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Integration of Theatre Activities in Cooking Workshops Improves Healthy Eating Attitudes Among Ethnically Diverse Adolescents: A Pilot Study

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A Pilot Study

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Abstract: *The purpose of this pilot study was to integrate theatre elements into interactive cooking workshops and assess if these experiences prompted attitude and awareness changes with adolescents about healthy eating. Over a 3-week period, 6 interactive cooking workshops were conducted by an artist-in-residence with a group of 21 low-income, predominantly Hispanic, high school sophomores. Social cognitive theory was used as a guide for lessons and outcomes assessment. Students prepared, discussed, and shared food, stories, and experiences about culture, health, and meals. Qualitative focus groups were conducted 4 weeks after the workshop series ended. The theatre-based cooking workshops elicited positive comments in attitudes about healthy eating, nutrition education, and enhanced cooking awareness among ethnically diverse youth. Results from preworkshop and postworkshop self-administered questionnaires showed positive shifts in healthy eating behaviors, beliefs,*

and attitudes. Qualitative statements supported lifestyle change, specifically by teens stating that they were eating more vegetables, trying new foods, and cooking together. Cooking education using interactive theatre engagement can positively affect high school students' attitudes toward healthful foods, eating, and culture.

reduction of individual risk of heart disease, diabetes, high blood pressure, and stroke over the life span.^{1,2} Targeting youth to cultivate self-efficacy and positive eating habits, such as increasing the number and variety of vegetables consumed, can improve health, help prevent disease, and establish lifelong behavioral skills.¹⁻³

“As a narrative art form, theatre has the unique ability to engage, entertain, and communicate complex information in an accessible manner.”

Keywords: adolescents; Hispanics; high school; theatre; cooking; school nutrition; nutrition education

Introduction

Healthy eating is central to optimal growth and cognitive development in adolescents and to the prevention and

Ethnic minority and low-income youth tend to have poorer eating habits, as well as higher risk for chronic diseases when compared with other peer groups.¹⁻⁴

Effective programs to change adolescent behaviors need to be theory based, interactive, and developmentally appropriate; intervene at multiple levels;

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and address more than the cognitive domain alone.⁵⁻⁸ Social cognitive theory (SCT) with its focus on the interplay among personal factors, the environment, and behaviors addresses many of these concerns.⁷ SCT theorizes that changes in one sphere can manifest changes in the others. The 8 constructs of SCT are self-efficacy, observational learning or modeling, emotional arousal, behavioral capability, expectation, expectancies, reinforcement, and locus of control.⁷

In designing adolescent health promotion programs, the developmental importance of self-efficacy, identity, self-esteem, peer social relationships, and independence should be considered.⁸⁻¹⁰ Despite cognitive mastery, youth are more likely to behave in reaction to emotional arousal than factual information alone.^{8,9} Cultural sensitivity is essential for credibility with youth and particularly ethnic, low-income, or otherwise disenfranchised groups.^{4,11,12} Young people tend to lack nutrition knowledge and to associate healthy foods and healthy eating with adults, the home, and unpopularity, and conversely to relate energy-dense fast food with pleasure, friendships, and social environments.⁸⁻¹³ Programs that focus solely on chronic disease prevention or longevity are less effective in reaching adolescents because of perceived invulnerability at their life stage.^{2,8,10,13,14}

Collaborative cooking classes can foster positive healthy eating attitudes and increase behavioral capability by observational learning methods.¹⁵⁻¹⁸ Another interactive method of health promotion which shows promise but is underutilized is theatre.¹⁹⁻²² As a narrative art form, theatre has the unique ability to engage, entertain, and communicate complex information in an accessible manner.²³ Individual and group storytelling and theatrical activities are interactive ways to apply the SCT concepts of self-efficacy, emotion arousal, reinforcement, and model learning.^{23,24} Performance can address the hidden, emotional aspects of food and produce meaning within the

chronicle of “lived everyday relationships.”²⁵ Grounding lessons and experiences in the reality of youth’s cultural lives can increase the perceived immediacy of the material.^{8,19,22,25}

