

PERCEPTIONS OF A COMMUNITY-BASED COOKING SKILLS AND NUTRITION
EDUCATION CLASS

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ABSTRACT

This dissertation examined the perceptions of a community-based cooking skills and nutrition education class that included an availability sample of adult learners who attended monthly classes offered from 2017-2018. The study was a mixed-methods research design using extant data. Participants completed a nine-question post survey. Two newly developed Likert type scales measured nutrition related self-efficacy and food resource management. Four survey questions were summed as Nutrition Empowerment Score (NES), four survey questions were summed as Food Resource Management Score (FRMS), and one open-ended question provided qualitative data. A total of 12 months of data were used for analysis. The new NES scale showed good reliability, while the FRMS scale did not meet the threshold for reliability. The relationship between NES and FRMS was statistically significant with a moderately positive relationship between the variables. The relationship between NES and the Good and Cheap, Eating Well on \$4 a Day curriculum was statistically significant, however, the relationship between the teaching kitchen environment and the class instructor were not statistically significant. Qualitative analysis revealed positive perceptions from participants related to the research variables. The curriculum and teaching kitchen used suggested knowledge gained and application to the home environment. Participants also reported social benefits from the class and a positive view of the various instructors. This study suggests that community-based organizations have a variety of low-cost options related to the teaching kitchen environment and instructor when implementing hands-on nutrition education (HONE) programs using the Good and Cheap curriculum.

DEDICATION

No one has been more important to me in the pursuit of this project than my family, friends, and church community. I would like to thank my family and friends who have cheered me on all along the way. I would also like to thank my North Shore Fellowship church community, who have prayed for me. Most importantly, I wish to thank my supportive husband, Chris, and my two children, Craig and Caroline, who provide an encouraging and loving home to return to after each day's work. Finally, I dedicate this dissertation in loving memory of my parents, Carol Ann and Bobby Craig, who gifted me with, in life, humor and, in death, endurance, two important aids for completing one's PhD. To God be the glory.

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LIST OF ABBREVIATIONS

CBPR, Community-Based Participatory Research

CHEPS, College of Health, Education, and Professional Studies

EFNEP, Expanded Food and Nutrition Education Program

FRM, Food Resource Management

FRMS, Food Resource Management Score

F/V, Fruits and Vegetables

HHP, Health and Human Performance

HONE, Hands-On Nutrition Education

IB, International Baccalaureate

IRB, Institutional Review Board

NCD, Non-Communicable Chronic Disease

NES, Nutrition Empowerment Score

RDN, Registered Dietitian Nutritionist

SNAP, Supplemental Nutrition Assistance Program

TK, Teaching Kitchen

US, United States

UTC, University of Tennessee at Chattanooga

WIC, Women, Infant, Children

CHAPTER I

INTRODUCTION

Introduction to the Chapter

Public health nutritionists are continually seeking programs that will improve the health of their clients. This dissertation describes research regarding perceptions of a particular community-based cooking skills and nutrition education class for adult clients. The first chapter presents the problem, research questions, and a brief overview of methodology used in the study. Using learning theory and building upon a long-term relationship with a community-based partner, the author seeks to offer evidenced-based guidance to her community partners and other public health nutritionists as a means of guiding future nutrition-related programs for adult participants.

Preliminary survey data were collected and analyzed in 2015 during the researcher's doctoral coursework, and this study was designed to analyze three additional years of data from 2016-2018. Initial data investigated perceived program outcomes with participation in federal food-related programs, such as the women, infants, and children (WIC) and supplemental nutrition assistance program (SNAP). This study examined perceived benefits in relationship to self-efficacy, food resource management (FRM), cooking class facilitator, curriculum, and the teaching kitchen environment. Open-ended qualitative survey questions were also added to this study, not included in the earlier data. Finally, this study extended preliminary data by examining descriptive data of the program and program participants.

Background to the Problem

Nutrition-related chronic disease is well established as a major public health problem. Noncommunicable chronic diseases (NCD) related to diet, such as obesity, cardiovascular disease, and diabetes, have been associated with shortened life expectancy and predictions of a bankrupt health care system in the United States (Ludwig, 2018). Registered Dietitian Nutritionists (RDN) are uniquely qualified to treat problems associated with food-related NCD with cost-effective, preventative methods such as cooking skills training and nutrition education (McWhorter, Raber, Sharma, Moore, & Hoelscher, 2018). Teaching kitchens, like the one used in this study, become learning laboratories for healthy life skills instruction (Eisenberg, 2018). The teaching kitchen (TK) learning environment appeals to the learner's experience, which is a valuable resource or a living textbook, where past experiences are drawn from and applied to current situations and where new experiences become a stimulus for additional learning (Merriam & Bierema, 2013). The study applied Community-Based, Participatory Research (CBPR) principles and used a Hands-On Nutrition Education (HONE) approach to the intervention and research.

The researcher previously worked as a public health nutritionist and is currently an RDN and associate lecturer in an accredited undergraduate dietetics program. The researcher's volunteer-based relationship with a local nonprofit agency provided an opportunity for a service-learning project within a community nutrition course for dietetic students. The nonprofit agency was the recipient of a grant to fund a cooking skills and nutrition education program and reached out to the RDN for assistance with coordinating, planning, implementing, and evaluating the program. Together, the agency staff, clients, and RDN prioritized increasing fruit and vegetable intake and food resource management (FRM) as program goals. Due to high participation, the

one-year grant was funded for an additional three years. Throughout the program's existence agency staff collected survey and demographic data; however, there has been no analysis of the data nor have results been discussed. Therefore, this dissertation provided an opportunity for the program's outcomes to add to the body of research related to teaching kitchens, hands-on nutrition education, and community-based participatory research.

Increased fruit and vegetable (F/V) intake and FRM are common goals public health community nutritionists (PHCN) have for their clients. High F/V intake correlates with lower incidence of food related chronic disease and F/V intake in the United States (US) consistently falls below recommended amounts. Culinary nutrition education, or Hands-On Nutrition Education (HONE), has been shown to increase F/V intake (Honrath, Wagner, & Rhee, 2018). According to the Expanded Food and Nutrition Education Program (EFNEP), FRM includes food budgeting and menu planning for healthy food intake despite a limited food budget (Adedokun, Plonski, Jenkins-Howard, Cotterill, & Vail, 2018). Culinary interventions similar to the program used in this study have revealed short-term and long-term increases in cooking confidence and self-efficacy, a reduction in intake of fast-food and convenience foods, and increased F/V intake (Bernardo et al., 2018). The program in this study focused on plant-based ingredients, provided supplemental F/V for participants to take home, and reinforced FRM messages such as planning and purchasing F/V ingredients used in demonstrated recipes.

The complexity of public health problems and solutions requires a cohesive effort from community members, practitioners, researchers, and the public and private sector organizations (B.A. Israel, Eng, Schulz, & Parker, 2012). Izumi et al. (2010) was an early adopter of CBPR in the field of dietetics, applying CBPR principles such as building on strengths and resources within the community, facilitating a collaborative and equitable partnership, and maintaining a

long-term commitment to sustainability (B.A. Israel et al., 2012). The program described in this study has been designed to mirror these and other CBPR principles and has continued to build upon a relationship between the community-based agency and the university dietetics program that has been ongoing for over five years.

O'Bannon and McFadden (2008) have developed the experiential andragogy model for applying adult learning theory in nontraditional settings. Additionally, neuroscience has added to the body of knowledge related to adult learning, noting the importance of social learning and reflection (Cozolino & Sprokay, 2006). “Experience is thus a resource and a stimulus for learning” (Merriam & Bierema, 2013, p. 106). Furthermore, reflection is a form of intentional learning used in multiple professional and learning settings to move individuals and groups towards a goal (Bolton, 2010). Hands-On Nutrition Education (HONE) relies on experiential learning to teach healthy eating skills (Hoffinger, 2016). The cooking skills intervention in this study relied upon adult and experiential learning theory to design the intervention, including culinary skills education, practice, and reflection.

Statement of Problem

The problem that this research study addressed was the need for sustainable and effective community-based nutrition interventions with measurable outcomes resulting in behavior change that targets chronic disease reduction and prevention. Food resource management (FRM) skills related to preparing healthy meals and grocery budgeting are two potential behavior changes. One interesting finding from the preliminary data was that participants of the cooking class who had never participated in a food-related program and who did not practice FRM skills benefited more from the class than participants who had participated in food-related programs or who did

practice FRM skills. These findings suggest that the class may be filling a gap in public health community nutrition. Similarly, the study also examined perceptions related to curriculum, facilitator, and teaching kitchen environment in order to offer innovative solutions for low-cost, sustainable nutrition programming within nonprofit organizations.

Purpose of the Study

The purpose of the study was to add to the research related to TK, HONE, and CBPR within the field of community nutrition. The study of the perceptions of this ongoing nutrition education and culinary skills intervention was designed to contribute to the body of knowledge in the fields of dietetics and nutrition education. Furthermore, the study sought to provide recommendations to address prevention and treatment of food-related chronic disease that can be utilized at the local level until more widespread and effective solutions, such as legislative policy, are adopted at the state or national level.

Research Questions

In order to examine research participants' perceptions of the HONE intervention, a mixed-methods study addressed three research questions:

1. What is the relationship, if any, between the Food Resource Management Score (FRMS) and Nutrition Empowerment Score (NES)?
2. What is the relationship, if any, between the cooking class elements such as curriculum, facilitator, and the teaching kitchen environment and NES?
3. What budgeting tips have participants used after attending a class?

The first two questions were examined through extant quantitative survey data collected during the research period. The third question used extant qualitative survey data also collected during the research period (Appendices B and C).

