

FOOD AND  
NUTRITION  
TECHNICAL  
ASSISTANCE

**Experience and Expression of  
Food Insecurity Across Cultures:  
Practical Implications for Valid  
Measurement**

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## 1. Introduction and Overview <sup>1</sup>

This paper attempts to look systematically for commonalities in the experience and expression of food insecurity across cultures. The analysis is based on a survey of 21 different applications of experiential food insecurity scales in 16 different countries, including the U.S. The working hypothesis is that the primary food security themes that underlie the U.S. Core Food Security Module are also important components of the experience of food insecurity in other populations and subpopulations. This directly tests this hypothesis by considering whether or not circumstances revealed by these different studies contradict the assumptions of the U.S. measure and by exploring whether additional or alternate themes emerge. In order to thoroughly assess the relevance of particular themes and items, the sample of 21 applications is augmented with additional insights from ethnographic literature<sup>2</sup>.

Other elements of creating a food security scale are nearly as important as the conceptual themes and items themselves. These include: 1) the recall period and the response options, 2) methods for scoring responses, and 3) the performance of the items as a group. Though the scale itself is continuous, for practical and policy purposes it is often desirable to draw cut-offs delimiting different levels of the extent or severity of the problem. The paper reviews different applications of the food security scale for their approach to each of these elements and highlights what appear to be the ‘best practices’ among them.

Finally, the most valid food security scale in itself is unimportant unless policy-makers, practitioners, and researchers believe that it captures what it claims to measure, generates the type of information that they are seeking, and is cost-effective to develop and implement. In order to get a sense of how these measures are perceived, particularly by the PVO community, representatives were interviewed from several of the institutions that have participated in either the development or implementation of some variation of an experiential food insecurity scale. Their insights are summarized in two final sections on applicability and usefulness, and time and cost.

The discussions that follow are intended to launch a dialogue among members of the Title II and Child Survival and Health PVO community and other stakeholders regarding the viability of experiential measures as tools to assess the prevalence of food insecurity, for targeting interventions, monitoring program implementation, demonstrating program impact, or other uses yet to be identified. It is expected that the conclusions drawn from this review will evolve from the input of other seasoned ‘players’ in the food security field once it is open for comment.

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<sup>1</sup> The author gratefully acknowledges the helpful input of Paula Bilinsky, Anne Swindale, and Patricia Bonnard (AED); Ed Frongillo (Cornell); and Beatrice Rogers (Tufts FSNSP).

<sup>2</sup> Due to the time limitations of this preliminary paper the enormous body of relevant ethnographic literature and institutional experiences was not exhaustively reviewed. A more thorough review will be undertaken during subsequent iterations of the paper.

## 1.1. Problem Statement

Bonnard et al (2002) point out in their review of development assistance program progress against the strategy laid out by USAID's 1995 Food Aid and Food Security Policy Paper that "an important constraint in evaluating the food security impacts of food availability and access interventions is the lack of meaningful and informative indicators." Indeed, though PVOs were found to do an excellent job of monitoring project outputs, many struggled with the challenge of identifying workable indicators of the *access* dimension of food insecurity. While measures like consumption and income are considered by many to be the gold standard, in fact they are but proxy indicators for an unobservable underlying phenomenon (food insecurity) that cannot be measured directly. These types of data also fail to capture the key components of vulnerability to food insecurity and household strategies for managing risk.

The reality is that food access itself is dynamic— not all food secure households remain so at all times and vice versa (Christiansen et al 2000). Whether a household becomes more or less food insecure over time depends largely on its entitlements and how efficiently they are managed in the face of exposure to different levels of actual or perceived risk (Swift 1989). The likelihood of adverse shocks affects a household's approach to resource management and influences production and consumption decisions that in turn affect current and future food security (Barrett 2002).

Current consumption and dietary intake surveys typically capture the households' status at either a single point in time, in the case of a 24-hour recall of food consumption, or over the previous week or month. Anthropometric indicators of stunting can reflect past insecurity of food deprivation, but without additional data on health/hygiene and caring practices they are not sufficient to permit reliable conclusions about the role of food deprivation or the prior *risks* of food deprivation in influencing current behaviors. The implications of such incongruence include 1) missing a critical window for preventive intervention within at-risk populations 2) designing "one-size-fits-all" interventions for households with different types and degrees of food insecurity, and 3) failing to adequately capture the impacts of programs that are working to minimize vulnerability in the populations with whom they work.

In the choice of appropriate indicators to assess food security, such issues are complicated by other considerations, including the time and cost to develop and implement survey instruments, process data, and present indicators in a way that is transparent, appropriate, and actionable. Consumption and income indicators are both time consuming to collect and require more human and financial resources than many PVOs can afford (FAO 2002). Hence, there has been a convergence of interest on the part of academics and practitioners in producing scientifically developed and validated, cost-effective approaches to capturing the multiple dimensions of food insecurity that are largely missing from conventional measures.

## 1.2. Historical Perspective

As with international efforts, much of the measurement dilemma in the United States in the last two decades was shaped by competing theoretical understandings of the concepts of "hunger", "malnutrition", and "food security", and limited as well by time and costs that were thought to be

associated with potentially more accurate methodologies (Eisinger, 1998). After nearly three decades of grappling with these issues, only within the last ten years has an approach to national food security measurement achieved broad consensus.

The tool of choice used by the USDA to monitor national food security, inserted since 1995 into the annual Current Population Survey, is a validated set of 18 questions about behaviors and attitudes that collectively distinguish households experiencing different degrees of food insecurity (see Appendix 1) (Hamilton et al. 1997). Building on the theoretical groundwork of Kathy Radimer and colleagues at Cornell University (Radimer, Olson, and Campbell 1990; Radimer et al. 1992) and the advocacy-oriented Community Childhood Hunger Identification Project (CCHIP) (Wehler, Scott, and Anderson 1992) the USDA Core Food Security Measure is underpinned by the notion that the experience of insecurity prompts predictable responses that are quantifiable in a way that “food security” itself is not. These behaviors and attitudes relate to insufficient quantity and quality of food, food procured through personally and socially unacceptable means, and feelings of vulnerability to downturns in supply (Kendall, Olson, and Frongillo 1995; Radimer, Olson, and Campbell 1990; Radimer et al. 1992).

The concepts underlying this approach are not entirely new to developing country-focused measurement attempts. During the Sahelian famines of the 1980’s, monitoring coping strategies in the face of acute shocks was thought to provide potentially useful early warning information (see Corbett, 1988). The understanding of coping/adaptive strategies was in its infancy, and the belief that the type and sequencing of behaviors was largely contextual may have stymied initial attempts to apply such indicators on a large-scale basis. Only in the late 1990’s was there a fledgling convergence in the two bodies of work previously focused on separate continents. Attentive to the U.S.-based research, Maxwell and colleagues (Maxwell 1996; Maxwell et al. 1999) offered a methodologically more sophisticated approach to identifying the food insecure by quantifying what previously had produced only qualitative results. The Coping Strategies Index (CSI) has since been elaborated into a relatively simple method that appears to be not only grounded in local food insecurity experience, but also transferable for use in a variety of settings and for purposes ranging from food aid monitoring to early warning (Maxwell et al. 2003). Approximately ten different CARE and World Food Programme (WFP) offices are using CSI measures in Africa and the Middle East (Wheeler, personal communication 3/29/04), and upwards of 200 requests have been received for the recently issued field guide to developing the CSI (Maxwell, personal communication 3/22/04).

Around the same time, preliminary results from concurrent studies by Tufts and Cornell in Bangladesh and Burkina Faso demonstrated that a replicable *process* similar to the approach used to develop the U.S. Core Food Security Measure (i.e. grounded in people’s experience of food insecurity and relying on systematic ethnographic inquiry, item development and testing, cognitive debriefing, and construct validation), resulted in valid food insecurity scales that had predictive capability in these developing country contexts. World Vision/Bangladesh and Africare/Burkina Faso have since applied these measures at the baseline and midterm of their respective DAPs to assess the prevalence of household-level food insecurity in their program areas. Longitudinal assessments using these measures at different time points have demonstrated their stability and sensitivity to detect changes in household food circumstances over time

relative to conceptually relevant indicators of causes and consequences of insecurity (Coates, Webb, and Houser 2003; Frongillo and Nanama 2003).<sup>3</sup>

Coinciding with these two large-scale studies has been a proliferation of research within the U.S. and other industrialized countries that examines the experience and expression of food insecurity by subpopulations – (ie. those with different socioeconomic and demographic characteristics than the rural, white, families with children, upon which much of the original theoretical development was based). Such groups include the elderly (Lee and Frongillo 2000; Quandt and Rao 1999; Wolfe, Frongillo, and Valois 2003; Wolfe et al. 1998), the homeless (Dachner and Tarasuk 2002), Hispanics in California (Harrison et al. 2003; Melgar-Quinonez et al. 2003), Pacific Islanders in Hawaii (Derrickson and Anderson 2000; Derrickson and Brown 2002; Derrickson, Fisher, and Anderson 2000; Derrickson et al. 2001; Derrickson, Sakai, and Anderson 2001), Quebecois families (Hamelin, Beaudry, and Habicht 2002; Hamelin, Habicht, and Beaudry 1999), and the Maori in New Zealand (Parnell et al. 2001).

Still others have begun to examine the performance of adaptations of either the U.S. Core Food Security Module, the Cornell/Radimer Measure, or the Community Childhood Hunger Identification Project (CCHIP) Measure in countries like Indonesia (Studdert, Frongillo, and Valois 2001) the Russian Federation (Welch, Mock, and Netrobenko 1998), Venezuela (Bernal and Lorenzana 2003; Lorenzana and Mercado 2002; Lorenzana and Sanjur 1999) Bolivia, the Phillipines, Burkina Faso, and Ghana (Melgar-Quinonez, personal correspondence 03/04), and Haiti (Ruel and Menon 2003).

This new research coupled with the demand for practical applications makes it not only possible, but also pressing, to respond to the challenge issued by Eileen Kennedy (2002): that is, to investigate the development of “a common scale...” that could provide a “...consistent basis for measuring food insecurity and hunger prevalence at well-defined levels or ranges of severity, across varied cultural contexts and levels of economic development”. While recent Tufts and Cornell work demonstrates that completing a standard process produces a robust food insecurity indicator, in order to develop a measure to generate data that are generalizeable and comparable across communities, countries, or regions, and that is simple for PVOs to adopt, it is important also to question what is the *least* amount of adaptation necessary to produce a contextually-relevant food security scale. In other words, though there is certainly a great deal of variation in both the causes and consequences of food security in different countries, is there, regardless, a core of the phenomenon common to all contexts that can be tapped for measurement purposes?

## 2. Terminology

Currently there are a number of different adjectives commonly applied to describe these measures. For instance, Radimer et al (Radimer et al. 1992) introduced their paper by explaining that “this research was undertaken with the conviction that it was possible to measure hunger directly” before proceeding to explain their approach. Since then the term “direct measure” of food security has been widely adopted. However, many scientists would dispute that assessing

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<sup>3</sup> A manual (Frongillo et al, forthcoming) summarizing these experiences provides a technical guide to PVOs interested in replicating this process in other countries.

people's attitudes or behaviors is akin to direct measurement, which usually implies a physical assessment like taking weights or heights. In the sense that the scale based on Radimer's work is conceptually more directly representative of food insecurity than more distal proxies, then the use of direct measure is slightly more appropriate. However, because it is easily confused, the word 'direct' will not be used in this paper.

The term 'qualitative' food security scale is also a misnomer. Unlike most qualitative methods (such as key informant ratings or focus group feedback), which are principally descriptive and cannot be standardized beyond a specified time and place, the results collected via measures of food insecurity related behaviors *are* quantified and analyzed using statistically rigorous methods.

Likewise, the term "perceived" food insecurity is also less than ideal. Indeed, some of the items in the various scales assess perceptions (e.g. Do you or adult members of your household ever eat less than you feel you should because there is not enough money for food?), but an equal number of questions try to get at behaviors (eg. Adult skipped meals) that are, theoretically, observable although they are captured in the scale through self-report.

The most useful candidate descriptor that applies equally well to any of the questions in the scale and to several conceptually similar types of instruments (including the CSI) is "experiential" – derived from peoples' experiences. The experiential food insecurity scale can be understood as a measure that quantifies a range of behaviors known to reflect food-related stress.

### 3. Methods

The following approach was adopted in order to address the set of issues outlined above:

- a. *Undertake a literature review to identify studies* that have either a) examined the food security *experience* of populations or subpopulations in a variety of countries with an eye to understanding how well these groups are measured by the U.S. Core Food Security Module or b) reported on attempts to adapt the U.S. measure (or one of its variants) to ensure its cultural relevance before applying it for research or operational purposes. Studies that use the U.S. measure verbatim or through direct translation *without* any attempt to test its relevance to that population are not considered here.<sup>4</sup> However, studies that translate the U.S. measure directly but seek to assess its validity to that culture are examined.

<sup>4</sup> For recent examples of direct applications to adults in Trinidad and Tobago, Korean children, multinational refugee families living in London, and Hispanics in the US see Gulliford, M. C., D. Mahabir, and B. Rocke. 2003. Food insecurity, food choices, and body mass index in adults: Nutrition transition in Trinidad and Tobago. *Int J Epidemiol* 32, no. 4: 508-16.; Gulliford, M., D. Mahabir, and B. Rocke. 2003. Food insecurity definitions and body mass index. Response. *International Journal of Epidemiology* 32, no. 6: 1118-1119; Oh, S. Y. and M. J. Hong. 2003. Food insecurity is associated with dietary intake and body size of Korean children from low-income families in urban areas. *European Journal of Clinical Nutrition* 57, no. 12: 1598-1604; Sellen, D. W., A. E. Tedstone, and J. Froze. 2002. Food insecurity among refugee families in east London: Results of a pilot assessment. *Public Health Nutrition* 5, no. 5: 637-644; Dhokarh, R., R. Perez-Escamilla, D. A. Himmelgreen, Y. K. Peng, and S. Segura-Perez. 2003. Acculturation and household food insecurity among low-income Latinos in Hartford, Connecticut. *Faseb Journal* 17, no. 4: A296-A296; Himmelgreen, D., R. Perez-Escamilla, Y. Peng, and A. Bretnall. 2002. Food insecurity and nutritional status among low-income Hispanic children. *American Journal of Physical Anthropology*: 85-85; Himmelgreen, D. A., R. Perez-Escamilla, S. Segura-Millan, Y. K. Peng, A. Gonzalez, M. Singer, and A. Ferris. 2000. Food insecurity among low-income Hispanics in Hartford, Connecticut: Implications for public health policy. *Human Organization* 59, no. 3: 334-342; Himmelgreen, D. A., R. Perez-Escamilla, S. Segura-Millan, N. Romero-Daza, M. Tanasescu, and M. Singer. 1998. A comparison of the nutritional status and food security of drug-using and non-drug-using Hispanic women in Hartford, Connecticut. *American Journal of Physical Anthropology* 107, no. 3: 351-361.

