



Regional Nutrition Education and Obesity Prevention Center of Excellence

Northeast Region

Building Evidence and Taking Action in Communities

Executive Summary

Through a historic collaboration between the U.S. Department of Agriculture's National Institute of Food and Nutrition (NIFA) and Food and Nutrition Service (FNS), the Regional Nutrition Education and Obesity Prevention Centers of Excellence (RNECE) initiative was established in 2014.¹ Four regional centers and a national coordination center were funded, including the Northeast RNECE at Cornell University. The centers worked diligently to advance the initiative's shared objectives.² The approach was to strengthen the evidence-base of using PSE and direct nutrition education (DNE) methods to improve food resource management and diet quality for low-income families. Each regional center was tasked with planning and implementing at least one signature research project, and with supporting other appropriate research through sub-awards to partners within that region.

The Northeast RNECE (NE-RNECE).¹ The *goal* of the NE-RNECE was to expand the evidence-base that supports effective nutrition education for low-income families and children delivered in conjunction with policy, systems, and environmental (PSE) approaches that make healthy choices easier in order to prevent obesity. Three key initiatives included a *signature research program*, a *systematic review of literature*, and a *nationwide PSE training program*. Stakeholders from across the region were engaged, including the land grant EFNEP and SNAP-Ed coordinators (as well as some non-land grant coordinators) in each of the 12 northeastern states and the District of Columbia. Additionally, researchers from universities across the region (Columbia University, Cornell University, Harvard University, Pennsylvania State University, Rutgers University, Syracuse University, Tufts University, University of Connecticut, and Yale University) were involved in an advisory capacity.

The *signature research program* included five projects designed to investigate whether the combination of PSEs and DNE were more effective in combination than either strategy alone. These projects were carried out by the Hartford Connecticut Hispanic Health Council, Johns Hopkins University, University of Maryland,

¹ [USDA Regional Nutrition Education and Obesity Prevention Centers of Excellence](#) This work was supported by the U.S. Department of Agriculture (USDA), Food and Nutrition Service and National Institute of Food and Agriculture. Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the authors and do not necessarily reflect the view of the USDA. USDA is an equal opportunity provider, employer, and lender. Funding source: USDA 2014-48757-22611.

² [National Coordination Center Final Report](#)

University of Rhode Island, and Cornell University. Projects engaged EFNEP or SNAP-Ed participants, depending on the project. Research was conducted in rural, suburban, and urban areas, and included both quasi-experimental and experimental designs. A common challenge across projects was getting PSE approaches under way because most projects were only funded for one year. Although the results from several of the projects are promising, more time was needed to build relationships, undertake the PSE portion of the project, and collect data from individual participants after they had time to experience the PSE changes and receive DNE. Nevertheless, results of the signature research program have increased the research base for implementing PSE work in combination with DNE with multiple presentations at 10 different professional meetings and five peer-reviewed publications to date. Additional peer-reviewed manuscripts are under review or in preparation.

The systematic review was designed to address the question, “What is the evidence for the effectiveness of combining PSE changes with DNE, compared to either of these strategies alone, on weight status and food and nutrition behaviors related to obesity prevention?” While it is assumed that PSE changes will support healthy choices by program recipients receiving DNE, thorough review of the research in this area is lacking. Understanding this empirical evidence will inform funding and direction for future PSE research and programming. The search strategy used in this review was transdisciplinary and included both published and gray literature, producing nearly 13,000 results. Only 39 of these articles met the rigorous inclusion criteria established by the Systematic Review Workgroup. The majority of these studies were conducted in the United States and in school settings. A variety of PSE strategies and a range of DNE approaches were represented, including but not limited to policy interventions to increase access to healthy foods and physical activity, as well as interventions in economic and physical environments. The systematic review management team continues to extract and code intervention and results data from these studies, to be followed by review of bias in both individual studies and the body of results. The team anticipates submitting a manuscript in summer 2019. This review will provide important information on the effectiveness of combining strategies to affect nutrition-related outcomes and will serve as an opportunity to introduce considerations when defining scope, content, and evaluation of PSE interventions newer to nutrition education programming.

The nationwide PSE training program, titled *Making the Healthy Choice the Easy Choice* is a six-module asynchronous online course.³ It was developed by a workgroup led by a team at Cornell University with members representing all the centers. Based on the results of a 2016 national needs assessment along with a study done by the PSE Change Center, the course includes the span of skills necessary to undertake PSE change initiatives, from planning to implementation to evaluation. As of March 2019, more than 500 state and community nutrition education educators and other public health professionals have enrolled in the PSE training program. Learners have 1 year to complete the entire training and so far about 150 have done so, thus expanding capacity for improving nutrition and health behaviors, and policies, systems, and environments in ways that are equitable, efficient, and sustained over time. A shorter course consisting of the first module of the six-module course was launched in March 2019 for



making the **HEALTHY** choice
the **EASY** choice

An Introduction to Policy, Systems, and Environmental Approaches
to Promote Healthy Eating and Physical Activity

³ [PSE Training Program](#)

those interested in a basic introduction for those new to PSE approaches or an overview for those with more experience in PSEs. The training program has been presented at three national professional meetings and two manuscripts are in preparation.

The **NE-RNECE contributed to the overarching RNECE goal** of improving “the health of low-income Americans through multiple integrated strategies, including complementary nutrition education and public health approaches, particularly as pertains to SNAP-Ed and EFNEP.” The center contributed to the evidence-base that supports the effectiveness of DNE of low-income audiences delivered in conjunction with PSE approaches and by expanding training available for PSE efforts nationwide. The center’s work specifically supported the first four objectives of the RNECE Initiative:

1. **Strengthen the evidence-base on effective nutrition education/obesity prevention programs for diverse population groups – i.e. identify and confirm what works.** Two of the center’s three initiatives, the **signature research program** and the **systematic review** supported the objective of strengthening the evidence-base on effective nutrition education/obesity prevention programs for diverse population groups by investigating the combined effects of DNE and PSE strategies.
2. **Evaluate the long-term effectiveness of nutrition education/obesity prevention interventions for disadvantaged and underserved populations and opportunities for new research.** The NE-RNECE contributed insights into the effectiveness of interventions based on process evaluation data and some outcome data, but was limited in its ability to evaluate the long-term effectiveness of any interventions due to time and funding constraints.
3. **Identify and create research collaborations and synergistic relationships among researchers and EFNEP/SNAP-Ed program directors, universities and other implementers, and state and federal agencies.** The NE-RNECE identified possible research collaborations between EFNEP/SNAP-Ed program directors and university researchers through the responses to the original request for applications (RFA) for the **signature research program**. There is strong evidence of close collaboration between the researchers and program implementers in each of the five funded projects. In addition, the center’s Steering Committee and Stakeholder Committee helped build new relationships among EFNEP and SNAP-Ed state-level staff, and between SNAP-Ed implementing agency staff and researchers. Overall, the relationships established were widespread in terms of type and geography, namely between program and research; within and across states, program levels, universities, state agencies, and regional staff; and across regional and PSE centers.
4. **Enhance the impact of state and community nutrition education and obesity prevention efforts by providing the public health-related training and evidence that practitioners need for improving nutrition and health behaviors, environments, and policies in ways that are equitable, efficient, and sustained over time.** The NE-RNECE was the lead center contributing to this objective, working in close collaboration with the RNECE PSE Change Center and the Nationwide Training Workgroup representing all RNECE regions, on development and delivery of a **nationwide PSE training program** that includes

two courses,⁴ the six-module, *Making the Healthy Choice the Easy Choice: An Introduction to Policy, Systems, and Environmental Approaches to Promote Healthy Eating and Physical Activity* and a shorter one-module course.

In summary, the NE-RNECE contributed substantially to the goals and objectives of the national RNECE initiative. New relationships and collaborations were established across the northeast region among researchers and program implementers, as well as among researchers, program implementers, and state agencies. In addition, the NE-RNECE state leadership built strong new partnerships with the leadership in other regions, particularly through the development of the nationwide training program. Lessons were learned about the implementation of PSEs through the signature research program. The evidence-base was and will be added to in two ways: through the results of the systematic review, and through publication of the results, including process evaluation results, from the signature research program. The nationwide PSE training program, *Making the Healthy Choice the Easy Choice: An Introduction to Policy, Systems, and Environmental Approaches to Promote Healthy Eating and Physical Activity*, provides an important new national resource for building the capacity of educators to improve nutrition and health behaviors among low-income populations in their communities.