An innovative and creative approach to school health promotion is to combine cooking classes with elements of theatre. Schools are ideal intervention points because almost all youth attend school for a considerable period of time, and children from varying risk groups can derive some benefit.⁵ Only a few school-based health promotion programs have relied on theatre, perhaps because most school health teachers have limited theatre experience or time as a result of other curricular demands.^{5,19-22} In conjunction with bicultural performance artist/chef Robert Karimi, a transdisciplinary research team (theatre, anthropology, nutrition, and wellness) developed an intervention called “Cook. Eat. Together.” (CET). The pilot results of using an artist-in-residence incorporating theatre and cooking elements into the existing language arts curriculum of an urban high school are presented. The objective was to assess if the interactive theatre and cooking workshops prompted attitude and awareness changes about healthy eating with ethnically diverse adolescents.

Methods

The research design was exploratory, using mixed methods of qualitative focus groups and a within-groups pretest-posttest design for questionnaires. Workshop participants were recruited from a sophomore language arts class at the partner high school in a low-income predominantly Latino area of South Phoenix, Arizona. All students in the class were invited to participate and given the alternative choice of a different class assignment. After providing signed informed consent from themselves and a parent or guardian, participants completed a demographic and acculturation questionnaire at the first workshop.

Quantitative questionnaire measures of attitudes, beliefs, and behaviors of healthy eating were assessed at the first and last workshops. These instruments are described below. Students participated in focus groups to evaluate their experience 4 weeks after the workshops ended to assess if any behavior or attitude changes had persisted. The research was approved and deemed exempt by the Arizona State University Institutional Review Board for the Protection of Human Subjects.

Workshop Session Structure

The CET program consisted of a series of six 2-hour workshops administered twice weekly during school time over a 3-week period. Sessions took place in a multipurpose room equipped with cooking and food preparation stations. SCT was the theoretical basis for the CET program because it complemented the premises of theatre in education which hold that people learn by observing and modeling the behaviors of others, through self-reflection, and by interaction with the environment.^{7,18} Of the 8 SCT constructs, 4 were emphasized: self-efficacy, observational learning, behavioral capability, and emotional arousal. The lesson activities and corresponding theoretical constructs are presented in Table 1.

The CET program is based on a modified version of the Plate Method and supplemented with the theatre elements of performance and storytelling.²⁵ Conceived as a simplified meal planning approach to prevent and manage type 2 diabetes, the Plate Method apportions the meal plate into 3 sections: 50% vegetable, 25% carbohydrates, and 25% protein.²⁵⁻²⁸ The Plate Method is effective, easy to remember, and can support healthy eating goals—for example, increased consumption of vegetables. Performance and storytelling were used to relate aspects of cultural identity to memories and emotions about food as experienced in family and social settings. The emphasis on storytelling, group learning,

Table 1.

Workshop Session Lesson Activities and Social Cognitive Theory (SCT) Theoretical Construct Applications for Cook.Eat.Together. Program.

