

# Cognitive Aspects of the Questions Used to Measure Food Insecurity and Hunger

*Jennifer Dykema and Nora Cate Schaeffer*

A set of questions to measure food insecurity and hunger was first included as a supplement to the Current Population Survey (CPS) in 1995. In this paper, we review the core eighteen items from the Food Security Supplement (FSS) that are used to identify households that are food insecure and food insecure with hunger.<sup>1</sup> We approach our discussion from the perspective provided by the substantial literature about developing questions for standardized interviewing (e.g., Dykema and Schaeffer, 2000; Schaeffer and Dykema, 2004; Schaeffer and Presser, 2003). Our goal is to identify issues that could reduce the validity or reliability of the items that comprise the scale. To establish the context for this discussion, we draw on the work of others, particularly the background papers prepared for the workshop, to give a brief review of the concepts that the items are intended to measure and their history. We also briefly summarize the results of the methodological studies that were conducted in the early 1990s when the items were revised for inclusion in the CPS. We then turn to the items themselves: We first provide a discussion of issues that affect multiple items and then identify features of each of the individual items that could be examined in future developmental work. We conclude by suggesting future methodological studies.

## CONTEXT FOR THIS REVIEW

The core eighteen items – ten for households with adults and an additional eight for households with children -- that identify food insecure households changed little since the scale was first included in the CPS in 1995 (Alaimo and Froelich, 2004, p. 1). Details about the items are provided in the appendices: Appendix A provides current wording for the core 18 items and Appendix B summarizes changes to the items over the years.

### **Conceptualization of Food Insecurity (food security, food insecurity, hunger)**

Radimer and her colleagues developed their conceptualization of a construct they initially labeled “hunger,” based on semi-structured interviews with 32 women who “had gone hungry or had been close to going hungry” (Radimer et al., 1992, p. 37S; Radimer et al., 1990). Statements that women made in the interviews were analyzed using the “constant comparative

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<sup>1</sup> When we refer to the FSS in this paper, we mean the 18 core items unless we specify otherwise.

method” of Glaser and Strauss. By examining and sorting statements made by these women, the researchers identified components of “hunger” that they labeled quantitative, qualitative, psychological, and social. At the level of the individual these components are expressed as insufficient intake, nutritional inadequacy, lack of choice and feelings of deprivation, and disrupted eating patterns. For the household, these components are expressed as food depletion, unsuitable food, food anxiety, and food acquisition in socially unacceptable ways. In developing items for administration in standardized interviews, the researchers focused on a subset of these eight concepts: insufficient intake, nutritional inadequacy, and disrupted eating patterns for the individual (women and children); food depletion and food anxiety for the household. Answers provided by a convenience sample of 189 women were then factor analyzed; the analysis revealed three factors that the authors label “household,” “children,” and “women.”

In writing the original items, Radimer et al. (1992, p. 40S) used wording taken from their semi-structured interviews. When it was possible to do so, they phrased questions as statements, and respondents were asked to assess how often the statements were true; Radimer et al. report that this format was easier to understand than direct questions. Items used present tense when possible and were worded so that agreement indicated hunger. To focus the respondent’s thinking on hunger due to limited resources, a phrase referring to economic constraints was added to each item. In an attempt to make response categories applicable to both chronic and episodic hunger, relative frequency categories (e.g., “never, hardly ever”) were used rather than categories expressing rates (e.g., once a month). The researchers suggested that for items asking how “true” a statement was for the respondent, three categories (not true, sometimes true, and often true) would be less burdensome than the five that were used in the developmental work (1992, p. 43S), and it appears that this recommendation was implemented in the 1995 FSS.

The task taken on by Radimer et al. was substantial, both conceptually and operationally, as subsequent developments have made clear. Papers prepared for the Workshop on the Measurement of Food Insecurity and Hunger include detailed discussions of how the construct measured by the food security supplement is conceptualized and operationalized (see Habicht, Pelto, Frongillo, and Rose, 2004; Alaimo and Froelich, 2004; Wilde, 2004). The Panel to Review USDA’s Measurement of Food Insecurity and Hunger has also discussed the conceptualization of this concept in its report (2005). The following conceptual issues are particularly relevant for the discussion in our paper, which focuses on the link between the concept and its operationalization and on the technical aspects of its operationalization:

- *The dimensionality of the concept.* “Dimensionality” has different meanings. It can be used, for example, to refer to the fact that a factor analysis identifies separate factors for households, women, and children (e.g., Radimer et al., 1992, p. 42S); even though it might be plausible that the concept of “hunger” could be the same for each of these unit of analysis. The quantitative, qualitative, psychological, and social “components” of the concept might be described as “dimensions” for some purposes. If the items predict nutritional outcomes for some demographic groups (such as adults 65 and older) but not for other groups (such as children) (see Haider, 2004), this might imply a kind of multidimensionality. Dimensionality could also refer to technical features of a model (e.g., the unidimensionality assumption of the Rasch model). (See also the summary of additional studies in the report of the panel, p. 38-39.)
- *The relationship between “hunger” and “food insecurity.”* In its report, the panel noted that, “The question of whether it is appropriate to identify hunger as a category at the severe end of the range of food insecurity is a conceptual one. The panel thinks that a clear conceptuali-

zation of resource-constrained hunger – both a physiological and socioeconomic construct – is not evident in the current measure of food insecurity with hunger” (2005, p. 33). The question is also an operational one: If “hunger” is an important component of the concept being measured, it should figure appropriately in the operationalization of the concept.

- *The causal and measurement models of the concept.* Survey questions usually ask about “effects” or “symptoms” of a concept that is being measured. Ideally, one chooses effects that respond to the unobserved concept, but not to other important causes. Which effects one focuses on depends in part on the overall causal model of the concept and the analytic goals of the researcher. The elaborated and refined conceptual model of food insecurity in Alaimo and Froelich (2004) is a step toward developing a model that might directly inform the operationalization of the concept, but further refinements that include both native and analytic concepts are needed.
- *Unit of analysis and unit of reporting.* In the terms of classical measurement theory, a concept is a property of a system. The items in the food insecurity and hunger scale ask for information for several different “systems:” households (or possibly just adults in households), the respondent, and children in a household. Answers to these questions are then used to construct measures of properties of other systems: households with children, households without children, and, perhaps, individuals. The source of information appears to be the respondent chosen for the Current Population Survey; the studies we reviewed did not discuss the extent to which the CPS respondent is likely to be a good respondent for the food security supplement. The food security supplement is further complicated, as we discuss later, by the fact that some of the items ask the respondent to report about him or herself, some ask for reports about the household, and some are ambiguous.

The initial qualitative work on which the food security supplement was based appears to have uncovered important features of the organization of food insecurity and hunger in the population, what we might label native concepts of hunger. The initial research also described native concepts invoked by members of the population when they discuss being hungry. However, the complex concepts of food insecurity and hunger and the similarly complex set of operationalizations that were proposed as a result of this work, do not appear to have been subjected to the discipline afforded, for example, by developing explicit causal and measurement models for the concept. The IRT models that have been used to analyze these items were originally developed for use in testing, where it is plausible that the “effects” being measured are causally homogeneous. For example, it is plausible to assume that when we observe someone solving many different algebra problems we are seeing many effects of a single unobservable ability to solve algebra problems. In contrast, which effects of food insecurity are experienced by an individual may depend partly on additional causes, such as their history, access to social programs, size of household, and so on.

### **Overview of the Food Security Supplement and Scale**

The Food Security Supplement (FSS) was first included in the Current Population Survey (CPS) in April of 1995. Since then, the supplement has been administered in the following years: September 1996; April 1997; August 1998; April 1999; September 2000; April 2001; December 2001; December 2002; and December 2003. Data from these supplements are used to track levels of food insecurity and hunger for the nation and for individual states. Our review focuses only on the food security scale, which is one of four sections included in the supplement.

The other sections include questions on food expenditures, food program participation, and ways of coping with not having enough food.

The items used to measure food insecurity ask about several facets of the concept that were identified in the qualitative work reported by Radimer et al. (1990). Thus, the questions ask about several content dimensions (Bickel et al., 2000, p. 22-25). First, the items include a mixture of both psychological consequences of food insecurity and hunger (“we worried whether our food would run before we got money to buy more”) and associated events (“we couldn’t afford to eat balanced meals”), although most of the items in the scale ask about the frequency of events or behaviors. Second, the questions describe four domains or situations (Bickel et al., 2000, p. 24):

“Anxiety or perception that the household food budget or food supply was inadequate (Q2, Q3);  
 Perceptions that the food eaten by adults or children was inadequate in quality (Q4, Q5, Q6);  
 Reported instances of reduced food intake, or consequences of reduced intake, for adults (Q8, Q8a, Q9, Q10, Q11, Q12, Q12a); and  
 Reported instances of reduced food intake or its consequences, for children (Q7, Q13, Q14, Q14a, Q15, Q16).”

Based on their responses to questions in the scale, respondents or households may be classified into several categories, the three most relevant for our discussion are: food secure, food insecure without hunger, and food insecure with hunger. The last category, food insecure with hunger, can be further divided into those with “moderate” or “severe” hunger (Tarasuk, 2001).

### **The Scale**

The core set of 10 items (for households without children) or 18 items (for households with children) have been analyzed using the one-parameter IRT (item response theory) model, or Rasch model. The Rasch model establishes a stringent set of criteria for a scale. Similar models underlie many achievement tests: If all items in a test are equally related to the underlying ability but differ in difficulty, we can use a sum of the correct answers on the test as an estimate of the level of the underlying ability. When a set of dichotomous items satisfies the attractive properties of the Rasch model, one can simply sum the number of answers that indicate the presence of the underlying trait to estimate an individual’s level of the trait. For the Rasch model to be appropriate, all items in a scale must have the same relationship to the single dimension the items measure (i.e., the same discrimination), and the items must be calibrated to the levels of the underlying trait that one wishes to measure. (See discussions in Wilde, 2004 and Johnson, 2004.)

It appears that the items are not well-described by the Rasch model. For example, analysis of the 10-item set administered in 2002 with the two-parameter IRT model indicates that the item discrimination for at least two of the items differs significantly from the discrimination of the other items. The item discrimination for the item about affording “balanced meals” is significantly smaller than the discrimination of the other items, and that of the item about being hungry but not eating is significantly larger (Johnson, 2004). Like reliability, the item discrimination indicates how much information about the underlying trait is carried by an item. If the two-parameter IRT model is more appropriate than the Rasch model, then more discriminating items should be weighted more heavily when scores are calculated. Because the issues discussed in

sections 2 and 3 below could affect the reliability of the items, these issues also have implications for how well the Rasch model fits the data. An additional issue raised by using the Rasch model is that most items in the FSS are polytomous, but they are treated as dichotomous, thus losing useful information (see Johnson, 2004).

Concerns about the dimensionality of the scale can implicate problems with the design of the questions from which the scale is built. For example, the items about adults have different scale properties in households with and without children (Wilde, 2004). This finding could reflect real differences between the households, but could also reveal ambiguities in the meaning of the questions.

## **GENERAL (CROSS-CUTTING) ISSUES THAT AFFECT THE SCALE ITEMS**

### **Fit between the Concept and Its Operationalization**

There are many ways of assessing the validity of a scale. Content validity refers to the degree to which the items currently included in the scale represent the various facets of the concept (see Bohrnstedt, 1983), in this case the components of food security, food insecurity, and hunger. Although the current scale covers 15 topics, the scale still falls short of capturing important aspects of both the definition of food security/hunger and the process of experiencing these states as identified in numerous ethnographic interviews. Habicht, Peltó, Frongillo, and Rose (2004) review the findings from several ethnographic studies of food insecurity that point to additional areas not indicated by items in the scale including items to capture a “lack of stored food (shortage of food in the home)” and a “... psychological component of food insecurity in which expressions of social alienation and loss of self-esteem predominate” (p. 5). Although recommending substantial changes to the current scale, such as including a battery of additional items, is not within the scope of this review, we briefly review aspects of food insecurity that are not included in the scale at present.<sup>2</sup>

Bickel et al. (2000, p. 6) describe the conceptual definition of food security and food insecurity as defined by the Life Sciences Research Office (LSRO) of the Federation of American Societies for Experimental Biology in 1990:

“Food security: Access by all people at all times to enough food for an active, healthy life. Food security includes at a minimum: (1) the ready availability of nutritionally adequate and safe foods, and (2) an assured ability to acquire acceptable foods in socially acceptable ways (e.g., without resorting to emergency food supplies, scavenging, stealing, or other coping strategies).”

“Food insecurity: Limited or uncertain availability of nutritionally adequate and safe foods or limited or uncertain ability to acquire acceptable foods in socially acceptable ways.”

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<sup>2</sup> Note that the current scale is quite short – it takes roughly 4 minutes to administer all of the items; however, when the screener questions are asked, the administration time is substantially lower, about 2 minutes on average for the general population (Bickel et al. 2000, p. 20). Any recommendations about increasing the number of items in the scale would have to balance increased respondent burden against potential gains in validity or reliability.

This definition points to at least three areas that are not represented (or not represented adequately) by the current items (see, too, Bickel et al., 2000, p. 9). First, to be food secure, households should be eating foods that are “nutritionally adequate” and “safe.” The scale asks about: not being able to afford to eat “balanced meals (Q4)” for the household (Q4) and the children (Q6) and relying on “a few kinds of low-cost food” for the children (Q5). These questions are probably intended to assess whether respondents are eating food that is adequate in quality. However, there may be better ways of asking about this phenomenon and these should be explored in qualitative interviews with respondents. Presently, the scale only assesses whether the household relied on “a few kinds of low-cost food” for the children; a parallel item is not included for adults in the household. Second, as far as we could discern, none of the questions evaluates whether the foods eaten are “safe.” Third, none of the items included in the scale ask whether food was obtained through other socially acceptable channels, such as through emergency food supplies,<sup>3</sup> although it is not clear whether such behaviors should be considered symptoms of food insecurity; they might be more appropriately considered as coping strategies that have important causes other than food insecurity that make them unsuitable for inclusion in the scale. Bickel et al. (2000, p. 9) also point out that “... other possible sources of household food insecurity apart from financial constraint, such as reduced mobility or function for isolated elderly or ill persons, are not captured by the measure.”

### **Survey Concepts and Item Complexity: Household Financial Limitations**

One of the most important goals in questionnaire design is to reduce the cognitive complexity of the items for the respondent. To achieve this, questions should: (1) be written as unambiguously as possible, (2) where applicable, related items should use a parallel structure, and a (3) concept should be described in the same way whenever it is referred to. When the same concept is described in different ways, respondents must expend effort to process the descriptions and determine whether or not they refer to the same concept. In some cases, respondents may decide that the variation in terminology is intended to invoke different concepts, and implement nuances of meaning where none was sought.

Many of the items in the scale specify constrained financial resources, but the items vary in how they describe these constraints. Currently the questions include the following phrases:

“before we got money to buy more” (Q2);

“didn’t have/wasn’t enough money” (Q3, Q8, Q9, Q11, Q12, Q13, Q14);

“couldn’t afford” (Q4, Q6, Q7, Q10, Q15, Q16);

“running out of money” (Q5)

Bickel et al. (2000, p. 9) note that: “Each question aims to assure that the reported behavior or condition occurred because of household financial limitations by including phrases such as ‘because we couldn’t afford that’ or ‘because there wasn’t enough money for food’.” However, the questions include different phrases to refer to these limitations; this burdens the respondent with additional processing. In addition, the respondent may also be unsure about whether these

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<sup>3</sup> Bickel et al. (2000, p. 43) note: “The CPS Food Security Supplement does collect information on major types of food-augmenting coping behaviors, e.g., getting emergency food from a food pantry, eating meals at a soup kitchen, borrowing money to buy food, and others. These coping-behavior items were tested for inclusion in the food security scale. However, they were found not to meet the statistical test criteria for inclusion *within* the measurement scale, even though they correlate closely *with* the scale. Very few households use these coping behaviors that are not also identified as food insecure by the scaled measure. Other aspects of the broad conceptual definition (LSRO 1990) are not readily, if at all, commensurable with the central element measured by the food security scale (see note 5).”

different formulations are intended to refer to the same concept. Although all of these phrases refer to constrained economic resources, not being able to “afford” a commodity – even one as basic as food – may evoke a different set of considerations than “not having enough money.” There are also more subtle variations within these broad groups. For example, “you didn’t have enough money for food” may be different from “because there wasn’t enough money for food.”

We recommend investigating the meaning of these various phrases in cognitive interviews and, after candidate phrases are selected, in respondent debriefing questions held as part of a pilot study. The final set of questions should refer to constrained economic conditions in a consistent manner across items.

### **Specification of the Reference Person(s): Household versus Respondent versus Children**

The specification of the reference person in the Food Security Supplement poses several challenges for respondents:

- *The unit referred to by the question changes across questions.* The unit is variously the household (e.g., Q2/SS2, “Was that often true, sometimes true, or never true for you/your household?”), adults in the household (e.g., Q8/SH2, “In the last 12 months, did (you/you or other adults in your household) ever cut the size of your meals or skip meals because there wasn’t enough money for food?”), the respondent (e.g., Q9/SH3, “In the last 12 months, since December of last year, did you ever eat less than you felt you should because there wasn’t enough money for food?” and Q13/SSH2, “...In the last 12 months, since December of last year, did you ever cut the size of (your child’s/any of the children’s) meals because there wasn’t enough money for food?”), and children within the household (e.g., “In the last 12 months, did (your child/any of the children) ever skip a meal because there wasn’t enough money for food?”).
- *The unit referred to changes within question.* For example, Q3/SS3 presents the statement “‘The food that (I/we) bought just didn’t last, and (I/we) didn’t have money to get more.’ Was that often, sometimes, or never true for you in the last 12 months.” In households with more than one adult, the statement uses the plural “we,” but the target question asks about “you.” Although “you” can be either singular or plural, the introduction at Q2/SS2 and the target question in Q2/SS2 specified the unit being referred to (“Was that often true, sometimes true, or never thru for (you/your household) in the last 12 months?”). Although some respondents may infer at Q3/SS3 that “you” refers to “your household,” some respondents will treat the contrast as informative and infer that the unit has changed, and others will simply shift focus to the easier unit to report about, the respondent themselves.
- *The unit is an aggregate unit that implicitly requires that the respondent aggregate or summarize in order to describe the unit.* In responding to Q2/SS2 (“The first statement is, ‘(I/We worried whether (my/our) food would run out before (I/we) got money to buy more.’ Was that often true, sometimes true, or never thru for (you/your household) in the last 12 months?”), the respondent must summarize the experience of multiple adults. These experiences may be variable within household – one person may worry sometimes, another may never worry. It is not clear whether the respondent should report that “your household” worries if at least one adult worries or only if all adults worry. Similarly, the question assumes that there is some economic sharing among the adults in the household,

so that it makes sense to say, "...before we got money to buy more." It is not clear how many adults would need to "get money to buy more" and which adults they must be willing to share the food they buy with.