Rationale for the Study

The rationale of the study was twofold. First, in order to fully incorporate all elements of CBPR into this study the researchers were ready for interpreting and disseminating findings, the final two phases of the CBPR cycle (Barbara A Israel et al., 2010). Accomplishing these two steps would ideally add to the assessment of community strengths and dynamics, which would provide a richer community assessment for future interventions and strengthen the CBPR partnership between the university and the agency. A second rationale for the study was to further investigate the interrelatedness of the teaching kitchen and hands-on nutrition education through the lens of experiential learning related to chronic disease prevention and treatment (Hoffinger, 2016). HONE may aid clients in self-management, a key component of chronic disease prevention and maintenance, through knowledge and skills needed to help clients “achieve the motivation and support needed for initiating, realizing, and maintaining their dietary goals” (Hoffinger, 2016, p. 14).

Theoretical Framework

The theories that influenced the design and implementation of this intervention included adult learning, experiential learning, and social learning. Strategies from the four quadrants of the Kolb learning cycle were incorporated into the intervention (Merriam & Bierema, 2013). Examples of strategies used in the program at various times include food demonstrations,

structured small group reflection and discussion, documents such as recipes and shopping lists, what/if situations, creating action plans, and problem-solving activities. Culinary art education relies heavily on similar andragogy and experiential learning theory (Abdulsalam, Condrasky, Bridges, & Havice, 2017). Therefore, these theories informed the intervention as well. Reflection on recipes and food-related behaviors, situated cognition in a teaching kitchen similar to the clients' kitchens at home, and a community of learners that included dietetics faculty, undergraduate dietetic students, or agency staff, along with program participants exhibit various aspects of experiential learning theory woven throughout the intervention (Merriam & Bierema, 2013). Underscoring andragogy and experiential learning theory in nontraditional settings, like a teaching kitchen, is the experiential learning model of a nontraditional experiential learning program, which promotes personal growth and learning throughout the lifespan (O'Bannon & McFadden, 2008). The framework applied to the qualitative portion of the study was phenomenological, where the open-ended survey question assisted the researcher in further understanding of perceptions of participants from the cooking class.

Importance of the Study

The study's importance was closely related to the CBPR approach to the research. First, community-based organizations often rely on outside funding to operate programs. Studies like this one can provide evidence-based support for funding requests. Similarly, small social services agencies have limited staff, so partnerships with local universities can offer additional resources. Particular to this study were curriculum selection and instructor support for cooking classes. Research assessing program outcomes better informed both the agency and university resource allocation. Additionally, the real-life aspect of the class had important implications for dietetics

education and testing models like the nontraditional experiential learning program (O'Bannon & McFadden, 2008; White, 2017). Lastly, the study provided value to community nutritionists who, like social services agencies, often rely on limited staff and resources to achieve public health goals. The unique setting of the study, outside of the formalized nutrition education provided by large, federally funded programs like women, infant, and children (WIC) and supplemental nutrition assistance program (SNAP), will further public health community nutrition knowledge within the broader field of dietetics.

Methodological Assumptions

The study assumed that participants of the cooking class were at-risk for food insecurity due to the agency's clientele and recruitment methods. Case managers and staff identified clients who expressed food-related needs as well as clients who received other services at the agency, such as direct assistance, adult education, and childcare. These clients were personally invited to the cooking class by agency staff. The study also assumed that participants completed attendance records, survey responses, and registration forms, and that agency staff entered data honestly and accurately.

Delimitations

The scope of the study was guided by CBPR principles. The organization's mission and the researcher's relationship with agency staff aligned with CBPR principles. The unique on-going nature of the cooking class was of interest to the researcher since many interventions occur during a fixed timeframe or number of sessions. It was also the researcher's belief that the

longevity and popularity of the class, along with unanalyzed data, made this research study a worthy endeavor.

The study provided perceptions of adult participants. Free childcare was provided to children of participants, but school-aged children of various ages and development levels often chose to participate in the class alongside their parents. This was encouraged and supported by agency staff and the researcher. However, only the adult participants completed the surveys and, therefore, only perceptions of adult participants are represented in the study.

The focus of this study was on the cooking class surveys collected by the agency staff, which offered insight into participant perceptions of the cooking class' curriculum, facilitator, and teaching environment. Current funding for the cooking class expired in 2019, therefore, the investigators have limited the research in this study to the extant data collected from 2016-2018. Future studies would benefit from additional research measures, such as observations in the teaching kitchen, documents such as grocery receipts, previously validated measurement tools, biochemical markers, and/or focus groups.

Limitations

A limitation of the study was the research tool. The researcher was not involved with the cooking class until after the survey tool was developed. The agency staff developed the tool with the primary purpose of reporting grant goals and objectives and program evaluation through participant self-reporting. Analysis of the pilot data, however, provided insight into the use of a teaching kitchen and hands-on nutrition education that the researcher further explored in this study.

An additional limitation was the anonymity of the surveys, which hinders the researcher from linking a participant's demographic data with the post cooking class survey; therefore, the researcher has linked the cooking class survey data with class elements, such as the teaching kitchen environment, the instructor, and the curriculum. Finally, due to agency staff turnover, the survey was modified mid study. Benefits to the modification included an open-ended qualitative component to the data, as well as participants' perceptions of knowledge and skills gained from previously attended classes. However, the modification removed the question related to participation in federally funded food-related programs, so that data is not available to see if patterns related to that population continued from the initial data. Another limitation that occurred because of staff changes at the agency was incomplete data. The 36 months of extant data collection resulted in only 12 months of complete data, including cooking class surveys, attendance records, registration forms, and class details, such as curriculum and instructor. Therefore, only 12 months of data were included in the study.

Lastly, inconsistent survey administration is also a limitation of the study. Both paper surveys and digital surveys using agency-owned tablets were administered. The format of the survey often depended on the staff member responsible for the class, which varied from month to month. The survey was given at the end of the one-hour class while participants were packing ingredients from the recipe to take home and picking up children from childcare. Therefore, participants may have felt rushed in completing the surveys.

Explanation of Terms

Terms that frequently appear throughout this study with definitions that may be unique to this study or need distinction from definitions used in other studies include community-based,

participatory research (CBPR), food resource management (FRM) and food resource management score (FRMS), nutrition empowerment score (NES) score, on-going intervention, and teaching kitchen (TK).

Community-based, participatory research (CBPR) uses principles and practices presented by B.A. Israel et al. (2012) for guidance throughout the study. Essential to this study's CBPR has been the researcher's long-term relationship with the agency staff, as well as relationships with participants who have returned for multiple cooking classes over the years. Agency staff roles have included grant writing, development of the survey tool, data collection, and the overall design of the cooking class, while the researcher's roles have consisted of curriculum selection, planning, facilitating, and now, data analysis. As a dietetics educator, the class has been a learning lab for dietetic students to practice community nutrition, cultural competency skills, and introduce CBPR principles to students. As a community-based, participatory researcher, the primary goal is a collaborative and equitable partnership with cooking class participants, agency staff, and the university's dietetics program for developing sustainable and evidenced-based food-related interventions (B.A. Israel et al., 2012). Therefore, this dissertation primarily served as a part of the Core Components/Phases in Conducting CBPR related to interpreting and translating research findings (Barbara A Israel et al., 2010).

Food resource management (FRM) in this study refers to participants' reported grocery budgeting practices, perceived ability to stretch food dollars, and budgeting tips learned from the cooking class. The definition of FRM for this study is perhaps narrower than in other studies due to the agency's focus on the cooking class grant's specific goals, objectives, and survey tool. A food resource management score (FRMS) was developed for the purposes of statistical analysis. The score was derived from four survey questions (3, 6, 7, 8) related to food resource

management. The FRMS ranged from zero to eight, based on participant responses. A higher FRMS indicated that a participant regularly creates a grocery budget (survey question 3), has applied budgeting tips from the class over the last month (survey question 6), used ingredients provided through the class in the same or other recipes at home (survey question 7), and has cooked five or more meals at home in the past seven days (survey question 8).

The nutrition empowerment score (NES) reflects a combined score from four survey questions related to the cooking class experience. The Cooking Class Survey is composed of nine questions (Appendix B). Four survey questions (1, 2, 4, and 5) relate to the immediate perceived benefits from the class content, including confidence in making healthy meals with the ingredients provided, repeating the same recipe at home, ability to stretch food dollars, and plans to share this recipe with family or friends. Participants selected from four responses: disagree, neutral, agree, and strongly agree. Each response is scored: zero for disagree or neutral, one for agree, and two for strongly agree. The NES score is a total score of zero to eight when individual scores are combined into a single score. The NES, from low to high, represents increasingly perceived benefits from the cooking class. The NES was created by the researcher in conjunction with agency staff who developed the survey prior to the researcher's involvement with the cooking class as a way to quantify the pilot data collected from the survey.

The on-going aspect of the intervention refers to the particular design of the cooking class described in this study, which has been monthly since 2014. Whereas the majority of published culinary and nutrition interventions are conducted within a fixed time-frame, such as three weekly sessions or eight monthly sessions, with the same participants, this intervention is on-going monthly and individual participants vary from month-to-month (Reicks, Trofholz, Stang, & Laska, 2014). All clients of the agency are invited to participate on any given month, with

registration limited to the first 15 participants due to the size of the teaching kitchen. Some participants have attended one class; others have attended multiple classes.

