

Evaluating Food Stamp Nutrition Education: Issues and Opportunities

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ABSTRACT

Food Stamp Nutrition Education (FSNE) is an optional component of the Food Stamp Program aimed at improving food choices of program participants. The last decade has seen a dramatic expansion in FSNE, accompanied by increased interest in FSNE evaluation. The Society for Nutrition Education, as a leader in nutrition education research, has worked collaboratively with federal partners to improve FSNE evaluation. This is the first in a 3-part series of papers presented in this issue of the *Journal of Nutrition Education and Behavior*. The series reviews the issues, priority needs, and opportunities identified through this process; explains our current focus on the development of a brief measure assessing FSNE-relevant dietary behaviors; and describes plans for measurement development.

Key Words: food stamp nutrition education, evaluation

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INTRODUCTION

During 2004, over 23 million individuals participated in the Federal Food Stamp Program (FSP), operated by the Food and Nutrition Service (FNS) of the U.S. Department of Agriculture (USDA) at an annual cost of approximately \$27 billion.¹ Eligibility for the FSP is based on financial need, and the program is considered a cornerstone of the nation's nutrition safety net, with goals of maintaining the food security of low-income American households and improving the diets of low-income Americans by helping program participants make healthy food choices.²

USDA acts to promote healthful diets among FSP participants through its support for Food Stamp Nutrition Education (FSNE), an optional component of the FSP. FSNE provides nutrition education to food stamp participants via a partnership between the USDA and states (in some states, program waivers extend FSNE coverage to low-income nonparticipants). State partners include state Cooperative Extension Services, who have a historic relationship with USDA's Cooperative State Research, Education, and Extension Service (CSREES), state health departments, and other community-oriented agencies. USDA reimburses states 50 percent of allowable FSNE costs. Annual guidance is provided on the appropriate scope of FSNE

activities, with FSNE focusing on 4 core elements—food security, diet quality, food resource management, and food safety³—but states have flexibility in how they deliver their FSNE.

FSNE's flexibility offers both advantages and disadvantages. It gives states the opportunity to tailor their FSNE activities to local needs and preferred educational approaches. However, by making it possible for state FSNE programs to differ considerably in their educational emphases and strategies, this flexibility complicates program evaluation.

The last decade has seen a dramatic increase in FSNE activities and spending, with state participation expanding from 7 States in 1992 to 50 States, 2 Territories, and the District of Columbia in 2004. Over that same time period, total budgeted federal spending increased from \$661,076 to \$228,650,278.⁴ Although this increase shows a rapid growth in total dollars, given the number of households and individuals served by the FSP, FSNE federal funds translated to less than \$10 in approved FSNE federal funds per FSP participant as of FY 2003.

While there is recognition that nutrition education can be an important part of food assistance programs,⁵ a 2004 report by the U.S. Government Accounting Office (GAO) highlighted the need to improve program evaluation.⁶ Despite the fact that states conduct numerous evaluation activities, policy and program officials lack the data needed to draw conclusions as to the effectiveness, either of the program overall or of the different educational approaches and emphases that have been employed by various states.⁶

Both states and the federal government have a strong interest in improving FSNE evaluation. Nutrition educa-

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tion experts also have an interest. For some nutritionists who work in the program, the interest is obvious. For others, the interest is less direct; nevertheless, all nutrition educators benefit from improvements in nutrition education evaluation methods. Because of this joint interest, ERS has been able to work collaboratively with FNS, CSREES, and state FSNE program leaders and nutrition experts, through the Society for Nutrition Education (SNE), to assess evaluation needs and identify strategies for improving evaluation. The first product of these joint efforts was a series of papers assessing the state of the art in evaluating the key component areas of food stamp nutrition education.⁷ Following their publication, ERS, SNE, and state and federal collaborators have held a series of workshops exploring priority FSNE evaluation needs.⁸ This series of papers presented in this issue provides a review of the issues, needs, and opportunities identified through this process; explains why we have chosen to focus our current efforts on the development of a brief measure assessing FSNE-relevant dietary behaviors; and describes our plans for measurement development.^{9,10}

While this effort is focused on improving FSNE evaluation, we believe the processes we have used are relevant to nutrition educators striving to improve evaluation of other community-based nutrition education programs. We have drawn on what has been learned from the broader field of program evaluation, as exemplified in the second paper in this series, "Evaluating Food Stamp Nutrition Education: A View from the Field of Program Evaluation," by Dr. Ellen Taylor-Powell,⁹ and by the proceedings of the SNE Workshop, which are available on-line.⁸ Our plans for measurement development have been based on research-based conceptual and methodological frameworks, as described in the third paper in this series, "Evaluating Food Stamp Nutrition Education: Process for development and validation of evaluation measures," by Dr. Marilyn Townsend.¹⁰ Moreover, we believe that the issues we have identified and discuss below are of broad interest and compelling importance for nutrition researchers and educators to address.

