5-2014

PEER HEALTH TEACHING IMPROVES NUTRITION BEHAVIORS IN THE TEEN TEACHER POPULATION

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by

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A THESIS

Presented to the Faculty of

The Graduate College at the University of Nebraska

In Partial Fulfillment of Requirements

For the Degree of Master of Science

Major: Nutrition and Health Sciences

Under the Supervision of Professor Michelle Krehbiel

Lincoln, Nebraska

May, 2014

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University of Nebraska, 2014

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Peer teaching is a promising model of health education. Limited research exists on the topic of the effectiveness of peer health teaching, and even less research exists on the effects on the actual peer teachers, notably their motivations for becoming peer teachers as well as behavioral modifications and improved self-efficacy made as a result. This study examined the motivations and the health behavior modifications made by 4-H Eat 4-Health teen teachers ages 14 to 17 after delivering a peer health education program. This study investigated teen teachers' nutrition and physical activity behavior changes as well as their leadership and confidence skills acquired as a result of teaching a health education program. Demographic information and nutrition and physical activity behaviors were measured using a retrospective 4-H Common Measures survey questionnaire. In-depth phone interviews examined the teen teachers' reasons for participating in the 4-H Eat 4-Health program and the skills they gained from teaching. The findings from this study showed that the study participants experienced the most significant changes in their leadership skills, eating patterns, confidence levels, role modeling capabilities, and need for self-improvement.

ACKNOWLEDGEMENTS

Special thanks to my advisor, Dr. Michelle Krehbiel, and committee members Dr. Timothy Carr and Dr. Candace Kohnke. I would also like to thank Melissa Wallinga and the Nebraska Evaluation and Research Center. I'd like to thank my husband and family for all their support and encouragement and, ultimately, I thank Jesus for His abundant blessings in my life.

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CHAPTER I

INTRODUCTION

The Centers for Disease Control and Prevention (CDC) report that childhood obesity affects 17% of the youth population in the U.S.; therefore, the issue of combating poor health behaviors with positive behaviors is a priority. "An estimated 33 percent of children and adolescents ages 2 to 19 years are either overweight or 'at risk for overweight'" (Rolfes et al., 2009, p. 281). With this, the CDC noted that "unhealthy behaviors are often established during childhood and persist into adulthood" (2012, para 1). The CDC's 2011 Youth Risk Behavior Survey categorized "overweight" as youth who are at greater than the 85th percentile but less than the 95th percentile, based on sex- and age-specific reference data from the 2000 CDC growth charts. Youth categorized as obese constituted those greater than the 95th percentile, based on sex- and age-specific reference data from the 2000 CDC growth charts (CDC, 2012). Accordingly, 15.2% of high school youth representing grades ninth thru twelfth were considered overweight, while 13% of them were obese (CDC, 2012).

According to the CDC's High School Youth Risk Behavior Survey, Nebraska youth closely aligned with the U.S. averages for statistics on dietary and physical activity behavior trends. All survey statistics reflected the youths' responses based on the seven days prior to completing the survey. In accordance with the U.S. averages, 11.7% of high school youth reported not eating fruit in the previous seven days, while 71.7% reported eating vegetables fewer than two times a day (CDC, 2012). The CDC reported that 19%

of high school youth in the U.S. claimed that they drank a can, bottle, or glass of non-diet soda two or more times per day (CDC, 2012).

Moreover, 50.5% of high school youth reported being physically active at least 60 minutes per day on fewer than five days (CDC, 2012). Similarly, 32.4% of youth watched television three or more hours per day on an average school day (CDC, 2012). Nebraska averages in these health categories mirror U.S. averages (CDC, 2012). In addition, the 2005-2006 National Health and Nutrition Examination Survey (NHANES) reported that the number of adolescents ages 12-19 years old snacking or consuming an extra beverage or food item on any given day increased from 61% in 1977-1978 to 83% in 2005-2006 and that 23% were snacking three or more times a day (Sebastian et. al., 2010).

Health initiatives are being implemented in the United States as a result of the growing childhood obesity trends. Many focus on the importance of youth learning and practicing healthy habits, such as eating nutritious foods and exercising regularly. Several examples of national health initiatives include the School Lunch Act, the National Football League sponsored "Fuel Up to Play 60" program, the "Let's Move" campaign, the U.S. Department of Agriculture's Food Stamp Nutrition Education Program, and other statewide and local initiatives. These efforts, among many others, provide youth with the knowledge and resources to live healthier lifestyles. Although changing eating and physical activity behaviors is difficult, one way youth can succeed in making wise choices about their health is by teaching a health curriculum to others. One model that shows promise is peer health education.