A teaching kitchen (TK) is a laboratory for teaching culinary skills and associated education, such as nutrition, mindfulness, and food safety, suitable for a variety of groups and purposes (The Teaching Kitchen Collaborative, 2016). For the purposes of this study, the TK was located at the site of a nonprofit social services agency. This particular TK contained a combination of residential and commercial grade equipment and has been used for a variety of cooking-based education and agency food-related functions for children kindergarten-high school, adult clients, and agency staff. The intervention described in this study utilized basic appliances and tools found in residential households of all income levels in the United States. The agency received a grant from Lowe's in 2017 to renovate the kitchen, updating appliances and equipment, therefore, the study analyzes class surveys pre- and post-renovation as a means of evaluating the teaching kitchen environment's impact on participant perceptions.

Summary

The first chapter of this dissertation has introduced the study. The background to nutrition-related chronic disease and the partnership between a community-based agency and the university, which led to a grant-funded intervention, have also been described. Pilot data has now evolved into further research questions being explored, with feedback and dissemination of research as an important next step for this project, especially as it relates to CBPR. The next chapter will review the literature related to HONE, teaching kitchens, and CBPR, including theories, models, and other similar programs and studies.

CHAPTER II

LITERATURE REVIEW

Introduction

The literature review for this study investigated the recent and closely related studies involving teaching kitchens, hands-on nutrition education (HONE), and community-based, participatory research (CBPR). The review begins with the theories and frameworks that have guided this and similar studies. Prior sample populations, learning environments, curriculums, and instructors are then be discussed. Finally, CBPR within community nutrition and the dietetics field is explored.

Theories Related to Teaching Kitchens and HONE

The teaching kitchen concept draws from a variety of theoretical and conceptual frameworks. The Kolb learning cycle, culinary arts education, reflection, and the experiential learning model for nontraditional learning environments were discussed within the study's theoretical framework (Abdulsalam et al., 2017; Merriam & Bierema, 2013; O'Bannon & McFadden, 2008). Therefore, this review of theoretical and conceptual frameworks takes a broader look at the application of theory within the teaching kitchen environment and cooking as a means of learning. Lastly, health behavior models and theories used in interventions and program planning are discussed.

Transformative and experiential learning are frameworks for linking andragogy theory and practice. Merriam and Bierema (2013) note that in addition to the classroom and the workplace, the community is a site of transformative learning. Furthermore, the authors note that adult educators are change agents when they approach learning with humility and comfort with personal disclosure. The andragogy experts also acknowledge the importance of where learning occurs or situated cognition. Embodied learning occurs in environments like a teaching kitchen when learners interact with kitchen tools and ingredients and their senses of touch, taste, and smell are engaged (Alonso & Chiang, 2017).

Behavior change techniques (BCT) play a role in the teaching kitchen and hands-on nutrition education models, such as observational learning and modeling. According to Hollywood et al. (2017):

Cooking embraces a wide range of skills...including not only factors involved with the meal preparation—such as chopping, mixing, heating basic ingredients, understanding the language and terminology of recipes, following recipes, and understanding measurements and cooking techniques—but also knowledge of how to plan and budget for food and organize and plan meals that other members of the household will find acceptable. (p. 2413)

The combination of these culinary behaviors is broadly referred to as food literacy, and researchers utilize a variety of theoretical frameworks, including social cognitive theory, social learning theory, experiential learning theory, social ecological theory, and social marketing theory, to improve food literacy with clients (Hollywood et al., 2017).

Health behavior models and theories, such as the socioecological model, the transtheoretical model (stages of change), and the health belief model, help to explain individual and community behavior. Consideration of multiple models often helps planners provide tailored and effective interventions to support the development of health-related behaviors (Simpson, 2015). Self-efficacy, or one's belief in one's ability to complete a task, is a concept reflected in

all three of these health behavior models. For example, the intrapersonal and interpersonal levels of the socioecological model focus on individual characteristics and environment, respectively. The transtheoretical model considers individual readiness, motivation, and ability, all of which are important qualities of self-efficacy. Lastly, the health belief model situates behavior change within an individual's beliefs about their actions and potential for success, which relates to self-efficacy as well (Simpson, 2015; Skinner, Tiro, & Champion, 2015). The intervention used in this study contains elements of each of these theories as they relate to self-efficacy.

Self-efficacy and these health models and theories were a prominent component of both the NES and the FRMS during data analysis. FRM, for example, reduces food insecurity and food insecurity is related to adverse health outcomes (Gundersen & Ziliak, 2015). Cooking skills are also related to FRM and health outcomes (Hartmann, Dohle, & Siegrist, 2013). Mills, Brown, Wrieden, White, and Adams (2017) have connected the transtheoretical model to number of meals cooked and eaten at home each week. The links between these models and survey questions are discussed in more detail later in the dissertation.

Teaching Kitchen and HONE Topics and Populations

Teaching kitchens and hands-on nutrition education (HONE) have been utilized for a variety of subject matters and populations. K. M. Brown, Diplock, and Majowicz (2016) evaluated teaching kitchens for teaching food safety in high schools. Language and math educators have incorporated teaching kitchens within their curriculum (Alonso & Chiang, 2017; Preston et al., 2015). Alonso and Chiang (2017) used cooking as a higher level, problem-based learning tool to combine subjects such as language, math, history, and chemistry to challenge international baccalaureate (IB) students.

Hands-on nutrition education interventions have been used with individuals with severe mental illness (Clark, Bezyak, & Testerman, 2015) and families (Cunningham-Sabo et al., 2016). Interventions with foci on adherence to a particular diet (Polak et al., 2018) and in a particular life stage, such as pregnancy (Sharma et al., 2018) and adolescents (Hagedorn et al., 2018; Oakley, Nelson, & Nickols-Richardson, 2017) have also incorporated cooking-based education. Other populations included in hands-on cooking interventions consist of particular disease states, such as diabetes and cardiovascular disease (Archuleta et al., 2012; Monlezun et al., 2018; Nichol, Retallack, & Panagiotopoulos, 2008), student-athletes (Ellis, Brown, Ramsay, & Falk, 2017), Head Start teachers (Stage, Bullard, Hegde, & Jones, 2018), and low-income and homeless populations (Rodriguez, Applebaum, Stephenson-Hunter, Tinio, & Shapiro, 2013). Utter, Larson, Laska, Winkler, and Neumark-Sztainer (2018) identified emerging adults as a prime population for increasing cooking confidence and skills with a lasting effect, even a decade later, on more frequent food preparation including vegetables and less fast food consumption. Therefore, demographic data, such as age, are often assessed in similar studies in order to identify target populations or to inform methodology with a subpopulation.

Teaching Kitchen and HONE Learning Environments

Teaching kitchens are used in multiple learning environments. School-based teaching kitchens are increasingly common, from preschools to graduate schools. The workplace setting has been utilized for health-based interventions for some time; however, the teaching kitchen model is a recent addition to this environment (Eisenberg et al., 2017). Medical schools are increasingly incorporating teaching kitchens and partnering with dietetic programs to develop the newly emerging field of culinary medicine in order to more holistically address prevention and

treatment of chronic, food-related disease (Devries et al., 2014; Monlezun et al., 2018; Monlezun et al., 2015). The primary care setting is another relatively new environment for teaching kitchens, where mobile kitchens can be used to demonstrate recipes in waiting rooms (Delichatsios, Hauser, Burgess, & Eisenberg, 2015). On college campuses, programs that utilize teaching kitchens and HONE methods engage participants in cooking activities and are more successful than activities where participants watch but do not practice skills, such as cooking demonstrations (Levy & Auld, 2004).

Closely related to the learning environment for an intervention is the length of time designed for the intervention. Reicks et al. (2014) provide a systematic review of culinary interventions with the number of sessions extending from one assignment to 29 sessions. Interventions range from one class period to one year, with six to eight weeks being the most common length of intervention. While number of sessions is commonly reported, length of time per session is not as often detailed. Reicks et al. (2014) report a range of 15-minutes to two hours for each learning session or activity. The most common lengths of time reported for culinary interventions are 60-, 90-, and 120-minutes. The format used in this study's program was a monthly, 60-minute, on-going intervention over multiple years.

Teaching Kitchen and HONE Curriculum and Instructors

In addition to the learning environment and timeframe of the intervention, the curriculum and instructor have an impact on intervention outcomes. This study will compare two curriculums: Good and Cheap and other (L. Brown, 2015). Other refers to lesson plans and recipes that were self-selected by the instructor and approved by agency staff and dietetics faculty. Most studies utilize an investigator-developed curriculum that is grounded in evidenced-

based nutrition recommendations (Edens, Folkens, Sharma, & Wojtowicz, 2017; Reicks et al., 2014). L. Brown (2015) approaches healthy eating from a food policy perspective, developing a cookbook with SNAP participants in mind and a focus on affordable, tasty, real food, rather than health. This approach may appeal more to the American population's approach to food (Whitney, Rolfes, Crowe, Cameron-Smith, & Walsh, 2011). Agency staff consulted with dietetics faculty when other recipes not from the Good and Cheap resource were preferred by the facilitator on any given month.

The research in this study compared two instructors: undergraduate dietetic students and agency staff or board members. Similar interventions have looked at peer and adult instructors and found outcomes to be similar when teaching adolescents (Oakley et al., 2017). Classroom teachers and parent volunteers have also had success in teaching cooking skills education (Oakley et al., 2017). A team approach with a chef and nutrition educator have also led culinary and nutrition education interventions (Overcash et al., 2018). Reicks et al. (2014) provides evidence of peer, dietitian, chef, and nutrition educator as instructors in culinary skills interventions.