	Lesson Activities	Social Cognitive Theoretical Construct Applications ^a
Session 1	Interactive and sensorial engaged lesson incorporating kinesthetic embodiment of foundational skills, humor, and play in the collective preparation of food <ul style="list-style-type: none"> • Instruction on food and kitchen safety • Vegetable Starch Protein (VSP) Plate Method interactive demonstration • Personal recall of food and memories activity and discussion among peer groups and in front of all 	Through observational learning, interaction, and doing, students develop self-efficacy and behavioral capability of skills needed for cooking a dish compliant with the VSP Plate Method Food preparations provide internal reinforcements, whereas consumption provides external reinforcement Food and memory activity encourages an awareness of reciprocal determinism and food
Session 2	Interactive and sensorial engaged lesson building on prior skills and focusing on <ul style="list-style-type: none"> • How to select healthful ingredients • How to interpret recipe instructions • Sensory and emotional engagement through food preparation, poetry, and stories, both written and oral 	Ingredient selection and recipe interpretation increases expectations and self-efficacy around healthy cooking experience Food preparation and communal eating builds behavioral capability, internal and external reinforcement, reciprocal determinism, and self-efficacy Sense writing engages reciprocal determinism and internal reinforcement of the theatrical cooking experience
Session 3	Interactive lesson using theatre games, group activities, and discussion to solve problem of “How to make VSP delicious?” <ul style="list-style-type: none"> • Aesthetic • Sensory • Pleasurable qualities of healthful eating 	Engagement with problem through kinesthetic, written and verbal responses provokes qualities of reciprocal determinism, and expectations Theatre games ^b build awareness of expectations, reciprocal determinism, and self-efficacy Decision making, communication, and social skills of group activity enhances self-efficacy Food preparation provides experience of behavioral capability, internal and external reinforcement, and self efficacy
Session 4	Interactive lesson using discussion, modeling and creative writing to focus on <ul style="list-style-type: none"> • Portion moderation • Emotional aspects of food 	Discussion and modeling of moderation engages behavioral capability, reciprocal determinism, self-efficacy, and observational learning Discussion of food metaphors and emotions provokes reciprocal determinism Food consumption provides both internal and external reinforcements and behavioral capability
Session 5	Lesson using problem-based learning approach and poem sharing to focus on <ul style="list-style-type: none"> • Creative ways to engage an audience around healthful eating • Communal aspects of food • Role of fruit in a balanced plate 	Problem-based approach enhances self-efficacy Sharing of poems engages reciprocal determinism, expectations, and internal and external reinforcements, as well as expressions of self-efficacy Performance preparation engages observational learning, behavioral capacity, reciprocal determinism, self-efficacy, and expectations
Session 6	Lesson on planning and rehearsing an interactive cooking performance focusing on <ul style="list-style-type: none"> • Creatively and effectively communicating <ul style="list-style-type: none"> • VSP plate method • Portion moderation • Healthful ingredients • Rehearsing activities and roles for performance 	Rehearsal engages observational learning, behavioral capacity, reciprocal determinism, self-efficacy, and expectations

^aDefinition of SCT constructs in order of appearance in table: observational learning or modeling, learning by watching others complete a task or behavior; self-efficacy, an estimation of one's ability to perform a task, action, or behavior; behavioral capability, having the knowledge and skills necessary to engage in a particular behavior; internal reinforcement, reward or punishment for a behavior that comes from within one's self; external reinforcement, reward or punishment for a behavior that comes from another person, agency, or environment; reciprocal determinism, the interaction of the individual, behaviors, and environment; expectations, anticipated behavioral outcomes.⁷

^bRole playing, movement, scenarios, or designing tableaux.

and peer sharing in the CET program provided a positive social-affective context that can influence food preferences and consumption patterns.^{1,21,29}

The workshops focused on a select number of personal, behavioral, and socioenvironmental/affective factors that were suitable to address using theatre techniques. These personal factors addressed included attitudes toward healthy eating. Students told stories about foods, eating practices, and memories. Behavioral aspects highlighted were using the visual plate portion method as a method for healthy eating; trying new foods, spices, and cooking techniques; selecting healthy foods more often; and increasing the amount of vegetables included in meals. Key affective factors were involving peers in the experience of meal preparation, and engagement through shared storytelling, embodied risk taking, and theatre game playing (Table 1).

At each of the 6 sessions, healthier eating options at school and at home were encouraged through the use of collaborative cooking preparation, shared storytelling, and theatre practices in the classroom. Each new recipe was framed through prompts asking youth to share personal stories around food and health. The chef/facilitator modeled effective and engaging storytelling techniques that had the added benefit of creating positive mentorship in relational engagement. The chef's/facilitator's own stories often featured his Latino and Middle Eastern culture but encompassed other cultures as well. Theatre games, such as story creation through movement, role-play, devising tableaux (still images of scenes), scenario building, and focused creative writing, helped students envision and embody new principles and attitudes about healthy eating. Preparing foods and engaging in the theatrical experiences helped create a sense of camaraderie and teamwork among the participants (Table 1).

Questionnaires

Demographic and Acculturation Instruments. The students provided demographic information such as gender, age, birthplace, ethnicity, and race. Acculturation status was assessed by the Bidimensional Acculturation Scale (BAS).³⁰ The BAS assesses both English and Spanish preferences, use of media, and social engagement in addition to language use alone. Theoretically, it reflects cultural affinity in at least 2 dimensions.

