinach, wild asparagus, and other wild plant foods could be listed only under “other foods.” In the second situation, if the respondent had simply checked zucchini and corn on the FFQ, consumption of the fat used in making the gravy would not have been recorded.

As draft food lists are developed, additional focus groups should be formed and participants encouraged to talk about the foods on the FFQ lists that they never eat, foods they did not have the opportunity to report, and foods that were similar to but not identical to foods they eat. One response to a long list of rarely or infrequently eaten foods is to report consumption of foods that are not actually eaten. Smith (31) has referred to these as “phantom foods” or “intrusions.” People may feel awkward when they cannot check many of the foods listed, especially those in “good-for-you” categories such as fruit and vegetables. They may feel that they are not completing the task asked of them or that they are not eating “right.” These feelings can lead them to check familiar foods on the list, even if they eat them less than once a month. In the Native American FFQ project, those who ate few of the foods on the precoded list checked phantom foods more frequently than did those who ate many of the foods on the list. The existence of phantom foods was discovered during follow-up discussions about access to and preparation of those items.

Determination of culture-specific food groups

Culture-specific food groups should be determined from the food list has been developed. In the Native American FFQ project, copies of the food lists are cut apart at the individual lines. The resulting slips of paper with the separate line entries on them are given to focus-group participants, who are asked to organize the entries into as many or as few piles as they think appropriate. Given the influence of and the familiarity with Euro-American food groups and the standard food pyramid, most focus-group members produce food groupings based on those models, although deviations from the models do occur. For example, some participants prefer a classification system consisting of main dishes, side dishes, snacks, and desserts. Some participants are more comfortable thinking about bacon, Spam (Hormel Foods Corporation, Austin, MN), and breakfast sausage in conjunction with eggs and pancakes in a category of breakfast foods rather than in a meat category. Vegetables, particularly those grown in the community, such as corn, squash, and green beans, are placed in the main dishes group. These foods are reported to be so prevalent in the diet during harvest periods that they are served, accompanied only by bread, as the evening meal. Focus-group members confirm these behaviors, similarly stating that they are more comfortable with certain fresh vegetables listed as a main dish rather than a side dish.

To facilitate dietary reporting, food groupings should fit within respondents’ conceptual framework. Sometimes these groupings may seem counterintuitive to data collectors trained within a Euro-American framework. Intuition, however, is bound by cultural perception.

Creation of a culture-specific database

The creation of a culture-specific database begins with the development of a culture-specific food list and is not completed until after comprehensive assessment of the culture-specific FFQ. Developing a database for use with a new FFQ requires identification of culture-specific food-preparation techniques and recipes. The nutrient content of mixed dishes that include foods for which nutrient-composition information is available can be estimated from recipes providing weighed or measured ingredients. In the Native American communities that participate in the FFQ project, few people cook according to recipes and standard household measuring units. Data collection of food-preparation methods occurs during arranged cooking sessions or “food parties.” At these sessions, women cook one or more of the dishes on the FFQ for which there is no recipe.
While the dish is being prepared, ingredient portions are weighed and preparation steps recorded. Asking simply for reports or recalls of recipes relative to household measures is incompetent because although these measures are familiar and easy-to-use components of the data collector's environment, they are not used comfortably by the respondents. If forced to use these units, respondents may misestimate quantities.

The consumption in Native American communities of dishes that include wild foods or culture-specific domesticated foods has already been described. When such foods are mentioned by respondents, samples are collected for botanical identification. In instances in which no published nutrient values are available, the nutrient content of samples is analyzed.

Through the cooking and food-gathering sessions, community members emerge as experts as they explain and demonstrate their skills. The sessions clearly establish the community's role in the project and strengthen its interest and confidence in the validity of the data-collection instrument.

Definition of culturally appropriate serving sizes

The need to establish culturally appropriate serving sizes can be determined by work with focus groups. In the Native American FFQ project, the importance of reviewing cultural interpretations of serving sizes was discovered during the cooking sessions. Once a dish is completed, the cook is asked to serve the dish as she would to a family member. The demonstration indicates that, in some cases, the "typical" serving size is four or five cups, not the one-half cup often assumed on a standard FFQ.

To investigate the cultural relativity of serving sizes further, focus groups composed of members of the target population should be asked to illustrate their concept of small, medium, and large servings. To provide a nonrestrictive response domain, the participants should be furnished with cups ranging in capacity from 6 to 56 oz (177–1656 mL), plastic bowls with capacities of 2.5 to 8 cups (6.0–2 L), and spoons from 1 teaspoon (5 mL) to 5 tablespoons (74 mL) in size. In the Native American FFQ project, previous experience and focus-group discussions suggest that many participants associate standard household measuring cups and spoons with dietary restrictions and attempts to modify normal dietary behaviors; therefore, such items are not present during any focus-group session. To assess portion sizes for foods added to other foods, such as salad dressing, margarine, and peanut butter, actual salads and slices of bread are provided as props for participants to demonstrate small, medium, and large servings.