- b. *Generate a list of contacts at both researcher and NGO institutions* for access to additional grey materials.
- c. *Develop an open-ended key informant interview guide* (see Appendix 3) and administer it to institutional representatives on the contact list whose methods are not well documented in published literature. These interviews were intended to elicit information about personal and institutional experiences in developing and/or implementing experiential food insecurity scales.
- d. *Collect survey instruments and enter scale items into an Excel spreadsheet.* To be considered for the sample, a survey instrument had to have been tested for face validity (e.g. through focus groups, literature review, expert opinion, key informant interview, and/or cognitive debriefing). It also had to have been assessed for at least one of the following: criterion validity (e.g. compares as expected to an independent enumerator rating (Frongillo et al. 1997), content validity and internal consistency, or construct validity (e.g., compares as expected to conceptually related variables).<sup>5</sup>
- e. *Group scale items into themes and sub-themes.*
- f. *Explore published ethnographic literature* on food security experience for information related to other relevant themes not represented in the sample of twenty-one experiential food security scales.
- g. *Interpret and report results* that emerge for eventual discussion with researcher and practitioner-experts.

A few limitations to this paper should be noted at the outset. First, due to the short time frame in which the paper was written, it was impossible to canvass all PVOs or researchers who may have used experiential food insecurity scales, particularly those represented only in the grey literature. Secondly, because this review relies mainly on secondary data (plus some primary data in the form of key informant interviews), the analysis is constrained by not having comparable datasets to explore. Researchers at USDA (Nord et al. 2002) and Freedom from Hunger (Melgar-Quinonez, personal communication 03/04) have attempted some cross-country comparisons of experiential food insecurity scale data and these results will be highlighted here as well.

## 4. Food Security Themes and Items

The U.S. Core Food Security Module (U.S. CFSM) is a scaled set of 18 items that is designed to capture the full range of severity of the food insecurity problem as it is experienced in the United States. Five different types of experiences and behaviors indicate insecurity as measured by the U.S. CFSM (Hamilton et al. 1997), and serve as a useful starting point against which to assess other country and subpopulation experiences:

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<sup>5</sup> Each of these types of validity say something quite different about the instrument and are not generally used in a “pick one” fashion. However, some measure of quality control over the instruments was necessary and time constraints prevented a more thorough assessment of the strengths and limitations of each individual tool.

1. Anxiety that the food budget or supply may be insufficient to meet basic needs;
2. Perceptions that household food was inadequate in quality or quantity
3. Reported instances of reduced food intake by *adults* or the consequences of reduced intake.
4. Reported instances of reduced food intake or its consequences for *children* in the household; and
5. Coping actions taken by the *household* to augment the food budget or food supply (such as borrowing from friends or family or getting food from emergency food pantries).

All questions are asked to the person in household most responsible for food-related decisions and, while some questions refer to the entire household, others refer to the respondent's own experience or to 'the children', where applicable (Hamilton et al. 1997). In spite of information suggesting that individuals in the same family may experience food insecurity differently, it was decided early on to limit the unit of inquiry to the household. However, survey questions designed to assess adult versus child hunger remain important to determining the severity of the problem (households with child hunger are considered more insecure than those with only adult hunger) while also giving an indication of the intra-household allocation of resources.

Items in the module ask respondents whether each experience took place during either the past 30 days or the previous 12 months. Several of these items are followed by questions about how often the condition occurred. Finally, each item in the CFSM asks the respondent to affirm the item only if the cause is income poverty (or "not enough money").

It is worth considering whether this *structure* of the U.S. CFSM (apart from the specific item content) is something that should be replicated, verbatim, in developing countries. For example, research to understand the experience of food insecurity in the U.S. elderly has suggested that this demographic faces problems physically accessing and preparing food aside from not always affording it (Quandt et al. 2001; Wolfe, Frongillo, and Valois 2003; Wolfe et al. 1998).

Households in countries facing a high HIV/AIDS burden or civil conflict have been shown to experience the same constraints to physical access and meal preparation. In rural areas where as much food is home grown and traded as it is purchased, the particular phrasing of that part of the question (... "due to not having enough money") does not carry much meaning. A more universally-relevant question structure should be less restrictive, asking whether the condition resulted from *either* a lack of food or the inability to access it, or both.

## **4.1. Worry about getting enough food**

### **4.1.1. Results**

In this sample, eight of the twenty food insecurity measurement scales contained questions about food-related anxiety generally phrased as either how often the respondent "worries about food running out", "worries that the food won't last" or fears that they "don't know where it will come from" (see Appendix 2.1 for a list of items comprising the sample scales). Other instruments referred to "stress" rather than worry (Parnell et al. 2001) and still others (Coates, Webb, and

Houser 2003, Appendix 2; Frongillo and Nanama 2003) relied on questions to assess the predominance of food concerns within competing demands for health, education, housing, and other major classes of expenditure. Notably, none of the CSI instruments had questions relating explicitly to the psychological dimension of insecurity (assessing only self-reported behaviors, rather than attitudes and/or emotions).

Only the Burkina Faso and the Haiti scales sought to assess the *severity* of the anxiety through questions pertaining to 1) the number of worrying episodes (e.g. did you worry more than once in the last month?), 2) the length of time before the predicted food problem that the worrying began (e.g. do you worry you will lack food for next week? Next month?) and 3) the frequency of stress consequences such as insomnia. Another question asks, “did you lose weight because of this concern?” but it is not entirely clear whether the weight loss is expected as a result of the food worries or the lack of food itself or both.

In five of the eight studies, the “food worries” questions were affirmed more often than any other behavior, while in two of the remaining studies they were the second most prevalent. Only in the Haiti study did “worries about food” come fourth, after questions about reducing a staple food (beans) due to hardship. In every instance the prevalence of food worries was high (even in fourth place, the question in Haiti elicited an 88.2% rate of response), and for this reason whether these questions could succeed on their own at distinguishing the food insecure from the food secure in countries where food stress is the norm is a relevant question.

#### **4.1.2. Discussion**

This theme corresponds to what Radimer et al (1990; 1992) described as the psychological aspect of individual hunger and food insecurity. Subsequent ethnographic studies by Hamelin et al (2002; 1999) focused on this dimension of food stress in the Quebecois population. They observed that the psychosocial impacts of food insecurity on household dynamics and individual mental health constitute a serious social threat, with consequences such as impaired learning for children, productivity loss, and an increased need for health care.

Scale items assessing worry and anxiety over future food supply are central to the concept that experiential food security scales seek to measure; these are the questions that most closely approximate perceived vulnerability, or, food insecurity itself. Exposure to risk coupled with uncertainty about the future and the ability to manage it is likely to prompt the types of behaviors captured through other questions in the scale. In other words, whether or not any adversity is actually experienced, merely the fear that supplies will be disrupted can provoke food intake reductions and a savings response (Barrett 2002). Those people that experience periodic supply shocks are often better able to manage (and perhaps worry less) than people for whom it is truly a surprise (Reardon, Matlon, and Delgado 1988).

#### **4.1.3. Summary**

This comparison of anxiety-related items across several different scales suggests that worrying about food is quite common in different cultures. As such, a universal “worry” question should be possible, though it may not do an adequate job on its own of distinguishing between the

mildly and severely insecure. This type of question may also be useful in combination with other items representing the severity of the anxiety and its consequences.

## **4.2. Perceptions that the food eaten by household members was inadequate in quality or quantity**

### **4.2.1. Results**

Appendix 2.2 summarizes those items in the sample of experiential food insecurity scales about perceptions of insufficient dietary quality and quantity. Most of the items used in different countries are similar in that they ask, very generally, either about households or individuals eating less food or lower quality food than they would like or than they felt was healthy or nutritious. Items pertaining to quantity were typically phrased using the wording “enough” food or “eating until satisfied”. Items on quality had more variation, and were worded as “less preferred foods” “less variety” “relying on a limited number of foods”, “eating the same foods day after day” eating “balanced meals” or eating “properly” or “as I should”.

Experiential food insecurity scales from India and Uganda incorporated a version of the USDA question originally designed for the 1977-78 and 1987-88 Nationwide Food Consumption surveys [“which of the following statements best describes the food eaten in your household” (in Nord et al. 2002)], which combines aspects of both quantity and quality into the following set of response options: enough of the kinds of foods we want to eat, enough but not always the kinds of foods we want to eat, sometimes not enough to eat, or often not enough to eat (Briefel and Woteki 1992). However, pilot testing of responses to this question in a primarily low-income Hispanic population in Los Angeles suggested that the wording was confusing and respondents often affirmed it even when they did not answer due to food insufficiency. Reasons given for a positive response included not wanting to take the time to prepare proper food, a perception that children shouldn’t always eat what they want, and dieting (Briefel and Woteki 1992). To avoid misclassification error in the NHANES III survey, the two concepts were decoupled into a question that asked only about the frequency of having *enough* food to eat.

While quantitative items were similar across the sample, not every scale adopted the same generic ‘quality’ items. In Bangladesh, for example, the prototype questionnaire asked about the consumption of specific luxury foods that were not eaten by the more insecure households (e.g. “How often in the past 12 months did your family eat big fish?”) or less-preferred foods that were never or rarely consumed by the food secure (“How often did you have to eat wheat when you preferred rice?”). Similarly, in Burkina Faso the ‘quality’ theme was assessed using questions about the consumption of foods out of reach of the most insecure, including meat, milk and fish (Frongillo and Nanama 2001).

Finally, some of the items summarized under the theme “perceptions of inadequate quantity and quality” could be grouped a number of different ways. For example, in Haiti cooking with “less beans” and “not cooking with head of herring” is a rationing (coping) strategy that also speaks to eating lesser quality food. The group of variations on the question: “did you ever run short of money and try to make your food or your food money go further?” are clustered by the U.S.

CFSM with “anxiety” related items, while other researchers have related them more to insufficient “quantity”.

#### 4.2.2. Discussion

In several of these cases, identifying specific ‘less desired’, or inferior foods, was complicated. For example, not only are diets in Bangladesh quite varied, almost every menu item or variant that was considered seemed to be a desired food by someone, somewhere else. For example, *bhatarMar* (rice starch—the liquid left over after cooking rice) was initially found (through qualitative interaction) to represent a food consumed rarely, by very hungry people. The same seemed to apply to “rice with just chile and salt”. However, it was then found in pre-tests that some people eat rice starch or rice with chile and salt simply because they like the taste. Researchers in Burkina Faso (Frongillo and Nanama 2001) faced a similar challenge in that certain traditional ‘hungry foods’ (e.g. keguendo leaves) were consumed by some of the secure households because they liked to eat them. However, other types of leaves were identified as being indeed key indicators of distress behavior engendered by food insecurity.

Communicating ideas of nutritional “balance,” like the question about “eating balanced meals” in the U.S. CFSM, can be very challenging in the context of widespread energy deficiency or lack of nutrition education. For example, considerable time in Bangladesh was devoted to defining a ‘food groups consumed’ question by adapting the Indian and Chinese food pyramids and basing questions around a visual representation of Bangladeshi coins (some of which show food items on a silver coin—chicken, fish, fruit and a vegetable). Ultimately, the question was asked:

“In the past 12 months how often did your family in addition to rice/wheat/potatoes eat at least 3 of these different types of food groups all in the same day (a normal, non-festival day)?” Food group: 1) Fish/meat/egg/milk, 2) Vegetable, 3) Pulses, 4) Fruits.

When delivered this way and accompanied by drawings of the different groups of nutritionally similar foods the enumerators felt that they were able convey the concepts of variety. However, the question took time to complete, and though responses were highly correlated to both caloric intake and dietary diversity indicators, the information may have been just as easily captured in a short food frequency checklist. For these reasons, the question was not incorporated into the final scale.

Directly translating the U.S. CFSM question relating to “balanced meals” has also prompted much confusion when applied to different languages and cultures. Derrickson et al (2001) demonstrated through cognitive debriefing that the word “balance” was construed in a vague way by about half the Hawaiian sample to mean “a few food groups”. The other fifty percent thought it either meant something other than a variety of food groups or did not understand it at all. Similarly, in Ecuador, one researcher discovered that the word “balanced” had been translated directly to “*balanceada*”, which colloquially means “animal fodder” (Melgar-Quinonez, personal communication 3/29/04).

Harrison and colleagues, in their (2003) study of the interpretation of the U.S. CFMS by Hispanics living in the United States, discovered that only the focus group participants from Puerto Rico interpreted the item to mean “nutritious food or meals”. In fact, some members of the focus groups interpreted the “balanced meal” item quite literally to mean how well the food was distributed across the plate to prevent spillage. (Harrison, personal communication 02/04). These issues in translation may explain the different ordering in response frequency observed across Hispanic groups responding to a survey in Hartford CT (Himmelgreen et al. 2000) and results from a study directly applying the U.S. measure in Trinidad and Tobago (Frongillo 2003; Gulliford, Mahabir, and Rocke 2003). A variety of suggestions have been proffered to improve the comprehension of the question, including substituting the word “healthy” for “balanced” (Studdert, Frongillo, and Valois 2001).

### **4.2.3. Summary**

The definition of food insecurity has rightfully evolved beyond caloric sufficiency to include dietary quality since a diet rich in a variety of macro and micronutrients is essential for good health. Based on the questions reviewed from the different scales, issues of not eating the *types* of foods desired is relevant across cultures even where the first priority is obtaining *enough* food. This seems to be one thematic area where the underlying concept of “less preferred” or “distress” food is common to all, but the actual foods that distinguish the food secure from the insecure have to be identified for each separate context (since asking generally about whether the respondent ate a “less preferred food” may not be readily understood).

## **4.3. Reported instances of reduced food intake, or consequences of reduced food intake for adults in the household**

### **4.3.1. Results**

Every one of the experiential food insecurity scales examined in this sample contained questions pertaining to either the “household” or “the adults” or the individual respondent reducing their food intake, and many of the questions asked explicitly whether those reductions were in order to protect the food consumption of the children (see Appendix 2.3). Four different types of items are common to these twenty scales, each representing a different level of severity of the same phenomenon. They relate to: 1) eating less in a meal or cutting the size of the meal, 2) reducing the number of meals consumed in a day, 3) going an entire day or days without eating anything, 4) “complained of hunger”, “went to bed hungry”, or “felt hungry but didn’t eat”, and 5) lost weight. In the CCHIP measure, the U.S. CFMS and the experiential food insecurity scale applied in India, two of these levels are combined into one question, “Do you or adult members of your household ever cut the size of meals or skip meals because there is not enough money for food?” One question in the Coping Strategies Index from Western Kenya and one candidate item for the Bangladesh food insecurity scale asked about feeding working members of the household at the expense of non-working members.