Beliefs, Attitudes, and Behaviors Questionnaires. A 13-item instrument that measured "healthy eating beliefs" was adapted from similar questions on behavioral and control beliefs about low-fat diets developed by Armitage and Connor.³¹ Questions were rephrased to ask about a healthy diet in general rather than a low-fat diet. A second 8-item questionnaire was developed to reflect concepts presented in the workshop sessions. These questions asked about food behaviors, eating beliefs, role of culture, and ability to engage in storytelling. Both instruments used 5-point Likert scale response categories of 1 = *strongly disagree*, 2 = *disagree*, 3 = *neither agree or disagree*, 4 = *agree*, and 5 = *strongly agree*.

Data Analysis

Focus Groups. Focus group discussions were conducted with 4 separate groups of students 4 weeks after the final workshop, using a semistructured question guide. One researcher moderated the focus group while another researcher took field notes. Over the course of 45 to 90 minutes, a series of open-ended questions were asked about what participants most remembered; what they learned; what they liked and did not like about the workshops; how their learning transferred to other areas of their lives; how they shared their learning with family, friends, and community members; the role of theatre and storytelling in their experience; and their suggestions for future workshops. Each focus group was digitally recorded with the consent of participants and transcribed.

Questionnaires. Principal components analysis (PCA) was applied to the individual items of the "healthy eating beliefs" questionnaire to identify any underlying thematic constructs. One main factor explained 29% of the observed variation. The individual question scores were summed and divided by 5 to create a Likert scale. The thematic construct represented was "negative attitudes toward healthy foods." A lower score indicated more positive attitudes toward healthy eating. Reliability analysis for scale internal consistency was high, as evidenced by a Cronbach's α of .84.³² The scale was normally distributed. This factor consisted of questions 1 to 5 shown in Table 2.

Demographic and questionnaire data were entered and analyzed in SPSS v 21 (IBM, Armonk, NY). Differences between pretest and posttest measures were analyzed using the likelihood ratio for categorical variables and 1-way analysis of variance to compare group means for continuous variables.³² An α level equal to .05 or less was considered statistically significant. The transcriptions of the focus groups were reviewed by the team members to identify trends and emerging themes. Two members of the team developed a coding schema and independently coded the transcripts. These codes were entered into the text analysis software program MAXQDA (Berlin, Germany) to more easily assess salience of themes.

Results

Of the 27 sophomore-level high school students, 21 attended at least 5 of the 6 workshops and provided prequestionnaire and postquestionnaire data; 4 students declined to participate further after the first workshop (3 boys and 1 girl). One boy dropped out after the third workshop, and 1 girl attended all 6 sessions but was excluded from analysis because parental consent was not obtained. Of those who completed the program, 76% were female ($n = 16$) and 24% were male ($n = 5$). The majority self-identified as Hispanic (80%), and the

Table 2.

Preintervention and Postintervention Attitudes About Healthy Eating Beliefs for CET High School Workshop Participants Adapted From Armitage and Connor.³¹

Belief Statement ^a	Strongly Disagree (1)	Disagree (2)	Neither Agree nor Disagree (3)	Agree (4)	Strongly Agree (5)
1. I find it hard to resist foods which are unhealthy ^b					
Preintervention	0	2 (10%)	5 (26%)	10 (53%)	2 (10%)
Postintervention	1 (5%)	0	12 (60%)	7 (35%)	0
2. Eating a healthy diet reduces my enjoyment of food					
Preintervention	1 (5%)	7 (35%)	10 (50%)	2 (10%)	0
Postintervention	4 (20%)	9 (45%)	6 (30%)	1 (5%)	0
3. I do not always know which foods are healthier					
Preintervention	1 (5%)	3 (15%)	5 (25%)	9 (45%)	2 (10%)
Postintervention	2 (10%)	4 (20%)	6 (30%)	7 (35%)	1 (5%)
4. Food that is healthy does not taste nice					
Preintervention	1 (5%)	9 (45%)	8 (40%)	2 (10%)	0
Postintervention	3 (15%)	11 (55%)	6 (30%)	0	0
5. Eating a healthy diet means eating boring food ^c					
Preintervention	1 (5%)	7 (35%)	8 (40%)	4 (20%)	0
Postintervention	4 (20%)	9 (45%)	7 (35%)	0%	0
6. Unhealthy foods are more widely available than healthy foods					
Preintervention	0	1 (5%)	5 (25%)	7 (35%)	7 (35%)
Postintervention	0	3 (15%)	2 (10%)	6 (30%)	9 (45%)
7. To eat a healthy diet requires strong motivation					
Preintervention	0	2 (10%)	5 (25%)	8 (40%)	5 (25%)
Postintervention	0	2 (10%)	6 (30%)	9 (45%)	3 (15%)
8. By eating a healthy diet, I will reduce the risk of heart disease and diabetes					
Preintervention	0	0	2 (10%)	14 (70%)	4 (20%)
Postintervention	0	0	1 (5%)	14 (70%)	5 (25%)
9. Eating a healthy diet helps maintain lower weight					
Preintervention	0	0	8 (40%)	9 (45%)	3 (15%)
Postintervention	0	0	5 (25%)	10 (50%)	5 (25%)
10. Not eating a healthy diet would make me feel guilty					
Preintervention	0	5 (25%)	12 (60%)	3 (15%)	0
Postintervention	0	6 (30%)	12 (60%)	0	2 (10%)