- *Many questions ask for proxy reports.* It appears that the FSS uses the respondent for the CPS. In the case of Q8/SH2, for example, the respondent may not know how often all the adults in the household cut the size of meals or skip meals. If the respondent is not the person who feeds the children, she or he may not know how often the size of the children's meals were cut (Q13/SSH2). Questions Q9/SH3 ("...did you ever eat less than you felt you should because there wasn't enough money for food?"), Q10/SH4 ("...were you ever hungry but didn't eat because you couldn't afford enough food?"), and Q11/SH5 ("...did you lose weight because you didn't have enough money for food?") appear to use "you" as singular to refer to the respondent themselves. This seems appropriate, because the experiences asked about seem unsuited to proxy reports; if "you" in these questions refers to the respondent, then it is inconsistent with the use of "you" as (probably) plural in Q3/SS3 to Q6/SS6. The experience of "worry" in Q2/SS2 also seems unsuited to proxy reports, but it is asked about as though it is a household-level concept.

The problems raised, for example, by using aggregate units that are reported on by proxy can be seen by considering respondents' interpretations of the phrase "your household." First, members in a household may vary in whether they ran out of money to buy food and it is uncertain how a single respondent would answer these questions. Second, questions in the scale make a distinction between the experiences and behaviors of adults versus children. However, for many of the questions, this distinction will be ambiguous. For example, Q2/SS2 asks how often the statement was true for "your household," which could include the children. Rephrasing the questions to ask only about "adults in your household" is awkward. Third, it is not clear why some questions include all members of the household and some include only the respondent. As an example, why should the scale count all members of the household who cut the size of or skipped meals at Q8/SH2 but only the respondent's experience of eating less than she or he felt she or he should at Q9/SH3? Ethnographic evidence from other countries suggests that women often cut back on their food consumption in order to give more to their husbands and children. If this occurs in the United States, and the respondent is the male householder, information about this practice would be lost.<sup>4</sup> Finally, for questions that ask about the experiences and behaviors of all adult members of the household, the respondent may not be able to answer for the other members. For example, Q2/SS2 asks about worrying about food running out. While worrying has physical manifestations, it is largely an unobservable condition and unless this information is shared verbally with the respondent, it is uncertain whether the respondent will be able to report it.

We recommend cognitive interviews to determine if the interpretations made by respondents are consistent with the definitions of the question writers and whether respondents are able to answer for all adults (and children). Additional studies are needed to investigate issues related to proxy reporting. Analysis should begin by identifying who the respondent is in households with multiple adults and the relationship of the respondent to other adults and children in the household. The cognitive interviews with respondents like those in the CPS-FSS should then pursue this topic by asking respondents to report separately for themselves and other members of the household to see if differences exist. Respondents should be probed to find out if they are an-

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<sup>4</sup> This suggests looking to see if there are gender differences in reports for questions Q9/SH3 to Q11/SH5

swering the questions for themselves or all members of the household. These interviews should also investigate the respondent's knowledge about the food security of children in the household. There may be topics not currently included in the FSS (such as whether children in the household get reduced price breakfast or lunch at school) that may be useful supplementary information.

### **Reference Periods**

In principle the 12-month reference period currently employed in the food insecurity and hunger scale allows researchers to estimate the proportion of households that experienced hunger in a year, a concept that encompasses seasonal variation. Unfortunately, while the motivation to use a 12-month reference period is clear, evidence indicates that the reference period may be too difficult for respondents to implement accurately. For example, analysis of prevalence rates of food insecurity and hunger suggested a seasonality effect such that rates differed depending on whether the survey was fielded in the spring (April) versus the fall (September) (Cohen et al., 2002). Although one might expect that episodes of severe food shortage or hunger would be salient and therefore memorable, it is possible that the occurrence of such events is salient, but their frequency, duration, or timing are not encoded. This could occur if episodes of hunger occur in stressful contexts that are not conducive to encoding these experiential features. Furthermore, episodes of severe food shortage or hunger (or of constrained resources) may have vague boundaries – it may be easy to say that a time of constrained resources has now become a time of hardship, but it may be difficult to pinpoint exactly when the character of the event changed. Such ambiguities may make it difficult to encode or enumerate events like times of hunger. For researchers selecting a reference period, it is useful to understand how the event being asked about is patterned in the respondent's experience, and how the respondent encodes the frequency of the event. These are topics that can be addressed in developmental interviews and in cognitive interviews. There may be ethnographic evidence about how hunger is experienced over time at the household level that could also be drawn on. For example, in asking questions about behavioral frequencies, it is useful to know how the behaviors varied over time with regard to their frequency, regularity, and similarity. This information can be used to write questions that more accurately measure the behaviors in question (see Dykema and Schaeffer, 2000).

With regard to the reference periods included in the questions, there are at least two important issues to address. The first concerns the appropriateness of using (for the most part) an annual reference period to evaluate hunger. The second has to do with the best way to specify the reference period within the wording of the individual questions. A third issue is the challenge posed for respondents by shifting between a 12-month and a 30-day reference period. We do not discuss this issue in detail, but urge that cognitive interviews and debriefing questions examine consequences of the changing reference period for respondents.

### **Appropriate Length of the Reference Period.**

As noted by Schaeffer and Presser (2003, p. 17): “The choice of reference period is usually determined by the periodicity of the target event, how memorable or patterned the events are likely to be, and the analytic goals of the survey. Thus, investigators usually prefer to ask about religious practices over the previous year in order to obtain information about respondents who attend only on their religion's (annual) holy days. By contrast, questions about purchases of

candy bars usually use a much shorter reference period. Although more recent events are generally remembered better than more distant events, the influence of the length of the reference period is probably smaller for frequent and highly patterned events, because respondents use information about patterning to construct their answers (Schaeffer, 1994; Dykema and Schaeffer, 2000).” As we discussed earlier, information about how episodes of hunger are encoded could inform the choice of a reference period and the related choice of a response dimension (i.e., occurrence, frequency, duration, interval, and timing).

There is evidence to indicate that the 12-month reporting period asked about in these questions could reduce the validity and reliability of responses. Hess and Singer (1995) report on respondents’ understanding and use of the “last 12 months” reference period. As part of the pretest conducted to evaluate items for inclusion in the 1995 supplement, respondents were asked 17 debriefing questions designed to evaluate the consistency of their responses, their comprehension of terms and concepts, and their reactions to the survey. In order to assess whether respondents’ understanding of the “last 12 months” was consistent across respondents and matched the definition intended by the question writers, respondents were asked the following debriefing probe: “We asked you several questions about things you might have done in the past 12 months like borrowing food, putting off paying a bill, or skipping or cutting the size of your meals. When you answered these questions, were you thinking of the 12 months starting September 1993 and ending August 1994, or were you thinking of the 12 months starting January 1993 and ending December 1993?” Results indicated that nearly 25 percent of the respondents (N = 295) “... failed to understand correctly the time period referred to by the question asking about ‘the last 12 months’ (p. 1077).”

The impact of the length of the reference period and confusion about its boundaries on the quality of the resulting data depends partly on the actual organization of the episodes of hunger in respondents’ lives. Both the difficulty of the reporting task and the organization of the respondent’s experience will influence which heuristics the respondent uses to supplement their memory in constructing answers. For example, a respondent who experiences food shortages monthly because of the timing of income supports, may take a monthly value and multiply by 12 to produce an answer. Another mechanism is suggested by the comment in Bickel et al. (2000, p. 16) that, “The U.S. standard food security measure reflects the household’s situation over the 12 months before the interview (although the core module can be adapted to other survey periods--see p. 25 below). A household that experienced food insecurity at some time during the past year (or other period), and therefore is considered food insecure, may in fact be food secure at the time of the interview.” In such a case, the respondent’s beliefs about the stability or level of change in periods of food insecurity or hunger may supplement the respondent’s memory as the answer is constructed (see, for example, Ross and Conway, 1986). Other heuristics that supplement or replace memory when answers are constructed are described in Schwarz (1994) and Tourangeau, Rips, and Rasinski (2000).

Two methods for reducing the burden of such a long reference period are to reinforce the boundaries of the reference period (for example, by reviewing events that can help to fix the beginning of the reference period) and to choose a simpler response dimension (for example, asking about occurrence rather than frequency).

### **Specification of Reference Periods.**

In writing questions to assess behavioral frequencies over a fixed reference period, the question writer must decide: how specific the definition of the boundaries should be (e.g., “in the last

12 months” versus “from December 1<sup>st</sup> 2005 to December 1<sup>st</sup> 2006”); where in the question the reference should be located (e.g., at the beginning of the question so that respondents are immediately pointed to the relevant time period versus at the end of the question after the main topic of the question has been presented); and, for questions included as a series or in a scale, how often and in how much detail to repeat the reference period (see Schaeffer and Presser, 2003 for a discussion of most of these elements).

The items currently included in the food security and hunger scale vary in how the reference period is specified and where in the question the reference is located. For example, considering only the questions that use an annual reference period, in the initial screening item for the section, Q1/SS1, the reference period appears at the beginning of the question and is specified as “... in the last 12 months, since December of last year.” The questions included in Stage 1 (i.e., Q2/SS2 through Q6/SS6) use an abbreviated form of the reference period, “... in the last 12 months,” which appears at the end of each question. In Stage 2, Q7/SH1 continues with the pattern established by the questions in Stage 1 in which the reference period appears at the end of the question and is specified as “... in the last 12 months.” However, this pattern is altered for the remaining questions in Stage 2 so that in Q8/SH2 through Q11/SH5 the reference period is placed at the beginning of the question. Further, in contrast to the other questions in Stage 2, in Q9/SH4 the reference period is more fully specified and reads: “In the last 12 months, since December of last year ...”. Stage 3 repeats the pattern of placement in Stage 2 by including the reference to “in the last 12 months” at the beginning of the questions. However, the exact wording used varies slightly across the questions in this section: Q12/SSH1 includes the reminder “since last December;” Q13/SSH2 includes the reminder “since December of last year;” and Q16/SSH5 includes the reminder “since December of last year.”

For questions that appear as a series or in a scale, Schaeffer and Presser (2003) recommend specifying the period of time covered by the reference period as completely as possible for the first question in the series and then including an abbreviated form of the reference period in subsequent questions. With regard to its placement within the body of the question, Schaeffer and Presser suggest placing the reference at the beginning of the question before respondents have the opportunity to construct their own reference period. They note the importance of maintaining a parallel structure across questions in order to facilitate economical and accurate cognitive processing. See “Review of Individual Items” in Section 3 of this document for revisions we suggest making to the questions based on this discussion.

## **Response Scales**

### **Reducing respondent burden by rewriting the items to be dichotomous.**

Items in the scale use several formats to record the frequency of the various psychological states or behaviors. Six of the questions in the scale – Q2 through Q6 – require respondents to rate how often (i.e., often, sometimes, or never) the behavior or psychological state in question was true for them (or in some sort of aggregation across adults in the household). Three followup questions – Q8a, Q12a, Q14a – ask respondents to assess whether the behavior occurred “almost every month, some months but not ever month, or in only 1 or 2 months.” For the remaining items, respondents answer using a dichotomous yes/no format. When responses to scale items are converted into numerical scores, both often and sometimes responses are collapsed. Bickel et al. (2000, p. 44): “A requirement of the Rasch model used for the U.S. standard food

security scale is that all indicator variables be dichotomous.” One way to reduce cognitive burden for respondents is to rewrite the majority of the questions to focus on occurrence. This approach would also ease the burden of the 12-month reference period. Although Johnson (2004) notes that the polytomous items carry substantial information that is not being used by the scale, if the information is not going to be used in the scale, the simplification of the items would reduce the burden on the respondent. A drawback to this approach is that dichotomous items will not be exactly equivalent to the collapsed polytomous items that have been analyzed to date. In Section 3 we discuss additional considerations, question formats, and question wordings.

### **Fit between items and response categories: How often an event was true.**

As part of developmental research conducted to improve the National Health Interview Survey (NHIS), one of the authors participated in a series of cognitive interviews used to test questions for possible inclusion in the NHIS. Several of the questions used the response options “definitely true, mostly true, mostly false or definitely false.” Many respondents in the interviews expressed negative affect about the options noting that the situations/behaviors asked about in the questions were either true or false but that they did not vary in degree (Blix and Dykema, 1994). Similar problems were noted during the testing by CSMR. The problems in deciding how often a description of an event is “true” are exacerbated when it is a complex event (so that part of the event described may have happened and part not) and a compound event (which is aggregated over multiple actors, who may have experienced the event with different frequencies).

For the questions that ask about the frequency of truthfulness using the format “often, sometimes, or never true,” the format of the response options does not match the response dimension implied by the question. The questions ask about the frequency of specific psychological states or situations. Asking how often the state or situation was “true” for the respondent is not necessary and the questions could be rewritten to ask about frequencies in a more straightforward manner. For example, the following question:

*"The food that we bought just didn't last, and we didn't have money to get more." Was that OFTEN, SOMETIMES or NEVER true for you in the last 12 months?*

could be rewritten as:

*"The food that we bought just didn't last, and we didn't have money to get more." Did that occur OFTEN, SOMETIMES or NEVER for you in the last 12 months?*

or, even more straightforwardly as:

*How often did it happen that the food you bought did not last, and you did not have money to get more?*

In the next section we provide further examples and discussion of this issue (and other issues raised by these items, such as the ambiguity of “we”).

## **REVIEW OF INDIVIDUAL ITEMS<sup>5</sup>**

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<sup>5</sup> In this summary we do not comment on very minor changes in the wording of these questions that occurred between years. For example in 1995 the stem question for SS1 began “Which of these statements ...” but in 1998 the introduction was revised to read “Which one of these statements ...”

In this section we provide an item-by-item review of the eighteen items in the most recently available version of the food security scale, which as of the date of this report, is December, 2003. See Appendix A for the exact wording of all the questions included in the food insufficiency and hunger scale in the December, 2003 CPS-FSS and Appendix B for a listing of changes in the wording of these questions from 1994 to 2003. We focus exclusively on the eighteen items included in the scale and the initial item (or items depending on the year) that screens respondents for inclusion in the scale.

As part of this review we reexamine the methodological work undertaken for the development and fielding of the items for inclusion in the CPS-FSS. Where applicable, we draw on methodological results from the 1994 pretest of the FSS (Singer and Hess, 1994), the 1995 CPS-FSS (Hess, Singer, and Ciochetto, 1996), and the reinterview study (McGuinness, 1996). Although a contemporary effort would include cognitive interviewing, these methodological studies nevertheless constituted an impressive effort that used a wide range of techniques. These studies include some recommendations that were not implemented, and we found that some of our recommendations coincide with these earlier comments. Some of the other assessments of the food insecurity and hunger scale (for example, those assessing the whether the items can be described by a Rasch model) are summarized in the report of the panel (2005).

The 1994 pretest of the Food Security Supplement was held in August, 1994 (see Singer and Hess, 1994 for details). It included six states, was conducted primarily using computer-assisted telephone interviewing (CATI), and had a response rate of 70.3 percent. The sample size for the items included in the section on food sufficiency was 395 but varied within the section, apparently because of skip patterns and item nonresponse. The 1995 supplement was administered as part of the Current Population Survey.

The initial methodological work we reviewed was well conducted and substantial; it employed a variety of complementary methods to evaluate items in the 1994 pretest and the 1995 supplement. First, respondent debriefing questions – 17 in the pretest and 12 in the supplement – were included at the end of the survey to measure respondents' general impressions; debriefing questions for selected items explored comprehension issues and the reliability of answers. Second, interviewer debriefings – for the pretest only -- were held with 4 groups of between 6 to 7 interviewers from 3 regions across the country. Interviewers commented on questions they felt were difficult for either themselves or the respondents. Third, for both the pretest and the supplement, researchers examined item nonresponse and correlational patterns among the items. Fourth, interaction coding was conducted for 187 interviews from the pretest and 163 interviews from the supplement. After the pretest, questions were considered problematic and candidates for revision or exclusion if they met certain criteria; further recommendations for changes using similar criteria were made when data from the supplement were analyzed. Criteria for considering items problematic included the following: responses from the respondent debriefing questions indicated problems; over 10 percent of the respondents provided a “don't know” or refusal response; the correlation between items similar in content was .8 or higher;<sup>6</sup> interviewers failed to read the question exactly as worded or with only slight changes in at least 85 percent of the administrations of the question; or respondents failed to answer the question adequately or with qualifications for at least 85 percent of the administrations of the question. Hess, Singer, and Bushery (1999) also examined the relationship between interactional problems (identified through the behavior coding) and respondents' unreliability in their survey reports.

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<sup>6</sup> While there was overlap among several items included in the 1994 pretest and the 1995 supplement, none of the correlations was higher than .8 for the questions included here.

In addition to these efforts, a reinterview study was conducted. The goal of the study was to re-interview 1,000 respondents below a target income level. The reinterview used all the original supplement questions and the same mode as the original interview. The interviewer attempted to re-interview the respondent who completed the supplement originally. Many of the items in the scale had moderate to high unreliability (McGuinness, 1996).