ISSUE: WHAT ARE APPROPRIATE, EFFECTIVE METHODS AND STRATEGIES FOR DELIVERING COMMUNITY-BASED NUTRITION EDUCATION?

As mentioned previously, the flexibility of FSNE has led states to employ a wide range of educational emphases and strategies. This diversity reflects current debate within the field of nutrition education on a number of important topics. The fundamental question of the most appropriate and effective theoretical framework and delivery methods for community nutrition education is still unsettled. Authoritative reviews have established that community nutrition education is most effective when it is theory-based and behavior change is clearly defined as the goal.^{11,12} SNE has been a leader in promoting a theory-based approach to nutrition education. Nutrition educators now routinely use

theory to plan and implement their programs. However, they employ a wide variety of theories—commonly used theories include the Health Belief Model, social cognitive theory, the transtheoretical or "Stages of Change" model, and the theory of planned behavior—and there is no consensus as to which is the most effective.¹¹⁻¹⁴

Nor is there consensus on the most effective methods for delivering community nutrition education programs to achieve behavior change. Topics of debate include where and how nutrition education should be delivered; for example, whether nutrition education should be primarily delivered via print materials, face-to-face individual and small group education, mass media, or by using new computer-tailoring approaches to combine personalization with media.^{12,15} Also debated is the question of the "dose" or "intensity" of nutrition education necessary to make a difference,¹⁶ as well as effective strategies to achieve an effective dosage. Should nutrition education be delivered through multiple personal contacts with participants in individual or small group settings, through multiple reinforcing channels as in the social marketing approach, or some combination thereof? From the program perspective, repeated contacts add costs; from the participant perspective, they impose time costs, as well as possibly other costs, such as transportation to nutrition classes. Therefore, identification of a cost-effective dosage level is an important issue for both program providers and participants.

Targeting is an important issue of debate for nutrition education programs in general,¹⁷ but it may have special relevance to FSNE, which serves an extremely large and diverse audience. Does cost-effective program delivery indicate that FSNE should focus on a targeted subgroup of participants with more in-depth education? If so, how should targeting criteria be determined?

The existence of these debates can be considered a good thing: it demonstrates the growing interest in nutrition education in response to new public health priorities, and in new information concerning the link between diet and health. It illustrates the importance of the work that FSNE educators and other nutrition educators do. For those interested in research and evaluation, it offers an opportunity to participate in this debate, by crafting studies that can provide information on what effective nutrition education is or should be. However, researchers and evaluators also face challenges that must be addressed before they can be as useful as program managers and policy officials desire.

MEASUREMENT CHALLENGES

As we have discussed, under the single title of "Food Stamp Nutrition Education," educators are conducting a wide range of activities. This could be a good opportunity to see which approaches are working best, but we lack an essential element for conducting evaluation—a common core of measures that would give us a basis for comparison. As Taylor-Powell notes: "Program contexts vary, but without

identifying common outcome measures across the varied contexts, it is impossible to aggregate and tell a larger story.”⁹

Given that this is such a basic need, why, after more than a decade, does FSNE lack this common core of measures? As Taylor-Powell states, it is important to create common measures that are meaningful and appropriate to the program.⁹ Otherwise, she says, “creating outcome measures to achieve uniformity of meaning may result in meaningless information.” The very diversity of nutrition education efforts makes agreement on the common core set of meaningful outcomes difficult to achieve. Moreover, given the difficulty of measuring dietary behavior, even when outcomes are agreed upon, developing measures that will be valid, feasible, and useful assessments of target outcomes presents additional challenges.

Despite these difficulties, the development of a common set of outcome measures was the most consistently emphasized research need by the FSNE experts and stakeholders who attended the ERS-SNE Workshop. Several individuals recommended that a commitment be made to the sustained research effort necessary to develop and validate an agreed-upon set of questions.