⁴ [PSE Training Program](#)



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FINAL REPORT

September, 2014 – March, 2019

Through a historic collaboration between the US Department of Agriculture's National Institute of Food and Nutrition (NIFA) and Food and Nutrition Service (FNS), the Regional Nutrition Education and Obesity Prevention Centers of Excellence (RNECE) initiative was established in 2014.¹ Four regional centers and a national coordination center were funded, including the Northeast RNECE at Cornell University. The centers worked diligently to advance the initiative's shared objectives. The approach was to strengthen the evidence-base of using PSE and direct nutrition education (DNE) methods to improve food resource management and diet quality for low-income families. Each regional center was tasked with planning and implementing at least one signature research project, and with supporting other appropriate research through sub-awards to partners within that region.

The Northeast Regional Nutrition Education and Obesity Prevention Center of Excellence

The Northeast Regional Nutrition Education and Obesity Prevention Center of Excellence (NE-RNECE) was located in the Division of Nutritional Sciences at Cornell University. The region represents the northeast NIFA region which includes Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, West Virginia, Vermont, and the District of Columbia. The *mission* of the NE-RNECE was to promote a culture of health among low-income populations by bringing researchers and

¹ [USDA Regional Nutrition Education and Obesity Prevention Centers of Excellence](#). This work was supported by the U.S. Department of Agriculture (USDA), Food and Nutrition Service and National Institute of Food and Agriculture. Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the authors and do not necessarily reflect the view of the USDA. USDA is an equal opportunity provider, employer, and lender. Funding source: USDA 2014-48757-22611.

program implementers together to engage in intervention research congruent with implementation and dissemination science. The **goal** of the NE-RNECE was to expand the evidence-base that supports effective nutrition education for low-income families and children delivered in conjunction with policy, systems, and environmental (PSE) approaches that make healthy choices easier in order to prevent obesity.

Oversight for the NE-RNECE was provided by a Steering Committee, which included the Cornell University leadership team, as well as members with expertise in EFNEP and/or SNAP-Ed implementation and research from across the region, four from other Northeast Land Grant universities, one from another northeastern university, and one from a Hispanic-serving community organization.

Cornell University Leadership Team

Jamie Dollahite, PhD, Professor and NE-RNECE Director

Karene Booker, MS, Research Support Specialist and NE-RNECE Program Manager

Alisha Gaines, PhD, Research Associate and NE-RNECE Systematic Review Coordinator

Tisa Fontaine Hill, MPH, Extension Associate and NE-RNECE PSE Specialist

Jeff Niederdeppe, PhD, Associate Professor of Communications and NE-RNECE Communications Specialist

Joan Doyle Paddock, PhD, MPH, RD, Senior Extension Associate and NE-RNECE Program Specialist

Deborah Sellers, PhD, Senior Research Associate and NE-RNECE Evaluator

Christina Stark, MS, RD, Senior Extension Associate and Program Leader of Cornell NutritionWorks

Additional Steering Committee Members

Donna Brown, MA, Family Life Agent, Delaware State University

Grace Damio, MS, Director of Research & Service Initiatives, Hispanic Health Services, Hartford CN

Ann Ferris, PhD, RD, Professor Emerita, Executive Committee Member, Center for Public Health and Health Policy, University of Connecticut

Cindy Fitch, PhD, RD, Associate Dean of Programming and Research, West Virginia University Extension Service

Barbara Lohse, PhD, RD, Director Wegman's School of Health and Nutrition, Rochester Institute of Technology, Rochester, NY

Kate Yerxa, MS, RD, Associate Extension Professor, University of Maine

Two additional committees advised the center. The Stakeholder Committee (Appendix A) was formed during the writing of the original proposal. It included the EFNEP coordinators and representatives of SNAP-Ed implementing agencies from across the NE region (including both 1862 and 1890 Land Grant Universities and other SNAP-Ed implementing agencies), as well as the two FNS regional SNAP-Ed coordinators from the FNS Northeast and Mid-Atlantic Regions. The Stakeholder Committee provided advice on the development of the proposal and served as a conduit for information between the center and EFNEP and SNAP-Ed programs across the region. The Research Committee (Appendix B), representing experts who conduct research in relevant areas, included faculty from Columbia University, Cornell University, Harvard University, Pennsylvania State

University, Rochester Institute of Technology, Rutgers University, Syracuse University, Tufts University, University of Connecticut, and Yale University.

The NE-RNECE had **three key initiatives**: 1) a signature research program, 2) a systematic review of literature, and 3) a nationwide PSE training program.

Signature Research Program

The priority of the signature research program was to investigate whether the combination of PSE changes and DNE have greater impact on dietary intake and physical activity (PA) than either strategy alone. This focus was guided by (1) current directions in national nutrition education policy (such as the requirement in SNAP-Ed Guidance that both PSE and DNE approaches be used and in EFNEP policy that allows for the addition of PSE approaches to DNE), (2) the limited research-based evidence outside of school settings² that incorporating both is more effective than either alone, and (3) the results of the needs assessment survey for the Northeast region. Thirty-four agencies responded to the survey, representing all 12 states and nearly all of the SNAP-Ed and EFNEP implementing agencies in the region, including land grant universities, departments of health, non-profit organizations, and schools. Only one-third of agencies reported programs that integrated DNE and PSE approaches. Only half of these programs were far enough along to report on the reach of the integrated program. Due to the limited amount of time they had been implemented, the reach of programs integrating DNE and PSEs was substantially less than that of DNE programs without PSEs. Taken together, these factors guided the choice to focus the NE-RNECE signature research program on testing models of behavior change which complement DNE with sustained, synergistic organizational, and community implementation of PSEs.

A request for applications (RFA) was developed, approved by USDA, and circulated broadly within the Northeast region. It was posted on the NE-RNECE website and announced within the public and private sectors, including the 1890 and 1862 land-grant institutions that have EFNEP programs, SNAP-Ed implementing agencies, and other organizations involved in low-income nutrition education/obesity prevention programs in the Northeast region. It was disseminated via seven email lists that reach those audiences. Additionally, recipients of the e-mail announcing the RFA were encouraged to forward it to others who might be qualified and interested in submitting a proposal.

The funding priority was to support projects which:

1. Built upon established programming that included both PSE and DNE, that had existing evaluation data consistent with emerging or practice-based evidence, and that needed to be subjected to more rigorous research design and data collection to increase the strength of the evidence of effectiveness;
OR

² [Systematic Review on the Effects of Nutrition Education on Children's and Adolescent's Dietary Intake](#)

2. Expanded established programming with high quality evaluation in either PSE or DNE approaches which were well-positioned to add the complementary approach to test the additive effect under conditions of a well-designed research project.

Ten proposals were received and reviewed by members of the Cornell leadership team according to specific criteria (Appendix C).

Funded research projects

1. ***Nutrition Education and Texting (NEAT)***; Hispanic Health Council, Hartford CT; Damio G, Pérez-Escamilla R, Segura-Pérez S.

The main objective of the NEAT study was to assess the impact of a social marketing campaign consisting of coupons and promotional text messages on fresh produce purchases at the Hartford Mobile Market (HMM) on overall fruit and vegetable (FV) intake. This urban-centered RCT was conducted with SNAP-Ed participants with children age five years or younger. Participants were randomly assigned to the intervention (n=100) or control group (n=93). The intervention group received text messages for 30 days promoting their use of the HMM. They were also provided with \$20 in HMM coupons as incentives. The control group participants received text messages informing them about free public events in the city. Surveys were conducted at baseline and six weeks after enrollment. Participants were mostly female (97%), Hispanic (79%), and SNAP beneficiaries (81%); there were no between-group differences at baseline. Intervention group participants were more likely than those in the control group to buy at the HMM (46% vs. 23%), spent significantly more on fruits during the last week than those in the control group (\$42.0 vs. \$30.0), and consumed 0.33 more servings of fruit compared to controls. Coupon redemption was high among intervention group participants (67%) and HMM users were very satisfied with the price and quality of the produce sold and customer service. NEAT is a culturally sensitive social marketing intervention that led to improved access to and purchase of produce and consumption of fruits in an urban poor community.

2. ***Sustaining a Successful Youth-Leader Program as part of a Multi-Level, Multi-Component Food Environment/Behavioral Intervention***; Johns Hopkins University and University of Maryland, Baltimore MD; Gittelsohn J, Trude A, Lachenmayr L.