### **4.3.2. Discussion**

Underlying the use of questions pertaining to “adults reducing food intake” in the U.S. CFMS and elsewhere is the assumption that, under budget pressure, adults will sacrifice in order to

protect the food consumption of their children. In U.S. households where there are no children, the presence of adult hunger is the most severe manifestation of a hypothesized ‘food security continuum’. However, the results of this item comparison and accompanying ethnographic insights in a variety of countries suggest that adults in the household are not necessarily a cohesive group uniformly making sacrifices on behalf of their children. Certainly, many are, and there is no evidence to suggest that mothers are filling themselves while their children go hungry. But, in situations where the next family meal depends on the ability of the income-earner to work, the trade-offs may not be so straightforward. For example, some families in Bangladesh suggested that “the son who pulls the rickshaw”, or “those who go outside to work get the most” (Coates, Webb, and Houser 2003; Webb, Coates, and Houser 2002). And in China, (Wei et al 2002) and Myanmar (Twi and Yhoun-Aree 2002) researchers found that a ‘contributions rule’ appeared to be more predictive of the intra-household resources allocation than nutritional need.

Pursuant to the idea that different household members have differential access to household level resources, it is important to note that much of the research that informed the development of the U.S. CFISM and its subsequent applications across cultures was based only on the experience of food insecurity from the perspective of adult *women* and their young children. Meanwhile, there is evidence to suggest that men and women may in fact experience hunger differently (Macht 1999; Monello and Mayer 1967; Rime and Giovanni 1986). In Bangladesh, both a male and female in each household responded to the experiential food insecurity instrument. Preliminary comparisons of their response rate suggest a fairly high degree of concordance (81 percent agreement) that was higher in food insecure (10 percent disagreement) than food secure (23 percent disagreement) households. One possible explanation for the differences are that better-off households engage in a much broader array of adaptive strategies to improve their livelihoods and have more types of coping resources to draw on (and remember) when times are tough. Women from the better-off households may also be increasingly independent and undertake a number of activities outside the home and therefore outside of their husband’s awareness (Coates, Webb, and Houser 2003; Webb, Coates, and Houser 2002). Interestingly, the highest rate of disagreement surrounded cash-related coping strategies that were largely in the male’s purview, such as taking loans or giving children money for snacks. It is quite possible that men did not discuss these decisions with their wives since cash control is more commonly in the male domain. On the other hand, the most agreement appeared to be in responses to questions about group activities, such as the number of meals eaten per day, in which both men and women were fully involved.

In the context of the complex household structure in Northern Burkina Faso, qualitative research conducted by Cornell also suggested that mother-child ‘subunits’ did not always have a share in the households’ resources (Frongillo and Nanama 2003). Furthermore, the different experience of insecurity expressed by women-child subunits that emerged through focus groups prompted the development of two distinct experiential food insecurity scales. Though both women and men were interviewed with these questionnaires at each round of the longitudinal study, only the household heads’ responses were incorporated into reports of the initial analyses. With further analysis, data from both studies should eventually shed additional light on the interaction between gendered food insecurity experiences and their implications for household-level food insecurity categorization.

### 4.3.3. Summary

The preceding discussion suggests that determining a common set of questions to represent different levels of ‘adult’ reductions in food intake from the list in Appendix 2.3 is not difficult. However, a more thorough consideration of whether child hunger universally represents the most severe eventuality along with a gendered examination of adult responses is warranted before concluding that the adult-child response patterns are indicative of a particular set of points on the continuum that the experiential food insecurity scales seek to measure.

## 4.4. Reported instances of reduced food intake or its consequences for children in the household

### 4.4.1. Results

Unlike the adult food reduction questions, which were found in each of the 21 instruments, there were no child-referenced items in the scales from New Zealand, Bangladesh, Burkina Faso (household head), Uganda, Ghana, Kenya, Bolivia, or the Philippines. The items in the remaining scales were grouped into categories that, like the adult questions, progressed in severity from the more commonly affirmed 1) “gave child less variety and less quality foods”, to 2) child “eating less in a meal” or adult “cutting the size of the children’s meal”, 3) child skipping meals in a day due to lack of food, 4) child going an entire day or days without eating anything, and 5) children “complained of hunger”, “went to bed hungry”, or “felt hungry but didn’t eat” due to lack of money for food or a lack of available food in the household (see Appendix 2.4). A potential candidate item to assess even more severe household food insecurity, “child losing weight due to lack of food” was not present in any of the 21 scales examined for this paper<sup>6</sup>. In the CCHIP measure and the experiential food insecurity scale applied in India, levels 2) and 3) were combined into one question, “Do you ever cut the size of children’s meals or skip meals because there is not enough money for food?”

### 4.4.2. Discussion

Several issues related to the universal meaning of child hunger in the household were highlighted in the previous section on adults. However, it is useful to assess the different reasons for which child items were *not* included in several of the studies examined here to determine how such questions might perform in a ‘universal’ experiential food insecurity scale meant to apply to almost any culture. For instance, in Bangladesh several child-referenced items were tested but none ended up in the final scale since even “infants skipping entire meals” was such a rare practice that only three percent of households affirmed this question, compared with less than one percent in the U.S. A similar logic was given for combining the items “cutting children’s meal size” and “children skip meals” in the India survey. Because the latter behavior was a very rare occurrence even among the lowest-income households, any affirmative responses to the question “reducing size of meal or skipping meals” were most likely to relate to the part that describes cutting the child’s portion size (Nord et al. 2002).

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<sup>6</sup> This last item might be a good indicator of an acute phase of an emergency.

Freedom from Hunger researchers decided not to include the U.S. CFSM child-referenced questions in their scales for Bolivia, Ghana, Burkina Faso, and the Philippines after focus groups suggested that respondents had difficulty answering on behalf of *all* of their children when they varied in age. Perhaps the issue is that adolescent children may not be subject to the same type of buffering as the youngest infants. To circumvent this problem, scales from Bangladesh, India, and Uganda defined “children” as being under a certain culturally relevant cut-off.

The rationale given for not including questions of child feeding patterns in the Burkina Faso questionnaire administered to the household head was that the women responsible for feeding children can answer more authoritatively than men questions relating to reductions in children’s portion size or children skipping meals (Frongillo and Nanama 2001 Appendix 2). When the female was asked in a separate questionnaire, it was found that households of varying degrees of food insecurity do follow different child feeding practices (Nanama, personal communication, 04/04). The number of meals consumed and portion sizes are often reduced in more insecure households, however the latter response is non-specific; the sub-units commonly cut children’s portion size for reasons other than lack of food (Nanama, personal communication, 04/04).

#### **4.4.3. Summary**

All of these insights recommend caution in drawing assumptions about child hunger as a universal symptom of severe food insecurity, while also highlighting the very practical constraint of including questions in a scale that may or may not be applicable to households in a certain demographic.

### **4.5. Coping actions taken by the household to augment their food budget or food supply**

#### **4.5.1. Results**

Both the various area-specific Coping Strategies Indices and experiential food insecurity scales in the sample incorporate some assessment of behaviors prompted by food stress but to different degrees; whereas the scales like the U.S. CFSM also assess emotions and attitudes, in the case of the CSI, behavioral strategies are the centerpiece. The developers of the U.S. CFSM drew a distinction between intra-household allocation decisions (like reducing meal size or variety) and short-term “strategies to augment the resource base” such as visiting food pantries or borrowing money from relatives. However, both types of behaviors can be considered coping mechanisms<sup>7</sup>.

The application of the CSI methodology by the World Food Programme (WFP) and CARE in approximately 10-12 different countries has generated a short list of five types of self-reported consumption-related behaviors that appear to universally indicate some degree of food insufficiency. While Maxwell (personal communication, 03/04) cautions that this list is but a starting point for local inquiry, Wheeler (personal communication, 03/04), who has worked with WFP offices across Africa to implement the CSI approach, has suggested that this list now

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<sup>7</sup> Interestingly, the latter class of behaviors were tested but not incorporated into the CFSM because item response patterns did not perform according to the model that assumes a predictable order of uptake Hamilton, et al (1997). Food insecure households that successfully increased their food supply through loans or food pantry visits tended (not surprisingly) to also affirm items related to the emotional or psychological state of insecurity they continued to experience.

appears to be fairly common across locations (though the implied severity is not uniform). These questions are reproduced in the Figure 1, below:

**Figure 1: A Generic List of Coping Strategies**

<b>1. Dietary Change</b>
a. Rely on less preferred foods?
<b>2. Increase Short-term Household Food Availability</b>
b. Borrow food, or rely on help for a friend or relative?
c. Purchase food on credit?
d. Gather wild food, or hunt or harvest immature crops?
e. Consume seed stock held for next season?
<b>3. Decrease Numbers of People</b>
f. Send children to eat with neighbors?
g. Send household members to beg?
<b>4. Rationing Strategies</b>
h. Limit portion size at mealtimes?
i. Restrict consumption by adults?
k. Ration the money you have and buy prepared food?
l. Reduce number of meals eaten in a day?
m. Skip entire days without eating

Source: Reproduced from Maxwell et al, 2003 P. 9

Practically all of the coping strategies culled from the twenty-one different sample instruments (see Appendix 2.5 ) are contained in this ‘generic’ list. Three of the five U.S. “dimensions” of food insecurity (pertaining to quality/quantity of food intake, reductions of food intake by adults, and coping actions to augment food supply) are also represented here.

**4.5.2. Discussion**

As mentioned in Section 1, the CSI methodology that was developed by Daniel Maxwell and colleagues (Maxwell 1996; Maxwell et al. 2003; Maxwell et al. 1999) was influenced by a body of anthropological research in the 1980’s and early 1990’s (see de Waal 1989, Corbett 1981, Watts 1983 and 1988, and Longhurst 1986) which concluded that, in contrast to widely held perceptions, people subjected to daily risks were not passive victims of sudden ‘events’ but were active participants in managing the risks that they faced in their daily lives. At the time, famine early warning systems were largely dependent on aggregate indicators of food availability, and monitoring self-reported behavioral responses to food stress showed promise as an alternative and more leading indicator of impending food crisis. The CSI approach is predicated on the assumption that feelings of vulnerability to disruptions in the food supply prompt predictable actions that can be captured through recall and self-report.

Maxwell et al. (2003) distinguish between two different ‘classes’ of coping strategies: short-term adjustments to consumption patterns and more permanent adjustments to food production. This typology is not entirely in line with the literature that precedes their work. In her critique of the oft muddled use of the term “coping”, Davies (1993) discriminate between “adaptive”, “diversification”, and “insurance” strategies – the expansion of the resource base and the means of acquiring food in order to minimize the risk of future disruption, and “coping” strategies – a

set of responses to an atypical situation, often requiring a mortgaging of the means of production with a potentially irreversible impact on future livelihoods. While an assessment of self-reported coping strategies in situations of covariate shock (natural disaster, economic disturbance, civil conflict) could detect an ‘abnormal’ trajectory requiring intervention, applying the same label to broad categories of behavioral patterns exhibited by the chronically food insecure is conceptually murkier. How important is it to know whether a strategy is considered a longer-term ‘adaptive’ approach to maintaining a livelihood rather than a departure from the ‘norm’? Certainly for the purposes of planning an intervention it is useful to understand whether households are on a negative or more horizontal trajectory. However, if one subscribes to the notion of universal rather than normative standards of food security then particular strategies may be considered ‘undesirable’ no matter how they fit into the social calculus of risk buffering versus risk coping.

The CSI method treats the patterns observed in an area as context-specific, while incorporating a straightforward approach to weighing the strategies by severity level (Maxwell 1996; Maxwell et al. 2003; Maxwell et al. 1999). As such, the CSI methodology relies on a participatory exercise in which a list of coping strategies that has been generated by key informants is then ranked during focus group exercises until some consensus is reached regarding the typical level of severity of the food situation signified by each particular response.

As mentioned previously, the U.S. CFMS and its variants also ask coping strategy questions and assume an ordered response pattern indicative of different levels of severity. However, there are some important distinctions between the CSI, the U.S. CFMS, and other experiential food insecurity scales. First, as mentioned earlier, the CSI does not ask explicitly about the emotional state of anxiety and feelings of insecurity that may in fact prompt several of the behaviors on the list. It focuses instead on the “revealed” emotional state as reflected in the types of actions seen in Figure 1.

Secondly, the CSI and the U.S. CFMS are generic in that they do not predefine what is a universally “optimal”, culturally desirable or even typical threshold at which a specific behavior may represent insecurity. For example, a question is commonly worded in the CSIs or the U.S. CFMS as “how often did you reduce the number of meals eaten in a day”. Some of the other experiential food insecurity scales ask the same type of question phrased as “how often did you not eat three meals a day?” The assumption in the latter question is that eating less than three meals each day is not customary or socially desirable when food is plentiful. Developing the second type of question necessarily involves some qualitative exploration to understand the points on a continuum of behavior (e.g. three versus two or one meal) that distinguish food secure from insecure households.

The difference between these two approaches is relevant to the discussion of universality. While the more general question is more globally applicable, respondents may not understand what is being asked if the question is not defined according to their own cultural practices. These questions will be answered differently by individuals with different levels of expectations, experience, understanding, and personal acceptance of a situation. If it is not more narrowly interpreted for them in advance by the qualitative research, there is much more room for individual interpretation and perception to influence the meaning of their response.

A final point related to the coping strategies items is that because they are often unsustainable, certain types of strategies may be already exhausted or unavailable to different segments of the population when the survey is administered. For example, in Bangladesh responses to questions about selling or mortgaging productive assets and food security status (judged by independent enumerator rating) had a non-linear relationship: those households at the lowest end responded negatively because they had nothing of value to sell in exchange for food or cash, while the households at the more secure end of the spectrum also responded negatively since they had no need to sell off their productive assets in the first place. Borrowing money at high interest rates from a moneylender had a similar relationship to food security status for the same reasons. Thus, certain types of coping questions are subject to supply constraints and may not be useful in characterizing the food security status of households at a single time point -- an important consideration in selecting questions and interpreting results.

#### **4.5.3. Summary**

Items referring to consumption-related coping strategies and behaviors to augment the household food supply (in the short and long-term) were included in all scales in the sample. Most of these items appear in the generic list generated by Maxwell et al. (Maxwell et al. 2003) from experience implementing the CSI in several countries. However, the degree of severity and the trajectory of the food insecurity situation implied by a particular self-reported behavior are different across cultures. Therefore, it is recommended that this list serve as a starting point for adapting an experiential food insecurity scale to diverse contexts.

#### **4.6. Other themes**

While the items of the various experiential food insecurity scales can be classified under one of the first five themes, there is one major theme that was detected in the U.S. that is not explicitly operationalized as a question in the U.S. CFSM or other scales – the idea of *social acceptability*. The concept of social acceptability is, however, *implicit* in many of the scale items. In fact, this context-specific concept of ‘acceptability’ influences the likelihood of a strategy being adopted in different cultures. For instance, households in some parts of Ghana may consider food aid to be stigmatizing, seeking it only once other options are exhausted. In another country, emergency food rations may be a preferable alternative to skipping meals. However, as mentioned in earlier sections, personal acceptability (eg. some people eating ‘hungry’ leaves for pleasure) can depart from social norms making even the development of meaningful context-specific indicators more challenging.