ONGOING COLLABORATIVE WORK ON IMPROVING MEASUREMENT AND EVALUATION

Currently, ERS and SNE, working collaboratively with FNS, CSREES, and state agencies who manage and deliver the FSNE program, are focused on the first of the evaluation challenges we have identified, ie, development of a common core set of measures to assess dietary behaviors associated with FSNE diet quality outcomes.

As a first step in establishing appropriate content of such a measure, we organized a follow-up workshop in April 2004. Drawing upon a commissioned review of commonly used questions assessing diet quality,¹⁸ FSNE researchers and program managers came together to identify candidate items for a common core set of measures, based on criteria of relevance to FSNE diet quality objectives and practicality of administration. The workshop also included presentations by Drs. Ellen Taylor-Powell and Marilyn Townsend, who presented an overview of the role of evaluation and an outline of a research-based process for developing common outcome measures (see papers by these researchers elsewhere in this special section).

The collegial atmosphere of the ERS-SNE workshops sparked discussion and consideration of the characteristics necessary to make the common core measures a success from a state-federal perspective. Attendees stressed the importance of developing measures that could yield information usable at state and local levels; be capable of being flexibly aggregated at an above-state level, thus making possible evaluation of joint state activities (eg, if states in a region conduct a campaign with the same objectives); and

be used to track progress at a national level. It is also important that the measures be consistent with USDA performance (Government Performance Results Act, or GPRA) goals. For FSNE, that means improving diet quality as assessed by the Healthy Eating Index, or HEI.¹⁹ Finally, but ultimately most importantly, it is necessary that they be defensible from a scientific perspective—ie, they meet accepted scientific standards for reliability and validity.

The ERS-SNE Workshop made considerable progress in identifying candidate items that, while imperfect or not fully tested, seemed relevant to the diet quality goals of FSNE education. However, workshop participants also found that, because most items were not developed with the FSNE audience in mind, further work would be necessary to assess how understandable and appropriate they were for the FSNE audience, and to improve wording where necessary. In some areas of emerging importance, such as measures of behaviors associated with meeting dietary guidelines objectives for the consumption of whole grains, there was a relative lack of agreed-upon items, indicating a greater challenge for methodological development.

Therefore, it was considered necessary to follow up on the workshop by developing a cognitive testing protocol that will be used to assess how understandable the items are to individuals typical of the FSNE target audience, and to improve items as necessary. ERS awarded a contract to Abt Associates, Inc., to develop the cognitive testing protocol, and, together with FNS, will support implementation of the protocol with the goal of developing a short dietary behavior questionnaire. If the resulting questionnaire appears promising as an outcome measure, we will seek to establish its validity.¹⁰ Of particular interest to USDA is the comparison of findings to the HEI, to determine whether these questions can be considered a simple, proxy measure of the HEI, USDA’s performance measure for diet quality.

Dietary behaviors considered for assessment at the expert meeting included those related to consumption of fruits and vegetables; grains, legumes, and fiber; the recommended variety of foods; dietary fats and food sources of fat; calcium food sources; and sweetened beverages. In addition, general nutrition-related behaviors, such as reading nutrition labels, were considered, along with relevant knowledge and attitudes. These categories were included as primary FSNE teaching emphases. However, specification of the parameters of the outcome measure must remain flexible as the measure is in development, and it needs to be consistent with the new Dietary Guidelines for Americans, issued in early 2005.²⁰ Intended respondents at the testing stage include the FSNE target audience, with the measure initially to be developed and tested with English-speaking Hispanic women, African-American women, and Caucasian women who are primarily responsible for food purchase and food preparation in the household. The objective is to develop a 15-minute questionnaire that can be administered via telephone, as well as via paper and pencil.

DISCUSSION

Application of a common measure in evaluation

If we are successful in developing a questionnaire that provides a common basis for assessing behaviors associated with FSNE dietary quality outcomes, that questionnaire could be usefully employed for several evaluation purposes, including: a) formative evaluation or needs assessment, b) ongoing surveillance, c) experimental or quasi-experimental evaluation studies, and d) natural experiments. Using a common measure for formative evaluation can help states and localities gather data on needs that can then be compared to national data or data from other localities.