This urban-centered study was conducted with low-income youth in Baltimore. The objective was to expand and sustain the B'more Healthy Communities for Kids (BHCK) program using a combined PSE and DNE approach. The study used a quasi-experimental design, investigating changes assessed pre- to post-intervention and between the intervention and comparison groups at multiple levels. Low-income, predominantly African-American areas in Baltimore City recreation centers were included. The PSE approach targeted 10-14 year olds and older BHCK youth leaders delivering DNE in recreation centers, community corner stores and carry-outs, and acting as spokespersons in BHCK social media, combined with environmental changes at food stores and recreation centers to improve healthy food access. A train-the-trainer approach was used for DNE, with content developed by SNAP-Ed staff and aimed at building nutrition knowledge, food preparation skills, skill-based teaching methods, presentation skills, teamwork, and leadership. Youth-leader teams were formed to implement the program and deliver it to children in

the recreation center. Trainings and interactive sessions were evaluated through multiple process measures to ensure adequate reach, dose delivered, fidelity, quality, and reproducibility for sustainability of the youth-leader programming. To assess the impact of the program on BHCK youth-leaders (n=13) and children (n=93), changes in frequency of purchasing specific promoted foods, overall energy intake, fat intake and other indicators of dietary quality (FV servings), and body mass index (BMI) were analyzed using a difference-in-difference approach. This analysis assesses the difference seen in the intervention group from pre- to post-intervention as compared to the difference seen in the comparison group over the same time period. Results indicated that the youth-leader program was delivered with moderate to high reach, dose, and moderate fidelity. Significant improvements in outcome expectancies and leadership skills were shown in the most highly involved youth leaders ($p < 0.05$). Dietary data indicated that children in the intervention group showed a trend in decreased total calorie intake and dietary fat compared to those in the control group, although these differences were not statistically significant. No other statistically significant differences were found, possibly due to the short time of the study and the small sample sizes.

3. *Transforming Lifestyles: Integrating Direct Nutrition Education with Physical Activity: Using the Health Care System Expansion Model*; University of Maryland; Mehta M, Sankavaram K, Benoit-Moctezuma D, Song H-J, Ashburn L.

Maryland EFNEP created the Health Care System Model to deliver DNE promoting healthy lifestyles to Latino families with limited access to resources and supports. The model uses a direct skills-based approach to deliver a culturally-acceptable, family-centered DNE with PA emphasis, in collaboration with safety net clinic providers. The study expanded the existing model to examine the additive effects of PA assessment, education, and resource referrals by health care providers to improve lifestyle behaviors and outcomes using the Health Care System Expansion Model. A quasi-experimental design included two groups of clinics in a suburban setting: school based health centers (comparison) and Community Clinic Inc. (experimental). A convenience sample of 48 Latino youth ages 5-18 years and one parent were recruited. All participants were screened by providers for overweight/obesity using BMI and received the 6 week DNE intervention (nutrition, food resource management and PA education). In addition, the experimental group was screened by providers for PA engagement, provided age appropriate PA tip sheets, and a free/low-cost PA community resource list. To facilitate the model expansion, a systems change was initiated in experimental clinics by incorporating two screening questions for PA and screen time into the electronic health record, thus integrating referral to EFNEP into PCP's workflow.

Providers in experimental clinics indicated the PA screener required relatively modest investments of time and enabled changes in the workflow that were feasible and beneficial for participants. They found the screener easy to use, recommended its routine use, more frequently discussed BMI and PA with parents, and mentioned that, of community programs, only EFNEP provided lifestyle intervention. The screener provided parents the opportunity to ask questions and receive guidance.

Study results indicated a significant decrease in BMI in parents in both groups ($p < 0.05$). Parents increased PA ($p < 0.01$) in the experimental group, with a similar trend (NS) in the comparison group. Parents screen time was reduced in both groups ($p < 0.05$). Based on the Healthy Eating Index, experimental group parents improved dietary behaviors from a mean (\pm SD) of 62 (\pm 131) to 68 (\pm 50) ($p < 0.03$) and comparison group

parents trended in that direction 65 (± 118) to 70 (± 104) ($p < .07$). Similar results were observed in youth, but changes in BMI and PA were not statistically significant; BMI likely did not decrease as the study was only 6 weeks long. However some behavioral changes were seen. The youngest children (K-2 grade) in both groups decreased screen time, significantly in the experimental group ($p < .01$) though not in the comparison group ($p < 0.06$). Using the EFNEP Youth Behavior Checklist in children, both groups showed a significant improvement in dietary behaviors (fruits $p < .05$, vegetables $p < .001$, healthy snacks $p < .05$), and low fat foods ($p < .01$). The decrease in screen time coupled with moderate PA and improved food behavior practices in both parents and children suggest that the intervention was effective.

4. ***Empowering Urban School Children to Increase Fruit and Vegetable Intake through PSE Interventions;*** University of Rhode Island; Sobelia L, Greene G.

The goal of this study was to develop and implement an EFNEP curriculum educating elementary school children about PSE change approaches that might then be added to existing behavioral and environmental interventions to increase FV intake in urban schoolchildren. In a quasi-experimental design, four elementary schools in the urban school district of Pawtucket, RI, participated (two comparison schools receiving the existing intervention and two treatment schools receiving the existing intervention plus the new 10-week curriculum). Participants were 320 fifth graders (142 treatment; 178 comparison). The main objective was to increase FV intake by fifth graders. A FV Checklist assessed intake pre- and post-intervention, with no significant difference in FV intake from pre to post in either group. The treatment group had a higher FV knowledge post-score than the control group ($p < .001$) when adjusted for baseline score in an analysis of covariance. The overall sample increased FV knowledge in a repeated measures analysis of variance (treatment $p < .001$; control, $p < .05$). Extensive process evaluation was completed. All PSE lessons met more than 90% of curriculum objectives, however there was extensive variation in when the lessons were taught in relation to when the PSE was implemented, so any complementary effect may not have been able to be detected. This PSE project resulted in two school-wide Recipe Days in which two student recipes were highlighted on the schools' lunch menu and served to all students. As a result, one of the recipes, Josley's Apple Cucumber Salad, is now on the district lunch menu. This project is viewed as just the beginning of PSE efforts involving students and food service in schools and its implications could result in additional healthy changes introduced by students and implemented by food service and school administrations.

5. ***Adopting Healthy Habits in Worksites: Increasing Adoption and Acceptability of Policy, Systems, and Environmental Changes within Agencies Serving Low-Income Families;*** Cornell University and Cornell Cooperative Extension; Hill TF, Dollahite J, Sellers D.

This quasi-experimental study was conducted in two micropolitan areas. The objective was to assess the effects of PSE change efforts combined with DNE in three worksites (two Head Start Centers and one Community Action Planning Council) on the self-reported eating and PA behaviors of staff members and clients. The study also tracked and examined the process of adopting and implementing PSE approaches that promoted eating more FV, drinking water instead of sugar-sweetened beverages, and increasing PA. The *Healthy Children, Healthy Families: Parents Making a Difference!* curriculum was offered to both agency staff and clients. Data collection included participant (staff and client) surveys and environmental

scans (four time points, T1 to T4, fall and spring of each of the two 2 years). Participants reported food and PA behaviors. Environmental scans assessed changes in the food and PA environments, including policy adoption.

At the end of Year 1, all three participating sites adopted policies to make healthy choices easier, e.g., healthy food guidelines and/or PA during meetings. Resulting environmental changes included increasing use of fresh FVs during snack and meal times, creating healthy snack vending for staff use, encouraging walking before work and during breaks, and eliminating free high fat, high sugar snacks for staff. Activities that supported environmental and policy changes included healthy food events, PA offerings onsite, and healthy celebrations. Promotion was done via newsletters, bulletin boards, and signage promoting walking. Dose and depth of changes varied across sites with more changes coinciding with higher administrator support and a committed worksite wellness team. Across all three worksites, 69 clients and 77 staff members completed both a baseline (T1 or T3) and follow-up survey (T4) required to assess change over time. Many of the PSE changes and activities took place during Year 2 between T3 and T4. Of the 69 clients and 77 staff members, 3% and 38%, respectively, completed the DNE. Given the goal of assessing the combined effect of PSE and DNE, additional analyses were only completed on the staff. Staff were mostly female (97%), had varying levels of education (34% college educated), and about half were low-income. Staff of participating agencies showed increased healthy behaviors as a result of the intervention: of staff reporting less than healthy levels of PA at baseline (42%, n=32), 63% (n=20) reported healthy levels at follow-up; of staff reporting eating less than healthy levels of fruit at baseline (46%, n=35), 31% (n=11) reported eating healthy levels of fruit at follow-up; and, of staff reporting eating less than healthy levels of vegetables at baseline (32%, n=25), 36% (n=9) reported healthy levels of vegetables at follow-up. While these results are suggestive of a positive impact of combining PSE and DNE, the differences were not statistically significant. Logistic regression analyses of results of staff members who reported switching from unhealthy to healthy levels of PA between baseline and follow-up suggest that participating in DNE may facilitate this change (odds ratio=3.67, p=.106). However, the small sample sizes that occurred with the limitations in time and money to complete the study may mean that a real effect was not able to be detected.