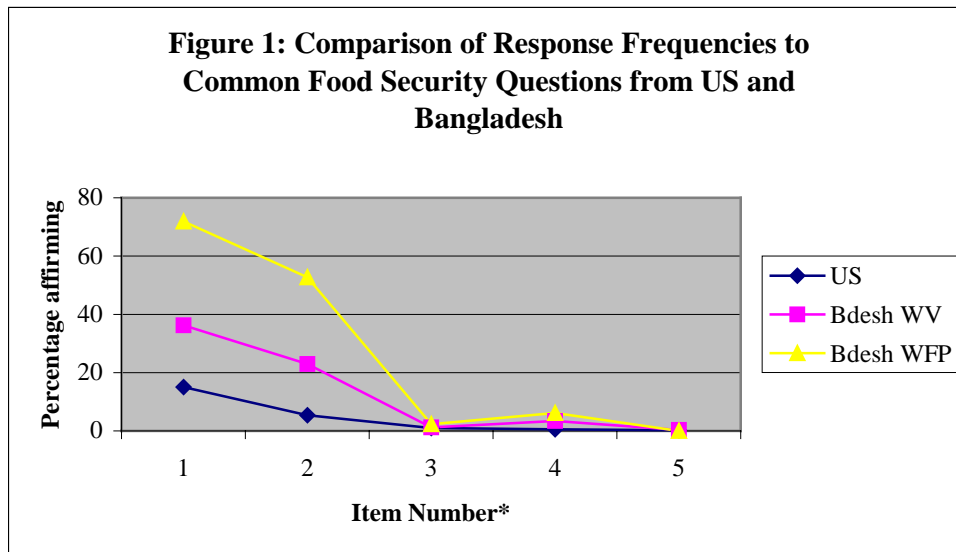
#### **4.7. The Items as a Group**

The preceding sections have considered the themes that appear to form the various dimensions of the food insecurity experience across different cultures and examined the types of items that were used to operationalize those themes in surveys. A next challenge is to examine how questions perform as a set – do scaled items applied in different countries behave as one might expect based on the hypothesis that the five U.S. dimensions of food insecurity have a common meaning in all cultures? Probing this question is challenging without access to the original data;

however, by plotting the response frequency of each item from one scale against the frequencies of equivalent items in another scale it is possible to draw some insights from the relationships.

As discussed in papers by Nord et al (2002), Bickel et al.(2000) and Frongillo (1999), though the prevalence of each item is expected to vary according to the population, sets of items equivalent in meaning should follow a roughly parallel trend. The analysis by Frongillo (1999) suggested that eight questions common to surveys of five different populations (the U.S. population as a whole, Hispanic families in Harford, families in Quebec, and two samples of families in upstate New York) were indeed parallel except for two items in the Hispanic Health survey pertaining to food anxiety and quality. One possible explanation for why the uncertainty item was affirmed relatively more often was the context of “general economic and social uncertainty” in Hartford at the time (Perez-Escamilla in Frongillo, 1999); another likely possibility given the results of focus groups with different Hispanic populations is that the items were not well understood and were mistakenly affirmed by people who were not insecure.

A similar type of comparison was made between sets of responses to food worry, adult, and child-referenced items among the U.S. CFSSM and two different populations in Bangladesh (one widely representative, the other comprised of ultra-poor women who had participated in a microcredit program).



Source: Nord et. al. (2002), Tufts FSNSP/World Vision/FANTA survey data (2002).

\* Item

1. Worried Food would run out
2. Adult skipped meals
3. Adult did not eat entire day
4. Child skipped meals
5. Child did not eat entire day

As in the previous example, the results shown in Figure 1 are also empirically plausible. It makes sense that for households experiencing relatively “normal times” in Bangladesh, adults going entire days without eating and children skipping meals are extreme eventualities practiced by only 2.3% and 6.2% of the ultra-poorest, respectively. However, the figure also suggests that,

while the child hunger items are good discriminators in the United States, they are not as useful in Bangladesh (for which reason they were dropped from the final scale). Furthermore, this figure illustrates that the ‘coping’ process implied by the U.S. model may, in fact, be slightly different in Bangladesh. According to this figure, children are slightly more likely to skip meals than adults are to not eat for an entire day. Again, it seems believable that children might eat two rather than three meals before their parent ate nothing at all. In fact, U.S. households’ management process is not quite as orderly as suggested by the model; Hamilton et al (Hamilton et al. 1997) report some overlap in item calibration such that the least-severe child-referenced questions actually occur very early in the order whereas the most severe adult question is situated at a very late stage. Emergent research also suggests that patterns of U.S. adult-referenced behavior are different for households with and without children (Wilde, personal communication 03/04).

Analyses performed by Nord et al (2002) to test the comparability of food insecurity scales developed for Bangladesh, India, and Uganda make an additional contribution to attempts to look at sets of items across countries. The paper’s first objective was to identify suitable candidate items from each of the three questionnaires that had some comparable counterpart in the U.S. CFSM. The second challenge was to calibrate the measures using Rasch model-based statistical tools so that the two scales (the prototype scale from each of the three countries and the U.S. comparator scale) were equivalent in meaning. The mechanics of this process are reviewed in detail in the paper (Nord et al. 2002).

The paper concludes that “the item-fit, model-fit and measurement error statistics from the Rasch model-based statistical assessments indicate that, within each study, the items in the final scale measure a common underlying phenomenon and do so with sufficient sensitivity to provide useable measures of household food security” (Nord et al. 2002). The report goes on to caution that, though some degree of internal validity was established through this process, additional external validation against variables hypothesized to be closely related predictors and outcomes of food insecurity is recommended.

Most of the scales included in this sample did, in fact, perform these types of ‘external validation’ analyses yet due to time and space constraints the results are not reviewed in this paper. It is useful to consider, however, that the causes and consequences of food insecurity are likely to be differentially related to food insecurity across cultures, an issue relevant to the comparison of “external validity” results from different contexts. For example, in an industrialized country like the United States, we may expect to see a higher association between malnutrition and household food insecurity indicators than in Bangladesh, where other factors like hygiene and sanitation may have a greater influence than food access on nutritional status

## 5. Other Considerations in Question Construction: Recall Period and Response Options

### 5.1. Recall Period

The choice of recall period for the experiential food insecurity scale has implications for both validity and the conclusions that can be drawn from the data. Of the twenty-one scales reviewed,

the shortest recall period was 30 days (used in eight surveys), followed by 60 days (Burundi), six months (Burkina Faso and Venezuela), and twelve months (CCHIP, U.S. CFSM, Bangladesh, and Uganda). Three of the scales (Cornell/Radimer, Indonesia, and Russian Federation) did not specify a recall period, leaving it open to interpretation by the respondent.

Two important considerations in selecting an appropriate recall period are the degree of variability of the phenomenon of interest over time as well as the intended application of the data. In regards to the former, the experiential food insecurity scale developed for Bangladesh sought to capture a composite picture of chronic food insecurity. To do so a 12 month recall period that averaged out seasonal differences was appropriate. The CSI for Uganda also used the "longer and more representative recall period" (Maxwell 1996). On the other hand, several of the CSI scales that were developed for countries like Burundi and the occupied Palestinian territories (oPt) with more acute, covariate, food insecurity used a thirty day recall since a great deal of change in food insecurity-related behaviors was likely to have occurred over the previous month. Theoretically, the scale could have a recall period equal to the minimum amount of time in which a meaningful change in the situation is expected.

Considerations of how the data will be used are also important to the recall period. For example, researchers developing the experiential food insecurity scale for Burkina Faso were interested to test its ability to detect seasonal changes in food insecurity over six month-long production cycles. Thus, in the first visit the enumerators used 'the last harvest' (eight months prior) as the reference period and thereafter referred to 'our last visit', which was timed every six months to correspond with periods of lower demand for labor (Frongillo and Nanama 2003). In Burundi the CSI was asked using two different recall periods: the first administration of each question asked about the situation 60 days prior (and in advance of the food aid intervention), and the second asked about the previous one month in attempt to retrospectively capture change in the CSI over time due to the intervention in an area of active conflict where baseline data could not be collected (Kaba, personal communication 3/25/04; Wheeler, personal communication 3/29/04).

A competing consideration for choosing an appropriate reference period is whether respondents can accurately recall their feelings and behaviors over that particular length of time. The longer the recall period, the greater the likelihood that respondents will provide inaccurate responses or answer reflexively about their present situation rather than carefully recalling the realities over the year. Qualitative interactions with households in Bangladesh allowed an exploration of this key issue: are respondents answering module questions based on what they feel today, what they believe was the case over the last year, or how they think things are becoming? The enumerators were requested to carefully reconstruct a twelve-month recall period for each question, guiding the respondent through the year using locally-relevant temporal markers, such as the *boro* harvest, Ramadan or *Kurbani Eid*. While time-consuming, pre-tests based around the construction of timelines (and using piles of *jujube* fruits to represent behavioral frequencies) suggested that using memory joggers was essential for accuracy.

How comparable are food insecurity scales that ask the same questions but with different recall periods? According to Nord et al. (2002), the scale stands up well to a change in reference period (previous 30 days or previous 12 months) and the shorter reference period may improve

recall. Based on this work, it was felt that 30-day recall period questions in the India experiential scale could be compared to the same U.S. CFSM questions recalling the previous 12 months (though whether the same assumptions can be made for other cross-country comparisons is open for discussion).

## 5.2. Response Options

Many of the response options to the scale questions were phrased to collect relative frequencies. The Cornell/Radimer scale asked respondents to select whether a statement was “not true, sometimes true, or often true”; the U.S. CFSM asked whether a question happened “often, sometimes, or never”, and in some cases a yes/no question was followed by a frequency question asking “almost every month, some months but not every month, or in only 1 or 2 months.” The Bangladesh, Venezuela, and various CSI scales used a similar set of relative frequency questions worded (in the first two instances) as “always, often, sometime, rarely, never” and in the second instance more specifically with enumerator prompts as “all the time? (every day); pretty often? (3-6 \*/week; once in a while? (1-2 \*/week); hardly at all? (<1\*/week); Never.” The Burkina Faso scale used the set of response options that seemed appropriate to distinguishing the behavior of food insecure versus secure households; these were not always related to frequency (e.g. in which selling unit did you usually buy cereals?: Yoruba, tomato can, or Bol”).

Except for the CSI scales, all of the responses were dichotomized (yes/no) or set to a value between 0 and 1. In most cases any response greater than “never” was coded affirmatively except in Bangladesh where “rarely or never” were grouped together for the analysis. The CSI scales incorporate the frequency of the behavior into the scoring of the questions: response frequencies are generally assigned a code in a range from 0-4, multiplied by the severity weighting generated by focus groups, and summed. Except for the India, Uganda, and U.S. CFSM, (which used Rasch), all scales were additive, created by summing the score for each item.

One critique of the U.S. CFSM is that it does not distinguish between households that are insecure once during the prior 12 months from those that frequently experience trouble. Preliminary analyses of data from the Uganda (Nord et al. 2002) and Bangladesh food insecurity scales (Coates, Webb, and Houser 2003; Nord et al. 2002) suggested that the frequency of the behavior may indeed characterize different experiences of food insecurity and this level of detail should not be lost when the item responses are dichotomized before analysis. Scale developers may want to phrase each item as a yes or no question and then follow it with a separate item asking about relative frequency.

## 6. Applications of Experiential Food Insecurity Scales: Institutional Perspectives

Though the use of experiential food insecurity scales for operational purposes is still relatively rare, representatives from a number of Title II PVO and other institutions have had some experience with these types of instruments and were willing to share their perspectives.

## 6.1. Freedom from Hunger (FfH)<sup>8</sup>

Freedom from Hunger (FfH) works in 16 different countries worldwide to provide training and assistance to local partners administering their Credit for Education program, a microcredit initiative that links loan eligibility to attendance at regular meetings where women can acquire knowledge about health and nutrition.

FfH became interested in testing an experiential food insecurity scale as a proxy measure for poverty in a number of different countries where they work. Their hope was that, eventually, their partner microfinance institutions (MFIs) could be used it as a screening tool to distinguish loan-eligible individuals (ie. those meeting the World Bank poverty definition of less than \$1 income per day). Just over one year ago, Freedom from Hunger hired Hugo Melgar-Quinonez (who had significant experience testing the U.S. CFSM in Mexico, Bolivia, and Ecuador and among Latinos living in California) to complete a cross-country study in four program sites in Ghana, Bolivia, Burkina Faso, and the Philippines. He is presently analyzing the data to answer their question about the scale's usefulness as a consumption proxy.

With minimal time and financial resources to devote to an in-depth exploration of the suitability of U.S. CFSM concepts in each country (and with the explicit intention to compare the scale's performance in different cultures), a short-cut approach was adopted. The Principal Investigator (P.I.) visited Bolivia for three weeks, during which time the draft survey instrument was tested in a series of focus groups designed to explore respondent perceptions and item comprehension. Skilled professional enumerators proved to be an invaluable resource as they were able to vet the questions in advance for potential wording issues that were later tested in focus groups. In each of these cases the adaptation was only slight, and centered primarily around translation; the two substantive differences were that they decided to use only the ten household-referenced items from the U.S. CFSM (since families where children were of different ages had difficulty answering on behalf of all children) and each question was reworded with a "yes/no" response option followed by an additional question asking the frequency of occurrence in the prior 12 months. Another one of their challenges was to identify appropriate words to represent response frequencies: Spanish words for "sometimes", for example, could mean "a lot" or "not a lot" depending on the country. Around 320 MFI clients were interviewed in each country, representing different income levels and urban and rural areas.

One of the positive externalities of the FfH process has been capacity-building in their partner MFIs. For example, in the Philippines the MFI recruited enumerators who, once trained, then trained additional enumerators from the different islands where they work to conduct the survey. The preliminary survey results suggest some differences by country (as judged by the Rasch severity ordering); questions of whether these differences result from the methodology or the instrument itself are currently being explored.

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<sup>8</sup> This summary is based on a 3/28/04 telephone interview with Hugo Melgar-Quinonez, principal investigator of the FfH research study.

## 6.2. World Vision/Bangladesh<sup>9</sup>

The World Vision/Bangladesh (WV/B) Food Security Enhancement Initiative (FSEI) Development Assistance Program (DAP) is implemented in sixteen *upazilas* located in some of the most food insecure regions of Bangladesh. The mandate of the five-year U.S.\$80 million Title II-funded program is to address many of the primary underlying causes of food insecurity in the country, namely: low agriculture productivity, poor infrastructure and market access, scarcity of viable off-farm income sources, vulnerability to recurrent natural disasters, and lack of access and knowledge regarding safe options for drinking water and sanitation.