For each of the 18 items included in the food security scale we present the current (2003) question wording and document (sometimes briefly) changes in the wording of the question over time. We highlight outstanding issues from previously conducted methodological research and discuss any issues that are likely to impact the quality of the data generated by the item and suggest areas for testing within the context of a cognitive interview. We conclude by presenting alternative question wordings or revisions to aid in clarifying our discussion. These revisions are for illustration rather than final drafts that are ready for testing or implementation. However, we intend that our illustrative revisions could serve as the starting point for further revisions. Any revisions should receive cognitive testing and other larger-scale evaluation as outlined in our concluding comments in Section 4.

## Q1/SS1

### Current Question Wording

*The next questions are about the food eaten in your household in the last 12 months, since December of last year, and whether you were able to afford the food you need.*

*Which of these statements best describes the food eaten in your household--enough of the kinds of food we want to eat, enough but not always the kinds of food we want to eat, sometimes not enough to eat, or often not enough to eat?*

### Changes in the Wording of the Question

This question has undergone several revisions during its nearly 10-year history. Most of the changes made to the wording of the question reflect the tension involved in trying to simultaneously measure the quantity and quality of food consumed. The version of the question included in the 2003 supplement is very similar to a question used by the USDA in other studies. See Appendix B for details in changes in the wording of the question/questions over time, which we briefly review. In the 1994 pretest respondents were asked separate questions about the amount of food eaten in their households and then only respondents answering “enough food to eat” were asked a follow-up question about whether they had enough of the kinds of food they wanted. This two-part sequence was included in the 1995 supplement for respondents with MISCK not equal to 8; respondents with MISCK=8 were asked a single question that was identical in wording to the current version. The 1996 supplement included the same question wordings but introduced new skip instructions. In 1997 the introduction and question were revised to include a specific reference to the appropriate time period (“in the last 12 months”). Two versions of a question combining quantity and quality were tested. In 1998 important changes were

made to the introduction to remind respondents to consider whether they were able to afford the food they need. The basic wording of the question (or questions) has remained unchanged since 1998 but there have been changes in procedures used to screen respondents into the food security scale.

### **Outstanding Issues from Previous Methodological Work**

In the 1994 pretest Q1/SS1 appeared as two questions. The first asked respondents if they had enough to eat and the second asked respondents if they had enough of the kinds of food they wanted to eat. Many problems were noted. First, more than 15 percent of the respondents provided inadequate responses to each of the questions. Second, interviewers felt the question about the kinds of foods was not interpreted correctly. In the 1995 supplement, a split-ballot experiment was included to test a version that combined quantity and quality (i.e., question 11A which is nearly identical to the current question with the exception of the introductory sentence) versus two questions that assessed the concepts separately. Almost half of the respondents provided an inadequate response to 11A. Many of their inadequate responses took the form of responding to only the quantity or quality part of the question but not consider both parts simultaneously. Rates of inadequate responses were also high when the concepts were measured using two questions, especially for the question about the kinds of foods eaten. Based on these results, it was concluded that using a single question to measure quantity produced more accurate responses than the question that combined the quantity and quality dimensions but that the question used to measure quality was inadequate. Evaluators recommended (1) adding an introduction to signal to respondents that they would be asked about both the quantity and quality of food eaten and (2) wording the question to focus respondents on the state of being able to afford the quality of food desired.

### **Issues and Areas for Cognitive Testing**

Question SS1 is the first item in the section on “Food Sufficiency and Food Security.” As currently worded, the question asks respondents to report on whether they had both “enough” and “enough of the kinds of food” to eat during the past year. Thus the question requires respondents to answer along two response dimensions -- both in terms of quantity and quality but the distinction is rather subtle in the response options and nothing in the introductory statement alerts respondents to the complexity of the reporting task. Past research reviewed demonstrates that respondents have difficulty when both dimensions are included in a single question (e.g., Briefel and Wotecki, 1992).

An important issue in determining how to ask the question concerns understanding how the dimensions – quantity and quality – are related to each other. Is quality nested in quantity such that the question sequence should first ask about quantity and then quality, or are they on the same level? Cognitive testing should be conducted to explore respondents’ understanding of how the concepts of the quantity and quality of foods eaten are nested. Behavior coding notes indicated that nearly a majority of respondents who reported sometimes or often not having enough to eat felt they always or almost always had the kind of food they wanted. This result suggests some misunderstanding. Interviews should also explore whether the phrase “kinds of food we want to eat” is understood as intended by the question writer. Do respondents interpret this phrase as referring to the quality of the food eaten? Methodological results suggest that this

construct is misunderstood. For example, one interviewer reported that “everybody wants something better ... even millionaires” (Singer and Hess, 1994, p. 6-7).

### Illustrative Revisions

In revision (a) suggested below, we have reversed the order in which the response options are presented. For questions that ask about socially desirable attitudes, Sudman and Bradburn (1982, p. 149) recommend placing the most threatening category first in the list of response categories; in the absence of other research, we recommend this practice when using closed questions to ask about sensitive or threatening topics. In addition, we have rewritten the introductory sentence to incorporate the recommendations we outlined earlier concerning the specification of the reference period.

*(a) The next questions are about the last 12 months, that is, since December, 2004. I'm going to ask about the food eaten in your household and whether you were able to afford the food you need.*

*I am going to read 4 statements. Please tell me which statement best describes the food eaten in your household in the last 12 months: often not enough to eat, sometimes not enough to eat, enough but not always the kinds of food we want to eat, or enough of the kinds of food we want to eat?*

We also suggest two different introductions at (b) and (c). Introduction (b) alerts respondents that they will be asked about both quantity and quality. In addition, introduction (c) focuses respondents on attending to whether they were able to afford what they ate.

*(b) I am going to read 4 statements. Please tell me which statement best describes the amount and kinds of food eaten in your household in the last 12 months. ...*

*(c) I am going to read 4 statements. Please tell me which statement best describes how well you were able to afford the amount and kinds of food eaten in your household in the last 12 months. ...*

### Q2/SS2

#### Current Question Wording

*Now I'm going to read you several statements that people have made about their food situation. For these statements, please tell me whether the statement was OFTEN true, SOMETIMES true, or NEVER true for (you/your household) in the last 12 months.*

*The first statement is "(I/We) worried whether (my/our) food would run out before (I/we) got money to buy more." Was that OFTEN true, SOMETIMES true, or NEVER true for (you/your household) in the last 12 months?*

#### Changes in the Wording of the Question

This question was first included in the pretest conducted in 1994. From 1994 to 1997, the item appeared as one of the last questions asked in the food sufficiency section; beginning in 1998, the question appeared as item SS2, which is the first item in Stage 1 of the food insecurity

and hunger scale.<sup>7</sup> Since 1998, the wording of this item has been identical to the current version (see Appendix B). From 1994 to 1998, relatively small changes were made to the wording of the question. Most of these changes involved correcting inconsistencies that existed in the original question including replacing: “I worried” with “(I/We) worried” in 1995 and “you (or other members of your household)” with “(you/your household)” in 1998. In addition, from 1994 to 1997, the response categories appeared as “often, sometimes, or never true” instead of the more complete and balanced specification of “often true, sometimes true, or never true” used in more recent years. In 1995, the transition “The first statement is” was added to the stem question.

### Outstanding Issues from Previous Methodological Work

The behavior coding results from both the 1994 pretest and the 1995 supplement indicated serious problems with the response categories for this question (Hess, Singer, and Ciochetto, 1996; Singer and Hess, 1994). Nearly 25 percent of the 142 respondents answering this item in the pretest provided an inadequate response. Roughly half of the inadequate responses took the form of the respondent answering “no,” “true,” or “yes,” instead of providing a response that matched the answer categories (“often,” “sometimes,” or “never”). This same pattern of results was evidenced in the 1995 supplement in which almost one-fourth of the respondents provided an inadequate response (e.g., they answered “no” or “yes” instead of providing the relative frequency). Interviewer debriefings, summaries of which refer to the series of questions and not to individual items, indicated that interviewers had to probe in order to obtain a codable response (e.g., interviewers had to probe responses such as “true” to determine which qualifier, “often” or “sometimes,” was appropriate). Question-answer sequences in which interviewers have to probe are likely to be associated with responses that are less reliable and valid (Belli and Lepkowski, 1996; Dykema, 2005; Mangione, Fowler, and Louis, 1992). This is borne out by the very high index of inconsistency for this item (54.1) in the reinterview study for the 1995 supplement (McGuinness, 1996, p. 32); McGuinness suggests that an index of inconsistency greater than 50 indicates high response variance and is very problematic (p. 7).<sup>8</sup> Furthermore, in their debriefings, interviewers related that they needed to read this question “... several times for the respondent to understand the task” (Singer and Hess, 1994, p. 11). Hess et al. (1996) also noted that this question had a high rate of interruptions by respondents in the supplement – between 12 and 15 percent for the questions in the series -- and interviewers “often” did not read the final reference period, probably because they felt it was redundant.

In the 1994 pretest, this question appeared first in a series of six questions that used the response format “often, sometimes, and never true,” and behavior coding results seem to indicate that problematic responses declined after this initial item, although they were still at or above the cutoff point of 15 percent for five of the six items (Singer and Hess, 1994, Attachment E, p. 5-6).<sup>9</sup> Interaction coding of the 1995 supplement showed a high level of problematic answers for this question and the five that follow it (Hess, Singer, and Ciochetto, 1996, Attachment H, p. 5-6). In the current version of the scale, this question is the first one to use these categories, and

<sup>7</sup> When we refer to the position of the question, we are referring to the location of the question in the 18-item food security scale not the position of the question in the full Food Sufficiency and Food Security Section.

<sup>8</sup> When the items are collapsed to two categories, the index of inconsistency is reduced, but the index is still high (McGuinness, 1996, p. 32-33).

<sup>9</sup> The results reported for questions 56 (SS6) and 57 (SH1) are confusing. Although the reported rate of inadequate answers is less than 15 percent, an asterisk appears next to these numbers and the corresponding footnote reads: “When respondent interruptions are coded rather than adequate answers (for items that received both behaviors), items marked with an asterisk had less than 85 percent adequate or qualified answers (Attachment E, p. 1).” Thus, we interpret the asterisks as indicating a problematic level of inadequate responses for these questions.

the problems identified in 1994 and 1995 are likely to be present still. Hess et al. (1996, p. 29) noted: “Although we discussed alternative response categories, the sponsor indicated a strong preference for maintaining the categories as they are. Assuming the categories remain, interviewer training will need to address the issue of neutrally probing inadequate responses such as those mentioned above.”

### Issues and areas for cognitive testing

**Response categories “often, sometimes, or never true.”** Q2/SS2 through Q7/SH1 require respondents to answer using the response format “often, sometimes, or never true.” There are many problems with this format, as our comments in Section 2 suggest. First, substantial evidence from the interaction coding of the 1994 pretest and the 1995 supplement indicate that respondents have difficulty using these categories. Inadequate answers were at or above the 15-percent cut-off indicating a problem for five of the six questions. Analyses indicated that many of the responses were inadequate because they did not match the categories (e.g., the respondent answered “no” or “yes”). Responses are likely to be less valid and more unreliable when they are initially inadequate answers that require interviewers to probe to obtain a codable response. Second, evidence from cognitive interviews held as part of the redesign of the NHIS (and described above) indicated that respondents do not like reporting whether the **occurrence** of an event or behavior is “true:” events and behaviors occur or do not occur, they are not true or false. Third, the statement identifies an event and then asks how often the event was “true;” this question form is potentially confusing to respondents. Fourth, the meaning of relative frequency terms (e.g., “often”) can vary depending on a person’s expectations, the person’s evaluation of the event, and the actual frequency of the event. For example, being hungry “often” can mean something different for someone who experiences food insecurity frequently than it does for those who seldom have this experience (see references in Schaeffer, 1991). This variability can reduce the comparability of answers across respondents. If these relative frequency categories are retained, respondents’ definitions of “often” and “sometimes” should be explored in cognitive testing and respondent debriefing questions, and the analysis should examine whether the frequency that respondents mean by each term seems roughly comparable both within and across items that use these categories. Finally, the categories are presented in a shorter form after Q2/SS2. The shorter form (often, sometimes, or never true) requires that the respondent retain the response dimension (“true”), and so is cognitively more burdensome than the more balanced version used in Q2/SS2 and we recommend using the fuller specification in situations like this.

**Specification of the reference person.** The discussion in Section 2 reviews our concerns with respect to this issue. Because “worry” is inherently subjective, it is not clear how someone in a household with several adults should report about how often “we” worried; similarly, it is not clear what constitutes “your household” and “our food.” Cognitive interviews should explore how respondents interpret “worry” and who they perceive as worrying. This issue is especially important because this is the first question in the sequence, and because the reference to “your household” is very ambiguous and could include children.

**Statements versus questions.** Although early work on these questions asserts that respondents find questions that present a statement easy to understand, the published papers do not present the evidence upon which this assertion is based. For example, Radimer et al. report that “respondents said statements were easier to understand than questions” (1990, p. 1547), but the methodology that elicited these comments from respondents is not described. Cognitive testing could administer the current version (which presents a statement) to some respondents and a di-

rect question (examples are given later) to other respondents, and the results are likely to be quite informative; but a larger scale test that included debriefings, measures of response latency, and psychometric evaluations (e.g., estimating reliability) would be more definitive.

### Illustrative Revisions

In the following version (a) we incorporate our earlier recommendations concerning the specification of the reference period, and we place the reference period at the beginning of the question to reduce the tendency of respondents to interrupt and of interviewers to refrain from reading the reference period.

*(a) ... The first statement is "(I/We) worried whether (my/our) food would run out before (I/we) got money to buy more." In the last 12 months, was that OFTEN true, SOMETIMES true, or NEVER true for (you/your household)?*

Because we follow previous evaluations and strongly recommend changing the response categories, we also present alternatives for obtaining the frequency of the event. Example (b) asks about the frequency of the event using the same frequency categories that are used elsewhere in the supplement (i.e., "almost every month..."). This approach would reduce the cognitive burden imposed on the respondent by reducing the number of different response categories the respondent has to learn:

*(b) ... The first statement is "(I/We) worried whether (my/our) food would run out before (I/we) got money to buy more." In the last 12 months, did this happen (in your household) almost every month, some months but not every month, in only 1 or 2 months, or never?*

We also note that this question could be asked about using an open (c) or a closed frequency format (d) (see our discussion about open and closed frequency formats at Q8a/SHF2). In Section 4 we show how this question could be formatted for inclusion in a check-list.

*(c) ... The first statement is "(I/We) worried whether (my/our) food would run out before (I/we) got money to buy more." In the last 12 months, how often did this happen (in your household)?*

\_\_\_\_\_ Total number of times per year  
 \_\_\_\_\_ Number per day/week/month  
 \_\_\_\_\_ Other

*(d) ... The first statement is "(I/We) worried whether (my/our) food would run out before (I/we) got money to buy more." In the last 12 months, how often did this happen (in your household) – almost every day, once or twice a week, several times a month, about once a month, several times, about once, or never?*

The technique of providing a statement and then asking the respondent to apply it to themselves may be more complex than simply asking the respondent to report about their own experience. The following revisions simplify the wording of the question using several different response formats. The versions we present also ask only about the respondent's worrying.

*(e) ... In the last 12 months, how often did YOU worry whether (YOUR/YOUR household's) food would run out before YOU got money to buy more – often, sometimes, or never?*

(f)... In the last 12 months, how often did YOU worry whether (YOUR/YOUR household's) food would run out before YOU got money to buy more – almost every month, some months but not every month, in only 1 or 2 months, or never?

(g)... In the last 12 months, how often did YOU worry whether (YOUR/YOUR household's) food would run out before YOU got money to buy more? (total number of times, number per metric).

### Q3/SS3

#### Current Question Wording

*"The food that (I/we) bought just didn't last, and (I/we) didn't have money to get more." Was that OFTEN true, SOMETIMES true, or NEVER true for you in the last 12 months?*

#### Changes in the Wording of the Question

This question was first included in the pretest conducted in 1994. From 1994 to 1997, the item appeared as one of the last questions asked in the food sufficiency section. In 1998, the question appeared in its current position, as SS3, which is the second item in Stage 1 of the food insecurity and hunger scale. The wording of the question has remained unchanged.

#### Outstanding Issues from Previous Methodological Work

This question uses an abbreviated version of the response format employed at Q2/SS2 (i.e., "often, sometimes, or never true" instead of "often true, sometimes true, or never true") and behavior coding results from both the 1994 pretest and the 1995 supplement indicated serious problems with the categories (Hess, Singer, and Ciochetto, 1996; Singer and Hess, 1994). Approximately 17 percent of the respondents answering this question in 1994 and 1995 provided an inadequate response (e.g., "no," "true," or "yes"). Interviewer debriefings, summaries of which relate to the series of questions and not to individual items, showed that interviewers had to probe in order to obtain a codable response. Hess et al. (1996) noted that this question had a high rate of interruption by respondents – between 12 and 15 percent for the questions in the series.

In the 1994 pretest, this question appeared second in a series of six questions that used this response format, and interaction coding results indicate that problematic responses were substantial for this item (Singer and Hess, 1994, Attachment E, p. 5-6). Interaction coding of the 1995 supplement also showed a high level of problematic answers for this question (Hess, Singer, and Ciochetto, 1996, Attachment H, p. 5-6). In the current scale this question appears second and still uses these categories, and the problems identified in the 1994 pretest and 1995 supplement are likely to still be present.

In the reinterview study, this item had an index of inconsistency of 48.7, indicating a substantial level of response variance (McGuinness, 1996, p. 32).

### Issues and areas for cognitive testing

**Response categories, reference person, and statements versus questions.** See the relevant discussions about response categories, specification of the reference person, and formatting questions as statements versus questions at Q2/SS2.

**Specific terms or phrases.** See also discussion earlier in this report about variation in the ways that economic need is described (e.g., “didn’t have money to get more”).