(continued)

Table 2. (continued)

Belief Statement ^a	Strongly Disagree (1)	Disagree (2)	Neither Agree nor Disagree (3)	Agree (4)	Strongly Agree (5)
11. Eating a healthy diet costs too much money					
Preintervention	1 (5%)	10 (50%)	7 (35%)	2 (10%)	0
Postintervention	3 (15%)	9 (45%)	5 (25%)	3 (15%)	0
12. Eating a healthy diet takes too much time					
Preintervention	1 (5%)	10 (50%)	8 (40%)	1 (5%)	0
Postintervention	13 (15%)	9 (45%)	6 (30%)	2 (10%)	0
13. Unhealthy foods are convenient					
Preintervention	0	0	13 (65%)	5 (25%)	2 (10%)
Postintervention	1 (5%)	1 (5%)	9 (45%)	6 (30%)	3 (15%)

Abbreviation: CET, Cook. Eat. Together.

^aItems 1 to 5 comprised the thematic construct “negative attitudes toward healthy food” identified by principal components analysis.

^bLikelihood ratio = 0.034.

^cLikelihood ratio = 0.050.

other 4 students identified themselves as African American ($n = 3$) and Native American ($n = 1$); 40% ($n = 8$) were classified as bicultural according to the BAS,³³ and 15% ($n = 3$) were foreign born.

The preintervention and postintervention “healthy eating beliefs” questionnaire responses are shown in Table 2. Two questions (“I find it hard to resist foods which are unhealthy,” $P = .034$, and “Eating a healthy diet means eating boring food,” $P = .050$) showed significant improvements between preintervention and postintervention responses. Of the remaining 11 questions, 8 showed shifts in the desired direction of improvement in healthy eating beliefs and attitudes. The summary Likert scale representing “negative attitudes toward healthy foods” decreased significantly from pretest measures (range = 2.67-3.30; $\mu = 2.97$) to posttest measures (range = 2.29-2.82, $\mu = 2.56$); $P = .036$. These changes in scale represent a decline in negative attitudes toward healthy foods.

Table 3 shows the response distributions for the 8 behavior and beliefs questions based on workshop

lesson materials. The question, “I believe my culture is a resource for healthy behaviors,” showed a significant increase after the workshop ($P = .040$), with the other 7 items exhibiting trends in the desired directions: for example, increased fruit and vegetable consumption, broiled or baked foods over fried, and portion size moderation.

Across the 4 focus groups, the 2 aspects of the CET workshops most commonly noted as memorable by the participants were (1) cooking as part of a group (“Because we learn as a team. . . . We learn from each other not from just the teacher”), and (2) the theatre elements, in particular the use of stories. Participants mentioned the ability of stories to do more than just communicate but also engage emotions and provoke memories (“It brought memories to you from the food”).

Participants most frequently mentioned specific cooking techniques they had learned (“knife skills; how to hold an onion”) and the Plate Method. Students spoke of using the Plate Method to assess how balanced the plates served in their homes or restaurants were. In

addition to specific cooking techniques and the Plate Method, workshop participants noted that cooking healthy was possible, enjoyable, and tasty. One participant explained,

“[C]ooking healthy isn’t boring. Like it’s fun to do. Usually people think that healthy foods are boring, like not fun to eat, that they don’t taste good but they do.”