Community-Based Participatory Research

Community-based, Participatory Research is an evidenced-based equitable research method. Partnerships are a key component for successful CBPR, with the structure and the dynamics of the partnership being a key element of health outcomes (Oetzel et al., 2018). The relationship between community and academic partners is a strategic component of CBPR, therefore, self-reflection is critical for researchers in order to establish ethical practices related to data sharing, post research relationships, and power (Wilson, Kenny, & Dickson-Swift, 2018). A

methodical approach to community assessment is an important first step from health disparity reporting to evidenced-based action (Akintobi et al., 2018). The community assessment method utilized to support this program included a client survey conducted by the agency that revealed nutrition and cooking related programming as highly desired among clients surveyed. Finally, a wide range of public health issues are being addressed through CBPR, including health disparities among non-English speaking populations, domestic violence, and mental health (Goodman et al., 2018; Ludden et al., 2018; Rogers, Carr, & Hickman, 2018). Although unplanned, the program did include participants in each of these categories, as well as participants from a rehabilitation center within walking distance to the agency. However, the research questions for this dissertation did not address these specific groups of individuals.

The field of dietetics is increasingly using CBPR methods to address nutrition-related chronic disease, especially among minority, low income, and at risk populations (Kidd et al., 2018; Lobb, Jarrott, Dabelko-Schoeny, & Speidel, 2018; Oropeza et al., 2017). Recognizing the expertise of others, understanding patients' lived experiences, and remaining nonjudgmental have been identified as best practices in CBPR (Kline et al., 2018). Common sites of CBPR in dietetics include the school and faith-based institutions (Koch, McCarthy, Uno, Gray, & Simatou, 2018; Lemacks et al., 2018). Community input can be garnered in a variety of ways, such as a Community Advisory Board (CAB), and with various monetary or non-monetary incentives (Ledoux, Robinson, Baranowski, & O'Connor, 2018). For example, the agency in this study has multiple thrift stores around the city, so they often use thrift store gift certificates as incentives. Obesity, particularly childhood obesity, is often addressed with CBPR, as well as eating disorders (Gustafson et al., 2018; Srivastava et al., 2018; Teran-Garcia, Fiese, Greder, & Hammons, 2018; Voelker & Reel, 2018). Photovoice, a research technique where participants

use photography to express or describe their viewpoints or communities, is a frequently used tool in CBPR within dietetics, used to address issues related to food desserts and minority health issues (Colón-Ramos et al., 2018). Photovoice was not used in this study but has been used by the researcher in other similar studies as a community assessment tool.

Summary

The literature review has described the various elements of this research study as they relate to prior nutrition education studies utilizing teaching kitchens and culinary interventions. One common theme is that improved sampling and evaluation methods are needed to determine the long-term effectiveness of cooking based nutrition education interventions (Rees, Hinds, Dickson, O'Mara-Eves, & Thomas, 2012; Utter et al., 2018). Often the largest benefit to the cooking intervention is the social aspect, rather than the nutrition or health benefits (Rees et al., 2012). HONE requires more resources than traditional nutrition education and simply focusing on real food over processed foods may have lasting behavior change equal to HONE studies (Case, 2017). The unique ongoing nature of the intervention with variability in instructor and curriculum is possibly an important new contribution to this field of research.

CHAPTER III

METHODOLOGY

Introduction

This chapter systematically details the research design of the study, including a description of the cooking class elements, such as the teaching kitchen environment, the curriculum, and the instructors. The type and subtypes of research are explained, followed by context and access to the population and sample. Next, participant selection is described. Lastly, instrumentation, data collection, and data analysis are included in this chapter. The chapter will delineate between the qualitative and quantitative methodology, as well as detail the research variables and discuss measurement reliability and validity (Joyner, Rouse, & Glatthorn, 2018).

Description of the Cooking Class

Cooking classes were offered monthly, in the evenings, for one hour. Attendance ranged from five to sixteen participants. Participants entered through the agency's lobby and completed an Adult Education Program Registration Form at their first class. Once all participants had arrived, they were invited into the teaching kitchen, signed an attendance sheet, washed hands, were given a copy of the recipe, and asked to stand at a recipe station, where they would assist with one or more steps of the recipe. The instructor provided a brief introduction to the recipe, cooking tools, and ingredients. The instructor would then guide participants through each stage of the recipe together as a group. Once the recipe was prepared, participants would

taste and reflect. During reflection, participants were encouraged to consider how ingredients or cooking utensils might change based on their available grocery store, budget, kitchen, and household members' food preferences. Educational messages such as nutrition and food budgeting were dispersed throughout the classes, when appropriate during cooking, tasting, or reflecting.

The teaching kitchen included a combination of commercial and residential equipment and tools. In 2017, the agency received a Lowe's grant to remodel the teaching kitchen. After the remodel, the equipment and tools were primarily residential, more likely modeling participants' home environments, and allowing instructors to introduce participants to a wider range of kitchen utensils. Therefore, the researcher examined perceptions from classes pre and post remodel to gain insight on how the teaching kitchen environment might affect HONE.

Instructors of the class were an undergraduate dietetic student or an agency staff or board member, depending on availability of instructors each month. In general, the undergraduate dietetic students enrolled in a community nutrition course would lead the class during the spring semester and the agency staff or board member would lead during the fall and summer months. The researcher, therefore, compared participant perceptions with the various instructors in order to assess what impact, if any, the facilitator had on NES.

The program's primary curriculum was *Good and Cheap: Eating Well on \$4/Day* (L. Brown, 2015). This curriculum was developed with SNAP recipients in mind as the author's culminating project while earning an advanced degree in food studies. The author's publisher offered copies of the books at no cost to the agency, the agency was also able to purchase additional copies as needed, and a digital version of the cookbook is available at no charge on the author's website. Participants received a copy of the book at their first cooking class.

Occasionally, however, the instructor would prefer to use a recipe not in the cookbook that the instructor was personally interested in or preferred to demonstrate. Therefore, the researcher also assessed the relationship, if any, between curriculum and NES.

After cooking, tasting, and reflecting on the recipe together, participants would receive the main ingredients from the recipe at no cost to take home, practice, and share in their household with household members. Finally, participants were invited to complete a cooking class survey at the end of each class, using a tablet or paper and pencil. Agency staff would collect the tablets or paper surveys and record the data. The responsibility between the agency and university researcher was divided so that the dietetics faculty identified the curriculum, provided shopping and cooking utensil lists, set-up recipe stations, and cleanup of the teaching kitchen. The agency was responsible for all other elements of the cooking class, including participant recruitment, shopping, data instrument design, and data collection. Data used for this research study were extant documents collected and maintained by the agency and provided to the university researcher following IRB approval (Appendix A).

Research Design

The design of the study was mixed methods, with a quantitative primary, quantitative first perspective. This means that the researcher began with a quantitative approach as the primary method and used a qualitative approach to further explain the quantitative results (Joyner et al., 2018). Multiple methodologies to the research were utilized. First, reliability analysis tested the internal consistency of the NES and the FRMS measures for the quantitative portion of the study. Next, correlation was used to determine if there was a relationship between NES and FRMS. Third, inferential statistics were used to determine if the independent variables

had significant differences between the two groups used in each category, including curriculum, instructor, or the teaching kitchen environment, in relationship to NES. Last, percentages of attribute variables, such as age, gender, and race contributed to the descriptive research analysis.

The methodology used extant data collected from four sources: monthly cooking class post surveys, cooking class attendance records, agency adult education registration forms, and agency and dietetic faculty records regarding curriculum and facilitator information. The cooking class survey data provided the NES and FRMS data used for statistical, quantitative analysis. One open-ended survey question was used for qualitative analysis. Descriptive data derived primarily from the adult education registration form (Appendix D).

The philosophical assumptions are notable elements of the qualitative research process used in this study. The researcher's prior work as a public health dietitian and current position as lecturer in a dietetics undergraduate program influenced the community nutrition setting for the study and the interest in the dietetic students' role as instructor as a research variable. Postpositivism was the paradigm and phenomenology was the framework for the study. Racher and Robinson (2003) note that postpositivism and phenomenology are compatible and enhance the ability of the health science to relate to the "phenomenon of priority-human beings"(p. 477). The focus of the qualitative research was to understand participants' experiences in the cooking class by analyzing the open-ended survey questions for significant statements related to the research variables. Post-positivism and phenomenology are popular approaches within the health science disciplines, such as dietetics, often used in mixed-methods studies to support quantitative findings and replicability (Creswell, 2012). Participants' perceptions related to self-efficacy, food resource management, teaching kitchen environment, instructor, and curriculum were investigated to describe the cooking class experience.

Research procedures used SPSS[®] version 25 for quantitative data and a general inductive analysis of the qualitative data. The SPSS software was chosen because the researcher has used the software previously and because it is available to faculty at the university. Inductive analysis was selected for qualitative analysis due to its appropriateness in evaluation research (Thomas, 2006). Following IRB approval, the agency shared the extant data collected from January 2016 through December 2018. The raw data were then organized and prepared for analysis.

Population and Sample

The theoretical population consisted of residents from one county in southeastern Tennessee. The target population included clients of a community-based social services agency who participated in at least one cooking class offered between January 2016 and December 2018. The selected sample was an availability sample of those participants who participated in a class and completed a post cooking class survey within this same timeframe. The actual sample included only data from months where complete data were recorded, maintained, and available to the researcher, including cooking class surveys, adult education registration forms, attendance records, and instructor and curriculum information. If a month did not have complete data, that month's data were exempt from the research study.

Data Collection

All data used in this study were extant data, collected and maintained by the agency staff between January 2016 and December 2018. Participants at their first cooking class completed the adult education program registration form. Attendance was recorded at the

beginning of each class using a paper sign in sheet. Program staff and cooking class instructors would remind participants to sign in prior to washing their hands and assigned a recipe station. Additionally, the instructor would often use the attendance sheet to learn names of participants or ask participants questions, providing an additional measure of confidence that all participants' attendance was recorded.