Summary of Signature Research Program

The five research projects that comprised the NE-RNECE signature research program included DNE and some form of PSE efforts, although the design of most did not lend itself to looking at the additive effect of the PSE and DNE. The exceptions were the University of Maryland project which added a systems change onto existing DNE and the Cornell project which included adding DNE to PSE efforts across sites. The University of Rhode Island intended to add a PSE to DNE, but ultimately only included DNE as the proposed PSE change ended up having such a low dose that it was not possible to measure any additive effect. The project in Baltimore and the Hartford Hispanic Health Council project included both PSEs and DNE in concert, with no way to assess the additive effect.

Limitations in time and funding precluded the recruitment of an adequate number of participants in three studies (University of Maryland, Johns Hopkins University, and Cornell University). Therefore, while the results

suggest positive influences of the interventions, most results were not statistically significant. The University of Rhode Island project PSE effort only included one new recipe being incorporated into the cafeteria menu, a PSE dose that was not high enough to measure an effect. PSEs take large amounts of time to set up, including relationship building and maintenance with partners. The four sub-awards lasted only one year because of the early termination of the funding for the overall RNECE initiative. Each of these projects was awarded only \$50,000 for this one year. While the Cornell project lasted two years, the PSE initiative was not really under way until the second year due to the time it took to work with the agencies to develop PSEs. In spite of these limitations, all projects reported some positive results, suggesting that combining PSE and DNE efforts may be important in influencing behavior change at the community level. Reports from all projects except the Hartford Hispanic Health Council indicated that the limitation in time and funding meant that the projects were not able to recruit enough participants to ensure that sample sizes were large enough to see real differences in outcomes; if time and money had been available to continue to recruit participants and continue the research, statistically significant results may well have resulted. Investigators also reported that they planned to look for other funding to continue the work started here, or were simply continuing the project with program funds but without the research component.

Presentations of Research Results

Outputs from the research projects are heavily focused on process evaluation results, because of the limitations of sample size and lack of statistically significant outcome results for all but the Hispanic Health Council project.

Oral and poster presentations on specific research projects, or the NE-RNECE overall initiative including the research projects, were delivered at meetings of the American Public Health Association (2018), Association of SNAP Nutrition Education Administrators (ASNNA) (2016, 2017), Tri-regional SNAP-Ed Conference (2016), Society for Nutrition Education and Behavior (SNEB) (2016, 2017), International Society of Behavioral Nutrition and Physical Activity (ISBPA) (2016), and American Society for Nutrition/Experimental Biology (ASN/EB) (2016, 2017).

- Hill TF, Sellers D, Dollahite JS. Adopting Healthy Habits in worksites: Increasing adoption and acceptability of policy, systems, and environmental changes within agencies serving low-income families. American Public Health Association. San Diego, CA, November 2018.
- Schmall A, Trude A, Gittelsohn J. Process evaluation of a youth-mentor led childhood obesity prevention intervention at urban recreation centers. Experimental Biology, Chicago, IL. April, 2017.
- Dollahite JS, Hill TF. Regional Nutrition Education and Obesity Prevention Centers of Excellence: Northeast Region at Cornell University. ASNNA, Washington D.C., February 2017.
- Dollahite JS, Damio G, Gittelsohn J. Green G, Hill TF, Mehta M. Initial results from the Northeast Regional Nutrition Education Center of Excellence (NE-RNECE) research: Examining the additive effect of direct nutrition education and policy, systems, and environmental changes to prevent obesity (Symposium with presentation of all projects). SNEB, San Diego, CA. July, 2016.
- Dollahite JS. Northeast Regional Nutrition Education and Obesity Prevention Center of Excellence, FNS Tri-regional Meeting, Baltimore MD. April, 2016.
- Dollahite J. Northeast Regional Nutrition Education and Obesity Prevention Center of Excellence.

ASNNA, Washington DC, January 2016.

- Anderson Steeves EA, Shipley C, Mejia Ruiz MJ, Jones-Smith J, Pollack K, Cheskin L, Hurley K, Hopkins LC, Gittelsohn J. Evaluation of a Youth-led Intervention for Childhood Obesity Prevention Among Urban, Minority Youth: Perceptions and Impact among Youth-leaders. ISBNPA Cape Town, South Africa, June 2016.
- Trude A, Anderson Steeves E, Shipley C, Mejía Ruiz MJ, Sato P, Lachenmayr L, Gittelsohn J. Sustaining the youth-leader program in Baltimore City recreation centers: Formative research findings. Experimental Biology, San Diego CA. April, 2016.

Presentations with published abstracts include the following:

- Segura-Perez S, Damio G, Perez-Escamilla R. Improving Access to Fresh Fruit and Vegetables among inner city residents: The NEAT trial. *FASEB J.* 2017;31(1Supplement):313.2. https://www.fasebj.org/doi/abs/10.1096/fasebj.31.1_supplement.313.2
- Schmall AM, Trude A, Gittelsohn J. Process evaluation of a youth-mentor led childhood obesity prevention intervention at urban recreation centers. *FASEB J.* 2017; 31(1_supplement): lb456. https://www.fasebj.org/doi/abs/10.1096/fasebj.31.1_supplement.lb456
- Trude A, Anderson Steeves E, Lachenmayr L, Shipley C, Sato P, Gittelsohn J. (2017) Impact of a multi-level multi-component food environment/behavioral intervention on youth leaders. *FASEB J.* 2017;31(1_supplement): abstract 30.4. https://www.fasebj.org/doi/abs/10.1096/fasebj.31.1_supplement.30.4
- Benoit-Moctezuma, D, Sankavaram, K and Mehta, M. Focus groups inform children's perceptions of physical activity, screen time and sugar-sweetened beverages. *J Nutr Educ Behav.* 2017;49: S66-S67, 2017. [https://www.jneb.org/article/S1499-4046\(17\)30463-3/fulltext](https://www.jneb.org/article/S1499-4046(17)30463-3/fulltext)
- Ashburn, L., Orantes, M., Song, H. J., Mehta, M., Benoit-Moctezuma, D., & Sankavaram, K. Measuring how systems change in clinics facilitates provider education about physical activity and Referrals to community resources. *J Nutr Educ Behav.* 2017;49:S87. [https://www.jneb.org/article/S1499-4046\(17\)30414-1/fulltext](https://www.jneb.org/article/S1499-4046(17)30414-1/fulltext)

The following papers have been published, are under review, or in preparation:

- Lepe S, Goodwin J, Mulligan K, Balestracci K, Sebelia L, Greene G. Process evaluation of a policy, system and environmental change intervention in an urban school district, *J Nutr Educ Behav.* 2019;51:307-317. DOI: <https://doi.org/10.1016/j.jneb.2018.07.017>.
- Trude AC, Anderson Steeves E, Shipley C, Surkan PJ, Sato PDM, Estep T, Clanton S, Lachenmayr L, Gittelsohn J. A youth-leader program in Baltimore City recreation centers: Lessons learned and applications. *Health promotion practice.* 2018;19:75-85. <https://www.ncbi.nlm.nih.gov/pubmed/28899234>
- Anderson Steeves, E., Trude A., Shipley, C., Mejia Ruiz, M.J., Jones-Smith, J., Pollack K, Cheskin, L., Hurley, K., Hopkins, L., Gittelsohn, J. Perceptions and impact of a youth-led childhood obesity prevention intervention among youth-leaders. *J Hunger Env Nutr.* ID: WHEN-2018-0053.R1 (Under review)

- Segura-Perez S, Damio G, Perez-Escamilla R Nutrition Education, Access and Texting (NEAT): Improving access to fresh fruit and vegetables among low-income city residents. (In preparation).
- Hill TF, Sellers D, Dollahite JS. Adopting Healthy Habits in worksites: Increasing adoption and acceptability of policy, systems, and environmental changes within agencies serving low-income families. (In preparation).

Systematic Review

The systematic review was designed to address the following research question: “What is the evidence for the effectiveness of combining PSE changes with DNE, compared to either of these strategies alone, on weight status and food and nutrition behaviors related to obesity prevention?”

The criteria for including articles in the systematic review were established by the Systematic Review Workgroup composed of content and evaluation experts taken from the NE-RNECE leadership staff and representatives of the Steering Committee, as well as a librarian experienced in scientific systematic reviews. A three-member management team led the effort. The management team met weekly and coordinated monthly meetings of the larger workgroup. The team was responsible for planning, organizing, and guiding the review. Responsibilities included developing and registering the review protocol; directing the implementation and quality control of the review, including training the full workgroup on the protocol and associated review tools; and developing and disseminating products of the review. The team also conducted title-abstract screening and resolved conflicts in title-abstract and full text screening. The management team is currently completing data extraction and risk of bias assessments and, with the assistance of the full workgroup, will grade the evidence and interpret results.