Enumerators hired and trained by Tufts implemented the experiential food insecurity questions in World Vision/Bangladesh's FSEI Program areas at baseline. However the midterm quantitative survey that was carried out entirely by WV/B also included the ten-item experiential food insecurity scale as one of its ten components. Twenty field staff and two Dhaka-based M&E staff were trained to use the instrument. Staff also participated in a one-day pilot test of the full questionnaire where the food insecurity module was discussed in depth. During the pre-test debriefing session, the staff discussed how they broke down the recall period into smaller questions so the respondent could understand exactly what the enumerators wanted to know.

When the Deputy Program Coordinator was asked whether she felt the WV/B enumerators had any difficulty conveying the questions, she speculated that they had understood the module quite well, but since they had to complete between eight and nine lengthy surveys each day their respondents may not have had a "full and nuanced understanding" of each of the ten food security questions.

Though WV/B has not used the indicator a formal part of their M&E system, the Deputy Coordinator (Brumbaugh, personal communication 03/04) had this to say: "I think it is a very interesting quantitative measure in that it has qualitative dimensions and it can also function as a form of reflective practice for the staff who collect the data. It helps them to think about the meaning of food security as a holistic concept and approach and how it can affect other aspects of food security programming". She reported an interest in using the indicator again for the endline evaluation survey and will raise the suggestion in planning meetings with staff.

## 6.3. Africare/Burkina Faso<sup>10</sup>

The purpose of Africare's five-year Title II funded "Projet de Sécurité Alimentaire du Zondoma" (Zondoma Food Security Project) is to sustainably improve food security at household and community levels.

Eight Community Motivators and six Technical Specialists from the organization were trained to implement the experiential food insecurity scale as part of the baseline and endline surveys. The team used translation exercises, role-playing, pre-test and pre-test feedback to ensure that enumerators had a well-grounded understanding of the concepts that the scale was seeking to measure. These sessions contributed to a smooth data-collection process in which enumerators

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<sup>9</sup> This section is a summary of email correspondence with Rachel Brumbaugh, WV/B FSEI Deputy Program Coordinator.

<sup>10</sup> This section summarizes email correspondence with Toni Adama, Africare/Burkina Faso.

were well-equipped to administer the food insecurity questions. When asked about the usefulness of the scale as an indicator of food security impact, the Africare/Burkina representative replied, “I think that this indicator is very useful as a measure of household food security. The questions developed by Cornell and FANTA allowed our project to do comparisons of data collected with several methods. During the endline, data collected with the [food insecurity] questionnaires and other indicators developed by our project showed that household food security was improved in the project intervention villages.”

#### **6.4. CARE and the World Food Programme**

As mentioned earlier in the paper, the Coping Strategies Index began as an attempt by Daniel Maxwell to develop a proxy indicator of food consumption as part of his dissertation research in Uganda (Maxwell 1996). The CSI *method* was later refined in Ghana (Maxwell et al. 1999). Maxwell, as regional advisor for CARE in East Africa, and Wheeler, regional advisor for WFP, recognized the potential to their respective organizations of using the CSI as an operational tool (Maxwell et al. 2003). Wheeler realized that WFP’s large field presence and high quality but generalist staff required a simple, non-technical tool for a variety of applications. He felt that the CSI could provide more reliable results than the PRA-type methodologies (eg. the Food Economy approach) they had been relying on in the past (Wheeler, personal communication, 03/04).

In the last year or so, the CSI approach has been used by WFP and CARE offices in approximately ten different countries in Africa including: Kenya, Burundi, Sierra Leone, Ethiopia, Eritrea, Rwanda and Uganda. According to Dan Maxwell (Personal communication, 3/22/04), its most important application has been real time impact monitoring in emergencies, in part because it is so quick to administer (requiring around 6-7 minutes per household). For impact monitoring the CSI is combined with a brief set of questions that assess basic demographic information along with items asking how food aid received by the household was used.

It also has the potential to be used as a tool for targeting food aid, for assessing the adequacy of food aid delivered to the household, and for early warning (coupled with more traditional indicators of food availability). In order to incorporate the tool into an emergency needs assessment, WFP/Burundi is currently testing whether or not the CSI can be calibrated to food consumption by trying to answer the question, “at what level of the CSI score does a household typically require food aid?”

One of the most important aspects of the CSI development in each country has been the consultative process used to involve stakeholders in the finalization of the questionnaire. WFP, for instance, has often taken a draft of potentially relevant sets of coping strategies to national-level training workshops. There, participants work in groups to develop a CSI that is broadly supported by all players before taking it to focus groups of potential beneficiaries.

## 7. Time and Cost estimates

Of all of the elements of the experiential food insecurity scale development and implementation that this paper tried to compare across countries, the cost figures were probably the most difficult to obtain. Each application varied so drastically in its objectives that even major line-items differed from place to place.

However, it is possible to give very rough estimates. In Bangladesh, the development of an experiential food insecurity scale from scratch, including testing its sensitivity to change at several time points and a full validation effort cost approximately \$240,000 over three years and required around 68 person months. The experience of Freedom from Hunger, in their testing and translation of the U.S. CFISM items, is probably most relevant to those planning to take a ‘short-cut’ approach; The PI (Melgar-Quinez, personal communication) estimated that the time to complete their adaptations and pre-test the instrument was approximately 1 person month of effort) for the food insecurity scale itself.

The time to administer the food insecurity scales and the coping strategies indices once they were developed was fairly consistent: 5-7 minutes at each household. There were a few exceptions, such as Burkina Faso, Bangladesh, and Haiti (around 15 minutes), which may relate either to longer recall periods requiring enumerators to assist respondents to remember back through several months or to more careful administration of the scale in support of the validation effort.

## 8. Recommendations and Conclusions

This paper sought to assess commonalities in the experience and expression of food insecurity across cultures in order to draw some preliminary conclusions regarding the extent to which a ‘generic’ experiential food insecurity scale can be validly applied in apparently different contexts.

Twenty-one studies with broad geographical coverage that had tried to validate at least certain aspects of an experiential food insecurity scale were reviewed along with relevant ethnographic literature. The preceding sections have considered themes that appear to form the various dimensions of the food insecurity experience in different cultures and items that were used to operationalize those themes in surveys. While exploring similarities between these questions (as individuals and in a scaled set) several issues emerged that should be taken seriously in any attempt to translate these items from one context to another.

The preliminary findings of this exploratory paper can be summarized as follows:

1. The five dimensions that underlie the food insecurity experience in the U.S. appear to meaningfully discriminate between households of differing degrees of food insecurity in a range of countries. That insecurity is handled through a “managed process” is also common across countries. However, the order (and assumptions about the severity indicated by each theme) of adoption in each culture is context-specific and is dependent on factors such as social acceptability and the availability of a particular coping strategy to different types of

households. Emergent research in the U.S. (Wilde, personal communication 03/04) and preliminary analyses of the Bangladesh data suggest that there is also idiosyncratic variation to this pattern.

2. The core phenomena that are common to all cultures can be tapped as a starting point for adaptations of experiential food insecurity tools. Such themes are general: for example, instead of the class of behaviors that involve adult sacrifice for their children, a more universal phenomenon may be that in the face of insecurity, *someone* in the household is likely to go hungry so that another's consumption can be protected [we have seen data suggesting that either children or income earners can be buffered from the initial effects of food shortage].
3. There is a trade-off between the generic phrasing of a question required for universal relevance and the cultural specificity required to ensure comprehension by the respondent. Items reviewed here represented a range from very generic to very specific.
4. Pursuant to number 3, existing questions relating to perceptions of diet quality are among the most challenging to convey across cultures and in different languages. Additional variations on the idea of "balanced meals" should be explored for relevance.
5. Experience in a variety of countries has highlighted some common pitfalls to creating appropriate items, including the idea that items may not be answered the way they are intended if a coping strategy has been exhausted and if the behavior asked of a male relates to an activity in the female purview and vice versa.
6. Differing concepts of household, complex social structures, and inequitable resource distribution among members reinforces the notion that the concept of "household food security" has policy relevance. However, research has not yet provided adequate insight into *individual* food insecurity. The implications for measurement of differing experiences of insecurity within the household should be discussed further.
7. One approach to examining the relevance of groups of items from different scales has been to plot the response prevalence for each item and to compare the patterns that result to a scale like the U.S. CFMS. The assumption that parallel trends among the test scales signifies the (partial) validity to those cultures should be examined critically; other patterns demonstrated in this paper are plausible.
8. One of the biggest challenges has been to develop a set of criteria that can be used to assess the validity of adapted experiential food insecurity scales across different cultures without complete data sets. Some agreement should be generated at the upcoming FANTA meeting.
9. Experiences outside the research community with the full-blown experiential food insecurity scale are still rare. However, this brief review suggested that many Title II PVOs see the potential utility of these scales as indicators both as part of their internal monitoring and evaluation strategy and for reporting to donors. CSI scales are being used by WFP and CARE offices as part of their initial food security assessments in a new emergency program, as part

of an early warning system, for assessing the short-term impact of food aid interventions in emergencies, and for targeting food aid at the household level. A short-cut approach using focus groups to test their comprehension of candidate items can, if deemed valid, shorten the process of scale development from an estimated 3 months to a couple weeks. Once a scale is developed it can be truly simple to administer – requiring an average of five-seven minutes per household.

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## Appendix 1: U.S. Household Core Food-Security/Hunger Survey Module

### 3-Stage Design (2 Internal Screeners)

**Questionnaire transition into module--administer to all households:** These next questions are about the food eaten in your household in the last 12 months, since (current month of last year), and whether you were able to afford the food you need.

**General food sufficiency question/screener: Questions 1, 1a, 1b (OPTIONAL: These questions are NOT used in calculating the food-security/hunger scale.)** Question 1 may be used as a screener: (a) in conjunction with income as a *preliminary* screen to reduce respondent burden for *higher income households only*; and/or (b) in conjunction with the 1st-stage internal screen to make that screen "more open"--i.e., provide another route through it.

1. [IF ONE PERSON IN HOUSEHOLD, USE "I" IN PARENTHETICALS, OTHERWISE, USE "WE."]  
Which of these statements best describes the food eaten in your household in the last 12 months: --enough of the kinds of food (I/we) want to eat; --enough, but not always the kinds of food (I/we) want; --sometimes not enough to eat; or, --often not enough to eat?
- [1] Enough of the kinds of food we want to eat [SKIP 1a and 1b]
  - [2] Enough but not always the kinds of food we want [SKIP 1a; ask 1b]
  - [3] Sometimes not enough to eat [Ask 1a; SKIP 1b]
  - [4] Often not enough [Ask 1a; SKIP 1b]
  - [ ] DK or Refused (SKIP 1a and 1b)

1a. [IF OPTION 3 OR 4 SELECTED, ASK] Here are some reasons why people don't always have enough to eat. For each one, please tell me if that is a reason why YOU don't always have enough to eat. [READ LIST. MARK ALL THAT APPLY.]

YES NO DK

- Not enough money for food
- Not enough time for shopping or cooking
- Too hard to get to the store
- On a diet
- No working stove available
- Not able to cook or eat because of health problems

1b. [IF OPTION 2 SELECTED, ASK] Here are some reasons why people don't always have the quality or variety of food they want. For each one, please tell me if that is a reason why YOU don't always have the kinds of food you want to eat. [READ LIST. MARK ALL THAT APPLY.]

YES NO DK

- Not enough money for food
- Kinds of food (I/we) want not available
- Not enough time for shopping or cooking
- Too hard to get to the store
- On a special diet

**BEGIN FOOD-SECURITY CORE MODULE (i.e., SCALE ITEMS)**

**Stage 1: Questions 2-6 --ask all households:**

[IF SINGLE ADULT IN HOUSEHOLD, USE "I," "MY," AND "YOU" IN PARENTHETICALS; OTHERWISE, USE "WE," "OUR," AND "YOUR HOUSEHOLD;" IF UNKNOWN OR AMBIGUOUS, USE PLURAL FORMS.]

2. 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, that is, since last (name of current month). 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?

- Often true
- Sometimes true
- Never true
- DK or Refused

3. "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/your household) in the last 12 months?

- Often true
- Sometimes true
- Never true
- DK or Refused

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

- Often true
- Sometimes true
- Never true
- DK or Refused

[IF CHILDREN UNDER 18 IN HOUSEHOLD, ASK Q5 - 6; OTHERWISE SKIP TO 1st-Level Screen.]

5. "(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/your household) in the last 12 months?

- Often true
- Sometimes true
- Never true
- DK or Refused

6. "(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/your household) in the last 12 months?

- Often true
- Sometimes true
- Never true
- DK or Refused

**1st-level Screen (screener for Stage 2): If AFFIRMATIVE RESPONSE to ANY ONE of Questions 2-6 (i.e., "often true" or "sometimes true") OR response [3] or [4] to Question 1 (if administered), then continue to Stage 2; otherwise, skip to end.**

**Stage 2: Questions 7-11 --ask households passing the 1st-level Screen: (estimated 40% of hh's < 185% Poverty; 5.5% of hh's > 185% Poverty; 19% of all households).**

[IF CHILDREN UNDER 18 IN HOUSEHOLD, ASK Q7; OTHERWISE SKIP TO Q8]

7. "(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/your household) in the last 12 months?

- Often true
- Sometimes true
- Never true
- DK or R

8. In the last 12 months, since last (name of current month), 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?

- Yes
- No (SKIP 8a)
- DK or R (SKIP 8a)

8a. [IF YES ABOVE, ASK] How often did this happen---almost every month, some months but not every month, or in only 1 or 2 months?

- Almost every month
- Some months but not every month
- Only 1 or 2 months
- DK or R

9. In the last 12 months, did you ever eat less than you felt you should because there wasn't enough money to buy food?

- Yes
- No
- DK or R

10. In the last 12 months, were you every hungry but didn't eat because you couldn't afford enough food?

- Yes
- No
- DK or R

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

- Yes
- No
- DK or R

**2nd-level Screen (screener for Stage 3): If AFFIRMATIVE RESPONSE to ANY ONE of Questions 7 through 11, then continue to Stage 3; otherwise, skip to end.**

**Stage 3: Questions 12-16 --ask households passing the 2nd-level Screen: (estimated 7-8% of hh's < 185% Poverty; 1-1.5% of hh's > 185% Poverty; 3-4% of all hh's).**

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

Yes

No (SKIP 12a)

DK or R (SKIP 12a)

12a. [IF YES ABOVE, ASK] How often did this happen---almost every month, some months but not every month, or in only 1 or 2 months?

Almost every month

Some months but not every month

Only 1 or 2 months

DK or R

[IF CHILDREN UNDER 18 IN HOUSEHOLD, ASK 13-16; OTHERWISE SKIP TO END.]

13. The next questions are about children living in the household who are under 18 years old. In the last 12 months, since (current month) 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?

Yes

No

DK or R

14. In the last 12 months, did (CHILD'S NAME/any of the children) ever skip meals because there wasn't enough money for food?

Yes

No (SKIP 14a)

DK or R (SKIP 14a)

14a. [IF YES ABOVE ASK] How often did this happen---almost every month, some months but not every month, or in only 1 or 2 months?