Why does this question specify “food that you bought” instead of using a less cognitively difficult phrase such as “your food?” It appears that a contrast is being invoked such as between food the respondent bought and food that was given to the respondent (or obtained through some other means). It is unlikely respondents make these distinctions when reporting. If the implied contrast is intentional, cognitive interviews should explore whether the contrast is being attended to and implemented as desired by the question writer.

### Illustrative Revisions

**The illustrative revisions at Q2/SS2 are relevant for this question. Unlike Q2/SS2 which referred to “you/your household” when presenting the response categories, this question refers to “you,” and the items are inconsistent in this respect. The reference to “you” in the final sentence is ambiguous (i.e., “you” could refer to either the respondent or the household, see for example, Belson, 1981, 1986). If the practice of asking the respondent to report about the worrying of all (adult?) members of the household is retained (a practice we do not recommend), the item should be rewritten as “(you/your household).”**

We present several versions that ask a direct question rather than presenting a statement and having the respondent apply it to himself or herself. This exercise makes salient the complexity of the statement. The statement describes a compound event, and each component of this compound event is described as a negation: food did **not** last and you did **not** have money to get more. The revisions (c through f) propose simplifying this complexity and remove at least one of the negative constructions.

(a) ... *In the last 12 months, how often did the food that YOU bought not last and YOU didn't have money to get more ... ?*

(b) ... *In the last 12 months, how often did YOU not have money to get more food when the food didn't last ... ?*

(c) ... *In the last 12 months, how often did YOU not have money to buy more food when the food ran out ... ?*

(d) ... *In the last 12 months, how often did YOU not have money to buy food when you needed it ... ?*

(e) ... *In the last 12 months, how often did YOU not have money to buy food that you needed?*

(f) ... *In the last 12 months, how many times did you run out of money to buy food that you needed?*

## Q4/SS4

### Current Question Wording

*"(I/we) couldn't afford to eat balanced meals." Was that often, sometimes or never true for you in the last 12 months?*

### Changes in the Wording of the Question

An item assessing whether the adult respondent (and other members of the household) did not eat properly was first included in the pretest conducted in 1994. In 1994 the question asked about not being able to "afford to eat properly" but the wording was changed to its current form in 1995. From 1994 to 1997, this item appeared as one of the last questions asked in the food sufficiency section. In the 1998 supplement the question was moved to its current position as SS4, the third item in Stage 1 of the food insecurity and hunger scale.

### Outstanding Issues from Previous Methodological Work

This question uses the same response format (i.e., "often, sometimes, or never true") as Q2/SS2. Behavior coding results from 1994 and 1995 show that fewer than 85 percent of the respondents provided adequate responses to the question (see discussion for Q2/SS2 above).

There is no documentation from the pretest indicating that the wording of the question used in 1994 – "couldn't afford to eat properly" -- was problematic. In the write-up for the 1995 supplement, the authors note that the change was made at OMB's request. In contrast, behavior coding from the 1995 supplement, in which "several" respondents made requests for clarification, demonstrated that the term "balanced meals" was difficult for some respondents (Hess et al., 1996, p. 29-30). For example, one respondent asked: "Balanced meals meaning vegetables and all that, right." Another respondent indicated that she thought the question was offensive.

In the reinterview study, this item had an index of inconsistency of 54.2, indicating a very high level of response variance (McGuinness, 1996, p. 33).

### Issues and Areas for Cognitive Testing

**Response categories, reference person, and statements versus questions.** See the relevant discussions about response categories, specification of the reference person, and formatting questions as statements versus questions at Q2/SS2. With regard to the specification of the reference person, exploring respondents' interpretations of these phrases in cognitive interviews is especially important for this question in which the reference to "your household" is most ambiguous. Without explicitly instructing respondents to disregard or not include their children, it is highly unlikely that respondents will not consider them in formulating a response.

**Specific terms or phrases.** This item introduces another phrase to refer to economic hardship, that is, what the respondent "couldn't afford."

"Balanced meals" may be a confusing or unfamiliar term. Cognitive testing may suggest whether respondents have definitions similar to each others' or to that of the study, or whether a

balanced meal is seen as similar for adults and children. Respondents may also think of a “balanced diet” not on a meal-by-meal basis but on a daily or weekly basis. Finding a more satisfactory phrase will not be easy (as the illustrative revisions below suggest), so cognitive testing should examine other candidate terminology, such as “healthy food.”

### **Illustrative Revisions**

The illustrative revisions at Q2/SS2 and Q3/SS3 are relevant for this question.

Although it is a minor point, the response categories are not capitalized in this item, but are in others. We know very little about if and how interviewers emphasize words that appear in all capital letters but the response categories should be presented in a consistent format.

We offer two revisions that point to issues to explore in cognitive interviews.

(a) ... *In the last 12 months, how often did YOU not have money to buy the kind of food YOU think is healthy ... ?*

(b) ... *In the last 12 months, how often did YOU not have money to buy food that would keep YOU healthy?*

### **Q5/SS5**

#### **Current Question Wording**

*"(I/we) relied on only a few kinds of low-cost food to feed ((my/our) child/the children) because (I was/we were) running out of money to buy food. Was that often, sometimes or never true for you in the last 12 months?"*

#### **Changes in the Wording of the Question**

This question was first included in the pretest conducted in 1994. From 1994 to 1997, the item appeared as one of the last questions asked in the food sufficiency section. In 1998, the question appeared in its current position, as SS5, the fourth item in Stage 1 of the food insecurity scale. In 1994 the question asked about “a limited number of foods ... for a meal,” but the wording was changed to “only a few kinds of food” in 1995. The basic wording of the question has remained unchanged since 1996 with the exception that the fill statement for the reference to the children has varied from “(CHILD’s name/the children),” asked in 1995 and 1996, to “(my/our child/CHILD’s name/the children)” asked in 1997, to “(my/our child/the children)” in 1998.

#### **Outstanding Issues from Previous Methodological Work**

The phrase “limited number of foods,” which was included in the original version of this question, caused problems for respondents, as evidenced by the rate of requests for clarification (just under 10 percent) in the 1994 pretest. The concept “limited number of foods” was replaced by “only a few kinds of food” in 1995 (at OMB’s request), and no requests for clarification were documented. However, responses to the respondent debriefing question -- “You told me earlier that in the last 12 months you relied on only a few kinds of food to feed the children because you were running out of money to buy food. What kinds of food did you rely on?” -- indicated sub-

stantial misunderstanding of the intent of this question. Of the 162 respondents who answered the debriefing item, 32 percent gave “meat” as examples of a “few kinds of food.” The intent of the question is to capture foods such as “rice, beans, macaroni products, bread or potatoes.”

We can understand even more about the comprehension problems involved with the reporting task by looking at responses to a similarly worded question that also appeared in the supplement. The survey question read: “In the last 12 months, did you ever serve only a FEW KINDS of low-cost foods – like rice, beans, macaroni products, bread or potatoes – for SEVERAL DAYS in a row because you couldn’t afford anything else?” Results from a respondent debriefing question indicated that fewer respondents mentioned meat either as the first food mentioned or at all when responding to this question that included kinds of low-cost foods as examples. These findings suggested including types of low-cost foods as part of the question. This idea was rejected after the pretest, advocated based on the results of the 1995 supplement, but apparently not incorporated. Finally, 16 percent of respondents provided inadequate answers in 1994 and roughly one-quarter did in 1995.

In the reinterview study, this item had an index of inconsistency of 48, indicating a substantial level of response variance (McGuinness, 1996, p. 33).

### **Issues and Areas for Cognitive Testing**

***Response categories and statements versus questions.*** See the relevant discussions about response categories and formatting questions as statements versus questions at Q2/SS2.

***Specific terms or phrases.*** This item refers to economic hardship as “running out of money to buy food.”

It is not clear what it means to “rely on” the foods described. It could mean they are the bulk of the diet or a last resort. Cognitive testing should explore how this term is understood. The phrase “a few kinds of low-cost food” seems intended to capture times when food is restricted to a few inexpensive foods that cannot by themselves be nutritionally sufficient. However, the phrase “a few kinds of low-cost foods” is cognitively difficult and requires respondents to both evaluate whether any of the food they ate was “low-cost” and then whether the variety eaten was enough to qualify as a “few kinds,” particularly since which food was relied on might vary from episode to episode. Given that the response categories allow respondents to qualify how often the behavior occurred (e.g., often, sometimes, or never) specifying the amount of low-cost food eaten may be unnecessary.

More problematic than the qualifier “a few kinds” is the phrase “low-cost,” which could be interpreted as meaning inexpensive but in this context appears to refer to food that is inadequate in terms of its quality. Cognitive interviews should be conducted to explore respondents’ understanding of “low-cost food.” Do respondents understand “low-cost” to mean nutritionally inadequate or are they interpreting the phrase in some other way. It is clear from the behavior coding results that a substantial number of respondents probably do not interpret this question as intended.

### **Illustrative Revisions**

The illustrative revisions and comments at Q2/SS2 and Q3/SS3 are relevant for this question.

This is the first question in the food security scale to refer to children and the introduction that appears at Q13/SSH2 should be asked before the current question.

We recommend retesting a version of this question that includes kinds of low-cost foods as examples.

### Q6/SS6

#### Current Question Wording

*"(I/we) couldn't feed ((my/our) child/the children) a balanced meal, because (I/we) couldn't afford that." Was that often, sometimes, or never true for you in the last 12 months?*

#### Changes in the Wording of the Question

This question was first included in the pretest conducted in 1994. From 1994 to 1997, the item appeared as one of the last questions asked in the food sufficiency section. In 1998, the question appeared in its current position, as SS6, which is the fifth item in Stage 1 of the food insecurity and hunger scale. The basic wording of this question has remained unchanged. However, the way in which the reference to the children is specified has changed over time as documented in Appendix B.

#### Outstanding Issues from Previous Methodological Work

Although no problems were documented for this item in the report about the 1994 pretest or the 1995 supplement, we interpret the behavior coding results as indicating that more than 15 percent of the respondents provided inadequate answers to this question in the pretest.

In the reinterview study, this item had an index of inconsistency of 50, indicating a high level of response variance (McGuinness, 1996, p. 33).

#### Issues and Areas for Cognitive Testing

***Response categories and statements versus questions.*** See the relevant discussions about response categories and formatting questions as statements versus questions at Q2/SS2.

***Specific terms or phrases.*** See discussion under Q4/SS4.

#### Illustrative Revisions

The illustrative revisions and comments at Q2/SS2 and Q3/SS3 are relevant for this question.

## Q7/SH1

### Current Question Wording

*"((My/Our) child was/The children were) not eating enough because (I/we) just couldn't afford enough food." Was that often, sometimes or never true for you in the last 12 months?*

### Changes in the Wording of the Question

This question was first included in the pretest conducted in 1994. From 1994 to 1997, the item appeared as one of the last questions asked in the food sufficiency section. In 1998, the question appeared in its current position, as SH1, which is the first item in Stage 2 of the food insecurity and hunger scale. The basic wording of this question has remained unchanged. However, the way in which the reference to the children is specified has changed over time as documented in Appendix B.

### Outstanding Issues from Previous Methodological Work

Although no problems were documented for this item in the report about the 1994 pretest, we interpret the behavior coding results as indicating that more than 15 percent of the respondents provided inadequate answers to this question in the pretest. Fifteen percent of the respondents from the 1995 supplement also provided inadequate responses to this question (see discussion under Q2/SS2).

In the reinterview study, this item had an index of inconsistency of 65.9, indicating an extremely high level of response variance (McGuinness, 1996, p. 33).

### Issues and Areas for Cognitive Testing

*Response categories and statements versus questions.* See the relevant discussions about response categories and formatting questions as statements versus questions at Q2/SS2.

### Illustrative Revisions

The illustrative revisions and comments at Q2/SS2 and Q3/SS3 are relevant for this question.

## Q8/SH2

### Current Question Wording

*In the last 12 months, did (you/you or other adults in your household) ever cut the size of your meals or skip meals because there wasn't enough money for food?*

### **Changes in the Wording of the Question**

In the 1994 pretest this question appeared in the section on “Coping Mechanisms and Food Scarcity.” In 1998, the question appeared in its current position, as SH2, which is the second item in Stage 2 of the food security scale. The basic wording of this question has remained unchanged. However, the way in which the reference period is specified has changed over time as documented in Appendix B.

### **Outstanding Issues from Previous Methodological Work**

No problems were documented for this item in the reports for the 1994 pretest or the 1995 supplement. However, no respondent debriefing questions were asked about this item.

In the reinterview study, this item had an index of inconsistency of 41.0, indicating a moderate level of response variance (somewhat problematic) (McGuinness, 1996, p. 30).

### **Issues and Areas for Cognitive Testing**

This question is more cognitively complex than is necessary because it requires respondents to process and retrieve occurrences of two events -- cutting the size of their meals and skipping meals -- in a single question. Parallel questions for children appear in Stage 3, but there separate questions are asked about cutting the size of meals (Q13/SSH2) and skipping a meal (Q14/SSH4). We recommend dividing this question into two separate questions in order to reduce the cognitive burden imposed and make the questions for adults and children parallel.

We recommend cognitive testing of the phrase “cut the size of your meals” to explore whether respondents have definitions similar to each others’ or to that of the study and whether this phrase is seen as similar for adults and children. Other phrases that might more accurately measure this construct and should be tested include “eat smaller meals” or “eat less at mealtime.”

Q14/SSH4 asks whether children ever skipped a “meal” but the current question asks whether any adults ever skipped “meals.” Is the plural “meals” used in the current version of the question necessary or should respondents count even one occurrence of the behavior? By asking respondents to only consider multiple occurrences of the behaviors in question, it is possible that respondents with only low frequencies of the behaviors to report (i.e., those who engaged in the behavior once or twice) will respond negatively to the question. We recommend using the singular “meal” and making the adult and child questions parallel.

Other issues, particularly with regard to asking for the information included in this question using a yes/no filter are discussed below at Q8a/SHF2.

### **Illustrative Revisions**

See examples under Q8a/SHF2.

#### **Q8a/SHF2**

### **Current Question Wording**

*[ASKED IF Q8/SH2 IS YES] How often did this happen--almost every month, some months but not every month, or in only 1 or 2 months?*

### Changes in the Wording of the Question

This question is asked as a follow-up to Q8/SH2. In the 1994 pretest this question used an open format in which respondents were required to specify “in how many months” they either cut the size of their meals or skipped meals. The question was rewritten for the 1995 supplement and has remained unchanged since that year.

### Outstanding Issues from Previous Methodological Work

Questions Q8a/SHF2, Q12a/SSHF1, and Q14a/SSHF4 are follow-up questions that ask how often the respondent or household cut the size of their meals or skipped meals (Q8/SH2), or did not eat for a whole day (Q12/SSH1), or the children skipped a meal (Q14/SSH4). As currently worded, the follow-up questions use the response format “almost every month, some months but not every month, or in only 1 or 2 months.” At the time of the 1994 pretest, these questions were written as open items in which interviewers recorded the number of *months* in which the reference person(s) engaged in the behavior.

Behavior coding results from the 1994 pretest indicated substantial problems with the monthly, open format; in approximately 80 percent of the coded administrations of this item, respondents provided an inadequate response. Respondents gave vague answers (e.g., “occasionally”), answered using a metric other than months (e.g., answered in terms of a total number of times), and provided a high rate of don’t know responses (7.5 percent). Respondents also expressed difficulty with the phrase “in how many months.” In the 1995 supplement, the open format was replaced with a set of closed responses that allowed respondents to answer using a range: “almost every month, some months but not every month, or in only 1 or 2 months.” Although this format appeared to improve the quality of responses relative to the pretest – the rate of don’t know responses dropped to .5 percent -- substantial problems continued to be documented. Fifty percent of the respondents still provided an inadequate response (e.g., “sometimes”). Although interviewers can be taught to probe neutrally, responses are more likely to be unreliable and inaccurate when interviewers are required to probe (see discussion under “Outstanding Issues from Previous Methodological Work” for Q2/S2). Further, in the reinterview study, this item had an index of inconsistency of 56.1, indicating a high level of response variance and very problematic (McGuinness, 1996, p. 30).

In 1995, respondents were asked debriefing questions to determine if they remembered in how many months the behavior occurred and to assess the total number of months in which the behavior was engaged. Roughly one-third of the respondents reported that they could not remember in how many months they had cut meals or skipped meals. In order to evaluate the reliability of responses among respondents reporting a number, raw numbers from the debriefing question were grouped into categories (i.e., 1-2 months, 3-10 months, and 11-12) and compared to the answers reported at the survey question (i.e., 1 or 2 months, some months but not every month, and almost every month). Overall there was only 62 percent agreement between these comparisons. Further, results from the reinterview analysis indicated moderate to high levels of variation. Finally, fewer respondents chose the category “only 1 or 2 months” in the supplement in comparison to “1” or “2” months in the pretest: 30.5 percent (N=2,935) versus 32.3 percent (N=499). Although this difference is extremely small for the current question, it is potentially important if the objective of the question is to measure even low frequencies of the behavior. Further, this difference is pronounced for Q14a/SSHF4 which asks how often children skipped a meal in the last 12 months.

### Issues and Areas for Cognitive Testing

**Asking about Occurrence and Frequency: Question Form.**<sup>10</sup> Questions about the frequency of events and behaviors (such as cutting the size of or skipping meals) can use some combination of three approaches: (a) a filter question to establish whether something has occurred within the reference period (followed by an open or closed question that asks for frequency for those who report an occurrence), (b) a closed question that combines a request for occurrence and frequency, or (c) an open question that combines a request for occurrence and frequency. For example, the 2003 supplement uses format (a), in which a yes/no filter question is followed by a closed frequency question. However, taking the pair Q8/SH2 and Q8a/SHF2 as illustrations, these questions could be written in a format corresponding to (b) or (c):

(b) Closed question that combines the request for occurrence and frequency: *In the last 12 months, how often did (you/you or other adults in your household) ever cut the size of your meals because there wasn't enough money for food-- almost every month, some months but not every month, only 1 or 2 months, or never?*

(c) Open question that combines request for occurrence and frequency: *In the last 12 months, how often did (you/you or other adults in your household) ever cut the size of your meals because there wasn't enough money for food?* (Record the number of times per year/month/week/total and multiply (post-hoc) the number of times by the metric (e.g., 12 for a monthly response) in order to arrive at an annual total.)