Cooking class survey collection occurred at the end of each cooking class. Participants self-selected a paper or online version of the cooking class survey (Appendix B). The cooking class survey was a nine question post-class survey. Survey questions one, two, four, and five were Likert-type scales that related to the participants' self-efficacy experience in that month's cooking class, composed the NES, and were quantitative in nature. Survey questions three, six, seven, and eight related to the participants' FRM skills and constituted the FRMS for statistical analysis. Question nine provided the extant qualitative data for the study.

Descriptive data, including age, gender, and race were obtained from the agency's adult education program registration form. Agency staff were responsible for collecting, recording, and maintaining data during the research period. The agency agreed to share all data collected and maintained in the agency's database with the researcher, with access granted specifically to attendance data, program registration forms, and cooking class surveys upon IRB approval and an agency letter of support (Appendix E). Data were de-identified by agency staff prior to sharing with the university researcher. The researcher initially met with the agency staff responsible for the data to request the specific data needed for the study. Agency staff provided the researcher excel documents with the requested data in approximately one week via email. The researcher organized and coded the raw quantitative and demographic data in excel and then transferred the data to SPSS for analysis. The open-ended survey question number nine, used in

qualitative data analysis, was organized by month using Microsoft Word, with one comment per line below each month's heading.

Measurement Validity and Reliability

In addition to the perspective, type, and methodology described in the research design, internal, external, and measurement validity were considered (Gliner, Morgan, & Leech, 2011). Using the adult education program registration form, researchers determined if participants in the cooking class were equivalent in terms of age, gender, and race providing a degree of internal validity when correlating NES with the various independent variables.

External validity as it relates to the population and conditions of the study was also considered. Similar recruitment methods were used throughout the program, including flyers available to clients at the front desk of the agency and referrals of clients reporting food insecurity by case managers, which provided some control for external validity for the convenience sample. Zip code data obtained from the registration form provided further confirmation that the actual sample is representative of the theoretical sample despite the availability sample of the population used in the study.

The teaching kitchen utilized throughout the study included appliances and tools commonly found in the typical American home. Alternative methods were taught if tools that may not be owned by participants were used in a recipe. For example, if the instructor used a garlic press to mince garlic, the instructor would also demonstrate mincing fresh garlic with a knife or discuss substituting pre-packaged minced garlic in the recipe. The length of the class did not change throughout the duration of the research period. Each class was approximately one hour in length. Recipes with similar number of ingredients and steps were also used. For

example, recipes had less than 10 ingredients and could be prepared in 30 to 40 minutes. Finally, a similar format was followed with each class, including time for introduction, recipe preparation, cooking, tasting, reflection, distributing ingredients for taking home, and survey completion. Controlling for these various conditions addressed issues of external validity (Gliner et al., 2011).

Measurement reliability and validity were also essential to the study's overall quality. Pilot data collection and analysis from the cooking class with a similar survey and population provided a degree of measurement validity concerning the NES. Additionally, qualitative data were collected through interviews during preliminary data collection and analysis, which further validated the survey tool as a measurement for evaluative research. Interprofessional agreement on the content of the survey between the agency staff and university faculty, including a social worker and dietitian, also provided evidence of measurement validity. Consistency across the two surveys provided a degree of parallel forms of reliability, even when the survey instrument was revised slightly. The summation of related items on the survey addressed the internal reliability of the survey tool.

Concerning the qualitative analysis, reliability and validity were addressed using multiple coders and a stakeholder check. A second coder independently coded the data, creating a second set of categories, which was compared to the first set established by the initial coder. A stakeholder check, where the community partners viewed the coded qualitative data and provided comments on the data interpretation and findings, was also performed.

Quantitative Research Variables

The dependent variable of the study was self-efficacy, expressed as the NES. The NES was an interval scale from zero to eight. There were five independent variables. Two of the independent variables were related to FRM: food budget habits and meals cooked at home in the last week. Three of the independent variables were elements of the cooking class: the teaching kitchen pre and post renovation, the curriculum, and the instructor. In addition to the dependent and independent variables, there were attribute variables. Age, gender, and race were each scaled at the nominal level.

Data Analysis

The researcher initially met with the agency staff responsible for the data to request the specific data needed for the study. This included data collected, recorded, and maintained from January 2016 until December 2018 and comprised of cooking class surveys, adult education registration forms, and attendance data. Agency staff provided the researcher Microsoft Excel documents with the requested data in approximately one week thru email. The researcher organized and coded the raw quantitative and demographic data in Excel and then transferred the data to SPSS for analysis. The open-ended survey question number nine, used in qualitative data analysis, was organized by month using Microsoft Word, with one comment per line below each month's heading.

In order to address the first research question, what relationship, if any, exists between NES and FRMS, Likert-type scales were used in the survey. Questions relating to the two constructs were grouped together and summed to create a scale, thereby treating the constructs as continuous variables. The internal consistency of the NES and FRMS survey constructs were

assessed using Cronbach's α . A Spearman Rho analysis was then used to analyze the relationship between NES and FRMS.

What relationship, if any, exists between the cooking class elements, such as the instructor, the teaching kitchen environment, and curriculum was the second research question to be investigated. Independent t-test analyses were performed to determine if one or more of the three independent variables, including teaching kitchen, curriculum, and instructor, were predictors of NES. All statistical analyses for the study were performed using IBM SPSS Statistics for Windows, Version 25.0.

Research question three examined the budgeting practices learned from the class that were used by the participants. This question was addressed using qualitative data available from the open-ended survey question. Survey question six was a yes or no multiple-choice question and stated, over the last month, have you used any of the budgeting tips you learned from this class. However, it also had an open-ended component that stated, if yes, please explain below. Additionally, the last question on the survey, please write any comments in the space below, was also open-ended. Participants were provided one space to address both open-ended comments on the survey, therefore, all comments provided by participants, related to budget practices, question six, or other comments, question nine, were analyzed together.

Analysis of the qualitative data used a general inductive approach. General inductive analysis is commonly used in health research and has been reported to be useful for condensing raw data into summary format and for establishing links between research questions and the summary findings (Thomas, 2006). The analysis included multiple readings in order to identify themes and subthemes as well as locate supporting texts for each theme. According to Thomas (2006), the inductive analysis of qualitative data use the following procedures: preparation of

data into a common format, close reading of the text until the evaluator is familiar with the content, categorical creation, identifying overlapping and uncoded text, and revision and refinement of categories. For this study, the process included two coders and two member checks. The researcher initially coded the qualitative data to identify themes, subthemes, and supporting comments. The second coder was a departmental graduate assistant and coded the qualitative data similarly. The two coders' analyses were then refined to reduce overlapping themes, subthemes, and supporting comments. Finally, two agency staff members performed a member check by email.

Summary

This chapter has detailed the methodology of the study. It has provided a description of the HONE class, research study design, participant population, data collection, and analysis. The mixed-methods approach using extant data has also been explained. Research survey constructs were first analyzed in order to determine internal consistency, which then allowed research questions to be addressed quantitatively using IBM SPSS Statistics for Windows, Version 25.0. Lastly, inductive analysis with two coders and member checks were performed for qualitative analysis. In the next chapter, results of the analysis are described.

CHAPTER IV

RESULTS

Introduction

Of the 36 months of extant data from January 2016-December 2018, 12 months of data met the researcher's criteria for completeness and were used for analysis. Complete data included attendance records, demographic data, cooking class surveys, and details about the teaching kitchen, instructor, and curriculum used for each class. Complete data were available from nine months in 2018 and three months in 2017. Each month included one to two classes. Classes taught in the same month used the same instructor, curriculum, and teaching kitchen. Table 1 shows the division of instructor, curriculum, and teaching kitchen variables used for analysis. During a meeting between the agency staff and researcher, it was discovered that the participant cooking class surveys were collected anonymously and could not be linked to participant demographic data. As a result, demographic data were used for the purpose of descriptive analysis only.

Table 1

Cooking Class Variables by Months and Surveys

		Month N=12 (100%)	Surveys N=89 (100%)
Instructor	Undergraduate Dietetic Student	6 (50)	51 (57)
	Agency Staff/Board Member	6 (50)	38 (43)
Curriculum	Good & Cheap	3 (25)	32 (36)
	Instructor Selected	9 (75)	57 (64)
Teaching Kitchen	Pre-Renovation	4 (33)	38 (43)
	Post-Renovation	8 (67)	51 (57)

Quantitative Findings

Demographic data were obtained from the adult registration forms of participants who attended a cooking class during the 12 months of data used in the study. More females ($N=52$) than males ($N=22$), 70% and 30% respectively, attended the cooking classes. Of the participants who reported age, 38% classified as a young adult, 18-39 years; 41% classified as middle-aged, 40-59 years; and 12% classified as an older adult, 60 years and older. Race was also reported on the adult registration form, and 72% of participants were white, 22% were black, 3% were Hispanic, and 1% were biracial. Participant demographics are displayed in Table 2.

Table 2

Cooking Class Demographic Data		<i>N</i> (%)
Gender		
	Female	52 (70)
	Male	22 (30)
Age		
	Young Adult (18-39)	28 (38)
	Middle-Aged (40-59)	30 (41)
	Older Adult (60+)	9 (12)
Race		
	White	53 (72)
	Black	16 (22)
	Hispanic	2 (2)
	Biracial/Other	1 (1)

Cronbach's alpha (α) was used to determine the internal consistency of both the nutrition empowerment score (NES) and food resources management score (FRMS) question items. A Cronbach's α value of .60 is considered minimally acceptable, while a Cronbach's α value of at least .70 is recommended (Sim & Wright, 2000). It was determined that NES was a reliable measure (alpha=.788), however, FRMS (alpha=.391) did not meet the threshold for reliability and, therefore, validity of the measurement was unable to be determined. Consequently, the first research question, what relationship, if any, exists between NES and FRMS, was analyzed with this limitation. Two participant reported incomplete survey data and the researcher chose to remove the cases from the dataset used for analysis.