Puchner (2003) defines peer teaching as “any activity carried out by a student or students that involves students taking on a teaching role in the school setting” (p.2). Peer teachers can teach in formal and informal classroom settings. The peer teachers are those that learn a skill or set of skills and then proceed to teach and implement those skills to others of similar ages.

Peer health education has numerous benefits. According to Klein and Sondag (1994), the peer health teachers gain knowledge, which influences positive behavior change, such as making healthier food choices and increasing their daily amounts of exercise. Peer health programs are financially efficient, as the peer health teachers deliver inexpensive yet effective educational resources (Klein and Sondag, 1994). Not only this, but peer health teachers can provide health education on a basic level (Klein and Sondag, 1994). Klein and Sondag also establish that peer teachers have the ability to teach and learn with their audience; therefore, they may not have the same expertise provided by an adult teacher, yet they hold the advantage of explaining concepts in a way that is easier to understand while quickly establishing common ground with their peer audience (1994). In addition, some students feel more comfortable with peer teachers and even excel in a peer-led environment (Klein and Sondag, 1994). Supporting this concept,

> Researchers report that the ‘peer education approach is based on two assumptions: Students are more responsive to the influence of peers who share similar values and interests, and individual or group discussions with trained peer educators will facilitate understanding of health information and encourage subsequent behavior change.’ Other researchers report that

> young people (ages 15-24) are more likely to listen to a speaker with whom they can identify (Klein and Sondag, 1994, p.127).

Studies have demonstrated several notable outcomes associated with peer health teachers regarding their experiences. These include an increase in self-confidence and ability to voice their own thoughts and opinions; increased knowledge pertaining to healthy eating and nutrition practices; increased consumption of fruits, vegetables, and lower-fat foods; and reported improvements in their will to exercise daily (Backett-Milburn and Wilson, 2000; Story et al., 2002; Perez-Escamilla et al., 2008). However, there is a noticeable absence of close examination of their unique experiences, including their motives for becoming a health teacher, their development of leadership skills, and self-efficacy.

As one study noted, "although there is a considerable body of evaluative findings about peer education from the U.S., much of this relies on quantitative methods, tends to investigate mainly short-term impacts and pays little attention to issues of process" (Backett-Milburn and Wilson, 2000, p.85). There is limited research focusing on the peer teachers themselves, along with their initial motivations to teach, and whether or not they experience changed health behaviors as a result of teaching. Furthermore, even fewer studies have been conducted that focus specifically on *adolescents* as the peer health teachers.

An effective strategy to learn something is by teaching it, so the peer health teachers hold the advantage of learning an art or practice extremely well when they are accountable for delivering and modeling it to others (Russell et al., 2006). According to

Wingenbach and Kahler (1997), peer teaching aids in improving communication and decision-making skills, cooperation with others, and with self-understanding. While peer health teaching is not a new concept, the impact on the peer teachers is not fully understood.

4-H Eat 4-Health Study

Participants in this study were teens between the ages of 14 and 17 years old who served as the peer health teachers in the 4-H Eat 4-Health program. 4-H is the largest youth development organization in the United States that focuses on preparing youth (ages 10-21 years old) to make a difference in their communities (4-H Council, 2014). The 4-H Eat 4-Health program utilized peer teachers or teens as teachers. Teens in the program taught a health-based curriculum focused on nutrition and physical activity to youth in grades K-12th. The 4-H Eat 4-Health program is part of the National 4-H Healthy Living initiative.

To participate in this study, eligible youth were between the ages of 13 and 19 years old and were recruited through the 4-H Eat 4-Health 4-H program. Twelve teenage applicants were accepted to participate in the Eat 4-Health program during 2013-2014. These teens attended training, taught nutrition and physical activity lessons, and assisted with reporting. Out of the twelve teens in the Eat 4-Health program during 2013-2014, ten of them participated in this study.

For the purposes of the Eat 4-Health study, the term "*teen* health teachers" will be the term used to represent the 14- to 17-year old age group being examined.

Purpose

The Eat 4-Health study examined the motivations and the health behavior modifications made by Eat 4-Health teen teachers ages 14 to 17 after delivering a peer health education program.