Almost every month

Some months but not every month

Only 1 or 2 months

DK or R

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

Yes

No

DK or R

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

Yes

No

DK or R

## **END OF FOOD-SECURITY/HUNGER CORE MODULE**

Source: Bickel, G., M. Nord, et al. (2000). Guide to Measuring Household Food Security, Revised 2000. Alexandria, VA, Office of Analysis, Nutrition, and Evaluation, Food and Nutrition Service, U.S. Department of Agriculture.

## Appendix 2: Food Insecurity Themes And Corresponding Items

<u>ID</u>	<u>Study</u>	<u>Country</u>	<u>Item</u>
<b>2.1: Anxiety relating to food budget or food supply</b>			
1	Wehler et al, 1992 (CCHIP)	U.S.	No anxiety items
2	Hamilton et al, 1997 (USDA)	U.S.	Worried food would run out
2	Hamilton et al, 1997 (USDA)	U.S.	Food bought didn't last
3	Kendall et al, 1995	U.S.	I worry whether my food will run out before I get money to buy more
3	Kendall et al, 1995	U.S.	I worry about where the next day's food is going to come from
4	Studdert, et al., 2001	Indonesia	Do you worry that your family may run out of food before you have money to buy again?
4	Studdert, et al., 2001	Indonesia	Do you worry that you may not be able to afford to buy adequate food?
5	Coates, Webb, Houser, 2003	Bangladesh	How often did you worry about where food would come from? (Mathar bhitre koto chinta from food or money worries)
6	Frongillo and Nanama, 2003	Burkina Faso	What worries you most in your daily life? Not having enough food? (include other responses)
6	Frongillo and Nanama, 2003	Burkina Faso	Do you worry you will lack food for... 1. Next week? 2. Next month 3. In the coming two months 4. In three months 5. In four months or later.
6	Frongillo and Nanama, 2003	Burkina Faso	Insomnia from food worries
7	Ruel and Menon, 2003	Haiti	Worried about not having enough food more than once
8	Raj and Satpathy	India	No anxiety items
9	WB study	Uganda	No anxiety items
10	Parnell et al 1998	New Zealand/Maori	I feel stressed because of not having enough money for food
10	Parnell et al 1998	New Zealand/Maori	I feel stressed because I can't provide the food I want for social occasions
11	Welch et al, 1998	Russian Federation	I worry about whether my food will run out before I get more money.
12	Lorenzana et al, 1999	Venezuela	No anxiety items
13	Maxwell, 1996	Uganda	No anxiety items
14	Maxwell et al, 1999	Ghana	No anxiety items
15	Maxwell et al 2003	W. Kenya	No anxiety items
16	WFP/Burundi, 2003	Burundi	No anxiety items
17	WFP/oPt, 2003	Palestine	No anxiety items

<u>ID</u>	<u>Study</u>	<u>Country</u>	<u>Item</u>
<b>Appendix 2.2: Perceptions of inadequate food quality or quantity</b>			
1	Wehler et al, 1992 (CCHIP)	U.S.	Do you or adult members of your household ever eat less than you feel you should because there is not enough money for food?
1	Wehler et al, 1992 (CCHIP)	U.S.	Do you ever rely on a limited number of foods to feed your children because you are running out of money to buy food for a meal?
2	Hamilton et al, 1997 (USDA)	U.S.	Did you ever eat less than you felt you should because there wasn't enough money to buy food?
2	Hamilton et al, 1997 (USDA)	U.S.	"We couldn't afford to eat balanced meals."
2	Hamilton et al, 1997 (USDA)	U.S.	"We couldn't feed the children a balanced meal because we couldn't afford that."
2	Hamilton et al, 1997 (USDA)	U.S.	"The children were not eating enough because we just couldn't afford enough food."
2	Hamilton et al, 1997 (USDA)	U.S.	"We relied on only a few kinds of low-cost food to feed the children because we were running out of money to buy food."
3	Kendall et al, 1995	U.S.	We eat the same thing for several days in a row because we only have a few different kinds of food on hand and don't have money to buy more.
3	Kendall et al, 1995	U.S.	The food that I bought didn't last and I didn't have money to buy more.
3	Kendall et al, 1995	U.S.	I ran out of the foods that I needed to put together a meal and I didn't have money to get more
3	Kendall et al, 1995	U.S.	I can't afford to eat the way I should
3	Kendall et al, 1995	U.S.	I can't afford to eat properly
3	Kendall et al, 1995	U.S.	I cannot afford to feed my children the way I think I should
3	Kendall et al, 1995	U.S.	I cannot give my children a balanced meal because I cannot afford that
3	Kendall et al, 1995	U.S.	My children are not eating enough because I just can't afford enough food
4	Studdert, et al., 2001	Indonesia	Do you wish you could buy more food if you had more money?
4	Studdert, et al., 2001	Indonesia	Has your family ever run out of food because you do not have money to buy more food?
4	Studdert, et al., 2001	Indonesia	Has your family ever eaten the same type of food for several days consecutively because you do not have enough money to buy different food?
4	Studdert, et al., 2001	Indonesia	Have you ever eaten less than you want because you do not have enough money to buy food?
4	Studdert, et al., 2001	Indonesia	Have your children, according to you, not had enough to eat because you do not have enough money to buy food?
4	Studdert, et al., 2001	Indonesia	Do you not have enough money to buy healthy and nutritious food for your children?
5	Coates, Webb, Houser, 2003	Bangladesh	In the last 12 months, how often did you have to eat wheat (or another grain) although you wanted to eat rice (not including when you were sick)?

<u>ID</u>	<u>Study</u>	<u>Country</u>	<u>Item</u>
6	Frongillo and Nanama, 2003	Burkina Faso	Does your household eat until satisfied right now?
7	Ruel and Menon, 2003	Haiti	Cooked with less beans than usual
7	Ruel and Menon, 2003	Haiti	Cooked without beans in last 30 days
7	Ruel and Menon, 2003	Haiti	Cooked without even adding the head of herring
7	Ruel and Menon, 2003	Haiti	Cooked same food day after day
8	Raj and Satpathy	India	Food sufficiency question: which of these statements best describes the food eaten in your HH in last 30 days?
8	Raj and Satpathy	India	The food that we bough just didn't last and we didn't have money to get more.
8	Raj and Satpathy	India	We couldn't afford to eat balanced meals.
9	WB Study	Uganda	Food sufficiency question: which of these statements best describes the food eaten in your HH in last 30 days?
9	WB Study	Uganda	Here are some reasons why people do not always have the quality or variety of food they want. For each one, please tell me if that is a reason why YOU don't always have the kinds of foods you want to eat: 1) Not enough money for food 2) Too hard to get to market or store 3) Kind of food we want not available 4) Good quality food not available
10	Welch et al, 1998	Russian Federation	See "Cornell/Radimer" questions, above.
11	Parnell et al, 1998	New Zealand/Maori	The variety of food I/we are able to eat is limited by a lack of money
11	Parnell et al, 1998	New Zealand/Maori	I/we can afford to eat properly
12	Lorenzana et al, 1999	Venezuela	HH runs out of money to buy food
12	Lorenzana et al, 1999	Venezuela	Buys less indispensable food for children for lack of money
12	Lorenzana et al, 1999	Venezuela	Reduces usual number of home meals for lack of money
12	Lorenzana et al, 1999	Venezuela	Anyone eats less than desired for lack of money
13	Maxwell, 1996	Uganda	Eating foods that are less preferred
14	Maxwell et al, 1999	Ghana	Rely on less preferred and less expensive foods
15	Maxwell et al 2003	W. Kenya	Rely on less preferred and less expensive foods?
16	WFP/Burundi	Burundi	Rely on less expensive and less preferred foods?
17	WFP/oPt	Palestine	Consume less quality and variety of foods
<b>Appendix 2.3: Reported instances of reduced food intake, or its consequences, for adults</b>			
1	Wehler et al, 1992 (CCHIP)	U.S.	Do you or adult members of your household ever cut the size of meals or skip meals because there is not enough money for food?

<b>ID</b>	<b>Study</b>	<b>Country</b>	<b>Item</b>
2	Hamilton et al, 1997 (USDA)	U.S.	Did 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?
2	Hamilton et al, 1997 (USDA)	U.S.	Did you or other adults in your household ever not eat for a whole day because there wasn't enough money for food?
2	Hamilton et al, 1997 (USDA)	U.S.	Were you ever hungry but didn't eat because you couldn't afford enough food?
2	Hamilton et al, 1997 (USDA)	U.S.	Did you lose weight because there wasn't enough food?
3	Kendall et al, 1995	U.S.	I am often hungry but I don't eat because I can't afford enough food
3	Kendall et al, 1995	U.S.	More? [which belong in "perceptions of quantity/quality]
4	Studdert, et al., 2001	Indonesia	Sometimes a person's body weight drop because of not eating enough. Has your body weight dropped in the last year because of the lack of food?
5	Coates, Webb, Houser, 2003	Bangladesh	How often did you personally eat less food so that there would be more for the rest of the family?
5	Coates, Webb, Houser, 2003	Bangladesh	How often did you yourself skip entire meals so there would be more food for the family?
6	Frongillo and Nanama, 2003	Burkina Faso	Since the last harvest, did you or any other adults in your household reduce the number of their daily meals because there wasn't enough food?
6	Frongillo and Nanama, 2003	Burkina Faso	If yes, which meals did you suppress?
7	Ruel and Menon, 2003	Haiti	Ate less food due to hardship
7	Ruel and Menon, 2003	Haiti	Ever went to bed hungry
7	Ruel and Menon, 2003	Haiti	Ate 2 or fewer meals per day
8	Raj and Satpathy	India	Did you or other adults in your HH ever cut the size of your meals or skip meals because there wasn't enough money for food? [How often?]
8	Raj and Satpathy	India	Were you ever hungry but didn't eat because you couldn't afford enough food?
9	WB Study	Uganda	Did you or any other adults (age 16 or older) in your household ever not eat for a whole day because there was not enough money for food? [How often?]
9	WB Study	Uganda	Were you or anyone in your household ever hungry but did not eat because you could not afford enough food?
10	Welch et al, 1998	Russian Federation	I/we eat less because of lack of money
11	Parnell et al, 1998	New Zealand/Maori	I am often hungry, but I can't eat because I can't afford enough food.
12	Lorenzana et al, 1999	Venezuela	Adult reduces number of usual meals for lack of money
12	Lorenzana et al, 1999	Venezuela	Adults eat less at main meal for lack of food
12	Lorenzana et al, 1999	Venezuela	Adult complains of hunger for lack of food

<u>ID</u>	<u>Study</u>	<u>Country</u>	<u>Item</u>
13	Maxwell, 1996	Uganda	Maternal buffering
13	Maxwell, 1996	Uganda	Skipping meals
13	Maxwell, 1996	Uganda	Skipping eating for whole days
14	Maxwell et al, 1999	Ghana	Limit portions at mealtimes?
14	Maxwell et al, 1999	Ghana	Limit your own intake to ensure child gets enough?
14	Maxwell et al, 1999	Ghana	Reduce number of meals eaten in a day?
14	Maxwell et al, 1999	Ghana	Skip whole days without eating?
15	Maxwell et al 2003	W. Kenya	Limit portion size at mealtimes?
15	Maxwell et al 2003	W. Kenya	Restrict consumption by adults in order for small children to eat?
15	Maxwell et al 2003	W. Kenya	Feed working members of HH at the expense of non-working members?
15	Maxwell et al 2003	W. Kenya	Reduce number of meals eaten in a day?
15	Maxwell et al 2003	W. Kenya	Skip entire days without eating?
16	WFP/Burundi	Burundi	Limit the size of meals.
16	WFP/Burundi	Burundi	Reduce the size of meals of adults in favor of the small children.
16	WFP/Burundi	Burundi	Reduce the number of meals.
16	WFP/Burundi	Burundi	Pass some days without eating.
17	WFP/oPt	Palestine	Reduce the meal of adults in favor of children
17	WFP/oPt	Palestine	Limit meal portion
17	WFP/oPt	Palestine	Reduce the number of meals per day

#### **Appendix 2.4: Reported instances of reduced food intake or its consequences for children**

1	Wehler et al, 1992 (CCHIP)	U.S.	Do you ever rely on a limited number of foods to feed your children because you are running out of money to buy food for a meal?
1	Wehler et al, 1992 (CCHIP)	U.S.	Do your children ever say they are hungry because there is not enough food in the house?
1	Wehler et al, 1992 (CCHIP)	U.S.	Do your children ever eat less than you feel they should because there is not enough money for food?
1	Wehler et al, 1992 (CCHIP)	U.S.	Do your children ever go to bed hungry because there is not enough money to buy food?
1	Wehler et al, 1992 (CCHIP)	U.S.	Do you ever cut the size of your children's meals or do they ever skip meals because there is not enough money to buy food?
2	Hamilton et al, 1997 (USDA)	U.S.	Did you ever cut the size of any of the children's meals because there wasn't enough money for food?
2	Hamilton et al, 1997 (USDA)	U.S.	Were the children ever hungry but you just couldn't afford more food?