Several studies have examined some or all combinations of these approaches, although only one has had the advantage of a record-check in which responses from the survey could be compared to external records in order to assess the accuracy of the responses; Burton and Blair (1991) found no difference in the accuracy of reports to open and closed questions, but the events and population they examined (number of checks written and use of an ATM) have little in common with the FSS. Consider first reports of occurrence. Schaeffer and Dykema (1994) speculated that question forms can be ranked according to how "difficult" the question makes it to report ever engaging in a behavior within the reference period, that is, how "high" a threshold the question establishes for reporting engaging in the event:

a closed question (e.g., How often did you engage in the behavior: never, once, several times, or many times?) in which the first two categories clearly distinguish "never" or "zero times" from "once" or "at least one time" offers the lowest threshold and should obtain the highest proportion reporting engaging in the behavior;

an open question (e.g., "How often did you engage in the behavior?") presents a threshold of intermediate strength; and

a standard filter question (e.g., "Did you ever engage in the behavior?") presents the highest threshold and should obtain the lowest proportion reporting ever engaging in a behavior.

Schaeffer and Dykema's analysis supported some of their hypotheses: they found that more respondents reported engaging in a behavior when they were asked a closed question in which "zero" was clearly distinguished from "at least one" in the response categories than when respondents were asked an open question; there were no differences between standard filtered and

<sup>10</sup> Parts of this discussion originally appeared in Schaeffer, Dykema, Thomson, and Wu, 1998.

unfiltered forms. However, Knauper (1998) reported results that supported Schaeffer and Dykema's expectations for standard filter questions: more respondents reported a frequency of greater than "0" to an open question ("How many times did you witness a crime...?") than answered "yes" to a standard filter question ("Did you witness a crime...?"). These studies do not include record checks, but in the case of many sensitive behaviors, other studies have shown that underreporting can be substantial and so higher reports are considered more accurate. Thus, unless there is a good reason not to, we recommend not using a standard filter question and instead using open questions for questions that ask for frequencies or counts, particularly for questions about sensitive topics. When filter questions are needed, we frequently recommend clarifying that even one event is to be included by using a strict filter that includes a phrase such as "even one time." When closed questions are used, we recommend using categories that clearly distinguish "zero" from "at least one."

Results for frequencies are more complex, because of the need to distinguish between those who report engaging in a behavior at all and the frequency among those who report engaging in the behavior. There are few studies comparing the formats researchers generally choose among. Blair, Sudman, Bradburn, and Stocking (1977) reported that respondents who passed a standard "ever" filter about sensitive behaviors reported more threatening behaviors to an open question than to a closed question, as was also found with less threatening items by Schaeffer and Dykema (1994) in many of their items. Knauper (1998) also found that among those who reported engaging in a behavior, the mean was higher for those asked only an open question than for those who had said "yes" to an initial standard filter question before the open question. Because sensitive behaviors are frequently underreported, unless there is a good reason not to, we recommend not using a filter and asking for counts or frequencies using open rather than closed questions. This recommendation also considers that response categories may provide respondents with information (see Schwarz et al., 1985; Schwarz, 1990; Tourangeau and Smith, 1996). We recognize, however, that open frequency questions are likely to get a slightly larger proportion of "don't know" responses than closed frequency questions (see Schaeffer and Charng, 1991; Schaeffer and Dykema, 1994; Knauper et al., 1997). Respondents who provide a "don't know" answer to an open question can then be asked for their best estimate and provided with a set of simplified categories.

***Response Categories.*** Response categories that correspond to the way in which information is stored in memory are likely to be associated with more accurate responses, and to simplify cognitive processing, speed the interview, and increase standardization by reducing the need for probing by the interviewer. Questions from the 1994 pretest about the frequency of behaviors in the past year were initially written in an open format and results indicated a high rate of inadequate answers (at least for the first questions in the series that used this format) and don't know responses. Consequently this format was abandoned. However, these questions were written in an open format that assumed respondents stored information about food insecurity and hunger in monthly intervals. For example, the questions asked "In how many months ... did you cut the size of your meals or skip meals?" Asking for the number of months in which an event occurred is a potentially useful way to simply the request for a frequency of an event that may have vague boundaries, particularly if some monthly periodicity is expected (e.g., because of the periodicity of income supports). However, in answers to debriefing questions in 1994 and 1995, respondents said that they did not know how many months they engaged in the behavior and reported monthly frequencies that were inconsistent with their original responses, indicating that respondents may not store this information on a month-by-month basis. More research is needed to un-

derstand how the target episodes are patterned and how information about them is stored in memory. In particular it is necessary to find out more about their regularity and similarity as well as their frequency. This information can then be used to rewrite questions to obtain more accurate responses (see Dykema and Schaeffer, 2000).

Response categories provide respondents with information. At times respondents use them to define what the question is asking about, for example, whether a question about the frequency of arguments is asking about any little argument or only about the really big ones (Schwarz, 1990). Some respondents also seem to use response categories to "place themselves" in the population distribution; a respondent who thinks they are "about in the middle" may be more likely to choose the "middle" frequency category regardless of its label (Schwarz et al., 1985; Schwarz, 1990). Tourangeau and Smith (1996) also found some effect of question form on the reporting of the number of sex partners: for reports of the number of partners in the last year and the last five years, the main effect suggests that a larger number of partners was reported using a closed question with a set of "high-frequency" response categories, lowest with a closed question with "low-frequency" response categories, and intermediate with an open question; however, the interactions between question format and mode mean that these main effects are not readily interpretable. Because of the complexities involved, we generally prefer open frequency questions.

**Recommendations.** Our discussion leads us to make several recommendations. First, with regard to using filter questions to measure occurrence, we understand that this appears to be an efficient way to screen out respondents who did not engage in the behavior in question. However, is it possible that these filter questions also remove respondents with only very low frequencies to report, and these respondents are likely to be of interest to analysts. Cumulative evidence suggests that a higher proportion of respondents will report engaging in a behavior with an unfiltered open question versus a filter question (with potentially the highest proportion reporting to an unfiltered closed question in which the threshold between "zero" and the next highest frequency category is very small). Second, with regard to response categories, the evidence reviewed indicates that a substantial proportion of respondents do not store information about their eating patterns on a monthly basis. Using months as a retrieval cue and response format may be compromising the quality of the data provided. As noted, we recommend uncovering more about how respondents store the kind of information asked for in these questions. One economical way to obtain this information would involve listening to the recordings from the pretest and supplement and coding how respondents remember and reconstruct their answers.

### Illustrative Revisions

As discussed above, we recommend testing versions of the sequence Q8/SH2 and Q8a/SHF2 in which the questions appear in their current form as a yes/no filter question followed by a closed frequency question versus a single closed frequency question versus a single open frequency question. See discussion above for examples of question wordings.

If the current question format in which a filter question is followed by a frequency question is retained, we recommend including other phrases to convey to the respondent that even small frequencies should be reported. For example:

(a) *In the last 12 months, did YOU cut the size of your meals or skip meals because there wasn't enough money for food **even one time**?*

(b) *In the last 12 months, did YOU cut the size of your meals **even one time** because there wasn't enough money for food?*

If an open frequency question is tested, it should not be written to restrict retrieval on a monthly basis. For example, the question should not read “In how many months ...” as was done in the pretest but simply as “How often ...” or “How many times...” and allow respondents to answer using a format similar to NUMBER OF TIMES per WEEK/MONTH/YEAR/TOTAL.

### Q9/SH3

#### Current Question Wording

*In the last 12 months, did you ever eat less than you felt you should because there wasn't enough money for food?*

#### Changes in the Wording of the Question

In the 1994 pretest this question appeared as question 28 in the section on “Coping Mechanisms and Food Scarcity.” The question appeared as question 32 from 1995 to 1997 and then in its current position, as SH3, the fourth item in Stage 2 of the food security scale, in 1998. The basic wording of this question has remained unchanged with the exception that from 1994 to 1997 the phrase “money to buy food” was used in place of the current phrase “money for food.”

#### Outstanding Issues from Previous Methodological Work

No problems were documented for this item in the report about the 1994 pretest or the 1995 supplement. Responses to a respondent debriefing item included in the pretest which asked respondents, “How do you decide how much you should eat” indicated “... this question was well understood by most respondents (Singer and Hess, 1994, p. 10).” In the reinterview study, this item had an index of inconsistency of 36.0, indicating a moderate level of response variance (somewhat problematic), but the response variance is lower for this item than for many others included in the scale (McGuinness, 1996, p. 31).

#### Issues and Areas for Cognitive Testing

In the pretest the correlation between this item and Q8/SH2 (cut the size of or skip meals) was .61 (N=298) indicating substantial overlap between the questions. On face value, it is difficult to determine how respondents could answer yes to “cut the size of your meals or skip meals” but no to “eat less than you felt you should.” Moreover, the current question is restricted to just the respondent’s experience while Q8/SH2 includes all adults in the household. These differences in the target event and the specification of the reference persons would lead to a prediction of a higher proportion of respondents answering affirmatively to Q8/SH2. However, the inclusion of meals at Q8/SH2 might set a higher threshold for reporting because a meal is likely to include several foods whereas eating less than one could imply eating less of a single item. If Q8/SH2 did set a higher threshold, this difference would lead to a prediction of a higher proportion of respondents answering affirmatively to the current question. Findings indicate a slightly higher percentage of respondents answering affirmatively for Q8/SH2 for the years 1995, 1998, and 1999 (Andrews et al., 2000). We recommend exploring what influenced their answers

among respondents who provide different answers to these questions, using debriefing questions or during cognitive interviews.

In addition, we recommend exploring how respondents interpret the phrase “eat less than you felt you should.” This phrase may be referring to not meeting nutritional goals or to experiencing hunger. Because it invokes a personal standard (“you should”), and because such concepts are vague and complex, the respondent may answer in terms of more accessible concepts such as “less than you wanted.”

### **Illustrative Revisions**

None suggested.

### **Q10/SH4**

#### **Current Question Wording**

*In the last 12 months, since December of last year, were you ever hungry but didn't eat because you couldn't afford enough food?*

#### **Changes in the Wording of the Question**

In the 1994 pretest this question appeared as question 31 in the section on “Coping Mechanisms and Food Scarcity.” The question appeared as question 35 from 1995 to 1997 and then in its current position, as SH4, the fifth item in Stage 2 of the food insecurity and hunger scale, in 1998. The basic wording of this question has remained unchanged with the exceptions: “you” as in “ever hungry but you didn’t eat” was dropped after the 1994 pretest and the way in which the reference period is specified has changed over time as documented in Appendix B.<sup>11</sup>

#### **Outstanding Issues from Previous Methodological Work**

Few problems were identified in the early methodological work. However, answers to a respondent debriefing question in the pretest in which respondents were asked to report in their own words what the question meant indicated some comprehension problems. Based on the protocols it appeared that respondents did not distinguish between “being hungry but not eating because they couldn't afford enough food” versus “running out of money to buy food.” That is, they did not attend to feeling of hunger because there were too many concepts in the question to process (Hess and Singer, 1995, p. 1077). Findings for this question also reinforce our earlier discussion concerning limiting the number of ways in which the questions refer to not being able to afford to eat.

In the reinterview study, this item had an index of inconsistency of 47.4, indicating a moderate, somewhat problematic, level of response variance (McGuinness, 1996, p. 31). (Note the threshold separating a moderate and high level of response variance is 50.0.)

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<sup>11</sup> The administration of this question across time highlights an inconsistency in how the annual reference period appeared. For example, the current version of the question, which was administered in December, includes the reference period as “since December of last year.” In contrast, in 1996, 1997, and 1999 the reference period was reduced by a month. For example, the 1996 supplement was administered in September but referenced the period of time “since October of last year.”

### **Issues and Areas for Cognitive Testing**

Based on the pretest results, it is possible that respondents may misclassify themselves because they are not attending to the sensation of hunger asked about in the question. This is the first and only question that directly refers to hunger among adults. If the question simply asked whether the respondent was “hungry because you couldn’t afford enough food,” the fact of being hungry already entails that the respondent has not eaten, and the simpler wording might focus the respondent on sensations of hunger. The phrase “but didn’t eat” is not included in the parallel question for children, Q15/SSH3, so excluding the phrase would also make the questions more parallel.

### **Illustrative Revisions**

In revision (a) the current question is worded to be parallel to the children’s version of the question about being hungry, Q15/SSH3.

*(a) In the last 12 months, since December of last year, were you ever hungry but you just couldn't afford more food?*

*(b) In the last 12 months, since December of last year, were you ever hungry because you couldn't afford more food?*

## **Q11/SH5**

### **Current Question Wording**

*In the last 12 months, did you lose weight because you didn't have enough money for food?*

### **Changes in the Wording of the Question**

From 1994 to 1997 this question appeared as question 38. It appeared in its current position, as SH5, the sixth item in Stage 2 of the food insecurity and hunger scale, in 1998. The wording of the question used in 1994 and 1995 was quite different from that used from 1996 to the present (see Appendix B).

### **Outstanding Issues from Previous Methodological Work**

While no problems were identified with this question in the 1994 pretest, respondent debriefing questions asked as part of the supplement uncovered serious comprehension problems. Approximately a quarter of the respondents who answered the question affirmatively provided an incorrect response (e.g., they reported losing weight on purpose and because they were dieting).

In the reinterview study, this item had an index of inconsistency of 48.2, indicating a moderate, somewhat problematic, level of response variance (McGuinness, 1996, p.

### **Issues and Areas for Cognitive Testing**

We are curious about the placement of this item in Stage 2 as it seems more appropriate for Stage 3. Is the behavior asked about in this question less severe than item Q12/SSH1, which asks about not eating for a whole day?

Although the wording of the current question is different from that used in 1995, it is likely that the same types of respondent comprehension problems and misclassifications exist. We recommend following up the current version of the question with the respondent debriefing questions “did you lose weight in the last 12 months” and “why was that” in order to evaluate the consistency between debriefing and survey responses.

### **Illustrative Revisions**

Several of the items in this section include the phrase “ever” in order to remind the respondent that the question writer is interested in the behavior in question even if it only happened one time.

*In the last 12 months, did you ever lose weight because you didn't have enough money for food?*

### **Q12/SSH1**

#### **Current Question Wording**

*In the last 12 months, since last December, did (you/you or other adults in your household) ever not eat for a whole day because there wasn't enough money for food?*

#### **Changes in the Wording of the Question**

In the 1994 pretest this question appeared as question 34 in the section on “Coping Mechanisms and Food Scarcity.” The question appeared as question 38 from 1995 to 1997 and then in its current position, as SSH1, the first item in Stage 3 of the food insecurity and hunger scale, in 1998. The basic wording of this question has remained unchanged with the exception of how the reference period has been specified (see Appendix B).

#### **Outstanding Issues from Previous Methodological Work**

No problems were identified with the content of this question in either the pretest or supplement. Before 1998, this question appeared in a large battery of questions in which the reference person shifted back and forth between asking just about the respondent versus other members of the household. In interviewer debriefings, held after the pretest, interviewers reported that these shifts were confusing. These difficulties were also documented in behavior coding notes. As a result, questions were reordered for the supplement so that “... questions about all adults in the household are asked first followed by questions about just the respondent (Hess et al., 1996, p. 21).” When the questions in the scale were reordered in 1998, the current question, which asks about the household, was placed after a series of questions that asked just about the respondent. This shift is likely pose difficulty for respondents as was documented in the pretest.

In the reinterview study, this item had an index of inconsistency of 54.2, indicating a high, very problematic, level of response variance (McGuinness, 1996, p. 30).

## Issues and Areas for Cognitive Testing

We recommend cognitive testing of the phrase “a whole day” to explore whether respondents have definitions similar to each others’ or to that of the study, or whether this phrase is seen as similar for adults and children. In particular, respondents should be probed to determine how they define “a whole day” and whether their definitions include an entire 24-hour period, that is, nights as well as days. In households with multiple adults, the respondent should be asked whether they are reporting on the experience of other adults and, if they are, how they know about the other adults’ experiences.

## Illustrative Revisions

In this question respondents are asked to report if they “ever” did not engage in the behavior in question, which is potentially confusing. The following revision eliminates the awkward sentence construction by asking if the behavior occurred “even one time.”

*In the last 12 months, since last December, did YOU not eat for a whole day because there wasn't enough money for food **even one time**?*

## Q12a/SSHF1

### Current Question Wording

*[ASKED IF Q12/SSH1 IS YES] How often did this happen--almost every month, some months but not every month, or in only 1 or 2 months?*

### Changes in the Wording of the Question

This question is asked as a follow-up to Q12/SSH1. In the 1994 pretest this question used an open format in which respondents were required to specify “in how many months” they did not eat for a whole day. The question was rewritten for the 1995 supplement and has remained unchanged since that year.

### Outstanding Issues from Previous Methodological Work

Results from the 1994 pretest indicated substantial problems with this format: behavior coding results indicated that approximately 81 percent of the respondents provided an inadequate response and 10 percent provided don’t know responses. (See discussion under Q8a/SHF2 for details on the nature of respondents’ problems.)

In 1995 the open format was replaced with a set of closed responses (see Appendix B). As a result, the rate of don’t know responses dropped to .6 percent and inadequate responses to less than 9 percent.

In 1995 respondents were asked debriefing questions to determine if they remembered in how many months the behavior occurred and to assess the total number of months in which the behavior was engaged. Roughly one-fourth of the respondents reported that they could not remember in how many months they had gone a whole day without eating. Overall there was only 63 percent agreement between when the number of months reported to the debriefing question

was evaluated against the frequency report from the survey question. Further, results from the reinterview analysis indicated moderate to high levels of variation. Finally, fewer respondents chose the category “only 1 or 2 months” in the supplement in comparison to “1” or “2” months in the pretest: 31 percent (N=652) versus 33 percent (N=115). Although this difference is extremely small for the current question, it is important if the objective of the question is to measure even low frequencies of the behavior. Further, this difference is pronounced for Q14a/SSHF4 which asks how often children skipped a meal.