Continued use of the measure over time would provide useful surveillance data, allowing stakeholders to accumulate evidence of change over time. Ongoing monitoring may be particularly useful for community-based nutrition education programs such as FSNE, since the nature of nutrition education for large population groups makes it likely that we can expect to see small changes in dietary behavior over time.¹² Such an approach has been used in other areas of public health intervention—for example, progress in several Healthy People 2010 diabetes self-care behaviors is assessed using data from CDC's Behavioral Risk Factor Surveillance Survey (BRFSS).^{21,22}

To improve the usefulness of surveillance data, while keeping costs reasonable, one feasible approach is to make use of existing data sets by adding a few questions at a relatively small marginal cost, rather than trying to mount a separate survey or study. The USDA approach to monitoring food security status of Americans is an example of this strategy. Rather than conducting a separate national survey, USDA funds collection of its short module assessing food security status in conjunction with the Current Population Survey (CPS), conducted by the Bureau of Labor and Statistics. This approach allows food security status to be estimated at national and state levels, and trends assessed in relationship to a wide range of socioeconomic and demographic characteristics (eg, household size, income, employment status) that are collected as part of the CPS. Similarly, if we could come up with a small set of questions on diet quality, states could explore adding them to an existing survey that they already conduct, or as an addendum to a state-based national survey, such as CDC's BRFSS.

However, as recently pointed out by the National Research Council's review of the USDA food security measure, surveillance measures cannot be used to draw conclusions as to cause and effect.²³ Population changes in dietary behavior take place in a complex and dynamic socioeconomic milieu, not in a controlled laboratory setting, making surveillance data useful, but not adequate, evidence of the effectiveness of a nutrition education program. For evaluation of program effects or comparisons of different approaches to program delivery, experimental or quasi-

experimental evaluation designs continue to be recommended.²⁴ Use of a common outcome measure can also be valuable in these designs.

FNS has asked states to highlight "promising programs" that seem particularly effective in promoting healthful dietary behaviors as a part of their annual planning and reporting process. Sharing information about promising programs is likely to spur interest in how to go "from promising to proven"—that is, determining whether promising programs actually are better at educating the FSNE audience and promoting healthier dietary behavior. If evaluation of model programs is done via experimental or quasi-experimental methods, using common measures will simplify comparison of study results, making it easier to come to consensus on which approaches are best, and shedding some light on the current debates regarding effective nutrition education methods and strategies.

Use of a common outcome measure may also make "natural experiments" possible, when states or regions vary along some clearly identified aspect of nutrition education program delivery. If outcome data can be linked to some process measures (for example, which nutrition activities are emphasized in a given state FSNE program), it may be possible to use statistical modeling to gain insight into associations of process and outcome. This approach has been useful in assessing effects of state-level variation in implementation of other food assistance policies.²⁵ To the extent that states have usable process information on FSNE, this could be possible, particularly if both process and outcome data are collected with identifier information that could link findings to a target group, either by geographic location (state or county identifiers), gender, or some other targeting characteristic. Several state and federal agencies are currently developing systems to collect administrative and/or process data.²⁶⁻²⁸ As this work progresses, it is important to consider how outcome measures could be used in conjunction with administrative data systems to develop more information on how programs can be better targeted and delivered for effectiveness and efficiencies, building on information obtained from similar data initiatives developed for other public health and education programs.^{29,30}

IMPLICATIONS FOR RESEARCH AND PRACTICE

Development of a broadly useful measure of FSNE-targeted dietary behaviors is an ambitious undertaking, requiring considerable commitment by many professionals in several organizations. While there is no guarantee that it will result in the simple, yet valid and reliable, common measure we seek, the process is reasonable and promising. Supplementing this process, ERS has developed a portfolio of research activities aimed at improving assessment of dietary outcomes. Among them is research to improve understanding of: (a) the components of the HEI and their relationship to

diet quality and health,³¹ (b) the nutritionally important aspects of dietary variety,³² and (c) the effects of behaviors, attitudes, and knowledge on weight status.^{33,34} ERS is also exploring the use of other strategies for nutrition education evaluation, such as use of food purchase data.³⁵

Developing improved outcome measures is the crucial first step in improving evaluation. Through the joint activities of federal and state nutrition professionals, and with SNE's professional leadership, this project is contributing to that process. The papers in this section, written as a part of this research process, provide a perspective on the need for improved evaluation and a research strategy for addressing the challenges of measurement.^{9,10}