Health-related behavior change as a result of participating in the workshops was reported by the majority of participants in the focus groups. A reported increase in eating vegetables was the most frequent behavior change stated in the focus groups. Participants talked about having an increased awareness of aspects of their behavior, particularly diet, which could be amenable to change. They described an increased willingness to try new foods and practices. Specific examples given included tasting new vegetables (“I’m not open minded like trying new foods . . . and now I am actually trying”) and cooking (“It made me open up to

Table 3.

Preintervention and Postintervention Behavior and Beliefs About Topics Presented in CET High School Workshops.

Behavior or Belief	Strongly Disagree (1)	Disagree (2)	Neither Agree nor Disagree (3)	Agree (4)	Strongly Agree (5)
1. I eat fresh fruits and vegetable snacks					
Preintervention	0	3 (16%)	7 (37%)	5 (26%)	4 (21%)
Postintervention	0	2 (10%)	2 (10%)	12 (60%)	4 (20%)
2. I eat more vegetables than meats or starches					
Preintervention	3 (16%)	6 (32%)	6 (32%)	4 (24%)	0
Postintervention	1 (5%)	6 (30%)	10 (50%)	1 (5%)	2 (10%)
3. I eat broiled or baked foods instead of fried foods					
Preintervention	0	6 (33%)	12 (67%)	0	0
Postintervention	1 (5%)	4 (20%)	11 (55%)	4 (20%)	0
4. I am conscious of portion size and choose moderation					
Preintervention	0	3 (16%)	12 (63%)	3 (16%)	1 (15%)
Postintervention	0	1 (5%)	10 (50%)	7 (35%)	2 (10%)
5. I believe it is easy to make healthy changes					
Preintervention	1 (5%)	6 (30%)	3 (15%)	8 (40%)	2 (10%)
Postintervention	1 (5%)	2 (10%)	7 (35%)	8 (40%)	2 (10%)
6. I believe my culture is a resource for healthy behaviors ^a					
Preintervention	0	6 (32%)	5 (26%)	7 (37%)	1 (5%)
Postintervention	0	1 (5%)	12 (60%)	7 (35%)	0
7. I believe that cooking healthy meals is fun					
Preintervention	0	1 (5%)	6 (30%)	10 (50%)	3 (15%)
Postintervention	0	0	3 (15%)	8 (40%)	9 (45%)
8. I am sure that I can engage others through storytelling					
Preintervention	0	3 (15%)	5 (25%)	10 (50%)	2 (10%)
Postintervention	0	1 (5%)	2 (10%)	13 (65%)	4 (20%)

^aLikelihood ratio $P = .040$.

cooking by myself and cooking for myself”).

An additional finding was that students experienced an increase in confidence in their team-building skills after participating in the workshops. Cooking together was frequently mentioned

favorably (“People would get into a group and then they would discuss what they want to cook, and then they planned it out on a piece of paper, the ingredients they need, and they just planned everything out from there”; “We all cooked together and we talked about

stories that reminded us of what we smelled”).

Participants noted that working and learning in a group had additional benefits because it fostered collegiality (“When you guys cook and eat together it brings you guys closer”; “It is like a

family, you work together to accomplish one thing”), was more engaging (“You don’t get that bored”; “When you cook together it makes it more exciting”), was more efficient (“Things get done quicker”), and promoted interactive learning (“We learn from each other, not from just the teacher”). The students gave examples of working together cooperatively (“Like one person could be cooking while some people will be chopping, some people will be washing the dishes”) and enhanced communication (“before the workshop like we really didn’t talk to each other or anything and then . . . [working] in groups that way, we had to communicate with each other”).

Overwhelmingly, the students stated in the focus groups that they would recommend participation in CET workshops to their friends, family, and peers. Participants frequently said that they taught others what they learned in the workshops and shared their recipes with others in the previous weeks. These comments suggest an extended effect of the program, and the findings speak to youth asset development and empowerment. In addition, many participants asked to be included if we conducted another series of workshops.