### **Issues and Areas for Cognitive Testing**

See “Issues and areas for cognitive testing” at Q8a/SHF2 for a discussion of the problems with the question format included here.

### **Illustrative Revisions**

The illustrative revisions at Q8a/SHF2 are relevant for this question.

### **Q13/SSH2**

#### **Current Question Wording**

*The next questions are about (your child/ children living in the household who are under 18 years old). In the last 12 months, since December of last year, did you ever cut the size of (your child's/any of the children's) meals because there wasn't enough money for food?*

#### **Changes in the Wording of the Question**

In the 1994 pretest this question appeared as question 40 in the section on “Coping Mechanisms and Food Scarcity,” and the question remained in its original position until 1998 when it was renumbered as SSH2, which is currently the third item in Stage 3 of the food insecurity and hunger scale. The basic wording of this question has remained unchanged with the exceptions of how the reference to the children is worded and how the reference period has been specified.

#### **Outstanding Issues from Previous Methodological Work**

No problems were identified with the content of this question in either the pretest or supplement, but no respondent debriefing questions were asked for this item in either the pretest or the supplement.

### **Issues and Areas for Cognitive Testing**

In the pretest this was the first question that asked about children, and the introduction was included in order to signal a shift in the reference person for the respondent. In the current version of the scale, several questions about children appear before the present question and the introduction is out of place.

Particularly **in households with multiple adults, the respondent should be asked who was responsible for the children’s meals, and how the respondent constructed their answers.**

See “Issues and Areas for Cognitive Testing” for the adult’s version of this question, Q8/SH2.

### **Illustrative Revisions**

The long introduction is out of place and should be shortened to “*The next questions are about (your child/the children).*”

Any changes made to the adult’s version of this question (Q8/SH2) should be incorporated here in order to ensure that the items are parallel.

### **Q14/SSH4**

#### **Current Question Wording**

*In the last 12 months, did (your child/any of the children) ever skip a meal because there wasn't enough money food?*

#### **Changes in the Wording of the Question**

In the 1994 pretest this question appeared as question 43 in the section on “Coping Mechanisms and Food Scarcity,” and the question remained in its original position until 1998 when it was renumbered as SSH4, which is currently the fourth item in Stage 3 of the food insecurity and hunger scale. The basic wording of this question has remained unchanged with the exceptions of how the references to the children have been worded and how the reference period has been specified.

#### **Outstanding Issues from Previous Methodological Work**

No problems were identified with the content of this question in either the pretest or supplement, but no respondent debriefing questions were asked for this item in either the pretest or the supplement.

#### **Issues and Areas for Cognitive Testing**

See “Issues and Areas for Cognitive Testing” for the adult’s version of this question, Q8/SH2. Particularly in households with multiple adults, the respondent should be asked how they know about the children’s experiences.

### **Illustrative Revisions**

Any changes made to the adult’s version of this question (Q8/SH2) should be incorporated here in order to ensure that the items are parallel.

### Q14a/SSH4

#### Current Question Wording

*[ASKED IF Q14/SSH4 IS YES] How often did this happen--almost every month, some months but not every month, or in only 1 or 2 months?*

#### Changes in the Wording of the Question

This question is asked as a follow-up to Q14/SSH4. In the 1994 pretest this question used an open format in which respondents were required to specify “in how many months” the children skipped a meal. The question was rewritten for the 1995 supplement and has remained unchanged since that year.

#### Outstanding Issues from Previous Methodological Work

Behavior coding results from the 1994 pretest indicated substantial problems with the response format for this question, as roughly one-third of the respondents provided an inadequate response (note that the sample size for this result is very small). Nearly 29 percent answered don’t know in response to the question.

In 1995 the open format was replaced with a set of closed responses (see Appendix B). As a result, the rate of don’t know responses dropped to .7 percent and no inadequate responses were coded.

In 1995 respondents were asked debriefing questions to determine if they remembered in how many months the behavior occurred and to assess the total number of months in which the behavior was engaged. Roughly one-third of the respondents reported that they could not remember in how many months children had skipped a meal. Overall there was only 53 percent agreement when the number of months reported to the debriefing question was evaluated against the frequency report from the survey question. Finally, a much smaller percentage of respondents chose the category “only 1 or 2 months” in the supplement in comparison to “1” or “2” months in the pretest: 34 percent (N=141) versus 46.7 percent (N=15).

#### Issues and Areas for Cognitive Testing

See “Issues and Areas for Cognitive Testing” at Q8a/SHF2 for a discussion of the problems with the question format included here. **Particularly in households with multiple adults, the respondent should be asked how they know about the timing of the children’s experiences.**

#### Illustrative Revisions

The illustrative revisions at Q8a/SHF2 are relevant for this question.

### Q15/SSH3

#### Current Question Wording

*In the last 12 months, (was your child/were the children) ever hungry but you just couldn't afford more food?*

#### Changes in the Wording of the Question

In the 1994 pretest this question appeared as question 47 in the section on “Coping Mechanisms and Food Scarcity,” and the question remained in its original position until 1998 when it was renumbered as SSH3 and is currently included as the penultimate question in Stage 3 of the food insecurity and hunger scale. The basic wording of this question has remained unchanged with the exception of how the reference to the children is worded.

#### Outstanding Issues from Previous Methodological Work

No problems were identified with the content of this question in either the pretest or supplement, but no respondent debriefing questions were asked for this item in either the pretest or the supplement.

#### Issues and Areas for Cognitive Testing

See “Issues and Areas for Cognitive Testing” for the adult’s version of this question, Q10/SH4. Particularly in households with multiple adults, *the respondent should be asked how they know about the children’s experiences.*

#### Illustrative Revisions

Any changes made to the adult’s version of this question should be incorporated here in order to ensure that the items are parallel.

### Q16/SSH5

#### Current Question Wording

*In the last 12 months, since last December of last year, did (your child/any of the children) ever not eat for a whole day because there wasn't enough money for food?*

#### Changes in the Wording of the Question

In the 1994 pretest this question appeared as question 50 in the section on “Coping Mechanisms and Food Scarcity,” and the question remained in its original position until 1998 when it was renumbered as SSH5 and included as the final question in Stage 3 of the food insecurity and hunger scale. The basic wording of this question has remained unchanged with the exceptions of how the reference to the children and time period has been specified (see Appendix B).

### **Outstanding Issues from Previous Methodological Work**

No problems were identified with the content of this question in either the pretest or supplement, but no respondent debriefing questions were asked for this item in either the pretest or the supplement.

### **Issues and Areas for Cognitive Testing**

See “Issues and Areas for Cognitive Testing” at Q12/SSH1 for a relevant discussion. Particularly in households with multiple adults, *the respondent should be asked how they know about the children’s experiences.*

### **Illustrative Revisions**

The illustrative revision at Q12/SSH1 is relevant for this question.

## **SUGGESTIONS FOR FUTURE METHODOLOGICAL RESEARCH**

In conducting this review we were impressed with the unusually comprehensive program of methodological research conducted in the mid-1990s. That series of studies provides, in many respects, a model to ground future revisions to the items. However, some important suggestions from that initial work were not evaluated further or implemented, and those suggestions provide a starting point for future work.

At the time those studies were done, cognitive interviewing was not as routine a component of question testing as it is now (see e.g., Willis, 2004; Presser et al., 2004). Thus, even though a substantial amount of methodological work has been conducted with these items, they have not been subjected to systematic cognitive testing. We urge this as a critical initial step in any future research. Interviewer debriefings, respondent debriefings, and behavior coding results indicate substantial problems with respondents’ comprehension of many of the terms included in the questions, with retrieval of the information asked for, with reporting in the last 12 months, with switching among the various reference periods, and with regard to the unit of reference or reference person. There are also indications that for key frequency questions, the format in which answers are requested does not match the format in which many respondents store the information (e.g., on a month-by-month basis). These issues should be explored in cognitive interviews as described in our item-by-item review. In addition, cognitive interviews should explore who in the household is the most appropriate person to answer the questions and what topics are appropriate for proxy responding.

Following substantial cognitive testing, if a major revision of these items is undertaken, we recommend focusing on improving the reliability of the items by simplifying them and the cognitive burden that they impose. We strongly recommend following the model of assessment and evaluation used by Singer, Hess, and colleagues in which several methods were employed as part of pilot study: interviewer debriefings, respondent debriefing questions (i.e., probes administered after the body of the survey that attempt to uncover problems with comprehension, retrieval, and general impressions), patterns of item nonresponse, correlational patterns among related items, and behavior coding. With regard to behavior coding, we suggest coding the following behaviors frequently exhibited by respondents: qualifications (separate from adequate answers), inadequate answers, pauses, and any don’t know responses (not just don’t knows provided as a final response to the survey question). Our own research suggests that these behaviors

are consistent and often significant predictors of inaccurate answers (Dykema, 2005). It is also clear that reliability and validity studies must be an important component of an evaluation of any revisions to the items.

Other important issues concern the conceptual and operational part of the scale, and we refer to reader to the work of Parker Wilde (e.g., Wilde, 2004).

We conclude by noting that an efficient and consistent method of administering these questions would involve including the items in a checklist. We recommend exploring this option. One difficulty in formatting the questions in a uniform manner concerns how to specify the response format or response categories. In general, we recommend using an open response format to measure behavioral frequencies, but such a format might be difficult for respondents to use for the items included in Stage 1, particularly for the item about worrying (Q2/SS2). We suggest exploring both a yes/no filtered format and a closed frequency format in which the threshold between never engaging in the behavior and engaging in the behavior at least one time is small. In the following examples, we use simplified wordings of the current versions of the question, and we do not deal with issues discussed previously, such as those included in the item-by-item evaluations or the multiple ways in which running out of money is referenced.

### **Checklist Version A: Yes/No Filter Questions**

*Now I'm going to ask several questions about the kinds of things people do when they don't have enough money for food. Please tell me if any of these things happened even one time in the last twelve months, that is, since (MONTH, YEAR)?*

*In the last 12 months ...*

*... did you worry about whether your food would run out before you got money to buy more?*

*... did the food that you bought not last and you didn't have money to get more?*

*... were you not able to afford to eat balanced meals?*

*... did you rely on only a few kinds of low-cost food to feed your children because you were running out of money to buy food?*

*... were you not able to feed your children a balanced meal because you couldn't afford that?*

Note: after completing the series, all affirmative responses would be followed-up with frequency questions.

### **Checklist Version B: Closed Frequency Questions (With Low Threshold)**

*Now I'm going to ask several questions about the kinds of things people do when they don't have enough money for food. Please tell me how often these things happened in the last 12 months, that is, since (MONTH, YEAR).*

*In the last 12 months, how often ...*

*... did you worry about whether your food would run out before you got money to buy more -- almost every day, once or twice a week, several times a month, about once a month, several times, about once, or never?<sup>12</sup>*

*... did the food that you bought not last and you didn't have money to get more more -- almost every day, once or twice a week, several times a month, about once a month, several times, about once, or never?*

*... were you not able to afford to eat balanced meals more -- almost every day, once or twice a week, several times a month, about once a month, several times, about once, or never?*

*... did you rely on only a few kinds of low-cost food to feed your children because you were running out of money to buy food more -- almost every day, once or twice a week, several times a month, about once a month, several times, about once, or never?*

*... were you not able to feed your children a balanced meal because you couldn't afford that more -- almost every day, once or twice a week, several times a month, about once a month, several times, about once, or never?*

In addition to the broad research agenda we describe above, we recommend supplementing this report with the results of the numerous split-ballot experiments that have been conducted with items over the last 10 years. For example, what do the differences (if any) in the reports to the multiple versions of Q1/SS1 tell us about the cognitive aspects involved in answering these initial screener questions and what are the implications of using only the respondent as the reference person (versus all adult members of the household) as was implemented in an experiment in 1998?

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<sup>12</sup> We note that this set of response categories may be too long for administration over the phone. If the number of categories is reduced, it is important to retain the final categories "about once a year" and "never;" the category "about once a year" establishes a very low reporting threshold for "never" and has been shown to increase reporting of sensitive behaviors (see Schaeffer and Dykema, 1994).

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**Appendix A:****18 Questions Included in the Food Security Scale Based on the 2003 CPS-FSS**

Question Number		
Scale <sup>a</sup>	CPS-FSS	Question Wording <sup>b</sup>
<b>Stage 1: Questions 2 through 6</b>		
Q2	SS2	Now I'm going to read you several statements that people have made about their food situation. For these statements, please tell me whether the statement was OFTEN true, SOMETIMES true, or NEVER true for (you/your household) in the last 12 months.  The first statement is "(I/We) worried whether (my/our) food would run out before (I/we) got money to buy more." Was that OFTEN true, SOMETIMES true, or NEVER true for (you/your household) in the last 12 months?
Q3	SS3	"The food that (I/we) bought just didn't last, and (I/we) didn't have money to get more." Was that OFTEN, SOMETIMES or NEVER true for you in the last 12 months?
Q4	SS4	"(I/we) couldn't afford to eat balanced meals." Was that often, sometimes or never true for you in the last 12 months?
Q5 <sup>c</sup>	SS5	"(I/we) relied on only a few kinds of low-cost food to feed ((my/our) child/the children) because (I was/we were) running out of money to buy food. Was that often, sometimes or never true for you in the last 12 months?
Q6 <sup>c</sup>	SS6	"(I/we) couldn't feed ((my/our) child/the children) a balanced meal, because (I/we) couldn't afford that." Was that often, sometimes, or never true for you in the last 12 months?
<b>Stage 2: Questions 7 through 11<sup>d</sup></b>		
Q7	SH1	"((My/Our) child was/The children were) not eating enough because (I/we) just couldn't afford enough food." Was that often, sometimes or never true for you in the last 12 months?
Q8	SH2	In the last 12 months, did (you/you or other adults in your household) ever cut the size of your meals or skip meals because there wasn't enough money for food?
Q8a	SHF2	[IF Q8/SH2 IS YES] How often did this happen--almost every month, some months but not every month, or in only 1 or 2 months?
Q9	SH3	In the last 12 months, did you ever eat less than you felt you should because there wasn't enough money for food?
Q10	SH4	In the last 12 months, since December of last year, were you ever hungry but didn't eat because you couldn't afford enough food?
Q11	SH5	In the last 12 months, did you lose weight because you didn't have enough money for food?
<b>Stage 3: Questions 12 through 16<sup>e</sup></b>		
Q12	SSH1	In the last 12 months, since last December, did (you/you or other adults in

Question Number		
Scale <sup>a</sup>	CPS-FSS	Question Wording <sup>b</sup>
		your household) ever not eat for a whole day because there wasn't enough money for food?
Q12a	SSHF1	[IF SSH1 IS YES] How often did this happen--almost every month, some months but not every month, or in only 1 or 2 months?
Q13 <sup>c</sup>	SSH2	The next questions are about (your child/ children living in the household who are under 18 years old). In the last 12 months, since December of last year, did you ever cut the size of (your child's/any of the children's) meals because there wasn't enough money for food?
Q14 <sup>c</sup>	SSH4	In the last 12 months, did (your child/any of the children) ever skip a meal because there wasn't enough money for food?
Q14a <sup>c</sup>	SSHF4	[IF SSH4 IS YES] How often did this happen – almost every month, some months but not every month, or in only 1 or 2 months?
Q15 <sup>c</sup>	SSH3	In the last 12 months, (was your child/were the children) ever hungry but you just couldn't afford more food?
Q16 <sup>c</sup>	SSH5	In the last 12 months, since December of last year, did (your child/any of the children) ever not eat for a whole day because there wasn't enough money for food?

<sup>a</sup> Question numbers for the scale are from Bickel et al., 2000.

<sup>b</sup> For households containing a single adult, interviewers use the singular pronouns “I,” “my,” and “you;” for households containing more than one adult, interviewers use the plural forms “we,” “our,” and “your household.” For cases in which the number of household members is not known, interviewers use the plural forms.

<sup>c</sup> Asked only if the household contains children under 18 years of age.

<sup>d</sup> Questions in Stage 2 are asked if the respondent reports that any of the items in Stage 1 are “often” or “sometimes” true or if all the items in Stage 1 are “never” true but the preliminary screener at SS1 = 3 or 4.

<sup>e</sup> Questions in Stage 3 are asked if the respondent reports affirmatively to any of the items in Stage 2 (i.e., answers “often” or “sometimes” for Q7 or “yes” to Q8, Q9, Q10, or Q11).

## Appendix B:

### Documentation of Changes in the Wording of Selected Questions Over Time

Year	Question Number	Asked If <sup>13</sup>	Wording
<b>Q1/SS1 Question about the Quantity and Quality of Food Eaten</b>			
Pretest 1994	11	All	<p>These next questions are about the food eaten in your household.</p> <p>Which of the following statements best describes the amount of food eaten in your household – enough food to eat, sometimes not enough to eat (skip to 13: Reasons Not Enough Checklist), or often not enough to eat (skip to 13: Reasons Not Enough Checklist)?</p>
	12	S11 (above)=enough food to eat	Do you have enough AND the kind of food you want to eat (skip to S15: Money Short), or do you have enough BUT NOT ALWAYS the kind of food you want to eat (skip to S15: Money Short)?
Apr 1995	S11A	MISCK=8	<p>These next questions are about the food eaten in your household.</p> <p>Which of these statements best describes the food eaten in your household -- enough of the kinds of food we want to eat (skip to S15: Money Short), enough but not always the kinds of food we want to eat (skip to S15: Money Short), sometimes not enough to eat (skip to S13: Reasons Not Enough Checklist), or often not enough to eat (skip to S13: Reasons Not Enough Checklist)?</p>
	S11	MISCK NE 8	... Which of the following statements best describes the amount of food eaten in your household--enough food to eat, sometimes not enough to eat (skip to S13: Reasons Not Enough Checklist), or often not enough to eat (skip to S13: Reasons Not Enough Checklist)?
	S12	S11 (above)=enough food to eat	Do you have enough of the KINDS of food you want to eat (skip to S15: Money Short), or do you have enough but NOT ALWAYS the KINDS of food you want to eat (skip to S15: Money Short)?
Sep 1996	S11A	HRMIS=1,2,4,5,6,7	See S11A, 1995
	S11	HRMIS NE 1,2,4,5,6,7	See S11, 1995
	S12	S11 (above)=enough food to eat	See S12, 1995
Apr 1997	S11A	MISCK=1, 4, 5, 7	<p>These next questions are about the food eaten in your household in the last 12 months, since May of last year.</p> <p>Which of these statements best describes the food eaten in your household in the last 12 months--enough of the kinds of food we want to eat (skip to S15: Money Short), enough but not always the kinds of food we want to eat (skip to S13A: Reasons Kinds Checklist), sometimes not enough to eat (skip to S13: Reasons</p>

<sup>13</sup> Some of the skip information is reproduced from available documentation for the instrument, which does not define all the variables that are referenced.