After all participants have demonstrated their idea of the various serving sizes for each food line, differences in the perceptions of small, medium, and large servings are presented to the entire focus group for discussion and development of a consensus. This consensus is incorporated into the FFQ.

Comprehensive assessment of the FFQ

Comprehensive assessment of a culture-specific FFQ can be done by members of the target population hired to collect the 24-h recalls used in the validation stage of the project. As the first step in their dietary assessment training, these individuals should be asked to self-administer the FFQ and then discuss their level of comfort with it, as well as their level of satisfaction with the process. The following questions should be asked during this initial training session:

1) Did you feel that you had the opportunity to report the types and amounts of food you have eaten during the past month?
2) Did the food descriptions describe the foods you eat?
3) Did you know where to record all the foods you eat?

Responses to these questions should be considered in the final modification of the FFQ before it is tested in the field.

In the Native American FFQ project, the questionnaires are not converted into a scannable format because printing scannable forms is not cost-effective in the small populations in which these questionnaires will be used and because participants are not comfortable with the scannable format.

Validation of FFQs

Culture-specific FFQs should be validated against multiple 24-h recalls of food intake, preferably including both weekdays and weekends. All recall information should be collected by trained members of the target population. In the Native American FFQ project, the respondents are not chosen randomly. Because of the large burden placed on the subjects by multiple dietary recall sessions, the trained Native American interviewers are asked to identify persons they think will be willing to be interviewed repeatedly about their food habits. They are encouraged to choose participants of diverse ages, education and income levels, and positions in the household. A considerable amount of time is spent discussing the need to include in the sample individuals who are married to nonmembers of the tribe, those having both traditional and nontraditional food habits, and individuals in various states of health.

Interviewers are trained to collect recalls by using a kit consisting of locally available bowls, cups, spoons, cardboard and plastic food models, and rulers. Dishes are marked to indicate total and partial volume sizes in standard household cups and spoon sizes. Interviewers are encouraged not to ask respondents to report sizes in standard measuring units, but to illustrate portion sizes by pointing to the place to which the bowl was filled or to the appropriate spoon size. Cardboard circles of various diameters are cut to represent tortilla and frybread sizes. Plastic models of meat are provided to assist estimation of meat servings. Interviewers are trained not to refer to these models as "normal" or "typical" portion sizes, but merely as reference tools. For difficult-to-quantify foods, such as homemade bread, brownies, cookies, and cake, respondents are asked to draw an outline indicating their size on a blank sheet of paper. After completion of the interview session, interviewers measure the drawings with the rulers and record the dimensions. Dietary recalls are conducted during a 4-mo period. Monthly meetings are held with interviewers to collect the recall information and discuss problems and techniques.

Reliability testing of FFQs

The FFQs should be administered twice to the same persons who had provided multiple 24-h recalls, with the two administrations being 2–4 mo apart and conducted by two different interviewers. Redadministration by a different interviewer helps reduce respondents' need to recall earlier FFQ responses by eliminating the feeling that the same data collector has come back to verify the earlier responses and aids in determining the instrument's effectiveness when administered by an unfamiliar interviewer.
SUMMARY AND CONCLUSIONS

The instrument development process used in the Native American FFQ project illustrates techniques for improving the cultural competency of an assessment and education tool. Soliciting the help of community members as experts in creating a data-collection instrument not only improves the cultural competency of the questionnaire but also leads to ownership and confidence in the tool. The community members hired during the validity and reliability stages of this project are interested to see how well their questionnaire works.

Engaging members of the target population in the development process should reduce the pressure on local interviewers and respondents to function within two health constructs—the Euro-American biomedical or nutrient-based model and the culture-specific model. This approach contrasts with the frequently used technique of soliciting members of the local community to assist in the development of a questionnaire or educational curriculum and then providing workshops and training sessions to help them understand the development process and project goals. Such workshops and training sessions bring the community experts into the Euro-American conceptual framework and ignore or discredit cultural interpretations of the target population. For example, community lay educators or interviewers may be taught to use the standard food pyramid as an aid in education or data collection. In doing so, they must ignore traditional food-classification systems or make a cognitive bridge between two culturally distinct conceptual systems. In most cases, the need to build this bridge is not even recognized.

The culture-specific FFQs described here are being developed with cultural competency as a goal. Using a data-collection framework useful to the epidemiologist, the questionnaires allow interviewers and respondents to work within their own conceptual universe and to recognize rather than ignore culture-specific ways of thinking about food.

I express my sincere gratitude to the community members and health care providers who are assisting in the Native American FFQ project.

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