In order to address the first research question, visual tests using scatterplots were performed for both the NES and FRMS measurements to determine normality. Once normality was determined, a Spearman's rank-order correlation was run to determine the relationship

between NES and FRMS. There was a strong, positive correlation between NES and FRMS, which was statistically significant ($r_s=.195$, $p=.000$). These results suggest that as nutrition related self-efficacy increased, food resource management skills increased. Figure 1 depicts the relationship between NES and FRMS.

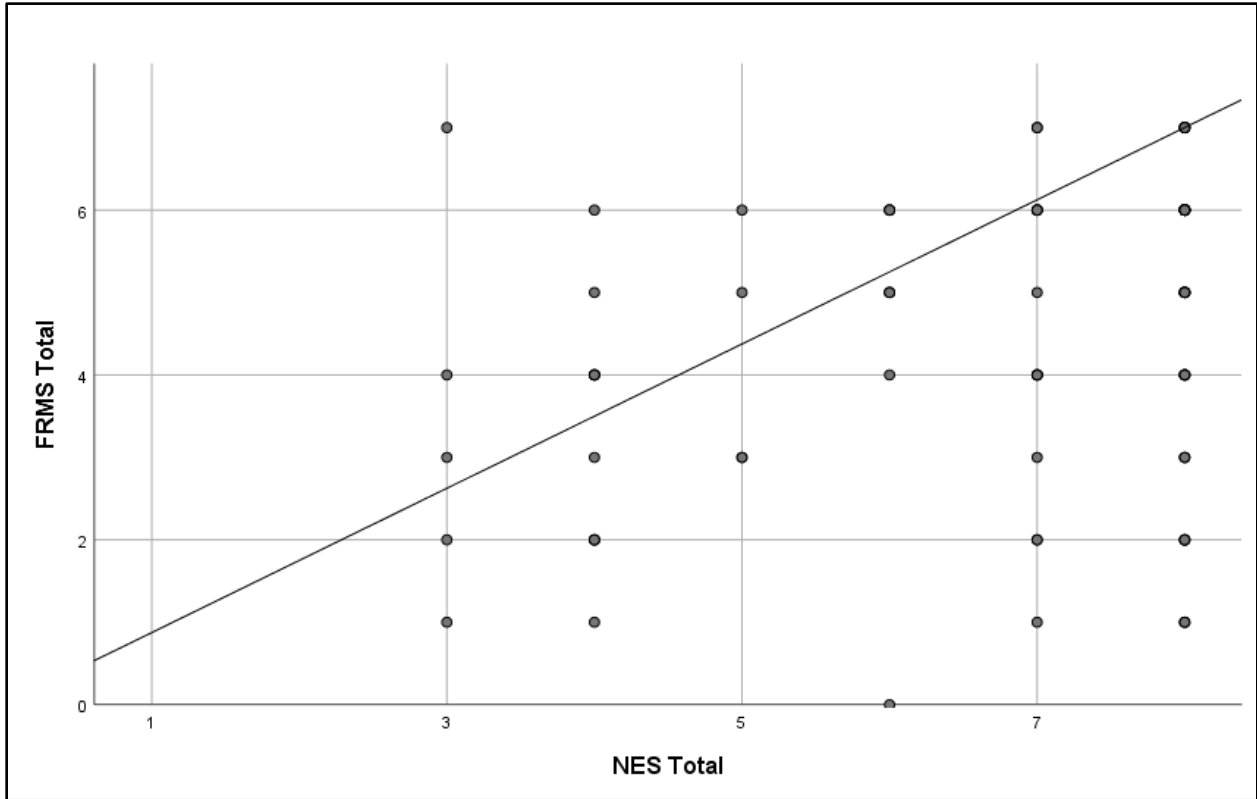


Figure 1

Significant, moderately positive relationship between NES and FRMS, ($r_s=.195$, $p=.000$)

Mean NES (6.56 ± 1.93 , $N=89$) and FRMS (4.44 ± 1.821 , $N=89$) scores are displayed in Figure 2. Frequency statistics for NES and FRMS are presented in Table 3. These descriptive measurements provide the average and frequencies of each score from the participant population. Results indicate a mean and frequency that reflect a high NES among participants.

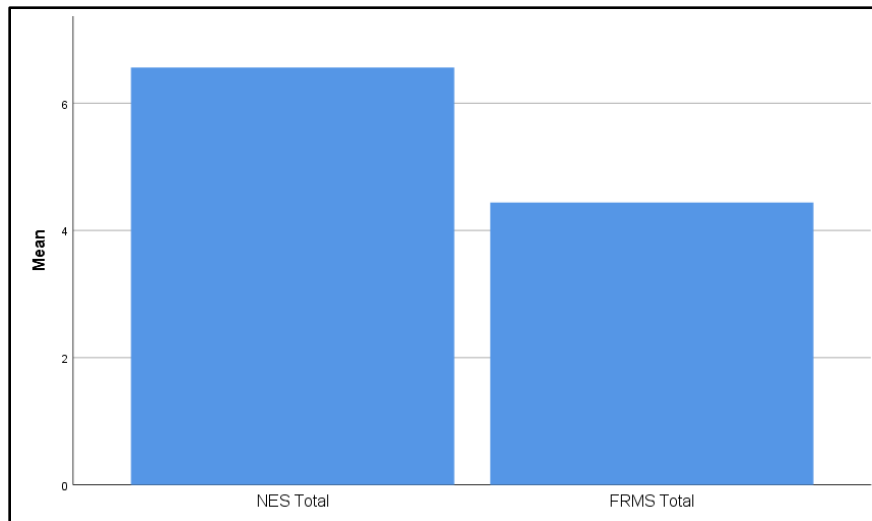


Figure 2

Mean NES (6.56 ± 1.93 , $N=89$) and FRMS (4.44 ± 1.821 , $N=89$)

Table 3

Low, Medium, and High NES and FRMS Frequency Statistics

	NES ($N=89$)	FRMS ($N=89$)
	N (%)	N (%)
Score (0-8)		
Low (0-2)	2 (2)	17 (19)
Medium (3-5)	20 (23)	39 (44)
High (6-8)	67 (75)	33 (37)

Research question number two was analyzed using independent t-tests in order to determine if there was a relationship between NES and the three cooking class research variables, curriculum, teaching kitchen environment, and teacher. This study found that the Good and Cheap curriculum ($M=7.38$, $SD=1.34$) resulted in a statistically significantly higher NES

than when another curriculum ($M=6.97$, $SD=1.38$), self-selected by the instructor, was used for the cooking class, ($t=3.477$, $p=0.001$). There were no significant findings for either the teaching kitchen, pre and post renovation, or the teacher, undergraduate student and agency staff or board member, variables. These results suggest that when the Good and Cheap curriculum was utilized for the cooking class, nutrition related self-efficacy was higher. Neither instructor nor teaching kitchen environment, however, had an impact on nutrition related self-efficacy.

Qualitative Findings

Qualitative data were obtained from 69/89 (78%) of participants who provided open-ended comments when completing the post survey. Through inductive analysis of the data findings, the two coders identified four categories and 13 subcategories. Table 4 lists the findings from most to least frequently mentioned within both the category and subcategory columns. For example, coders most frequently noted supportive quotes related to Student-Thankfulness, while Instructor-Gender was noted the least frequently. Budget-related responses associated with research question three, what budgeting tips were used after attending a class, did not emerge as a category or subcategory. Only one quote that specifically addressed budget was found during qualitative analysis. This quote appeared in the Learning category, New Knowledge subcategory, where the participant noted that s/he learned to “shop for quality ingredients and learn how to budget” (M.C. Creecy, personal communication, October 3, 2019).

Table 4

General Inductive Analysis Categories and Subcategories

Categories	Subcategories
Participant Attitude	Gratitude Desire to Return
Learning	New Knowledge Informative Applicable to Home Environment Adult Learning Experiential Learning Empowered/Self-Efficacy
Class	Social (mental health; friends/family; intergenerational) Recipe (taste; repeatable) Teaching Kitchen
Instructor	Personality Gender

The member check performed by email communicated to the researcher that two agency staff members involved with the planning and implementation of the cooking class also noted the lack of budget-related comments,

Only one comment about cooking on a budget/saving money. I think this goes back to what are the goals/objectives of the class and are we meeting them? I wonder if the class was really making an impact on people's budgets than we would have heard more about that in the comments section. (M.C. Creecy, personal communication, October 3, 2019)

Participant Gratitude emerged as the primary category/subcategory, with multiple quotes relating to participants being thankful for the class, cooking, help, learning, experience, atmosphere, new ideas, and instructor were reflected in the qualitative data analysis. Additionally, the agency staff and the coders agreed that the social outcomes were of greatest value to participants. One staffer

noted, “To me, reading through the comments shows that the greatest value realized was the social connection” (M.C. Creecy, personal communication, October 3, 2019).

Social benefits included improved mental health, where one participant expressed that the class was helping with her depression. Some participants noted sharing recipes with new friends in the class and others noted that their kids enjoyed the class and recipes, extending the social benefits to family and friends. One participant indicated that s/he felt like professional chef Bobby Flay after participating in a class. This is an example of a statement that highlights the feelings of empowerment and self-efficacy expressed in the open-ended comments that aligned with the high NES scores analyzed in the quantitative findings. Statements referencing the participants’ ability to prepare the recipe in their kitchen and looking forward to trying the recipe with their family members in the home environment are related to the teaching kitchen research variable and support the learning environment used for the cooking class. Finally, the instructor research variable was also evident in the qualitative data analysis. The qualitative analysis revealed participants were more interested in personality of the instructor than education or position. Open-ended comments noted instructors to be welcoming and kind towards participants.