Discussion

The use of cooking workshops to deliver nutrition education has demonstrated efficacy in limited settings. A program called “Cooking with a Chef,” was designed to teach Head Start families culinary principles and basic nutrition. The curriculum was delivered by a chef and registered dietitian in a 6-week series composed of 2-hour segments each weekend. Although long-term results are unknown, 24-hour recalls, questionnaires, and program evaluations showed improved confidence in cooking, changes in grocery shopping habits, and program satisfaction for the family unit participants.³⁴ The use of

theatre as a means of nutrition education has received less structured evaluation. Cheadle et al¹⁹ also reported significant changes with a nutrition education theatre program with elementary school youth. Colby and Haldeman²² piloted the use of theatre activities to teach nutrition education to Latino students, with favorable results. These studies support the use of theatre or cooking with nutrition education, but they did not combine interactive cooking and theatre activities. Direct comparisons to CET are difficult because of the differences in target populations and varying methodologies. Although viewing theatre productions or cooking instruction alone can convey observational learning, without the collaborative components of hands-on cooking and participatory theatre performance activities, essential behavioral capabilities and self-efficacy may not be developed.

Unlike these other programs, CET is unique by integrating theatre elements within a healthy cooking intervention for ethnically diverse youth in an urban school setting.^{15,19} The interactive aspects of the CET curriculum empowered adolescents to teach them not only cooking skills but improved communication skills, in an effort to boost health and nutrition. It also emphasized memories and emotional response—aspects important to adolescents. The qualitative findings supported participant engagement with workshop material. Focus group responses showed thought, critical reflection, emotional involvement, and personal transformation. The participants specifically mentioned the positive experiences of preparing healthy meals, increased awareness of health behavior, and openness to trying new foods and practices. Other positive outcomes that resulted from youth participation in CET include an increase in confidence and team-building skills, based on the student’s own statements. Archuleta et al³⁵ found similar increases in group interactions and positive social

learning environment among adults with type 2 diabetes who participated in a series of interactive cooking workshops.

The curriculum, as administered, has the potential to address developmental assets such as mastery motivation, self-efficacy, personal autonomy, and positive relationships in future studies.^{8,18,19,30} They mentioned the value of peer learning and doing tasks themselves. These skills can lead to further empowerment and self-confidence—character attributes that increase lifelong success. With further development, the curriculum and nutrition education components could be used by language arts teachers without an outside chef/facilitator.

Preintervention and postintervention differences found in the questionnaire measures indicate positive attitudinal trends toward healthy eating after participation in the CET workshops. Although few differences were significant, it is notable that more students agreed they could “engage others through storytelling,” “were conscious of portion size,” and “that cooking healthy meals is fun” after participating in the workshops (Table 3). These quantitative trends support the transformations reflected in the focus group discussions.

Programs like CET are particularly useful for minority and immigrant youth who may feel disenfranchised or isolated from mainstream adolescent culture because of economic or social barriers in their communities.^{2,4,9,11,12} The sharing of stories, performance, and evocation of memories about specific foods, meals, preparation, and experiences taught students about and/or reinforced cultural rituals with each other.

The CET results support efficacy of using theatre and cooking techniques together to deliver messages. Food and storytelling are central elements to most cultures—and particularly among Latino and African Americans.^{36,37} Although students were not pointedly asked to consider culture during their activities, the use of multicultural experiences by

the chef/facilitator encouraged discussion and comparison of cultural experiences.³⁶ Highlighting cultural practices that resonate with low-income ethnically diverse youth makes the nutrition messages more real and shows them ways in which they can make subtle changes or choices.^{14,22}

The pilot study has several limitations. Most notably, the small sample size restricts the validity of quantitative analysis findings. The sample population had fewer male than female adolescents. The gender difference may be a result of there being fewer male students in the advanced language arts class or less appeal of the CET concept for male adolescents. More formative research needs to be done to address the acceptability of the CET program for male adolescents. The addition of preintervention and postintervention quantitative dietary intake measures and a nonintervention comparison group will strengthen interpretation of program efficacy. Based on the study results, future application of the CET program will be tested with a larger sample size and over a longer period of contact time with an artist in residence.

In conclusion, building on positive cultural ritual and empowering adolescents to make real-life choices in their food environment may have long-lasting positive effects for health. A key to the future success of this program is to involve not only adolescents but their families as well. Integrating theatre activities with cooking may be a more effective way of developing self-efficacy and modeling healthy eating behaviors for youth.

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