<b>ID</b>	<b>Study</b>	<b>Country</b>	<b>Item</b>
2	Hamilton et al, 1997 (USDA)	U.S.	Did any of the children ever skip a meal because there wasn't enough money for food? [How often did this happen?
2	Hamilton et al, 1997 (USDA)	U.S.	Did any of the children ever not eat for a whole day because there wasn't enough money for food?
3	Kendall et al, 1995	U.S.	I cannot afford to feed my children the way I think I should.
3	Kendall et al, 1995	U.S.	I cannot give my children a balanced meal because I cannot afford that.
3	Kendall et al, 1995	U.S.	My children are not eating enough because I just can't afford enough food.
3	Kendall et al, 1995	U.S.	I know my children are hungry sometimes, but I just can't afford more food
4	Studdert, et al., 2001	Indonesia	Have your children, according to you, not had enough to eat because you do not have enough money to buy food?
4	Studdert, et al., 2001	Indonesia	Do you not have enough money to buy healthy and nutritious food for your children?
5	Coates, Webb, Houser, 2003	Bangladesh	No questions were suitable (see discussion).
6	Frongillo and Nanama, 2003	Burkina Faso	Found not to be useful in distinguishing households
7	Ruel and Menon, 2003	Haiti	Children ever went to bed hungry
8	Raj and Satpathy	India	We couldn't feed our child a balanced meal, because we couldn't afford that.
8	Raj and Satpathy	India	In the last 30 days, did you ever cut the size of any of the children's meals/or ever skipped meals of children (under 14) because there wasn't enough food? [how often did this happen?]
8	Raj and Satpathy	India	In last 30 days, did any of the children ever not eat for a whole day because there wasn't enough money for food?
9	WB Study	Uganda	I (we) relied on only a few kinds of low-cost food to feed the children in this household because I was (we were) running out of money to buy food.
9	WB Study	Uganda	Did you ever cut the size of the meals given to any of the children (under 16 years of age) in this household because there was not enough money to buy food?
9	WB Study	Uganda	Did any of the children in this household (under 16 years) ever not eat for a whole day because there was not enough money for food?
9	WB Study	Uganda	Did you or any of the adults in your household ever send or take your child or other children in this household to the homes of friends or relatives for a meal because you were running out of food?
10	Welch et al, 1998	Russian Federation	I can't afford to feed my children the way I think I should
10	Welch et al, 1998	Russian Federation	My children are not eating enough because I just can't afford enough food
10	Welch et al, 1998	Russian Federation	I know my children are hungry sometimes, but I just can't afford more food
11	Parnell et al, 1998	New Zealand/Maori	No child questions
12	Lorenzana et al, 1999	Venezuela	Child reduces usual number of meals for lack of money

<u>ID</u>	<u>Study</u>	<u>Country</u>	<u>Item</u>
12	Lorenzana et al, 1999	Venezuela	Child eats less at main meal for lack of food
12	Lorenzana et al, 1999	Venezuela	Child complains of hunger for lack of food
12	Lorenzana et al, 1999	Venezuela	Child goes to bed hungry for lack of food
13	Maxwell, 1996	Uganda	No child items
14	Maxwell et al, 1999	Ghana	No child items
15	Maxwell et al, 2003	W. Kenya	No child items
16	WFP/Burundi	Burundi	Send the children to eat elsewhere
17	WFP/oPt	Palestine	Send children to eat elsewhere
17	WFP/oPt	Palestine	Send children to work for food
17	WFP/oPt	Palestine	Children dropped out of school
<b>Appendix 2.5: Coping Strategies to augment household food supply or budget</b>			
1	Wehler et al, 1992 (CCHIP)	U.S.	No Coping strategies questions
2	Hamilton et al, 1997 (USDA)	U.S.	No Coping strategies questions
3	Kendall et al, 1995	U.S.	No Coping strategies questions
4	Studdert, et al., 2001	Indonesia	No Coping strategies questions
5	Coates, Webb, Houser (2003)	Bangladesh	How often did your family take food (rice, lentils etc.) on credit (or loan) from a local shop?
5	Coates, Webb, Houser, 2003	Bangladesh	How often did your family have to borrow food from relatives or neighbors to make a meal?
6	Frongillo and Nanama, 2003	Burkina Faso	Give mondé in grain when you do it from your home store
6	Frongillo and Nanama, 2003	Burkina Faso	Since the last harvest, did you reduce mondé because there wasn't enough food?
6	Frongillo and Nanama, 2003	Burkina Faso	Get money to buy cereals from poultry sales?
6	Frongillo and Nanama, 2003	Burkina Faso	Borrow cereals to feed family because there were no cereals left?
6	Frongillo and Nanama, 2003	Burkina Faso	Ate 'hungry' foods?
7	Ruel and Menon, 2003	Haiti	Ate less food due to scarcity of fuel?
8	Raj and Satpathy	India	No coping strategies questions
9	WB Study	Uganda	Did you or anyone in this household ever get food or borrow money for food from friends and relatives?
10	Welch et al, 1998	Russian Federation	No coping strategies questions
11	Parnell et al, 1998	New Zealand/Maori	I/we rely on others to provide food and/or money for food for my/our household when I/we don't have enough money

<b>ID</b>	<b>Study</b>	<b>Country</b>	<b>Item</b>
11	Parnell et al, 1998	New Zealand/Maori	I/we make use of special food grants or food banks when I/we don't have enough money for food.
12	Lorenzana et al, 1999	Venezuela	No coping strategies questions
13	Maxwell, 1996	Uganda	Borrowing food or money to buy food
14	Maxwell et al, 1999	Ghana	Borrow food, or borrow money to buy food?
14	Maxwell et al, 1999	Ghana	Purchase food on credit?
14	Maxwell et al, 1999	Ghana	Rely on help from relative or friend outside household (including remittance for 'chop' money)?
14	Maxwell et al, 1999	Ghana	Ration the little money you have to household members to buy street foods?
15	Maxwell et al, 2003	W. Kenya	Borrow food, or rely on help from a friend or relative?
15	Maxwell et al, 2003	W. Kenya	Purchase food on credit?
15	Maxwell et al, 2003	W. Kenya	Gather wild food, hunt, or harvest immature crops?
15	Maxwell et al, 2003	W. Kenya	Consume seed stock held for next season?
15	Maxwell et al, 2003	W. Kenya	Send household members to eat elsewhere?
15	Maxwell et al, 2003	W. Kenya	Send household members to beg?
16	WFP/Burundi	Burundi	Depend on food aid
16	WFP/Burundi	Burundi	Eat wild foods
16	WFP/Burundi	Burundi	Send children to work for food.
16	WFP/Burundi	Burundi	Consommer les semences (eat the seeds)
17	WFP/oPt	Palestine	Purchase food on credit
17	WFP/oPt	Palestine	Depend on food aid
17	WFP/oPt	Palestine	Regrouping of family members to save money
17	WFP/oPt	Palestine	Rely on less health and education expenses
17	WFP/oPt	Palestine	Wood and grass collection
17	WFP/oPt	Palestine	Depend on aid from family and friends
17	WFP/oPt	Palestine	Ask people you don't know for money
17	WFP/oPt	Palestine	Send children to eat elsewhere
17	WFP/oPt	Palestine	Send children to work for food
17	WFP/oPt	Palestine	Children dropped out of school

## Appendix 3: Sample Phone Interview Guide

*Note: This interview guide is suggestive of the types of questions that were asked to a range of key informants. The specific questions will necessarily be tailored to the particular circumstances of the respondent and will depend largely on 1) the nature of the respondents' work (ie. research or program implementation) 2) the application of the food security instrument (e.g. validation, project evaluation, assessment of prevalence), and 3) the approach (ie. (a) use of U.S. Core Food Security Module verbatim, (b) the "ground up" approach, (c) adaptation of the U.S. CFSM questions, or (d) direct translation).*

- Please describe the objective(s) of your research/your program:
- What was the population of interest (geographic and demographic)?
- Briefly summarize the sampling methodology (including sample size):
- How was "food insecurity" defined in this exercise? What sources did you rely on in forming this definition?
- How was "food insecurity" measured? (*sample list, below*)
  - *Full 18 Question USDA Core Food Security Module*
  - *Six Item Short Form of the Food Security Survey Module*
  - *Cornell Radimer Index*
  - *CHHIPS index*
  - *USDA Child index*
  - *Maxwell's Coping Strategies Index*
  - *Food security measure developed directly from qualitative/ethnographic interaction*
  - *Other*
- What factors influenced your decision to measure food security this way? (*ie. why this method and not another on this list, and why one on this list and not a more conventional measure of food insecurity?*)
- Describe the process of preparing/developing the instrument (*what types of adaptations were made, on what basis, how were they tested etc.*):
- The U.S. Core Food Security Module (and the qualitative work that influenced its development) detected several behaviors, experiences, attitudes that were the basis for constructing the 18 questions (Bickel et al 2000). These dimensions included:
  - Anxiety that the household food budget or food supply may be insufficient to meet basic needs;
  - The experience of running out of food, without money to obtain more;
  - Perceptions by the respondent that the food eaten by household members was inadequate in quality or quantity;

- Adjustments to normal food use, substituting fewer and cheaper foods than usual; (*or less variety, less quality*)
- Instances of reduced food intake by adults in the household, or consequences of reduced intake such as the physical sensation of hunger or loss of weight; and
- Instances of reduced food intake, or consequences of reduced intake, for children in the household.

Which of these ‘dimensions’ were relevant in your research/program population?

- *How do you know (i.e. qualitative interaction? Literature?)*
  - *If none were relevant, in your opinion, why not?*
  - *What other dimensions (if any) did you detect during this process?*
  - *How were these detected?*
- How were questions created to represent these behaviors or experiences?
  - Over what period of time was food security assessed? What factors did you consider in determining this recall period?
  - Did you pre-test the instrument before administering it to the full sample? How?
  - Were there particular questions that you had to change after the pretest because they were not well understood or didn’t “work”? Can you give examples of which questions and why?
  - In what language was it administered? How were the translations made? What types of issues (if any) did you encounter in the translation (ie. *questions that made sense to you in English but not when translated to Spanish*)? How were these issues resolved?
  - How would you “validate” such an instrument? *What types of validation procedures did you use in your own study?*
  - How was this tool used? How do you plan to use it in the future?
  - Do you think that this measure is useful for other contexts?
    - *Such as...*
    - *Why or why not?*
  - What would you advise a PVO who was interested in measuring food security using this type of measure relative to other proxy measures of access such as dietary intake or income?
  - We’d like to get a sense of the resources it takes to prepare this type of valid measure. Could you try to estimate both the number of person months and total financial resources invested in:
    - *Preparing the measure?*
    - *Administering it?*
    - *Analyzing the data from it?*

- Do you have a copy of the instrument that you pre-tested that you would be willing to share with me? Would you be willing to have this instrument attached to the published document? *(If not, why not). (Obtain written permission for use).*
- Do you have a copy of the ‘final’ instrument that you used that you would be willing to share with me? Would you be willing to have this instrument attached to the published document? *(If not, why not). (Obtain written permission for use).*
- Do you have any other documentation that you could share with me that you think might be useful for this review? Would you be willing to have this documentation attached to the published document? *(If not, why not). (Obtain written permission for use).*
- Do you know of any other researcher or program using this type of measure? *(Get details)*

## Appendix 4: Contact List

Name (First)	Organization/Title	Email	Region
Toni	Africare/Burkina Faso Country Representative	<a href="mailto:africare.zfsi.team@fasonet.bf">africare.zfsi.team@fasonet.bf</a>	North Burkina Faso
Watkins	WFP	<a href="mailto:ben.watkins@wfp.org">ben.watkins@wfp.org</a>	Kenya
Rachel	World Vision/Bangladesh, Deputy Coordinator	<a href="mailto:rachel.brumbaugh@wvi.org">rachel.brumbaugh@wvi.org</a>	Bangladesh
Heather	Save the Children, US	<a href="mailto:hdanton@juno.com">hdanton@juno.com</a>	Bangladesh, Ethiopia
Christopher	Freedom from Hunger, President	<a href="mailto:cdunford@freefromhunger.org">cdunford@freefromhunger.org</a>	Bolivia, Philippines, Ghana, Burkina Faso
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## Appendix 5: Experiential food insecurity Scales

ID	1	2	3
<b>Source</b>	Wehler, C., R. Scott, et al. (1992). "The Community Childhood Hunger Identification Project: A Model of Domestic Hunger -- Demonstration Project in Seattle, Washington." <i>Journal of Nutrition Education</i> 24: 29S-35S.	Hamilton, W. L., J. T. Cook, et al. (1997). <i>Household Food Security In the United States in 1995: Summary Report of the Food Security Measurement Project</i> . Washington, D.C., United States Department of Agriculture.	Kendall, A., et al. (1995). "Validation of the Radimer/Cornell Measures of Hunger and Food Insecurity." <i>Journal of Nutrition</i> 125(11): 2793-2801.
<b>Item1</b>	Does your household ever run out of money to buy food? (62%)	"I worried whether our food would run out before we got money to buy more."	I worry whether my food will run out before I get money to buy more. (HH/food anxiety) 39%
<b>Item2</b>	Do you ever rely on a limited number of foods to feed your children because you are running out of money to buy food for a meal? (69%)	"The food that we bought just didn't last, and we didn't have money to get more."	I worry about where the next day's food is going to come from. (HH/food anxiety) 13.2%
<b>Item3</b>	Do you or adult members of your household ever eat less than you feel you should because there is not enough money for food? (50%)	"We couldn't afford to eat balanced meals."	We eat the same thing for several days in a row because we only have a few different kinds of food on hand and don't have money to buy more. (HH/Qualitative)
<b>Item4</b>	Do you or adult members of your household ever cut the size of meals or skip meals because there is not enough money for food? (50%)	"We relied on only a few kinds of low-cost food to feed the children because we were running out of money to buy food."	The food that I bought didn't last and I didn't have money to buy more. (HH/Quantitative) 22.3%
<b>Item5</b>	Do your children ever say they are hungry because there is not enough food in the house? (36%)	"We couldn't feed the children a balanced meal because we couldn't afford that."	I ran out of the foods that I needed to put together a meal and I didn't have money to get more. (HH/Quantitative) 29.6%
<b>Item6</b>	Do your children ever eat less than you feel they should because there is not enough money for food? (38%)	"The children were not eating enough because we just couldn't afford enough food."	I can't afford to eat the way I should (Adult/qualitative) 22.6%
<b>Item7</b>	Do your children ever go to bed hungry because there is not enough money to buy food? (14%)	Did 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?	I can't afford to eat properly (Adult/qualitative) 23.2%
<b>Item8</b>	Do you ever cut the size of your children's meals or do they ever skip meals because there is not enough money to buy food? (34%)	Did you ever eat less than you felt you should because there wasn't enough money to buy food?	I am often hungry but I don't eat because I can't afford enough food. (Adult/Quantitative) 9.8%
<b>Item9</b>	—	Were you ever hungry but didn't eat because you couldn't afford enough food?	I eat less than I think I should because I don't have enough money for food. (Adult/quantitative) 14.8%

ID	1	2	3
<b>Item10</b>	—	Did you lose weight because there wasn't enough food?	I cannot afford to feed my children the way I think I should. (Child/Qualitative) 26.9%
<b>Item11</b>	—	Did you or other adults in your household ever not eat for an entire day because there wasn't enough money for food?	I cannot give my children a balanced meal because I cannot afford that. (Child/Qualitative) 15.1%
<b>Item12</b>	—	Did you ever cut the size of any of the children's meals because there wasn't enough money for food?	My children are not eating enough because I just can't afford enough food. (Child/Quantitative) 7.1%
<b>Item13</b>	—	Did children ever skip meals because there wasn't enough food?	I know my children are hungry sometimes, but I just can't afford more food (Child/Quantitative) 8.5%
<b>Item14</b>	—	Were the children ever hungry but you just couldn't afford more food?	—
<b>Item15</b>	—	Did any of your children ever not eat for a whole day because there wasn't enough money for food?	—