Year	Question Number	Asked If <sup>13</sup>	Wording
			Not Enough Checklist), or often not enough to eat (skip to S13: Reasons Not Enough Checklist)?
	S11	MISCK NE 1, 4, 5, 7	... Which of these statements best describes the food eaten in your household in the last 12 months?: "(I/We always have enough to eat, and the kinds of food (I/we) want" (skip to S15: Money Short); "(I/We have enough to eat, but not always the KINDS of foods (I/we) want" (skip to S13A: Reasons Kinds Checklist); "Sometimes (I/we) don't have ENOUGH to eat" (skip to S13: Reasons Not Enough Checklist); or "OFTEN (I/we) don't have enough to eat" (skip to S13: Reasons Not Enough Checklist).
Aug 1998	SS1	MISCK NE 4	These next questions are about the food eaten in your household in the last 12 months, since August of last year, and whether you were able to afford the food you need.  Which one of these statements best describes the food eaten in your household in the last 12 months --enough of the kinds of food we want to eat (skip to SX1CK), --enough, but not always the KINDS of food we want (skip to SS1B: Reasons Kinds Checklist), --sometimes NOT ENOUGH to eat (skip to SS1C: Reasons Not Enough Checklist), or, --OFTEN not enough to eat (skip to SS1C: Reasons Not Enough Checklist)?
	SS1A	MISCK = 4	... Which one of these statements best describes the food situation in your household in the past 12 month --(I was/we were) satisfied with the food (I/we) ate (skip to SX1CK), --sometimes (I/we) did not have the quality and variety of food that(I/we) wanted (SS1B: Reasons Kinds Checklist), --(I/we) worried that (I/we) might not have enough to eat (skip to SS1C: Reasons Not Enough Checklist), or --there were times when (I/we) did not have enough to eat (skip to SS1C: Reasons Not Enough Checklist).
	SX1CK		If POOR=2 and (SS1=<1>or <R> OR SS1A =<1> or <R>) and S2=<2> or <R>, then skip to S3CK (Lowest Amount Could Spend) else continue to SS2 (Food Run Out).
Apr 1999	SS1	MISCK = 2, 4, 6, 8	These next questions are about the food eaten in your household in the last 12 months, since May of last year, and whether you were able to afford the food you need.  Which of these statements best describes the food eaten in your household--enough of the kinds of food we want to eat (skip to SX1CK), enough but not always the kinds of food we want to eat (SS1B: Reasons Kinds Checklist), sometimes not enough to eat (skip to SS1C: Reasons Not Enough Checklist), or often not enough to eat (skip to SS1C: Reasons Not Enough Checklist)?
	SS1A	MISCK NE 2, 4, 6, 8	... Which of the following statements best describes the amount of food eaten in your household--enough food to eat (skip to SS1A1), sometimes not enough to eat (skip to SS1C: Reasons Not Enough Checklist), or often not enough to eat (skip to SS1C: Reasons Not Enough Checklist)?
	SS1A1	SS1A=1	Do you have enough of the KINDS of food you want to eat (skip

Year	Question Number	Asked If <sup>13</sup>	Wording
			to SX1CK), or do you have enough but NOT ALWAYS the KINDS of food you want to eat (SS1B: Reasons Kinds Checklist)?
Sep 2000	SS1		<p>These next questions are about the food eaten in your household in the last 12 months, since September of last year, and whether you were able to afford the food you need.</p> <p>Which of these statements best describes the food eaten in your household--enough of the kinds of food we want to eat (skip to SX1CK), enough but not always the kinds of food we want to eat (SS1B: Reasons Kinds Checklist), sometimes not enough to eat (skip to SS1C: Reasons Not Enough Checklist), or often not enough to eat (skip to SS1C: Reasons Not Enough Checklist)?</p>
	SX1CK/ SS2CK		<p>SX1CK If POOR=2 and (SS1=&lt;1&gt;or &lt;R&gt;) and S9=&lt;2&gt; or &lt;R&gt;, then skip to S10 (Spend More/Less to Meet Needs) else continue to SS2CK.</p> <p>SS2CK If MISCK=8 then skip to SS2A (Worry) else continue to SS2 (Food Run Out).</p>
Apr 2001	SS1		<p>These next questions are about the food eaten in your household in the last 12 months, since April of last year, and whether you were able to afford the food you need.</p> <p>Which of these statements best describes the food eaten in your household—enough of the kinds of food we want to eat (skip to SX1CK), enough but not always the kinds of food we want to eat (SS1B: Reasons Kinds Checklist), sometimes not enough to eat (skip to SS1C: Reasons Not Enough Checklist), or often not enough to eat (skip to SS1C: Reasons Not Enough Checklist)?</p>
	SX1CK/ SS2CK		If POOR=2 and (SS1=<1>or <R>) and S9=<2> or <R>, then skip to S10 (Spend More/Less to Meet Needs) else continue to SS2 (Food Run Out).
Dec 2001	SS1		[See SS1, April 2001]
Dec 2002	SS1		[Question wording same as 2001 but all Rs skip to SX1CK]
	SX1CK		If POOR=2 and (SS1=<1>or <R>) and S9=<2> or <R>, then go to END OF SUPPLEMENT else ask SS2 (Food Run Out)
Dec 2003	SS1		[Same question wording and skip sequence as 2002.]
<b>Q2/SS2: Worried Whether Food Would Run Out</b>			
Pretest 1994	53	pass initial screener: IF Q11="enough to eat" & HH>200% POVERTY	<p>[Introductory statement is the same as current question wording with the following exceptions: the current fill of "(you/your household)" appeared as "you (or the other members of your household)."]</p> <p>"I worried whether (my/our) food would run out before (I/we) got money to buy more." Was that often, sometimes or never true for</p>

Year	Question Number	Asked If <sup>13</sup>	Wording
			you in the last 12 months?
Apr 1995	S53	pass initial screener: (complicated, see instrument)	[Introductory statement is the same as current question wording with the following exceptions: the categories appeared as “ <u>often</u> , <u>sometimes</u> , or <u>never true</u> ” and the current fill of “(you/your household)” appeared as “(you/you or the other members of your household).”]  ... Was that often, sometimes or never true for you in the last 12 months?
Sep 1996	S53	pass initial screener: (complicated, see instrument)	[Introductory statement is the same as current question wording with the following exceptions: the categories appeared as “ <u>often</u> , <u>sometimes</u> , or <u>never true</u> ” and the current fill of “(you/your household)” appeared as “(you/you or the other members of your household).”]  ... Was that often, sometimes or never true for you in the last 12 months?
Apr 1997	S53	pass initial screener: (complicated, see instrument)	[Introductory statement is the same as the current question wording with the following exceptions: the current fill of “(you/your household)” appeared as “(you/you or the other members of your household).”]  ... Was that often, sometimes or never true for you in the last 12 months?
Aug 1998	SS2	pass initial screener: IF NOT [POOR=2 & (SS1=1,R OR SS1A=1,R) & S2=2,R]	[Same as current question wording.]
Apr 1999	SS2	pass initial screener: IF NOT [POOR=2 & (SS1=1,R OR SS1A=1,R) & S9=2,R]	[Same as current question wording.]
Sep 2000	SS2	pass initial screener (see Dec 2003) but only if MISCK ne 8	[Same as current question wording.]
Apr 2001	SS2	pass initial screener (see Dec 2003)	[Same as current question wording.]
Dec 2001	SS2	pass initial screener (see Dec 2003)	[Same as current question wording.]
Dec 2002	SS2	pass initial screener (see Dec 2003)	[Same as current question wording.]
Dec 2003	SS2	pass initial screener: IF NOT [POOR=2 & (SS1=1,R) & S9=2,R]	---
<b>Q3/SS3: Food Bought Didn't Last</b>			
Pretest 1994	S4	see Q2/53	[Same as current question wording.]
Apr 1995	S54	see Q2/S53	[Same as current question wording.]

Year	Question Number	Asked If <sup>13</sup>	Wording
Sep 1996	S54	see Q2/S53	[Same as current question wording.]
Apr 1997	S54	see Q2/S53	[Same as current question wording.]
Aug 1998	SS3	see Q2/SS2	[Same as current question wording.]
Apr 1999	SS3	see Q2/SS2	[Same as current question wording.]
Sep 2000	SS3	see Q2/SS2	[Same as current question wording.]
Apr 2001	SS3	see Q2/SS2	[Same as current question wording.]
Dec 2001	SS3	see Q2/SS2	[Same as current question wording.]
Dec 2002	SS3	see Q2/SS2	[Same as current question wording.]
Dec 2003	SS3	see Q2/SS2	---
<b>Q4/SS4: Couldn't Afford to Eat Balanced Meals</b>			
Pretest 1994	S5	see Q2/S3	“(I/we) couldn't afford to eat properly.” Was that often, sometimes or never true for you in the last 12 months?
Apr 1995	S55	see Q2/S53	[Same as current question wording.]
Sep 1996	S55	see Q2/S53	[Same as current question wording.]
Apr 1997	S55	see Q2/S53	[Same as current question wording.]
Aug 1998	SS4	see Q2/SS2	[Same as current question wording.]
Apr 1999	SS4	see Q2/SS2	[Same as current question wording.]
Sep 2000	SS4	see Q2/SS2	[Same as current question wording.]
Apr 2001	SS4	see Q2/SS2	[Same as current question wording.]
Dec 2001	SS4	see Q2/SS2	[Same as current question wording.]
Dec 2002	SS4	see Q2/SS2	[Same as current question wording.]
Dec 2003	SS4	see Q2/SS2	---
<b>Q5/SS5: Relied On Only a Few Kinds of Low-Cost Food to Feed Children</b>			
Pretest 1994	S8	see Q2/S3 & IF CHILDREN<18	“(I/we) relied on a limited number of foods to feed (the children) because (I was/we were) running out of money to buy food for a meal.” Was that often, sometimes or never true for you in the last 12 months.
Apr 1995	S58	see Q2/S53 & IF CHILDREN<18 (HHMEM=1 & AGE<=17)	“(I/we) relied on only a few kinds of food to feed (name/the children) because (I was/we were) running out of money to buy food.” Was that often, sometimes or never true for you in the last 12 months.

Year	Question Number	Asked If <sup>13</sup>	Wording
Sep 1996	S58	see Q2/S53 & IF CHILDREN<18 (HHMEM=1 & AGE<=17)	[Same as current question wording except the fill statement was slightly different: "... feed (CHILD's name/the children) ..."]
Apr 1997	S58	see Q2/S53 & IF CHILDREN<18 (HHMEM=1 & AGE<=17)	[Same as current question wording except the fill statement was slightly different: "... feed (my/our child/CHILD's name/the children) ..."]
Aug 1998	SS5	see Q2/SS2 & IF CHILDREN<18 (HHMEM=1 & AGE<=17)	[Same as current question wording except there appears to be a typo/error in the fill statement such that as worded the interviewer would have read "my" instead of "my child": "... feed (my/our child/the children) ..."]
Apr 1999	SS5	see Q2/SS2 & IF CHILDREN<18 (HHMEM=1 & AGE<=17)	[Same as current question wording.]
Sep 2000	SS5	see Q2/SS2 & IF CHILDREN<18 (HHMEM=1 & AGE<=17 & PURRP>=4)	[Same as current question wording but if MISCK = 8, respondents were also read the following introduction: "Now I'm going to read you several statements, please tell me whether the statement was OFTEN true, SOMETIMES true, or NEVER true for (you/your household) in the last 12 months. The first statement is:"]
Apr 2001	SS5	see Q2/SS2 & IF CHILDREN<18 (HHMEM=1 & AGE<=17 & PERRP>=4)	[Same as current question wording.]
Dec 2001	SS5	see Q2/SS2 & IF CHILDREN<18 (HHMEM=1 & AGE<=17 & PERRP>=4)	[Same as current question wording.]
Dec 2002	SS5	see Q2/SS2 & IF CHILDREN<18 (HHMEM=1 & AGE<=17 & PURRP>=4)	[Same as current question wording.]
Dec 2003	SS5	see Q2/SS2 & IF CHILDREN<18 (HHMEM=1 & AGE<=17 & PURRP>=4)	---
<b>Q6/SS6: Couldn't Feed the Children a Balanced Meal</b>			
Pretest 1994	56	see Q5/58	[Same as the current question wording except instead of asking about "((my/our) child/the children)," the question simply reads: "... feed the children ..."]
Apr 1995	S56	see Q5/S58	[Same as the current question wording except the fill statement was slightly different: "... feed (CHILD's name/the children) ..."]
Sep 1996	S56	see Q5/S58	[Same as the current question wording except the fill statement was slightly different: "... feed (CHILD's name/the children) ..."]

Year	Question Number	Asked If <sup>13</sup>	Wording
Apr 1997	S56	see Q5/S58	[Same as the current question wording except the fill statement was slightly different: "... feed (my/our child/CHILD's name/the children) ..."]
Aug 1998	SS6	see Q5/SS5	[Same as the current question wording except the fill statement was slightly different: "... feed (my/our child/the children) ..."]
Apr 1999	SS6	see Q5/SS5	[Same as the current question wording except the fill statement was slightly different: "... feed (my/our child/the children) ..."]
Sep 2000	SS6	see Q5/SS5	[Same as current question wording.]
Apr 2001	SS6	see Q5/SS5	[Same as current question wording.]
Dec, 2001	SS6	see Q5/SS5	[Same as current question wording.]
Dec 2002	SS6	see Q5/SS5	[Same as current question wording.]
Dec 2003	SS6	see Q5/SS5	---
<b>Q7/SH1: Children Not Eating Enough</b>			
Pretest 1994	57	see Q5/58	[Same as current question wording except the fill statement was slightly different: "(The children were)"]
Apr 1995	S57	see Q5/S58	[Same as current question wording except the fill statement was slightly different: "(CHILD's name was/The children were)"]
Sep 1996	S57	see Q5/S58	[Same as current question wording except the fill statement was slightly different: "(CHILD's name was/The children were)"]
Apr 1997	S57	see Q5/S58	[Same as current question wording except the fill statement was slightly different: "(My/our child/CHILD's name was/The children were)"]
Aug 1998	SH1	see Q2/SS2 & IF CHILDREN<18 & IF NOT [(SS1=1 OR SS1A=1,2) & (SS2 & SS3 & SS4 & SS5 & SS6=3,D,R)] & MISCK NE 8	[Same as current question wording.]
Apr 1999	SH1	see Q2/SS2 & IF CHILDREN<18 & IF NOT [(SS1=1 OR SS1A=1,2) & (SS2 & SS3 & SS4 & SS5 & SS6=3,D,R)] & MISCK NE 8	[Same as current question wording.]
Sep 2000	SH1	see Q2/SS2 & IF CHILDREN<18 & (SS1=3,4 OR SS2, SS3, SS4, SS5, SS6=1,2 OR SS2A, SS3A, SS4A=1)	[Same as current question wording.]
Apr 2001	SH1	see Q2/SS2 & IF CHILDREN<18 & (SS1=3,4 OR SS2, SS3, SS4, SS5, SS6=1,2)	[Same as current question wording.]

Year	Question Number	Asked If <sup>13</sup>	Wording
Dec 2001	SH1	see Q2/SS2 & IF CHILDREN<18 & (SS1=3,4 OR SS2, SS3, SS4, SS5, SS6=1,2)	[Same as current question wording.]
Dec 2002	SH1	see Q2/SS2 & IF CHILDREN<18 & (SS1=3,4 OR SS2, SS3, SS4, SS5, SS6=1,2)	[Same as current question wording.]
Dec 2003	SH1	see Q2/SS2 & IF CHILDREN<18 & (SS1=3,4 OR SS2, SS3, SS4, SS5, SS6=1,2)	---
<b>Q8/SH2: Cut the Size of Meals or Skip Meals</b>			
Pretest 1994	24	see Q2/S53	[Same as current question wording except the wording for the reference period is expanded to read: "In the last 12 months, since September 1993, did ..."]
Apr 1995	S24	see Q2/S53	[Same as current question wording except the wording for the reference period is expanded to read: "In the last 12 months, since (date), did ..."]
Sep 1996	S24	see Q2/S53	[Same as current question wording except the wording for the reference period is expanded to read: "In the last 12 months, since October of last year, did ..."]
Apr 1997	S24	see Q2/S53 & IF MISCK NE 4,8	[Same as current question wording except the wording for the reference period is expanded to read: "In the last 12 months, since May of last year, did ..."]
Aug 1998	SH2	see Q2/SS2 & IF NOT [(SS1=1 OR S1A=1,2) & (SS2 & SS3 & SS4 & SS5 & SS6=3,D,R)] & MISCK NE 8	[Same as current question wording.]
Apr 1999	SH2	see Q2/SS2 & IF NOT [(SS1=1 OR S1A=1,2) & (SS2 & SS3 & SS4 & SS5 & SS6=3,D,R)] & MISCK NE 8	[Same as current question wording.]
Sep 2000	SH2	see Q2/SS2 & (SS1=3,4 OR SS2, SS3, SS4, SS5, SS6=1,2 OR SS2A, SS3A, SS4A=1)	[Same as current question wording.]
Apr 2001	SH2	see Q2/SS2 & (SS1=3,4 OR SS2, SS3, SS4, SS5, SS6=1,2)	[Same as current question wording.]
Dec 2001	SH2	see Q2/SS2 & (SS1=3,4 OR SS2, SS3, SS4, SS5,	[Same as current question wording.]