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REFERENCES

1. US Department of Agriculture, Economic Research Service. The Food Assistance Landscape, March 2005. Available at: <http://www.ers.usda.gov/publications/fanrr28-6/>. Accessed June 1, 2005.
2. US Department of Agriculture, Food and Nutrition Service, Office of Analysis, Nutrition and Evaluation. Food and Nutrition Service (FNS) Strategic Plan 2000 to 2005. September 30, 2002. Available at: <http://www.fns.usda.gov/oane/MENU/gpra/FNSStrategicPlan2000-2005.PDF>. Accessed June 20, 2005.
3. US Department of Agriculture, Food and Nutrition Service, Food Stamp Program. Food Stamp Nutrition Education Plan Guidance: Federal Fiscal Year 2006. March 2004. Available at: http://www.nal.usda.gov/foodstamp/programplan/FSNE_Plan_Guidance_06.pdf. Accessed June 20, 2005.
4. US Department of Agriculture, Food and Nutrition Service, Food Stamp Program. Approved Federal Funds for Food Stamp Nutrition Education by Fiscal Year. Available at: <http://www.nal.usda.gov/foodstamp/FSNEFederalFundsbyFiscalYear.pdf>. Accessed June 20, 2005.
5. US Department of Agriculture, Food and Nutrition Service, Office of Analysis, Nutrition and Evaluation. Nutrition Education in FNS: A Coordinated Approach for Promoting Healthy Behaviors. February 2002. Available at: [http://www.fns.usda.gov/oane/menu/Published/NutritionEducation/Files/CongressNutEd\(2-2002\).pdf](http://www.fns.usda.gov/oane/menu/Published/NutritionEducation/Files/CongressNutEd(2-2002).pdf). Accessed July 6, 2004.
6. US General Accounting Office. Nutrition Education: USDA Provides Services through Multiple Programs, but Stronger Linkages among Efforts are Needed. Washington, DC: US General Accounting Office; April 2004. Publication GAO-04-528.
7. Evaluation of Nutrition Education with Low-Income Families. *J Nutr Educ*. 2001;33(suppl 1):S001-58.
8. US Department of Agriculture, Cooperative State Research, Education and Extension Service. CSREES Food Stamp Nutrition Education Web Site: Conference Proceedings. Available at: <http://www.csrees-fsne.org/confproc.cfm>. Accessed June 29, 2004.
9. Taylor-Powell E. Evaluating Food Stamp Nutrition Education: A View from the Field of Program Evaluation. *J Nutr Educ Behav*. 2005;38(1):19-24.
10. Townsend MS. Evaluating Food Stamp Nutrition Education: Process for development and validation of evaluation measures. *J Nutr Educ Behav*. 2005;38(1):12-18.
11. Contento I, Balch G, Bronner Y, et al. The effectiveness of nutrition education and implications for nutrition education policy, programs, and research: a review of research. *J Nutr Educ*. 1995;27(6): 277-422.
12. US Department of Agriculture, Food and Nutrition Service, Office of Analysis, Nutrition and Evaluation. Doner L, ed. Charting the Course for Evaluation: How Do We Measure the Success of Nutrition Education and Promotion in Food Assistance Program? Summary of Proceedings. February 1997. Available at: <http://www.fns.usda.gov/oane/MENU/Published/NutritionEducation/Files/ChartingPt1.pdf>. Accessed June 29, 2004.
13. Contento I. Outcome measures for nutrition education with low-income families: Some considerations. Presented at Society for Nutrition Education Post-Conference; July 31, 2003; Philadelphia, PA. Available at <http://www.csrees-fsne.org/confproc/pdfs/jul03contento.pdf>. Accessed June 29, 2004.
14. Achterberg C, Miller C. Is one theory better than another in nutrition education? A viewpoint: more is better. *J Nutr Educ Behav*. 2004; 36(1):40-42.
15. Campbell MK, Carbone E, Honess-Morreale L, Heisler-Mackinnon J, Demissie S, Farrell D. Randomized trial of a tailored nutrition education CD-ROM program for women receiving food assistance. *J Nutr Educ Behav*. 2004;36(2):58-66.
16. Gregson J, Foerster SB, Orr R, et al. System, environmental, and policy changes: using the social-ecological model as a framework for evaluating nutrition education and social marketing programs with low-income audiences. *J Nutr Educ Behav*. 2001;33(suppl 1):S004-10.
17. Frongillo EA, Habicht JP. Symposium: Challenges in targeting nutrition programs. Introduction. *J Nutr*. 2005;135:878.
18. Hartline-Grafton H, Nyman R, Briefel R, Cohen R. Prototype Notebook: Short Questions on Dietary Intake, Knowledge, Attitudes and Behaviors. Submitted by Mathematica Policy Research, Inc. to US Department of Agriculture, Economic Research Service, Food and Rural Economics Division. E-FAN No. (04010) 171 pp, September 2004. Available at: <http://www.ers.usda.gov/publications/efan04010/>. Accessed October 12, 2004.
19. US Department of Agriculture, Center for Nutrition Policy and Promotion. USDA Healthy Eating Index. Available at <http://www.usda.gov/cnpp/healthyeating.html>. Accessed June 29, 2004.
20. U.S. Department of Health and Human Services and U.S. Department of Agriculture. Dietary Guidelines for Americans, 2005. Publication # HHS-ODPHP-2005-01-DGA-A. Available at: www.healthierus.gov/dietaryguidelines. Accessed January 12, 2005.
21. US Department of Health and Human Services, Office of Disease Prevention and Health Promotion. Healthy People 2010. Available at: <http://www.healthypeople.gov/>. Accessed July 6, 2004.
22. US Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease and Prevention and Health Promotion. Behavior Risk Factor Surveillance System: Turning Information into Health. Available at: <http://www.cdc.gov/brfss/>. Accessed July 6, 2004.
23. Panel to Review U.S. Department of Agriculture's Measurement of Food Insecurity and Hunger, Committee on National Statistics, Division of Behavioral and Social Sciences and Education, National Research Council. *Measuring Food Insecurity And Hunger: Phase I Report*, 2005. The National Academies Press. Washington, D.C. Available at <http://www.nap.edu/books/0309095964/html>. Accessed January 13, 2006.
24. Hamilton WL, Rossi PH. Effects of Food Assistance and Nutrition Programs on Nutrition and Health: Volume 1, Research Design. ERS Food Assistance and Nutrition Research Report No. FANRR19-1. February 2002, 39 pp.
25. Borjas GJ. Food Insecurity and Public Assistance. Joint Center Policy Research, May 2001. Available at: http://www.jcpr.org/wpfiles/borjas_foodinsecurity.pdf Accessed June 13, 2005.
26. US Department of Agriculture, Food and Nutrition Service. Educa-