Positive statements about the class were reported in 67/69 (97%) of the open-ended comments. Words such as great, enjoy, love, fun, and pleased, related to the class were frequently repeated throughout the comments. Participants referred to the instructor, class, taste, or environment as great in 27/69 (39%) comments. Participants expressed gratitude for the class in 17/69 (25%) comments. Only two negative comments were reported. One negative comment related to a nut allergy in the household when a vegetarian cashew curry was prepared. The

second negative comment was a participant who felt the recipe was too much to cook. Sample quotes for categories and subcategories are reported in Table 5.

Table 5

Qualitative Sample Quotations

Categories	Supportive Quotes
Participant Attitude	<p>Gratitude: “Thank you so much Really enjoy the atmosphere and had a wonderful time learning”</p> <p>Returning/Desire to Return: “Love this class, come every month, learn something new every time!”</p>
Learning	<p>New Knowledge: “I really enjoy coming and getting more cooking ideas for my family”</p> <p>Informative: “Very informative not only on cooking but education as well”</p> <p>Applicable to Home Environment: “Can’t wait to use what I learned at home.”</p> <p>Adult Learning: “I am 58 & did learn something”</p> <p>Experiential Learning: “I love the experience of learning how to cook healthy”</p> <p>Empowered/Self-Efficacy: “I feel like Bobby Flay”</p>

Categories	Supportive Quotes
Class	Social (mental health; friends/family; intergenerational): “helping with depression.” “met new friends and we can exchange new recipes” “my kids loved it.” Recipe (taste; repeatable): “I have made the meals we cook in class all the time” Teaching Kitchen: “Great environment! Enjoy the atmosphere”
Instructor	Personality: “Instructor is positive. Thank for being so nice to me.” Gender “Glad to see it was a male teacher!”

Summary

This research study included 12 months of extant post survey data between 2016-2018 collected from a nutrition and culinary education class taught monthly in a community-based social service agency’s teaching kitchen. Cronbach’s α showed the two new scales, Nutrition Empowerment Score (NES) and the Food Resource Management Score (FRMS), to be reliable and nonreliable, respectively. Quantitative results indicated NES was significantly related to FRMS and curriculum but was not significantly related to teaching kitchen environment or instructor. Inductive analysis of open-ended survey responses provided qualitative data that related to the research variables. These findings were positive towards the teaching kitchen environment, teacher, and curriculum variables. Research coders and member checks indicated little data related to FRMS. Discussion of the results and implications for future practice are discussed in the next chapter.

CHAPTER V

DISCUSSION AND CONCLUSION

Objectives of the Study

The objective of this dissertation was to identify and describe participants' perceptions of a hands-on nutrition education (HONE) intervention using a mixed methods approach. Three research questions were examined: (1) What is the relationship between cooking class participants' Food Resource Management Score (FRMS) and Nutrition Empowerment Score (NES)?; (2) What is the relationship between components of the cooking class, including curriculum, instructor, and the teaching kitchen environment, and NES score?; and (3) What budgeting tips have participants used after attending a class? The first two questions were examined through extant quantitative post survey data collected during the research period. The third question used extant qualitative post survey data also collected during the research period.

Summary of the Findings

Quantitative analysis of the first research question revealed NES to be a valid measurement for assessing nutrition related self-efficacy among participants. Cronbach's α showed that NES, but not FRMS, to be a reliable measurement. Despite the limitation related to the FRMS measurement, the Spearman Rho correlation indicated a significant, positive relationship between NES and FRMS. This finding suggests that the cooking class improved nutrition related self-efficacy among participants that likely resulted in improved food resource management skills. For example, participants who reported that the class increased confidence in

preparing healthy meals with the ingredients available to them, an NES survey construct, likely also reported the class to have helped stretch food dollars, an FRMS survey construct.

Quantitative analysis of the second research question also indicated a statistically significant relationship between NES and one of the three cooking class variables analyzed in the study, curriculum. The two curriculums analyzed in the study, Good and Cheap and other curriculum, revealed higher NES scores when the Good and Cheap curriculum was used than when instructors selected their own curriculum. The other two cooking class variables, instructor and the teaching kitchen environment were not significantly related to NES. The Good and Cheap: Eating Well on \$4 a Day curriculum was developed for use by populations like the participant population used in the study and is available for free online or at a low cost.

The findings from the second research question suggest that public health and community nutritionists, along with the organizations they work with, can implement the Good and Cheap curriculum using various instructors and teaching kitchen environments with the goal of increasing nutrition related confidence and food resource management skills. Instructors may have formal nutrition education, such as the dietetic students, or be lay persons, such as the agency staff or board members. Teaching kitchens may be similar to the prerenovated kitchen used in the study, with commercial equipment and older kitchen tools, or the post renovated kitchen used in the study, with residential equipment and newer kitchen tools.

Qualitative analysis of the open-ended survey question provided additional data related to the research variables of the study, including the teaching kitchen environment, the instructor, and the curriculum, as well as budgeting tips, which was the third research question being examined in the study. These findings suggested positive participant perceptions of the class

despite variations in the teaching kitchen environment, the instructor, and the curriculum throughout the 12 months of data analyzed.

Strengths of the study include the finding of the NES as a reliable scale of measurement, the significant relationship between NES and FRMS, the support for use of the Good and Cheap curriculum, and qualitative findings related that support the high NES overall. Collectively these outcomes suggest that nutrition related self-efficacy was accurately assessed and found to be high among participants in the study.

Implications for Future Research and Practice

This study highlights the importance of the planning phase of the research process. The researcher has recommended to agency staff to provide de-identifiable participant identification numbers on the adult education forms and to link that number on all future surveys. The inability to link participants' adult education forms with participant surveys was a weakness of the study and would have allowed the researcher to more accurately assess participants' perceptions quantitatively, especially as it relates to demographic data and participants who attended multiple classes.

Second, the importance of the mixed-methods approach to community-based participatory research (CBPR) was supported. Quantitative data provided a new reliable scale of measurement for the population using the NES. The high NES descriptive statistics, including mean and frequency, suggest the class resulted in high nutrition related self-efficacy among participants. The participants' positive reports from the quantitative data support the high NES results. Use of valid and reliable scale to assess food resource management skills, such as the

scale used by Martin, Colantonio, Picho, and Boyle (2016), coupled with the NES would likely provide a more precise investigation of the first research question in future studies, however.

Teaching kitchen and HONE are emerging fields of research within the dietetics population (Hoffinger, 2016). This study adds to the body of knowledge to these broader fields of study, but also more specifically to community-based agencies for future research and practice. The teaching kitchen used in this study was renovated from a commercial kitchen to a more residential kitchen setting. There was older and less equipment available pre-renovation while newer and more equipment was available after the renovation. The instructors included dietetic students and agency staff or board members. The curriculum included a published cookbook, written by a food studies student for a similar population that attended the class, or a choice recipe and topic by the instructor. With all three variables, the teaching kitchen, instructor, and curriculum, there were positive qualitative data that supported high NES data from the quantitative analysis. These findings suggest that community-based agencies have a variety of low-cost options when considering implementing similar programs. In particular, the Good and Cheap curriculum can be easily incorporated into comparable HONE interventions with the goal of increasing nutrition related self-efficacy.

Teaching kitchens vary in size, shape, and mobility, and this study provides evidence through qualitative findings that participants can learn and enjoy a teaching kitchen environment that is older and commercial or newer and residential (The Teaching Kitchen Collaborative, 2016). Much of the teaching kitchen research is related to a variety of school environments, from elementary to university school settings, whereas this study's teaching kitchen was located within a social service agency. Qualitative data in this study also revealed that the personality, kindness, and even gender of the instructor was more often noted by participants than the level of

knowledge the instructor exhibited. These qualitative findings indicate that more research is needed related to teaching kitchens in the non-school environment and instructor impact on learning and behavior change.

Lastly, implications for future practice and research from this study reinforce the value of CBPR in dietetics research. The clients, agency, and researcher have spent five years forming a partnership. The CBPR-related strengths of this study include maintaining a partnership, assessing community strengths and dynamics, identifying priority health concerns, and designing interventions. Areas for improvement within the CBPR core components include identifying research questions and conducting, interpreting, disseminating, and translating research findings. This study has provided an opportunity for assessing the partnership through evaluating the intervention. Building on the strengths and cooperatively working on areas for improvements would likely make the partnership and intervention more sustainable. Identifying measurement tools and methods will strengthen the research related to this intervention and contribute to the larger body of knowledge for community-based teaching kitchens and hands-on nutrition education interventions and research.

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APPENDIX A

IRB APPROVAL AND CHANGE LETTERS

TO: Melissa Powell **IRB # 17-138**
Dr. Beth Crawford

FROM: Lindsay Pardue, Director of Research
Integrity Dr. Amy Doolittle, IRB
Committee Chair

DATE: 10/18/2017

SUBJECT: IRB #17-138: Community-Based Cooking Skills & Nutrition Education
Program Evaluation

The IRB Committee Chair has reviewed and approved your application and assigned you the IRB number listed above. You must include the following approval statement on research materials seen by participants and used in research reports:

The Institutional Review Board of the University of Tennessee at Chattanooga (FWA00004149) has approved this research project # 17-138.

Annual Renewal. All approved research is subject to UTC IRB review, at least once a year. Please visit our website (<http://www.utc.edu/research-integrity/institutional-review-board/forms.php>) for the Form B (continuation / change / completion form) that you will need to complete and submit if your project remains active and UTC IRB approval needs to be renewed for another year. Unless your research moves in a new direction or participants have experienced adverse reactions, then renewal is not a major hurdle. You as Principal Investigator are responsible for turning in the Form B on time (2 weeks before one year from now), and for determining whether any changes will affect the current status of the project. When you complete your research, the same change/completion form should be completed indicating project termination. This will allow UTC's Office of Research Integrity to close your project file.