The rest of the workgroup reviewed and approved materials drafted by the management team, including protocol content (research questions; inclusion/exclusion criteria; search strategy; and plans for data extraction, assessing risk of bias, and grading the evidence, as well as products of the review. These workgroup members conducted full text screening, participated in decisions about review conflicts that were not easily resolved, and will support the management team in grading the evidence and interpretation of results.

Management team

Alisha Gaines (Lead)

Deborah Sellers (Co-lead)

Sarah Young, MLIS (Health Science and Policy Librarian, Cornell University)

Advisors and reviewers

Jamie Dollahite

Cindy Fitch

Tisa Fontaine Hill

Barbara Lohse

Joan Doyle Paddock

Search Strategy

Inclusion criteria were organized using the following PICO strategy:

- **Problem (Domain)** – Prevention of obesity and unhealthy weight gain
- **Population** – Non-clinical, community-dwelling adults and children 2+ years in middle- and high-income countries, as defined by World Bank
- **Intervention** – In a randomized controlled trial (RCT) or quasi-experimental design, but incorporate both 1) a single PSE or DNE component and 2) a combined PSE and DNE approach
- **Comparison** – Allows for comparison of combined PSE-DNE approach to either PSE or DNE alone
- **Outcomes** – Weight status and/or food and nutrition behaviors

The search strategy was created by the Systematic Review Workgroup and, prior to execution, was peer-reviewed by a group of librarians who are experts in systematic reviews. The search included terms related to health policy and PSE interventions, nutrition education, and nutrition and food-related behavior outcomes, as well as study design terms. The full systematic review protocol was registered with International Prospective Intervention Comparison Outcomes (PROSPERO).³

The following databases were searched in 2016: MEDLINE (PubMed), CAB Abstracts (Thomson Reuters), CINAHL (EBSCO), Education Resources Information Center (ERIC) (EBSCO), PsycInfo (EBSCO), SocINDEX (EBSCO), Web of Science Core Collection, Sociological Abstracts (ProQuest), AGRICOLA (EBSCO), Embase (Ovid), PAIS Index (ProQuest), and ProQuest Dissertations and Theses. Because of the large number of articles (n=11,192) identified for possible inclusion in the review, the process has taken longer than initially anticipated. Consequently, the search was repeated in 2017 to ensure results reflected the most current literature. This resulted in an additional 1,756 articles for possible inclusion. Title and abstract screening and full text screening are complete, resulting in 39 included studies.

Although funding for the initiative has ended, because of the importance of this research question, along with the team's commitment to see it through, the management team continues to extract and code intervention and results data from these studies, to be followed by review of bias assessments using Cochrane instruments for randomized and non-randomized studies. Finally, the body of evidence will be assessed by the entire workgroup using the Grading of Recommendations, Assessment, Development, and Evaluations (GRADE) approach.⁴ Findings will be disseminated via a peer-reviewed manuscript and conference presentations. Conference presentations and submission of a peer-reviewed manuscript are expected summer 2019.

Initial results

The majority of studies were excluded because they did not include a single PSE or DNE intervention *and* a combined PSE-DNE intervention to allow for comparison of the effects of combined versus single strategies. Of the included studies, 65% were conducted in the United States, and approximately 50% were conducted in

³ [PROSPERO protocol CRD42016046859 for NE-RNECE Systematic Review](#)

⁴ [GRADE](#)

school settings. Study designs included both RCTs and quasi-experimental studies with both body weight and behavioral outcomes. A range of nutrition education approaches and a variety of PSE strategies were represented, including but not limited to policy interventions to increase access to healthy foods and PA, as well as interventions in economic (price reductions, paid leave) and physical (improved playgrounds, increased FV availability) environments.

Nationwide PSE Training Program

The PSE Training Program was developed by a Nationwide PSE Training Workgroup, led by a team at Cornell University. The Workgroup included collaborators from the PSE Change Center and had members representing all the centers.

Nationwide PSE Training Workgroup Leadership Team

Tisa Fontaine Hill (NE-RNECE and Workgroup Co-Chair)

Christina Stark (NE-RNECE and Workgroup Co-Chair)

Jamie Dollahite (NE-RNECE)

Zoe Wakoff (NE-RNECE)

Nationwide PSE Training Workgroup Members

Alice Ammerman (RNECE-South)

Catalina Aragon (RNECE-West)

Kathleen Cullinen (RNECE- North Central)

Marsha Davis (RNECE-PSE)

Molly De Marco (RNECE-South)

Karen Franck (RNECE-PSE)

Janelle Galbreath (RNECE-PSE)

Janet Kurzynske (RNECE- National Coordination Center)

Amanda Root (NE-RNECE)

Jeanmarie Salie (RNECE-PSE)

Laura Stephenson (RNECE-PSE)

Kate Yerxa (NE- RNECE)

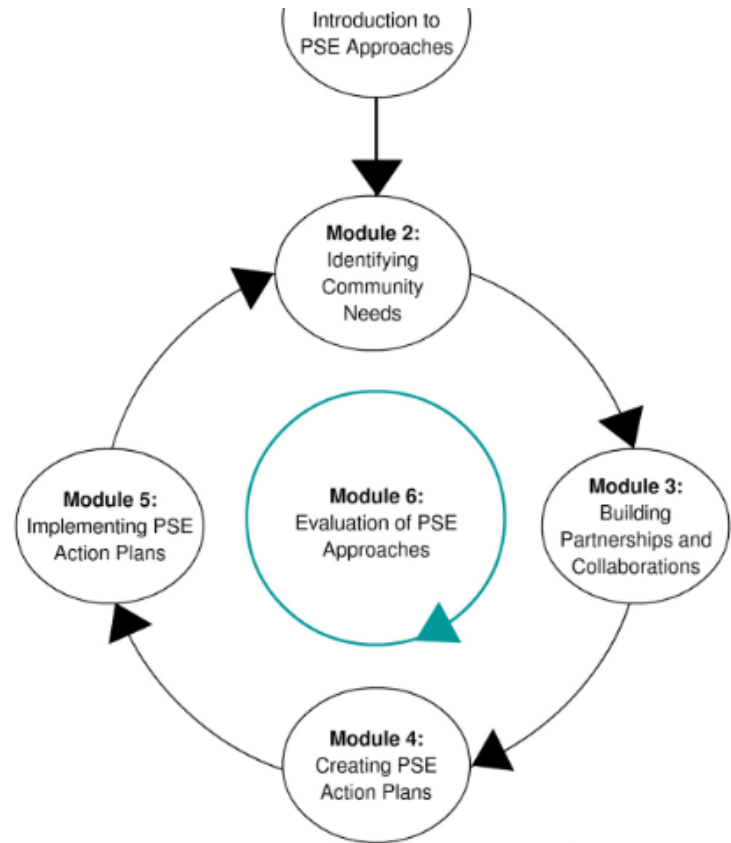
Online Course Development and Description

To identify content, a nationwide assessment of PSE training needs was conducted by the NE-RNECE in 2016. A total of 601 SNAP-Ed and EFNEP professionals representing 56 states and territories responded. Results from this assessment, along with the RNECE-PSE Change Center's list of PSE Competencies for SNAP-Ed Coordinators based on their Developing a Curriculum (DACUM) results,⁵ were used to inform the development of a six-module training course.

⁵ [Competency-based DACUM Report](#)

Course Content

Figure 1. Course Content



The final product, entitled *Making the Healthy Choice the Easy Choice: An Introduction to Policy, Systems, and Environmental Approaches to Promote Healthy Eating and Physical Activity*, was developed as a national training resource.⁶ This in-depth course, six-module course was completed and released in July 2018. The course introduces PSE approaches undertaken in multiple settings and uses an interactive workbook to guide learners through designing their own PSE approaches in their communities. Learners develop skills to assess needs, engage partners, develop and implement action plans, evaluate efforts, and create sustainability. Content delivery includes videos, interactive and practical tools, self-assessments and a graded online test at the end of each module. The course links to outside resources, including the PSE Change Center’s Interactive Map on Creating Healthy Local Places,⁷ that includes videos of PSE case examples. In addition, a one-module course, *An Introduction to Policy, Systems, and Environmental Approaches*, was released in March, 2019. This course is essentially the first module of the longer course and provides both an introduction for those new to PSE approaches and an overview for those with more experience with PSEs. Both online courses are asynchronous, self-paced, and delivered through the online eCornell platform.⁸ A personalized certificate of completion that can be used for continuing professional education credit is offered, worth 2 hours for the shorter course and 12 hours for the longer course. The graphic (Figure 1) shows the six modules and their relationships to each other. Note that Module 1 is both the beginning of the six-module course and the stand-alone single module course. Evaluation appears in the middle indicating that modules 2-6 all include some evaluation.