- tion and Administrative Reporting System. Available at: http://www.fns.usda.gov/fsp/nutrition_education/overview.htm. Accessed July 6, 2004.
27. US Department of Agriculture, Cooperative State Research, Education and Extension Service. CSREES Food Stamp Nutrition Education Web Site: Reports. Available at http://www.csrees-fsneep.org/pdfs/natl_rpt_fy02.pdf. Accessed July 6, 2004.
 28. Gromis, J. Improving Efficiency through the Use of a Web Site for Online Data Collection and for Sharing Relevant Nutrition Materials. Available at: <http://www.csrees-fsneep.org/confproc/pdfs/mar04gromis.pdf>. Accessed July 6, 2004.
 29. Gregson J. California's Online Tobacco Information System (OTIS). Presented at: Society for Nutrition Education Post-Conference; July 30, 2003; Philadelphia, PA. Available at: <http://www.csrees-fsneep.org/confproc/pdfs/jul03gregson.pdf>. Accessed June 29, 2004.
 30. Heinrich T. Web-Based Approaches to Collecting Nutrition Data in the Schools. Presented at: Society for Nutrition Education Post-Conference; July 30, 2003; Philadelphia, PA. Available at <http://www.csrees-fsneep.org/confproc/pdfs/jul03heinrich.pdf>. Accessed June 29, 2004.
 31. McCullough ML, Feskanich D, Rimm EB, et al. Adherence to the Dietary Guidelines for Americans and risk of major chronic disease in men. *Am J Clin Nutr*. 2000;72(5):1223-1231.
 32. Foote JA, Murphy SP, Wilkens LR, Basiotis PP, Carlson A. Dietary variety increases the probability of nutrient adequacy among adults. *J Nutr*. 2004;134(7):1779-1785.
 33. Kuchler F, Lin BH. The influence of individual choices and attitudes on adiposity. *Int J Obes Relat Metab Disord*. 2002;26(7):1017-1022.
 34. Variyam J, Callahan R. Diet-health knowledge, awareness of federal nutrition information programs, and obesity [abstract]. 2004 Experimental Biology meeting abstracts, Abstract # 6681. Available at: <http://www.biosis-select.org/faseb/index.html>. Accessed August 3, 2004.
 35. Bell LL. Evaluating changes in WIC participant food purchasing as a result of WIC nutrition education [abstract]. 2004 Experimental Biology meeting abstracts, Abstract # 8053. Available at <http://www.biosis-select.org/faseb/index.html>. Accessed August 3, 2004.