Year	Question Number	Asked If <sup>13</sup>	Wording
		SS6=1,2)	
Dec 2002	SH2	see Q2/SS2 & (SS1=3,4 OR SS2, SS3, SS4, SS5, SS6=1,2)	[Same as current question wording.]
Dec 2003	SH2	see Q2/SS2 & (SS1=3,4 OR SS2, SS3, SS4, SS5, SS6=1,2)	---
<b>Q8a/SHF2: How Often Cut the Size of Meals or Skip Meals</b>			
Pretest 1994	25	see Q8/24 & IF Q24=1	In how many months since September 1993 did (you/you or other adults in your household) cut the size of your meals or skip meals because there wasn't enough money for food?
Apr 1995	S25	see Q8/S24 & IF S24=1	[Same as current question wording.]
Sep 1996	S25	see Q8/S24 & IF S24=1	[Same as current question wording.]
Apr 1997	S25	see Q8/S24 & IF S24=1	[Same as current question wording.]
Aug 1998	SHF2	see Q8/SH2 & SH2=1	[Same as current question wording.]
Apr 1999	SHF2	see Q8/SH2 & SH2=1	[Same as current question wording.]
Sep 2000	SHF2	see Q8/SH2 & SH2=1	[Same as current question wording.]
Apr 2001	SHF2	see Q8/SH2 & SH2=1	[Same as current question wording.]
Dec 2001	SHF2	see Q8/SH2 & SH2=1	[Same as current question wording.]
Dec 2002	SHF2	see Q8/SH2 & SH2=1	[Same as current question wording.]
Dec 2003	SHF2	see Q8/SH2 & SH2=1	---
<b>Q9/SH3: Eat Less Than Felt Should</b>			
Pretest 1994	28	see Q8/24	[Same as current question wording except "money to buy food," appears in place of "money for food."]
Apr 1995	S32	see Q8/S24	[Same as current question wording except "money to buy food," appears in place of "money for food."]
Sep 1996	S32	see Q8/S24	[Same as current question wording except "money to buy food," appears in place of "money for food."]
Apr 1997	S32	see Q2/S53	[Same as current question wording except "money to buy food," appears in place of "money for food."]
Aug 1998	SH3	see Q8/SH2	[Same as current question wording.]
Apr 1999	SH3	see Q8/SH2	[Same as current question wording.]
Sep 2000	SH3	see Q8/SH2	[Same as current question wording.]
Apr 2001	SH3	see Q8/SH2	[Same as current question wording.]

<b>Year</b>	<b>Question Number</b>	<b>Asked If<sup>13</sup></b>	<b>Wording</b>
Dec 2001	SH3	see Q8/SH2	[Same as current question wording.]
Dec 2002	SH3	see Q8/SH2	[Same as current question wording.]
Dec 2003	SH3	see Q8/SH2	---
<b>Q10/SH4: Hungry But Didn't Eat</b>			
Pretest 1994	31	see Q8/24	In the last 12 months, since September 1993, were you ever hungry but you didn't eat because you couldn't afford enough food?
Apr 1995	S35	see Q8/S24	[Same as current question wording with the exception of the reference period: "In the last 12 months, since date ..."]
Sep 1996	S35	see Q8/S24	[Same as current question wording: survey conducted in September and reference period specifies "since October of last year."]
Apr 1997	S35	see Q8/S24	[Same as current question wording with the exception of the reference period: "In the last 12 months, since last May ..."]
Aug 1998	SH4	see Q8/SH2	[Same as current question wording: survey conducted in August and reference period specifies "since August of last year."]
Apr 1999	SH4	see Q8/SH2	[Same as current question wording: survey conducted in April but references period specifies "since May of last year."]
Sep 2000	SH4	see Q8/SH2	[Same as current question wording: survey conducted in September and reference period specifies "since September of last year."]
Apr 2001	SH4	see Q8/SH2	[Same as current question wording: survey conducted in April and reference period specifies "since April of last year."]
Dec 2001	SH4	see Q8/SH2	[Same as current question wording: survey conducted in December and reference period specifies "since December of last year."]
Dec 2002	SH4	see Q8/SH2	[Same as current question wording: survey conducted in December and reference period specifies "since December of last year."]
Dec 2003	SH4	see Q8/SH2	---
<b>Q11/SH5: Lose Weight</b>			
Pretest 1994	38	see Q8/24	Sometimes people lose weight because they don't have enough to eat. In the last 12 months, did you lose weight because there wasn't enough food?
Apr 1995	S38	see Q8/S24	Sometimes people lose weight because they don't have enough to eat. In the last 12 months, did you lose weight because there wasn't enough food?
Sep 1996	S38	see Q8/S24	[Same as current question wording.]
Apr 1997	S38	see Q2/S53	[Same as current question wording.]
Aug 1998	SH5	see Q8/SH2	[Same as current question wording.]
Apr 1999	SH5	see Q8/SH2	[Same as current question wording.]
Sep 2000	SH5	see Q8/SH2	[Same as current question wording.]
Apr 2001	SH5	see Q8/SH2	[Same as current question wording.]

Year	Question Number	Asked If <sup>13</sup>	Wording
Dec 2001	SH5	see Q8/SH2	[Same as current question wording.]
Dec 2002	SH5	see Q8/SH2	[Same as current question wording.]
Dec 2003	SH5	see Q8/SH2	---
<b>Q12/SSH1: Not Eat for a Whole Day</b>			
Pretest 1994	34	see Q8/24	[Same as current question wording except reference includes the year: "since September 1993."]
Apr 1995	S28	see Q8/S24	[Same as current question wording except reference period appears as "since (date)."]
Sep 1996	S28	see Q8/S24	[Same as current question wording except reference period appears as "since October of last year."]
Apr 1997	S28	see Q2/S53	[Same as current question wording except reference period appears as "since last May."]
Aug 1998	SSH1	see Q8/SH2 & MISCK NE 8 & IF NOT [(SH1, SH1A=3,D,R, Blank) & (SH2, SH2A=2,D,R OR) & (SH3=2,D,R & SH4=2, D,R & SH5=2,D,R)]	[Same as current question wording.]
Apr 1999	SSH1	see Q8/SH2 & MISCK NE 8 & IF NOT [(SH1, SH1A=3,D,R, Blank) & (SH2, SH2A=2,D,R OR) & (SH3=2,D,R & SH4=2, D,R & SH5=2,D,R)]	[Same as current question wording except reference period appears as "since last May" (not "since last April").]
Sep 2000	SSH1	see Q8/SH2 & SH1=1,2 OR (SH2, SH3, SH4, OR SH5=1)	[Same as current question wording.]
Apr 2001	SSH1	see Q8/SH2 & SH1=1,2 OR (SH2, SH3, SH4, OR SH5=1)	[Same as current question wording.]
Dec 2001	SSH1	see Q8/SH2 & SH1=1,2 OR (SH2, SH3, SH4, OR SH5=1)	[Same as current question wording.]
Dec 2002	SSH1	see Q8/SH2 & SH1=1,2 OR (SH2, SH3, SH4, OR SH5=1)	[Same as current question wording.]
Dec 2003	SSH1	see Q8/SH2 & SH1=1,2 OR (SH2, SH3, SH4, OR	---

Year	Question Number	Asked If <sup>13</sup>	Wording
		SH5=1)	
<b>Q12a/SSHF1: How Often Not Eat for a Whole Day</b>			
Pretest 1994	35	see Q8/24 & Q34=1	In how many months since September 1993 did (you/you or other adults in your household) not eat for a whole day because there wasn't enough money for food?
Apr 1995	S29	see Q12/S28 & S28=1	[Same as current question wording.]
Sep 1996	S29	see Q12/S28 & S28=1	[Same as current question wording.]
Apr 1997	S29	see Q12/S28 & S28=1	[Same as current question wording.]
Aug 1998	SSHF1	see Q12/SSH1 & SSH1=1	[Same as current question wording.]
Apr 1999	SSHF1	see Q12/SSH1 & SSH1=1	[Same as current question wording.]
Sep 2000	SSHF1	see Q12/SSH1 & SSH1=1	[Same as current question wording.]
Apr 2001	SSHF1	see Q12/SSH1 & SSH1=1	[Same as current question wording.]
Dec 2001	SSHF1	see Q12/SSH1 & SSH1=1	[Same as current question wording.]
Dec 2002	SSHF1	see Q12/SSH1 & SSH1=1	[Same as current question wording.]
Dec 2003	SSHF1	see Q12/SSH1 & SSH1=1	---
<b>Q13/SSH2: Ever Cut the Size of Children's Meals</b>			
Pretest 1994	40	see Q8/24 & IF CHILDREN<18	[Same as current question wording except for the fill statements for the references to children and the date reference. The first fill for children appears as "(child's name/children living in the household who are under 18 years old)" and the second fill appears as "(child's name/any of the children." The date is specified as "In the last 12 months, since September 1993."]
Apr 1995	S40	see Q12/S28 & IF CHILDREN<18	[Same as current question wording except for the fill statements for the references to children. The first fill appears as "(CHILD'S NAME/children living in the household who are under 18 years old)" and the second fill appears as "(CHILD'S NAME/any of the children." Also, the reference period appears as "since May 1994" (not "since April of last year").]
Sep 1996	S40	see Q12/S28 & IF CHILDREN<18	[Same as current question wording except for the fill statements for the references to children. The first fill appears as "(CHILD'S NAME/children living in the household who are under 18 years old)" and the second fill appears as "(CHILD'S NAME/any of the children)'s." Also, the reference period appears as "since October of last year" (not "since September of last year").]
Apr 1997	S40	see Q2/S53 & IF CHILDREN<18	[Same as current question wording except for the fill statements for the references to children. The first fill appears as "(CHILD'S NAME/your child/children living in the household who are under 18 years old)" and the second fill appears as "(CHILD'S NAME/your child's/any of the children." Also, in what must be a

Year	Question Number	Asked If <sup>13</sup>	Wording
			typo given that the survey was fielded in April, the reference for the date appears as “since October of last year.”]
Aug 1998	SSH2	see Q12/SSH1 & IF CHILDREN<18	[Same as current question wording.]
Apr 1999	SSH2	see Q12/SSH1 & IF CHILDREN<18	[Same as current question wording except reference period appears as “since May of last year” (not “since April of last year”).]
Sep 2000	SSH2	see Q12/SSH1 & IF CHILDREN<18	[Same as current question wording.]
Apr 2001	SSH2	see Q12/SSH1 & IF CHILDREN<18	[Same as current question wording.]
Dec 2001	SSH2	see Q12/SSH1 & IF CHILDREN<18	[Same as current question wording.]
Dec 2002	SSH2	see Q12/SSH1 & IF CHILDREN<18	[Same as current question wording.]
Dec 2003	SSH2	see Q12/SSH1 & IF CHILDREN<18	---
<b>Q14/SSH4: Children Ever Skip a Meal</b>			
Pretest 1994	43	see Q8/24 & IF CHILDREN<18	[Same as current question wording except for the fill statement for the reference to children and the date reference. The fill for the children appears as “(child’s name/any of the children)” and the reference period is “In the last 12 months, since September 1993, did ...”]
Apr 1995	S43	see Q12/S28 & IF CHILDREN<18	[Same as current question wording except for the fill statements for the reference to children and the date reference. The fill for the children appears as “(Child’s name/any of the children)” and the reference period is “In the last 12 months, since May 1994, did ...”]
Sep 1996	S43	see Q12/S28 & IF CHILDREN<18	[Same as current question wording except for the fill statements for the reference to children and the date reference. The first for the children appears as “(Child’s name/any of the children)” and the reference period is “In the last 12 months, since October of last year, did ...”]
Apr 1997	S43	see Q2/S53 & IF CHILDREN<18	[Same as current question wording except for the fill statements for the references to children and the specification of the reference period, which, in what must be a typo given that the survey was fielded in April, appears as follows: In the last 12 months, since October of last year, did (Child’s name/your child/any of the children) ... ]
Aug 1998	SSH4	see Q12/SSH1 & IF CHILDREN<18	[Same as current question wording.]
Apr 1999	SSH4	see Q12/SSH1 & IF CHILDREN<18	[Same as current question wording.]
Sep 2000	SSH4	see Q12/SSH1 & IF CHILDREN<18	[Same as current question wording.]
Apr 2001	SSH4	see Q12/SSH1 & IF CHILDREN<18	[Same as current question wording.]
Dec 2001	SSH4	see Q12/SSH1 & IF CHILDREN<18	[Same as current question wording.]
Dec 2002	SSH4	see Q12/SSH1 & IF CHILDREN<18	[Same as current question wording.]
Dec	SSH4	see Q12/SSH1 & IF	---

Year	Question Number	Asked If <sup>13</sup>	Wording
2003		CHILDREN<18	
<b>Q14a/SSHF4: How Often Children Ever Skip a Meal</b>			
Pretest 1994	44	see Q8/24 & IF CHILDREN<18 & Q43=1	In how many months since September 1993, did (child's name/any of the children) skip a meal because there wasn't enough money for food?
Apr 1995	S44	see Q12/S28 & IF CHILDREN<18 & S43=1	[Same as current question wording.]
Sep 1996	S44	see Q12/S28 & IF CHILDREN<18 & S43=1	[Same as current question wording.]
Apr 1997	S44	see Q2/S53 & IF CHILDREN<18 & S43=1	[Same as current question wording.]
Aug 1998	SSHF4	see Q12/SSH1 & IF CHILDREN<18 & SSH4=1	[Same as current question wording.]
Apr 1999	SSHF4	see Q12/SSH1 & IF CHILDREN<18 & SSH4=1	[Same as current question wording.]
Sep 2000	SSHF4	see Q12/SSH1 & IF CHILDREN<18 & SSH4=1	[Same as current question wording.]
Apr 2001	SSHF4	see Q12/SSH1 & IF CHILDREN<18 & SSH4=1	[Same as current question wording.]
Dec 2001	SSHF4	see Q12/SSH1 & IF CHILDREN<18 & SSH4=1	[Same as current question wording.]
Dec 2002	SSHF4	see Q12/SSH1 & IF CHILDREN<18 & SSH4=1	[Same as current question wording.]
Dec 2003	SSHF4	see Q12/SSH1 & IF CHILDREN<18 & SSH4=1	---
<b>Q15/SSH3: Children Ever Hungry</b>			
Pretest 1994	47	see Q8/24 & IF CHILDREN<18	[Same as current question wording except for the fill statement for the reference to children, which appears as "(was CHILD'S NAME/were the children)."]
Apr 1995	S47	see Q12/S28 & IF CHILDREN<18	[Same as current question wording except for the fill statement for the reference to children, which appears as "(was CHILD'S NAME/were the children)."]
Sep 1996	S47	see Q12/S28 & IF CHILDREN<18	[Same as current question wording except for the fill statement for the reference to children, which appears as "(was CHILD'S NAME/were the children)."]
Apr 1997	S47	see Q2/S53 & IF CHILDREN<18	[Same as current question wording except for the fill statement for the reference to children appears as: "... was (CHILD'S NAME/were the children) ever hungry ..."]
Aug 1998	SSH3	see Q12/SSH1 & IF CHILDREN<18	[Same as current question wording.]

Year	Question Number	Asked If <sup>13</sup>	Wording
Apr 1999	SSH3	see Q12/SSH1 & IF CHILDREN<18	[Same as current question wording.]
Sep 2000	SSH3	see Q12/SSH1 & IF CHILDREN<18	[Same as current question wording.]
Apr 2001	SSH3	see Q12/SSH1 & IF CHILDREN<18	[Same as current question wording.]
Dec 2001	SSH3	see Q12/SSH1 & IF CHILDREN<18	[Same as current question wording.]
Dec 2002	SSH3	see Q12/SSH1 & IF CHILDREN<18	[Same as current question wording.]
Dec 2003	SSH3	see Q12/SSH1 & IF CHILDREN<18	---
<b>Q16/SSH5: Children Not Eat for a Whole Day</b>			
Pretest 1994	50	see Q8/24 & IF CHILDREN<18	[Same as current question wording except for the fill statements for the references to children and the reference to the date. The children's fill appears as: "(child's name/any of the children)" and reference period appears as "In the last 12 months, since September 1993, ..."]
Apr 1995	S50	see Q12/S28 & IF CHILDREN<18	[Same as current question wording except for the fill statements for the references to children and the reference to the date. The children's fill appears as: "(NAME/any of the children)" and reference period appears as "since (date)."]
Sep 1996	S50	see Q12/S28 & IF CHILDREN<18	[Same as current question wording except for the fill statements for the references to children and the date of the reference period. The children's fill appears as "(Child's name/any of the children)" and reference period uses "October" not "September."]
Apr 1997	S50	see Q2/S53 & IF CHILDREN<18	[Same as current question wording except for the fill statements for the references to children and the reference to the date. The children's fill appears as: "(Child's name/your child/any of the children)" and reference period uses "May" not "April."]
Aug 1998	SSH5	see Q12/SSH1 & IF CHILDREN<18	[Same as current question wording.]
Apr 1999	SSH5	see Q12/SSH1 & IF CHILDREN<18	[Same as current question wording except reference period appears as "since May of last year" (not "since April of last year").]
Sep 2000	SSH5	see Q12/SSH1 & IF CHILDREN<18	[Same as current question wording.]
Apr 2001	SSH5	see Q12/SSH1 & IF CHILDREN<18	[Same as current question wording.]
Dec 2001	SSH5	see Q12/SSH1 & IF CHILDREN<18	[Same as current question wording.]
Dec 2002	SSH5	see Q12/SSH1 & IF CHILDREN<18	[Same as current question wording.]
Dec 2003	SSH5	see Q12/SSH1 & IF CHILDREN<18	---