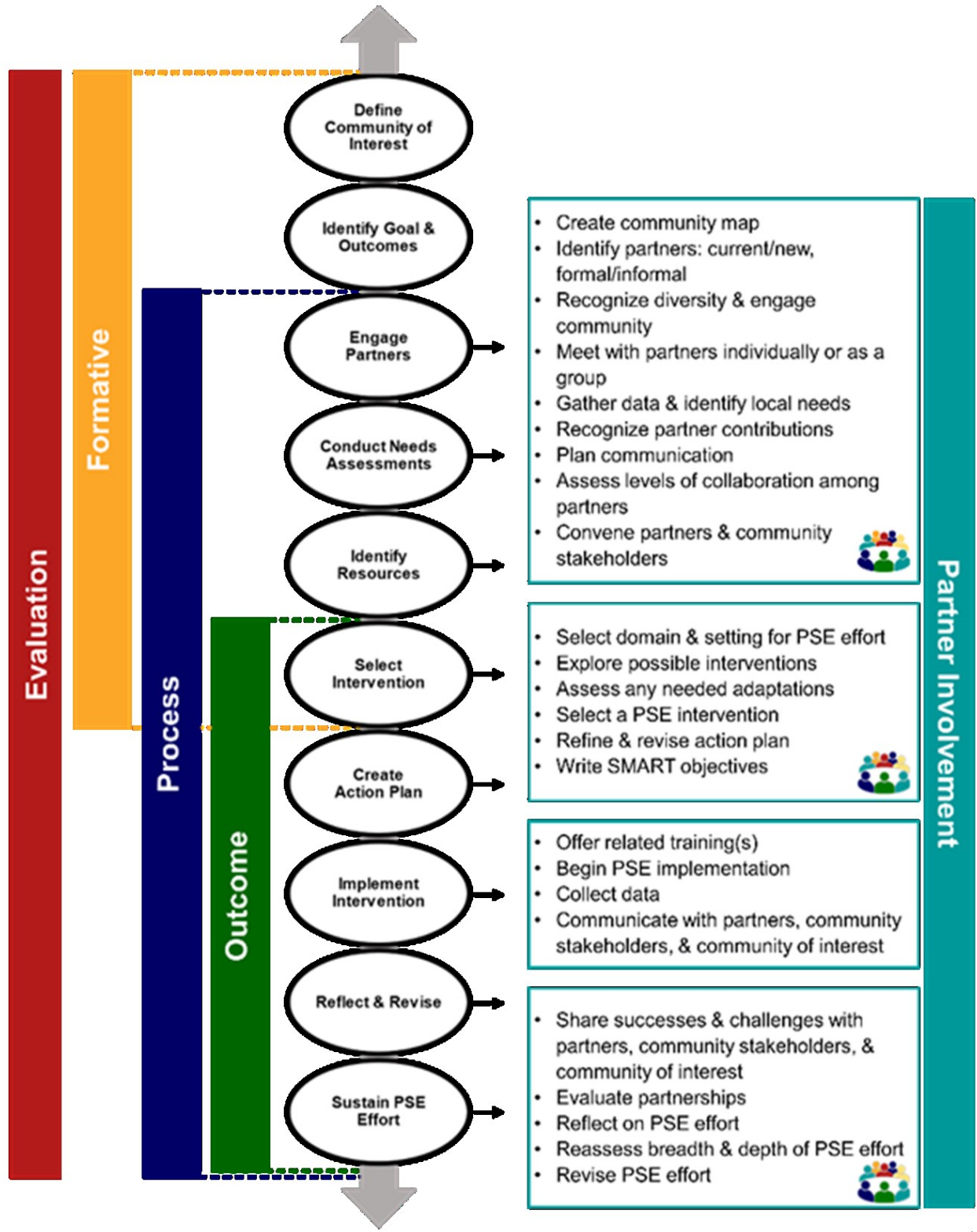
The map (Figure 2) shows the approach that the course takes to PSEs. The ovals outline specific steps necessary to the development of a PSE effort. Bars along the left of the map indicate type and occurrence of evaluation efforts. Bullets to the right of the steps provide guidance on involving partners in PSE efforts.

⁶ [PSE Training Program](#)

⁷ [PSE Change Center “Creating Healthy Local Places” Interactive Map](#)

⁸ [PSE Training Program](#)

Figure 2. Map of PSE Approaches



Course enrollment to date

As of March, 2019, over 500 learners had enrolled in the course with 144 completing all six modules. Enrollees have one year to finish the in-depth course. Module 1 was released on March 1, 2019 as a stand-alone course targeting learners such as professional and paraprofessional educators, community members, dietitians, dietetic and public health students, and others who are interested in background information, but may not be positioned to develop their own PSE efforts. Enrollment in the six-module course continues to increase and enrollment in the stand-alone module has just begun.

Three presentations of the PSE course have occurred at national meetings and two manuscripts for publication in a peer reviewed journal are in process.

Presentations/Publications

- Stark C, Hill TF, Dollahite J. What we mean by policy, systems and environmental changes: A nationwide training for SNAP-Ed and EFNEP professionals. *J Nutr Educ Behav.* 2016;48:S146.
- Hill TF, Stark C, Wakoff Z, Dollahite J. Development of an online training to build capacity of public health professionals in policy, systems, and environmental approaches (PSEs) targeting nutrition and physical activity. American Public Health Association. San Diego, CA, November 2018.
- Dollahite J. Making the Healthy Choice the Easy Choice: An introduction to policy, systems, and environmental approaches to promote healthy eating and physical activity. National EFNEP Meeting. Washington, DC, March 14, 2019.
- Hill TF, Stark C, Sellers D, Scott Pierce M, Dollahite J. Policy, Systems and Environmental Approaches: Assessing training needs of nutrition educators. *J Nutr Educ Behav.* (In preparation)
- Hill TF, Stark C, Wakoff Z, Sellers D, Scott Pierce M, Dollahite, J. Making the Healthy Choice the Easy Choice: An online training for nutrition and public health professionals engaged in policy, systems, and environmental approaches. *J Nutr Educ Behav.* (In preparation)

NE-RNECE's Efforts Supported the RNECE's Objectives

Given the resource intensity of combining PSE and DNE efforts, it is important to understand if there is a value-added effect in order to justify this approach for federal nutrition programming with low-income populations. This was the overall justification for the approach of the NE-RNECE, which contributed to the evidence-base that supports the effectiveness of DNE of low-income audiences delivered in conjunction with PSE approaches and by expanding training available for PSE efforts nationwide. The center's work supported the RNECE Initiative's overarching goal of improving "the health of low-income Americans through multiple integrated strategies, including complementary nutrition education and public health approaches, particularly as pertains to SNAP-Ed and EFNEP."

The center's work specifically supported four objectives of the RNECE Initiative:

1. **Strengthen the evidence-base on effective nutrition education/obesity prevention programs for diverse population groups – i.e. identify and confirm what works.**

Two of the center's three initiatives supported this objective by investigating the combined effects of DNE and PSE strategies. The **signature research program** consisted of the five intervention projects described above. Two of the projects examined the additive effects of combining PSE and DNE strategies, as compared to PSE or DNE strategies alone. Two interventions employed a combined PSE and DNE approach. The fifth project was primarily DNE with a dose of PSE too low to see an effect. The **systematic review** continues to focus on identifying and evaluating empirical research designed to differentiate the additive effect of combined PSE and DNE strategies to prevent obesity from the effect of either approach delivered alone. Inclusion criteria will allow for conclusions regarding the effectiveness of interventions conducted to date with children and adults in multiple settings across the globe (65% in the U.S.); this comprehensive review has not previously been conducted. Almost 13,000 citations were identified, and approximately 600 entries that provided evidence from interventions that included both PSEs and DNE were fully reviewed. Relatively few of these citations reported research designs that allowed an additive effect to be assessed, resulting in 37 studies that will be included in the final review.