ID	4	5	6
<b>Source</b>	Studdert, L. J. et al. (2001). "Household food insecurity was prevalent in Java during Indonesia's economic crisis." <i>Journal of Nutrition</i> 131(10): 2685-91.	Webb, P., J. Coates, et al. (2002). <i>Allocative Responses to Scarcity: Self-Reported Assessments of Hunger Compared with Conventional Measures of Poverty and Malnutrition in Bangladesh</i> . Report to FANTA Project under Task Order. Boston, Tufts University Friedman School of Nutrition Science and Policy.	Frongillo, E. A. and S. Nanama (2003). Development and validation of an experience-based tool to directly measure household food insecurity within and across seasons in northern Burkina Faso. FANTA Report for Cornell University Task Order 5. Ithaca, Division of Nutritional Sciences, Cornell University.
<b>Item1</b>	Do you worry that your family may run out of food before you have money to buy again? (79.2%)	How often did you eat three 'square meals' (full stomach meals) a day? (not a festival day)?	Does your household eat until satisfied right now? (64.3%)
<b>Item2</b>	Do you worry that you may not be able to afford to buy adequate food? (76.9%)	How often did you or any of your family have to eat wheat (or another grain) although you wanted to eat rice (not including when you were sick)?	Give mondé in grain when you do it from your home store? (50%)
<b>Item3</b>	Do you wish you could buy more food if you had more money? (68.7%)	How often did you yourself skip entire meals due to scarcity of food?	Since the last harvest, did you reduce mondé because there wasn't enough food? (73%)
<b>Item4</b>	Has your family ever run out of food because you do not have money to buy more food? (33.2%)	How often did you personally eat less food in a meal due to scarcity of food?	Since the last harvest, did you or any other adults in your household reduce the number of their daily meal because there wasn't enough food? (65.1%)
<b>Item5</b>	Has your family ever eaten the same type of food for several days consecutively because you do not have enough money to buy different food? (40.7%)	How often did food stored in your home run out and there was no money to buy more that day?	How many times a month can you afford rice for your HH members? Le 4 (92.9%)
<b>Item6</b>	Have you ever eaten less than you want because you do not have enough money to buy food? (30.8%)	How often did you worry about where food would come from? (Mathar bhitre koto chinta from food or money worries).	How many times a month can you afford meat for your HH members? Le 4 (81.0%)
ID	4	5	6
<b>Item7</b>	Have your children, according to you, not had enough to eat because you do not have enough money to buy food? (24.4%)	How often did your family purchase rice?	How many times a month can you afford fish for your HH members? Le 5 (37.3%)

<b>Item8</b>	Do you not have enough money to buy healthy and nutritious food for your children? (19.0%)	How often did your family take food (rice, lentils etc.) on credit (or loan) from a local shop?	What worries more in your daily life about not having enough food ? (82.5%)
<b>Item9</b>	Sometimes a person's body weight drop because of not eating enough. Has your body weight dropped in the last year because of the lack of food? (11.1%)	How often did your family have to borrow food from relatives or neighbors to make a meal?	Length of predicted food worries
<b>Item10</b>	—		Insomnia from food worries
<b>Item11</b>	—	—	Lose weight from this concern
<b>Item12</b>	—	—	Buy cereals since last harvest (77.8%)
<b>Item13</b>	—	—	Buy cereals in Yoruba, tomato can, or Bol (18.3%)
<b>Item14</b>	—	—	Get money to buy cereals from poultry sales (3.1%)
<b>Item15</b>	—	—	Borrow cereals to feed family because there were no cereals left (11.9%)
<b>Item16</b>	—	—	Family had to eat food it did not want to eat because there wasn't enough or no food (33.3%)
<b>Item17</b>	—	—	Ate 'hungry' foods (83.4%)

ID	7	8	9
<b>Source</b>	Ruel, M. and P. Menon (2003). Child Care, Nutrition and Health in the Central Plateau of Haiti: The Role of Community, Household and Caregiver Resources. Washington, D.C, Food and Nutrition Technical Assistance (FANTA) Project, Academy for Educational Development.	Nord, M. et al. (2002). Comparing Household Survey-Based Measures of Food Insecurity Across Countries: Case Studies in India, Uganda, and Bangladesh. Food Policy and Nutrition Program Discussion Paper 7. Boston, Tufts University Friedman School of Nutrition Science and Policy.	Nord, M. et al. (2002). Comparing Household Survey-Based Measures of Food Insecurity Across Countries: Case Studies in India, Uganda, and Bangladesh. Food Policy and Nutrition Program Discussion Paper 7. Boston, Tufts University Friedman School of Nutrition Science and Policy.
<b>Item1</b>	Cooked with less beans than usual 98.0	Food sufficiency question: which of these statements best describes the food eaten in your HH in last 30 days?	Did you ever run short of money and try to make your food or your food money go further?
<b>Item2</b>	Cooked without beans in last 30 days 96.4%	The food that we bough just didn't last and we didn't have money to get more.	Food sufficiency question: which of these statements best describes the food eaten in your HH in last 30 days?
<b>Item3</b>	Ate less food due to hardship 89.7%	We couldn't afford to eat balanced meals.	Here are some reasons why people do not always have the quality or variety of food they want. For each one, please tell me if that is a reason why YOU don't always have the kinds of foods you want to eat: 1) Not enough money for food 2) Too hard to get to market or store 3) Kind of food we want not available 4) Good quality food not available
<b>Item4</b>	Worried about not having enough food more than once 88.2%	Did you or other adults in your HH ever cut the size of your meals or skip meals because there wasn't enough money for food?	Were you or anyone in your household ever hungry but did not eat because you could not afford enough food?
<b>Item5</b>	Cooked without even adding the head of herring 87.1%	How often did this happen in last 30 days?	How often did this happen?
<b>Item6</b>	Cooked same food day after day 85%	In the last 30 days, did you ever eat less than you felt you should because there wasn't enough money to buy food?	Did you or anyone in this household ever get food or borrow money for food from friends and relatives?
<b>Item7</b>	Ever went to bed hungry 83.9%	In the last 30 days, were you ever hungry but didn't eat because you couldn't afford enough food?	How often did this happen?
<b>Item8</b>	Ate 2 or fewer meals/day (76%)	We couldn't feed our child a balanced meal, because we couldn't afford that.	Did you or any other adults (age 16 or older) in your household ever not eat for a whole day because there was not enough money for food?

ID	7	8	9
<b>Item9</b>	Children ever went to bed hungry 75.5%	In the last 30 days, did you ever cut the size of any of the children's meals/or ever skipped meals of children (under 14) because there wasn't enough food?	How often did this happen?
<b>Item10</b>	Ate less food due to scarcity of fuel (50.2%)	How often did this happen in last 30 days?	I (we) relied on only a few kinds of low-cost food to feed the children in this household because I was (we were) running out of money to buy food.
<b>Item11</b>	—	In last 30 days, did any of the children ever not eat for a whole day because there wasn't enough money for food?	Did you ever cu the size of the meals given to any of the children (under 16 years of age) in this household because there was not enough money to buy food?
<b>Item12</b>	—	—	How often did this happen?
<b>Item13</b>	—	—	Did any of the children in this household (under 16 years) ever not eat for a whole day because there was not enough money for food?
<b>Item14</b>	—	—	Did you or any of the adults in your household ever send or take your child or other children in this household to the homes of friends or relatives for a meal because you were running out of food?
<b>Item15</b>	—	—	—

ID	10	11	12
<b>Source</b>	Parnell, W. R., J. Reid, et al. (2001). "Food security: is New Zealand a land of plenty?" N Z Med J 114(1128): 141-5.	Welch, K. et al. (1998). "Measuring Hunger in the Russian Federation Using the Radimer Hunger Scale." Bulletin of the World Health Organization 76(2): 143-148.	Lorenzana, P. A. and D. Sanjur (1999). "Abbreviated measures of food sufficiency validly estimate the food security level of poor households: measuring household food security." J Nutr 129(3): 687-92.
<b>Item1</b>	The variety of food I/we are able to eat is limited by a lack of money (24%)	I worry about whether my food will run out before I get more money (qualitative?) urban 71.9% rural 67.1%	HH runs out of money to buy food (66.0%)
<b>Item2</b>	I feel stressed out because of not having enough money for food (10%)	The food I bought just didn't last and I didn't have money to get more (quantitative) urban 56.3 rural 58.6	Buys less indispensable food for children for lack of money (46.2%)
<b>Item3</b>	Food runs out in our house because of lack of money (11%)	I ran out of the foods that I needed to put together a meal and didn't have money to get more food urban 42.5% rural 41.9%	Reduces usual number of home meals for lack of money (40.8%)
<b>Item4</b>	I feel stressed because I can't provide the food I want for social occasions. (10%)	I worry about where the next day's food is going to come from urban 51.0 rural 50.2	Anyone eats less than desired for lack of money (37.4%)
<b>Item5</b>	I/we can afford to eat properly (12%)	I can't afford to eat the way I should (66.3%) [rural areas; not sig. Dif from urban areas]	Adult reduces number of usual meals for lack of money (32.8%)
<b>Item6</b>	I/we eat less because of lack of money (11%)	I can't afford to eat properly (60.5%)	Adults eat less at main meal for lack of food (30.3%)
<b>Item7</b>	I/we rely on others to provide food and/or money for food for my/our household when I/we don't have enough money. (6%)	I am often hungry, but I can't eat because I can't afford enough food. (11.4%)	Adult complains of hunger for lack of food (18.1%)
<b>Item8</b>	I/we make use of special food grants or food banks when I/we don't have enough money for food. (2%)	I eat less than I think I should because I don't have enough money for food (24.9%)	Child reduces usual number of meals for lack of money (15.5%)
<b>Item9</b>	—	I can't afford to feed my children a balanced meal because I can't afford that (26.1%)	Adult goes to bed hungry for lack of food (14.3%)

<b>ID</b>	<b>10</b>	<b>11</b>	<b>12</b>
<b>Item10</b>	—	I can't afford to feed my children the way I think I should (28%)	Child eats less at main meal for lack of food (11.8%)
<b>Item11</b>	—	My children are not eating enough because I just can't afford enough food (12%)	Child complains of hunger for lack of food (10.1%)
<b>Item12</b>	—	I know my children are hungry sometimes, but I just can't afford more food. (2.6%)	Child goes to bed hungry for lack of food (4.6%)

ID	13	14	15
<b>Source</b>	Maxwell, D. (1996). "Measuring Food Insecurity: The Frequency and Severity of Coping Strategies." Food Policy 21(3): 291-303.	Maxwell, D., et al. (1999). "Alternative food-security indicators: revisiting the frequency and severity of 'coping strategies'." Food Policy 24(4): 411-429.	Maxwell, D., et al. (2003). The Coping Strategies Index: A tool for rapidly measuring food security and the impact of food aid programs in emergencies. Nairobi, CARE Eastern and Central Africa Regional Management unit and the World Food Programme Vulnerability Assessment and Mapping Unit.
<b>Item1</b>	Eating foods that are less preferred <i>(the following items are listed in order of severity determined by focus groups)</i>	Rely on less preferred and less expensive foods?	Rely on less preferred and less expensive foods?
<b>Item2</b>	Limiting portion size	Borrow food, or borrow money to buy food?	Borrow food, or rely on help from a friend or relative?
<b>Item3</b>	Borrowing food or money to buy food	Purchase food on credit?	Purchase food on credit?
<b>Item4</b>	Maternal buffering	Rely on help from relative or friend outside household (including remittance for 'chop' money)?	Gather wild food, hunt, or harvest immature crops?
<b>Item5</b>	Skipping meals	Limit portions at mealtimes?	Consume seed stock held for next season?
<b>Item6</b>	Skipping eating for whole days	Ration the little money you have to household members to buy street foods?	Send household members to eat elsewhere?
<b>Item7</b>	—	Limit your own intake to ensure child gets enough?	Send household members to beg?
<b>Item8</b>	—	Reduce number of meals eaten in a day?	Limit portion size at mealtimes?
<b>ID</b>	<b>13</b>	<b>14</b>	<b>15</b>
<b>Item9</b>	—	Skip whole days without eating?	Restrict consumption by adults in order for small children to eat?
<b>Item10</b>	—	—	Feed working members of HH at the expense of non-working members?
<b>Item11</b>	—	—	Ration the money you have and buy prepared food?
<b>Item12</b>	—	—	Reduce number of meals eaten in a day?
<b>Item13</b>	—	—	Skip entire days without eating?

ID	16	17	18-21
<b>Source</b>	Personal communication with Makawa Kaba (WFP/Burundi) 3/25/04	World Food Programme/occupied Palestinian territories (February 2004). Coping Strategies of WFP Beneficiaries in oPt: A Baseline Study.	Freedom from Hunger Measures (personal communication, Hugo Melgar Quinonez) Measure from Bolivia (below) additional measures from Ghana, Philippines, Bukina Faso are the same except for translation.
<b>Item1</b>	Se rabattre sur les aliments moins chers et moins preferes (1)	Consume less quality and variety of foods (98%)	Le voy a leer 4 opciones de respuesta y por favor digame ¿cuál describe mejor los alimentos consumidos en su hogar?
<b>Item2</b>	Acheter des aliments a credit (1)	Income earning activities (22%)	¿Le preocupó que los alimentos se le terminaran antes de tener dinero para volver a comprar?
<b>Item3</b>	Pret en especes pour achat vivres (1)	Purchase food on credit (84%)	Cada cuánto tiempo le pasó esto: 1) Seguido?2) Algunas veces? 3) Muy rara vez? [each item has two parts; this frequency question is the same for each item and is not repeated here].
<b>Item4</b>	Dependre des aides des parentes ou des amis (1)	Depend on food aid (58%)	¿Los alimentos que tenía no le alcanzaron y no tenía suficiente dinero para comprar más?
<b>Item5</b>	Mendicite (1)	Regrouping of family members to save money (13%)	¿Tuvo que comer lo mismo todos los días porque no tenía dinero para comprar otros alimentos?
<b>Item6</b>	Envoyer les enfants manger ailleurs (2)	Reduce the meal of adults in favor of children (83%)	¿Se ha servido usted o algún otro adulto en su hogar <u>menos comida</u> porque no tenía suficiente dinero para comprar alimentos?
ID	16	17	18-21
<b>Item7</b>	Recoltes precoces (2)	Rely on less health and education expenses (90%)	¿Dejó de comer alguna de sus comidas diarias porque no tenía suficiente dinero para alimentos?
<b>Item8</b>	Dependre de l'aide alimentaire (3)	Wood and grass collection (57%)	Piensa usted que alguna vez comió menos de lo que debería porque no tenía suficiente dinero para comprar alimentos?
<b>Item9</b>	Consommer les aliments sauvages/banane a biere (3)	Limit meal portion (87%)	¿Tuvo usted alguna vez hambre y no comió por que no tenía dinero para comprar suficientes alimentos?
<b>Item10</b>	Envoyer les enfants travailler contre la nourriture (3)	Depend on aid from family and friends (32%)	¿Perdió usted peso porque no tenía suficiente dinero para comprar alimentos?

<b>Item11</b>	Consommer les semences (3)	Ask people you don't know for money (6%)	¿Dejó de comer usted o algún otro adulto en su hogar por todo un día porque no había suficiente dinero para comprar alimentos?
<b>Item12</b>	Limiter la portion des repas (4)	Reduce the number of meals per day (67%)	
<b>Item13</b>	Reduire les repas des adultes au profit des petits enfants (4)	Send children to eat elsewhere (17%)	
<b>Item14</b>	Reduire le nombre de repas (4)	Send children to work for food (1%)	
<b>Item15</b>	Passer des jours sans manger (4)	Children dropped out of school (15%)	