Please remember to contact the IRB immediately and submit a new project proposal for review if significant changes occur in your research design or in any instruments used in conducting the study. You should also contact the IRB immediately if you encounter any adverse effects during your project that pose a risk to your subjects.

For any additional information, please consult our web page <http://www.utc.edu/irb> or email instrb@utc.edu.

Best wishes for a successful research project.

TO: Melissa Powell **IRB # 17-138**
Dr. Elizabeth Crawford

FROM: Lindsay Pardue, Director of Research
Integrity Dr. Amy Doolittle, IRB
Committee Chair

DATE: 4/13/2018

SUBJECT: IRB #:17-138: Community-Based Cooking Skills and Nutrition Education
Program Evaluation

The Institutional Review Board has reviewed and approved the following changes for the IRB project listed below:

- Addition of analysis of previously collected, de-identified survey data

You must include the following approval statement on research materials seen by participants and used in research reports:

The Institutional Review Board of the University of Tennessee at Chattanooga (FWA00004149) has approved this research project # 17-138.

Annual Renewal. All approved research is subject to UTC IRB review, at least once a year. Please visit our website (<http://www.utc.edu/research-integrity/institutional-review-board/forms.php>) for the Form B (continuation / change / completion form) that you will need to complete and submit if your project remains active and UTC IRB approval needs to be renewed for another year. Unless your research moves in a new direction or participants have experienced adverse reactions, then renewal is not a major hurdle. You as Principal Investigator are responsible for turning in the Form B on time (2 weeks before one year from now), and for determining whether any changes will affect the current status of the project. When you complete your research, the same change/completion form should be completed indicating project termination. This will allow UTC's Office of Research Integrity to close your project file.

Please remember to contact the IRB immediately and submit a new project proposal for review if significant changes occur in your research design or in any instruments used in conducting the study. You should also contact the IRB immediately if you encounter any adverse effects during your project that pose a risk to your subjects.

For any additional information, please consult our web page <http://www.utc.edu/irb> or email instrb@utc.edu.

Best wishes for a successful research project.

APPENDIX B
COOKING CLASS SURVEY

NNH Cooking Class Survey

Thank you for taking the time to fill out this anonymous survey! We appreciate your feedback.

1. 1. After participating in this class, I have more confidence in making healthy meals with the ingredients available to me.

Mark only one oval.

- Strongly agree
 Agree
 Neutral
 Disagree

2. 2. After participating in this cooking class, I will make the same recipe for my household.

Mark only one oval.

- Strongly agree
 Agree
 Neutral
 Disagree

3. 3. Do you regularly create a grocery budget for your household?

Yes

Mark only one oval.

- All of the time
 Sometimes
 Never

4. 4. This class helped me learn how to stretch my food dollars.

Mark only one oval.

- Strongly agree
 Agree
 Neutral
 Disagree

5. 5. Do you plan to share this recipe with your family or friends?

Mark only one oval.

- Strongly agree
 Agree
 Not sure.
 Disagree
 Strongly Disagree

6. Over the last month, have you used any of the budgeting tips you learned from this class?

If yes, please explain below:

Mark only one oval.

- No
- Yes

7. Did you use the ingredients/groceries that you took home last month?

Mark only one oval.

- Yes, I used them to make the same recipe we learned.
- Yes, I used them for other recipes.
- No, I did not use them.

8. During the past 7 days, how many times have you cooked a meal at home?

Mark only one oval.

1	2	3	4	5	6	7
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

9. Please write any comments in the space below.

APPENDIX C
IDENTIFICATION AND ANALYSIS OF RESEARCH QUESTIONS

Perceptions from a Community-Based Cooking and Nutrition Education Class:

Filling a Gap in Public Health and Community Nutrition

This study aims to identify the research participants’ perceptions from an on-going, grant-funded, community-based cooking skills and nutrition education class. The study uses a community-based, participatory research (CBPR) approach. In 2015, pilot data was analyzed revealing that the class may be filling a gap in public health and community nutrition. This study seeks to further the pilot data by examining three additional years of extant data from 2016-2018.

Quantitative

RQ1: What is the relationship between food resource management (FRM), participation in food-related programs, and nutrition self-efficacy score (NSES) of cooking class participants and Nutrition Empowerment Score (NES)?

	Variable Labels	Levels of the Variable	Scale of Measurement
Dependent Variable(s)	Nutrition Empowerment Score (NES) (Survey, Questions 1, 2, 4, 5)	NES (0-8)	Interval
Independent Variables	Food Resource Management Score (FRMS) (Survey, Question 3, 6, 7, 8)	FRMS (0-8)	Interval
	Food-Related Program Participation	1=Participant 2=Non-Participant	Nominal

RQ2: What is the relationship between elements of a cooking class (i.e. teacher, curriculum) and Nutrition Empowerment Score?

	Variable Labels	Levels of the Variable	Scale of Measurement
Dependent Variable(s)	Nutrition Empowerment Score (NES)	NES Score (0-8)	Interval
Independent Variables	Facilitator	1=RDN 2=RDN Student 3=Agency Staff/Board Member	Nominal
	Curriculum	1=Good and Cheap 2=Other	Nominal
	Teaching Kitchen	1=Old Kitchen	Nominal

		2=Remodeled Kitchen	
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Qualitative

RQ3 (Qualitative): What budgeting tips have participants used after attending a class?

Data Point/Element	Source for Data	Data Gathering Method	Data Analysis Method
Perception of budgeting practices	Post-Survey, open-ended question (Survey, Question 9)	Themes related to food resource management and the cooking class	Inductive Analysis

After all research question variables have been listed, please list any attribute variables to be gathered.

Attribute Variables:

	Variable Labels	Levels of the Variable	Scale of Measurement
	Age	1=Early Adulthood (18-39) 2=Midlife (40-59) 3=Later Adulthood (60+)	Ordinal
	Gender	1=Female 2=Male	Nominal

	Attendance	Number of Cooking Classes Attended (1-5)	Nominal
	Zip Code	1=37405 2=37415 3=37343 Etc.	Nominal
	Race	1=Asian	Nominal

		2=Black or African American 3=Hispanic or Latino 4=White 5=Other	
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APPENDIX D

ADULT EDUCATION PROGRAM REGISTRATION FORM



**Adult Education Program
 Registration Form**

Registration Date: _____

Name: _____ Birthdate: _____ Sex: _____ Race: _____
 First Last M

Address: _____
 Street City State Zip Code

Phone 1: _____ Phone 2: _____

Email: _____

GENERAL PERMISSION RELEASE

This information is correct to the best of my knowledge. I understand that Northside Neighborhood House does not provide insurance coverage for me and that I am responsible for my own personal coverage should an accident occur. If an emergency should occur I understand that I will be taken to Erlanger Medical Center where I will receive treatment as deemed necessary by the physician in charge. I give my permission for the physician to hospitalize, secure proper anesthesia, or to order injection or surgery for me if I am unable to decide for myself. In addition, I give permission for Northside Neighborhood House to photograph and reproduce such photographs of me for its promotional purposes.

Person To Call In Case Of Emergency: _____

Relationship To Client: _____ Phone #: _____

Signature: _____ Date: _____

Program _____
 (Office use only)

Entered in computer _____

2/2015

APPENDIX E
LETTER OF SUPPORT

From: Meghan Creecy
To: Powell, Melissa
Subject: Letter of Support
Date: Monday, May 13, 2019 11:21:52 AM

To the UTC IRB Committee and the Learning and Leadership Doctoral Program Faculty,

We are so excited to have Melissa Powell continue her research in order to evaluate and provide future insight for our Cooking Class. She and her team of students have been pivotal in this program's success. We are always eager to see how we can more effectively impact the lives of those we serve. We are pleased to share our cooking class data, as we believe her analysis will help us shape the future direction of this program and assist with funding efforts as well. Please contact me if you have any questions.

Sincerely,

Meghan Creecy

Chief Programs Officer | Northside Neighborhood House 211 Minor Street | PO Box 4086 |
Chattanooga, TN 37405 mcreecy@nnhouse.org | nnhouse.org

Phone: 423.267.2217 | Fax: 423.267.9506

"What I have tried to establish here is a place where all who need help can come to find the means to survive at that moment, and more importantly, the skills and abilities to survive for a lifetime."

- Rose S. Longgley, Founder and Former Executive Director of the NNH

VITA

Melissa Powell was born in Birmingham, AL. She attended Samford University where she became interested in nutrition. Melissa completed a Bachelor of Science degree in Dietetics. Melissa went on to complete a Dietetic Internship at the University of Alabama Birmingham and passed the registration exam to become a Registered Dietitian Nutritionist (RDN). Melissa worked as a clinical dietitian for one year in a rural hospital and long-term care facility before accepting a job with the Hamilton County, Tennessee Department of Health's Women, Infant, and Children (WIC) Program as the nutrition director. Melissa was a guest lecturer and completed a Master of Education degree, with a concentration in health education, at the University of Tennessee Chattanooga (UTC) while working with WIC. After accepting a full-time lecturer position in the Department of Health and Human Performance (HHP) at UTC, she decided to pursue a Ph.D. degree within the College of Health, Education, and Professional Studies (CHEPS) Learning and Leadership Doctoral Program. She is currently serving as an Associate Lecturer and Interim Program Coordinator of the future UTC Master of Public Health (MPH)-Registered Dietitian Nutritionist (RDN) Track.