2. **Evaluate the long-term effectiveness of nutrition education/obesity prevention interventions for disadvantaged and underserved populations and opportunities for new research.** The NE-RNECE contributed insights into the effectiveness of interventions based on process evaluation data and some outcome data, but was limited in its ability to evaluate the long-term effectiveness of any interventions due to time and funding constraints. Four of the projects under the **signature research program** were funded in June of 2015 for one year, with the plan of continuing funding for an additional year for those making satisfactory progress. While three of the four were making progress, funding was terminated at the end of the first year due to the administrative decision to end funding for the overall RNECE Initiative a year earlier than expected. Projects of this complexity take months to establish the PSEs and to recruit participants, so no longitudinal data could be collected in such a short time frame. The fifth, the Cornell project, received some internal funding that allowed it to continue for a second year. However, the PSEs were not underway until the second year, and so time and funding limitations again precluded obtaining longitudinal data. Four of the research projects have pilot data and processes that can be built on in new research to expand the evidence-base given more time, money, and participants. With additional funding, the Hartford Hispanic Health Council Project is positioned to have that work extended to investigate longitudinal effects of the promising results shown to date.
3. **Identify and create research collaborations and synergistic relationships among researchers and EFNEP/SNAP-Ed program directors, universities and other implementers, and state and federal agencies.**

The NE-RNECE contributed to this objective by identifying possible research collaborations between EFNEP/SNAP-Ed program directors and university researchers through the responses to the original request for applications (RFA) for the *signature research program* released in the first year of the center's funding. Ten applications, representing eight of the 12 states in the region, were submitted. While there is no evidence of whether or not the unfunded proposals created sustainable program-research relationships, there is evidence the five funded projects did. In addition, both the center's Steering Committee and Stakeholder Committee helped build new relationships among EFNEP and SNAP-Ed state-level staff, and between SNAP-Ed implementing agency staff and researchers. The Research Committee built awareness of EFNEP and SNAP-Ed programming and research being conducted on these programs through the center. Overall, the relationships established were widespread in terms of type and geography, namely between program and research; within and across states, program levels, universities, state agencies, and regional staff; and across regional and PSE centers.

4. Enhance the impact of state and community nutrition education and obesity prevention efforts by providing the public health-related training and evidence that practitioners need for improving nutrition and health behaviors, environments, and policies in ways that are equitable, efficient, and sustained over time.

The NE-RNECE was the lead center contributing to this objective, working in close collaboration with the RNECE PSE Change Center and the Nationwide Training Workgroup representing all RNECE regions, on development and delivery of the *nationwide PSE training program*, *Making the Healthy Choice the Easy Choice: An Introduction to Policy, Systems, and Environmental Approaches to Promote Healthy Eating and Physical Activity*. The training meets the needs of nutrition education practitioners new to PSE approaches, as well as those with existing PSE efforts, but who need to build their knowledge and skills. It is also useful to supervisors of these educators and state leaders, so they can better support those doing PSE work. In addition, a shorter online course, essentially the first module of the longer course, is available for those who are interested in background information, but may not be positioned to develop their own PSE efforts. Building the capacity of staff to use multiple integrated strategies will increase the reach and effectiveness of programs in meeting goals to improve population health. Both training courses are available on eCornell,⁹ a professional development website maintained through Cornell University. One primary goal for delivering these courses through eCornell is to ensure their sustainability beyond the existence of the NE-RNECE. The cost is affordable for EFNEP and SNAP-Ed practitioners, who are charged a reduced rate of \$100 for the six-module course, and \$31 for the one-module course. A registration link is provided on NIFA's RNECE site¹⁰ and on FNS's SNAP-Ed Connection.¹¹

In summary, the NE-RNECE contributed substantially to the goals and objectives of the national RNECE initiative. New relationships and collaborations were established across the northeast region among researchers and program implementers, as well as among researchers, program implementers, and state agencies. In addition, the NE-RNECE state leadership built strong new partnerships with the leadership in other regions, particularly through the development of the nationwide training program. Lessons were learned

⁹ [PSE Training Program](#)

¹⁰ [NIFA RNECE Accomplishments - PSE Training](#)

¹¹ [SNAP-Ed Connections online trainings](#)

about the implementation of PSEs through the signature research program. The evidence-base was, and will be, added to in two ways: through the results of the systematic review, and through publication of the results, including process evaluation results, from the signature research program. The nationwide PSE training program, *Making the Healthy Choice the Easy Choice: An Introduction to Policy, Systems, and Environmental Approaches to Promote Healthy Eating and Physical Activity*, provides an important new resource for building the capacity of educators nationally to improve nutrition and health behaviors among low-income populations in their communities.

APPENDICES

Appendix A

Stakeholder Committee		
	Name/Title/Institution	Affiliation/Role in Center
CT	Ann Ferris, Professor Emerita, Founding Director, Executive Committee member, Center for Public Health and Health Policy, University of Connecticut	NE-RNECE Steering Committee and Research Advisory Group; 1862 land-grant university
CT	Grace Damio, Director of Research & Service Initiatives, Hispanic Health Services, Hartford	NE-RNECE Steering Committee; SNAP-Ed Implementing Agency, Hispanic Services
CT	Linda Drake, EFNEP Director, CT SNAP-Ed Food Security Project Director, University of Connecticut	1862 land-grant university
DE	Donna Brown, Interim Associate Dean, Program Leader, Family & Consumer Science, Delaware State University Cooperative Extension	NE-RNECE Steering Committee; EFNEP, 1890 land-grant university
DE	Sue Snider, EFNEP Coordinator, SNAP-Ed Coordinator, Professor, University of Delaware	1862 land-grant university, urban
DC	Lillie Monre-Lord, EFNEP Leader, University of District of Columbia	EFNEP, 1862 land-grant university, urban
DC	Sara Beckwith, DC SNAP-Ed Coordinator, DC DOH	SNAP-Ed, DOH
MA	Pamela Griffin, Nutritionist, SNAP-Ed Coordinator, USDA FNS, Northeast Regional Office	SNAP-Ed, USDA FNS
MA	Alicia McCabe, Massachusetts State Director, Cooking Matters/No Kid Hungry	SNAP-Ed Implementing agency
MA	Lindiwe Sibeko, Assistant Professor, Nutrition Extension, School of Public Health and Health Sciences University of Massachusetts	1862 land-grant university
MA	Lisa Sullivan-Werner, EFNEP & SNAP-Ed Leader, Interim NEP Director, University of Massachusetts	1862 land-grant university
MD	Lisa A. Lachenmayr, SNAP-Ed Leader, University of Maryland	1862 land-grant university
MD	Mira Mehta, EFNEP Leader, University of Maryland	1862 land-grant university
MD	Virginie Zoumenou, EFNEP Leader, University of Maryland Eastern Shore	1890 land-grant university
ME	Joan Ingram, SNAP-Ed Program Manager, School of Community/Population Health, University of New England	SNAP-Ed Implementing agency, rural state
ME	Dora Ann Mills, Vice President for Clinical Affairs University of New England in Maine	SNAP-Ed Implementing agency, rural state
ME	Kate Yerxa, Associate Extension Professor, University of Maine Cooperative Extension	NE-RNECE Steering Committee; EFNEP, 1862 land-grant university

Stakeholder Committee		
	Name/Title/Institution	Affiliation/Role in Center
NH	Debbie Luppold, EFNEP Coordinator, SNAP-Ed Coordinator, Extension Professor/Specialist, Youth and Family, University of New Hampshire	1862 land-grant university, small state
NJ	Doris Chin, Nutritionist & SNAP-Ed Coordinator, USDA FNS, Mid-Atlantic Regional Office	SNAP-Ed, USDA FNS
NJ	Karen Ensle, County Extension Dept. Head, Family and Community Health Sciences, Rutgers University	1862 land-grant university, rural/urban mix
NJ	Kathleen Morgan, Professor/Department Chair, Family & Community Health Science, Rutgers University	1862 land-grant university, rural/urban mix
NJ	Debra Palmer, EFNEP Coordinator, SNAP-Ed Director, Associate Professor, Rutgers University	1862 land-grant university, rural/urban mix
NY	Barbara Lohse, Professor, Director, Wegmans School of Health and Nutrition, Rochester Institute of Technology	NE-RNECE Steering Committee and Research Advisory Group; SNAP-Ed
NY	Lisa Irving, Project Manager, OTDA	State OTDA
NY	Joan Paddock, Sr. Extension Associate, Division of Nutritional Sciences, Cornell University	Program Coordinator – NE-RNECE, EFNEP
NY	Laura Sugarwala, Nutrition Resource Manager, FoodLink, Rochester	Non Profit, SNAP-Ed implementer
NY	Patricia Race, Associate Director for Nutrition Policy and Outreach, NYSDOH - Division of Nutrition	State Health Department, Policy development
PA	Christine Brennan, SNAP-Ed Project Director, Pennsylvania State University	1862 land-grant university, large state, rural/urban mix
PA	Marilyn Corbin, Extension Program Leader and Professor, Penn State University	1862 land-grant university, large state
PA	Muffin Friedman, Director, Eat.Right.Now Program, School District of Philadelphia	SNAP-Ed Implementing agency, School District of Philadelphia
PA	Elise Gurgevich, Nutrition Links State Coordinator, Pennsylvania State University	1862 land-grant university, large state, rural/urban mix
PA	Robin Rifkin, Consultant, SNAP-Ed Collaborator	Nutritionist, Trained facilitator
PA	Denise Wall, SNAP-Ed Assistant Project Director, Pennsylvania State University	1862 land-grant university, large state, rural/urban mix
RI	Katie Mulligan, EFNEP Program Coordinator, University of Rhode Island	1862 land-grant university, small state
RI	Linda Sebelia, Adjunct Professor, Department of Nutrition and Food Sciences, University of Rhode Island	1862 land-grant university, small state
VT	Amy Davidson, EFNEP Coordinator, Nutrition Education Coordinator, University of Vermont	1862 land-grant university, rural state

