Reviewer’s report

Title: Reliability and validity of the short form household food security scale in a Caribbean community

Version: 1 Date: 2 December 2003

Reviewer: Mark Nord

Reviewer’s report:

General
The research testing the U.S. survey methods for measuring household food security in Trinidad is important and of interest to researchers considering adaptation of these methods into other cultural and linguistic settings. Validation was assessed based both on internal and external associations (and, weakly, on associations between responses of multiple respondents in the same household). In its present form the article has one major analytical problem that must be resolved as well as some background and presentation issues that should be addressed prior to publication. The work is readily achievable, however, and the authors should be encouraged to revise and resubmit this important research.

Discretionary Revisions (which the author can choose to ignore)

(3) Bickel et al. “Guide to Measuring Household Food Security, Revised 2000” (published by USDA’s FNS) should be cited as the authoritative source for how the measure is implemented in the U.S. This report also provides guidance for the 6-item module, including a question order somewhat different than that in Blumberg et al. as used in the Trinidad research.

(4) Much more should be made of the "multiple respondents in the same household" validation. It is not mentioned in the "Introduction" (where all methods of validation should be clearly and separately mentioned). It is also not mentioned in the "Methods," where the methods used to assess it should be described. And it is not mentioned in the "Results," where the findings should be presented. Then, suddenly, in the discussions section, it is stated as a finding. To my knowledge, this would be the first such analysis in the food security measurement literature and should be highlighted as such.

(5) "While the consistency of our main findings with other reports pointed to the validity of the scale, our results showed an unexpectedly increased frequency of positive results to the item concerning 'balanced meals,' and an unexpected difference in the frequency of food insecurity according to ethnicity." This statement has several problems.

- The consistency of the findings (at least as regards relative severity of items as described for the balanced meals question) does not provide much information about validity, but rather comparability. Relative item severities could be quite different in Trinidad than in the U.S., yet the scale might pass all tests of internal validity and be quite valid for use in Trinidad. However, in this case, the measured food security status of individual households and the measured prevalence rates of food insecurity and hunger in Trinidad might not be directly comparable with those based on the same measure in the U.S.
- Second, "unexpectedly increased frequency of positive results to the item concerning 'balanced meals',..." should probably be "unexpectedly higher proportion of affirmative responses to the item concerning 'balanced meals',..."
- Third, "...an unexpected difference in the frequency of food insecurity according to ethnicity." This
should probably read, "...and unexpected differences in the prevalence of food insecurity across ethnic groups." Also, unless there is some other measure of food security or food access or closely associated constructs for these ethnic groups, differences in prevalences of food insecurity among them provides no information about the validity of the measure. It may simply be registering actual differences in food insecurity. Thus, the intent of this statement must be clarified. Finally, this analysis also is not described in the "Methods" or "Results." So, the reader has no clue as to how large the differences were or why they were unexpected. (In fact, I find it strange to encounter this summary of findings in the introduction. Unless this reflects editorial policy of the BMC, I would reserve this sort of statement for the discussion.)

Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

Major analytic issue:
(1) The internal validation of the multiple-indicator measure in this article is based entirely on linear measures of association. The development and assessment of the food security measurement methods in the U.S. has consistently used nonlinear methods based on item response theory (IRT) statistical models, specifically, the single-parameter logistic model, known as the Rasch measurement model. Such methods are more appropriate than linear models for multiple-indicator measures of this sort in which the proportions of affirmative responses of dichotomous items vary greatly. The authors bump up against this problem, for example, in assessing kappa statistics, which, they state, "are also influenced both by the prevalence of the trait and by the distribution of disagreements." Their assessment of agreement of the individual items with the other 5 items is also a rather awkward work-around of the non-linearity problem, which is nicely solved in the Rasch methods by the item infit and outfit statistics. The extent and statistical significance of the "balanced meals" item could also be assessed using the Rasch-based methods, which provide standard errors for item parameter estimates.

The role of the Rasch-based methodology in assessing items and sets of items in food security measures has been extensively documented in the two Hamilton et al. reports the authors cite as well as in several other publications by USDA's Economic Research Service, which is a leader in this research. The article would be strengthened substantially by reworking the entire internal validity analysis using Rasch-based statistical methods. At the very least, the authors should acknowledge the usual use of Rasch-based methods for this sort of analysis and state why they use linear methods instead.

Other issues:
(2) The context of the research vis-à-vis the development and adaptations of the U.S. method for measuring food security should be set forth more clearly. This research is an adaptation of food security measurement methods developed and validated in the U.S. into a non-U.S. population. This is interesting only if that population differs from the U.S. population. Trinidad is (I believe) an English-speaking population. The authors should clarify to what extent the population differs from that of the U.S. in terms of language, income and culture. This will help readers know to what extent this research informs the practicability of adapting this module for use in other countries and cultural settings. In this regard, the authors should be aware of other related work such as:
- The paper by Nord et al., "Comparing Household Survey-Based Measures of Food Insecurity
Across Countries: Case Studies in India, Uganda, and Bangladesh," presented at an FAO symposium last year and on the Tufts web site as a working paper paper (http://nutrition.tufts.edu/academic/fpan/).


**What next?:** Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

**Level of interest:** An article of importance in its field

**Quality of written English:** Acceptable

**Statistical review:** No

**Declaration of competing interests:**

None