Stakeholder Committee		
	Name/Title/Institution	Affiliation/Role in Center
WV	Cindy Fitch, Associate Dean, Programming and Research, Extension Service, West Virginia University	NE-RNECE Steering Committee; EFNEP/SNAP-Ed, 1862 land-grant university
WV	Gina Taylor, Interim Director for Families & Health programs, Extension Service, West Virginia University	1862 land-grant university, small, rural state
WV	Kristin McCartney, SNAP-Ed Coordinator, Extension Specialist, Extension Service, West Virginia University	1862 land-grant university, small, rural state
WV	Gina Wood, EFNEP Coordinator, Extension Specialist and Dietitian, Extension Service, West Virginia University	1862 land-grant university, small, rural state
WV	Kelli Batch, EFNEP Coordinator, Assistant Program Director, 4-H Youth Development, West Virginia State University	1890 land-grant university

Appendix B

Research Advisory Committee	
Name/Title/Institution	Expertise
Isobel Contento, Professor, Health and Behavior Studies, Columbia University, NY	School-based nutrition education; wellness policy development & implementation; access to healthy foods in low-income communities
Kirsten Davison, Associate Professor, Nutrition & Social & Behavioral Sciences, Harvard University, MA	Family-centered interventions for childhood obesity prevention in low-income families; parent empowerment
Christine Economos, Associate Professor and Associate Director, John Hancock Research Center on Physical Activity, Nutrition, & Obesity Prevention, Tufts University, MA	Interventions addressing the interaction between exercise, diet, body composition, and the built environment on osteoporosis and obesity, starting in early childhood
Ann Ferris, Professor Emerita, Founding Director, Executive Committee member, Center for Public Health and Health Policy, University of Connecticut, CT	SNAP-Ed, public health & health policy, research, community nutrition
Tisa Hill, Extension Associate, Division of Nutritional Sciences, Cornell University, NY	PSE programming in nutrition education in EFNEP/SNAP-Ed
David Just, Professor, Applied Economics & Management, Cornell University, NY	Behavioral economics; Smarter Lunchrooms
Don Kenkel, Professor, Policy, Analysis & Management, Cornell University, NY	Cost-benefit/cost-effectiveness economics of public health & prevention interventions
Barbara Lohse, Professor, Director, Wegmans School of Health and Nutrition, Rochester Institute of Technology, NY	community nutrition, nutrition education, evaluation, SNAP-Ed
Jeff Niederdeppe, Associate Professor, Department of Communications, Cornell University, NY	Research on effective health messaging & interventions for underserved populations
Debra Palmer, Associate Professor, Nutritional Sciences, Rutgers University, NJ	Community nutrition; nutrition education; program evaluation
Ian M. Paul, Professor of Pediatrics & Public Health Sciences; PennState University, PA	Obesity prevention in early life
Rafael Perez-Escamilla, Professor, Epidemiology and Public Health; Director Public Health Practice, Yale University, CT	Nutrition; breastfeeding; public health in under-resourced populations, including Hispanic & urban populations
Marlene Schwartz, Director, Yale Rudd Center for Food Policy and Obesity, CT	Effectiveness of federal food programs for low-income individuals

Research Advisory Committee	
Name/Title/Institution	Expertise
Debbie Sellers, Director of Research & Evaluation, BCTR, Cornell University, NY	Research design/evaluation, survey methods & quantitative analysis; individual/organizational/comm. interventions; cross-sectional & longitudinal studies
Rebecca Seguin, Assistant Professor, Division of Nutritional Sciences, Cornell University, NY	Community-based nutrition/physical activity interventions; dissemination research; exercise physiology
Jennifer Tiffany, Director, Outreach & Community Engagement, Bronfenbrenner Center for Translational Research, Cornell University, NY	Community-based health education; Leader for Research Navigator program in Cornell Cooperative Extension
Jennifer Wilkins, Professor of Practice Public Health, Food Studies, & Nutrition, Syracuse University, NY	Food systems; community based approaches to increase healthy food access for low-income populations; consumer education

Appendix C
Criteria for Review of Signature Research Program Proposals

Below are the criteria used by Cornell leadership team to review and prioritize proposals for the signature research programs (100 total points possible):

1. *Project Relevance* (20 points total, including 5 points for logic model)
Relevance of the proposal to program goals as described in the RFA.
 - a. Documentation that the project is directed toward an investigation of the additive effects of skills-based DNE with PSEs to encourage healthful food and activity behaviors and wise use of food resources.
 - b. Project components (research and program delivery including PSEs and DNE) are fully integrated and necessary to address the objectives of the project, and address target audience/participant needs.
 - c. Research objectives, project activities, and research methods, including methods to evaluate outputs and outcomes are clearly described, adequate, and appropriate, and are reflected in the logic model.

2. *Merit of the Application* (25 points)
Completeness and adequacy of the proposal's response to the RFA programmatic requirements.
 - a. Proposed approach, personnel, activities and research methods are clearly described, suitable, and feasible.
 - b. Expected results, including outputs and outcomes, are clearly stated, measurable, and achievable within the allotted time frame.
 - c. Proposed research will contribute to filling the knowledge gap that exists regarding the additive effects of skills-based PSE plus DNE approaches.
 - d. Proposed interventions will likely lead to measurable, documented positive changes in healthful food and activity behaviors and/or wise use of food resources among low-income participants.

3. *Project Feasibility and Qualifications of Key Personnel* (25 points)
Potential of the proposal to accomplish research goals and objectives.
 - b. Roles of key personnel are clearly defined.
 - c. Experience, accomplishments and time commitments of key project personnel are sufficient to complete the proposed project.
 - d. Evidence is provided of organizational capacity and competence in the proposed area of work.
 - e. Evidence is provided of project readiness and implementation feasibility within the timeframe of the award.
 - f. Project deliverables can be completed and submitted to the NE-RNECE by the end of the funding cycle.

4. *Involvement of both Program Implementers and Researchers* (15 points)
Quality and extent of both program implementer and researcher involvement in proposal development, and probability of involvement in implementation.

5. Partnership is evident between researcher(s) and program implementers, substantiated by documentation as key personnel and/or letters of support included in the “collaborative arrangements” portion of the application.
6. Where appropriate, partnerships with other disciplines and institutions are established.
7. Program implementer and researcher involvement in project development, implementation, and evaluation is demonstrated.

5. *Capacity of Host Organization* (5 points)

Capacity and commitment of the host organization to support the success of project.

- a. Evidence of organizational commitment to low-income nutrition education/obesity prevention research and programs (EFNEP and SNAP-Ed and similar programs).
- b. Support personnel and facilities are sufficient.
- c. A clear plan is articulated for project management, including time allocated for attainment of objectives and delivery of products, maintenance of partnerships and collaborations, and a strategy to enhance communication, data sharing, and reporting among members of the project team, and with the NE RNECE.

6. *Appropriateness of requested budget* (10 points)

See funding priority above.

There were four sub-award projects that received funding under the competitive RFA. In addition, one project was funded non-competitively and internally to Cornell, meeting the same criteria as described above. The five projects, detailed below, encompassed variation in race, ethnicity, and cultural contexts of the target audience and locales where they live, as well as variation in methods of delivery of the intervention and the federal program through which they were delivered:

- One project was implemented in SNAP-Ed, one was implemented with low-income youth in collaboration with SNAP-Ed staff, and three were implemented in EFNEP.
- Three projects were conducted in urban settings, one project was conducted in a suburban setting, and one project was conducted in a rural setting at two sites within micropolitan areas.
- One project was a randomized controlled trial (RCT), and four projects used quasi-experimental designs.