Objectives

The four objectives of this study are:

1.) To examine why teens choose to become teen health teachers
2.) To assess the teen teachers' behavior changes made as a result of being a teen health teacher
3.) To evaluate the gains in knowledge and the implementation of nutrition and physical activity recommendations by the teen health teachers
4.) To identify the potential benefits and challenges of being a teen health teacher

CHAPTER 2

LITERATURE REVIEW

While the traditional method of teaching in a formal classroom setting with an adult as the teacher remains the most prevalent mode of youth education, peer health teaching is emerging as a popular educational method. Ample research exists on the topic of peer education, yet the scope is quite limited regarding peer or teen health teaching. Few studies focus on the effects on the actual peer health teachers, notably their motivations for becoming peer teachers as well as behavioral modifications and improved self-efficacy made as a result (Perez-Escamilla et al., 2008; Ricketts and Rudd, 2002; Guldal et al., 2012). These reasons and others solidify the basis to pursue a study on the topic of peer health education and how it is perceived by the youth that are teaching.

Defining Peer Health Education and Peer Health Teachers

C.J. Helm and colleagues (1972) reported that "using peer health educators, who are students trained to provide health education to fellow students, was reported on college campuses as early as 1957" (Klein and Sondag, 1994, p.126). This somewhat "old-school" method of teaching is experiencing a comeback, notably in the area of health education. Peer education is an ever-increasingly effective model to implement health programs in school and community settings (Mellanby et al., 2000).

The terms "peer education" and "cross-age teaching" are both used to describe a similar teaching model. Peer education focuses on teaching those at the same status or age as the teacher (Guldal et al., 2012), while cross-age teaching involves youth teaching across a range of age groups, including those similar in age (Russell et al., 2012).

Researchers on this topic use both terms. “Teen teachers” refers to students between the ages of 14 and 19 who deliver an educational curriculum-based program to youth similar or younger in age (Mellanby et al., 2000).

Cross-age teaching differs from peer teaching in that the teachers are teaching to an array of age groups rather than solely to those that are the same status. Cross-age teaching occurs when trained youth teach those younger than themselves as well as those of similar age, usually in an informal or nontraditional educational setting (Russell et al., 2006). For example, an informal setting would be an out-of-school setting, usually occurring during after-school hours or during the summer, or as an event on a weekend. Formal settings refer to a structured time and place with adult supervision, while informal refers to a setting with limited adult supervision and a flexible timetable, such as a health fair (Story et al., 2002).

There are various advantages to using a cross-age or peer education program. According to the U.S. Department of Justice (1999), cross-age teaching involves sharing skills and knowledge involving a range of ages being taught, whether similar ages, older or younger. Cross-age teaching and peer teaching allow the utilization of certain talents and abilities while instilling improved self-esteem and confidence for those that are teaching (U.S. Dept. of Justice, 1999). It creates an atmosphere wherein teachers and students may learn from each other in an open context while discovering new perspectives as well as embracing opportunities to role-model (U.S. Dept. of Justice, 1999). A description of peer education is the improvement of knowledge and skills by means of efficient help and support among ones who are of the same status (Guldal et al., 2012). Important elements to develop youth leaders for peer education include: creating

and maintaining youth-adult partnerships; granting young people decision-making power and responsibility for consequences; providing a broad context for learning and service; and recognizing young people's experience, knowledge and skills (Ricketts and Rudd, 2002).

Basis for Using Peer Health Teachers

Research supports the significance of using peer teaching models. Mellanby's (2000) comparative literature review provides multiple reasons for applying peer teaching strategies. These reasons reflect the social influences theoretical model based on the following theories: Bandura's (1976, 1986) social learning, McGuire's (1964) social inoculation and Baric's (1977) social norms. This stems from Lindsey's (1997) study reporting that "friends seek advice from friends and are also influenced by the expectations, attitudes and behaviors of the groups to which they belong" (Mellanby et al., 2000, p.534). The primary purpose for peer teaching is to "support the social, personal, and cognitive development of the student teachers" (Hammon-Diedrich and Walsh, 2006, p.2). Puchner's (2003) research assessed the findings from previous studies that focused on individuals between grades K-12 teaching peers in the classroom. She reported that four out of five studies looking at attitudes in the peer teachers showed that the attitudes were more positive in those that served as peer teachers versus students in conventional instruction (Puchner, 2003).

The audience or follower is an important component in the peer teaching context. The term "followership" translates as a voluntary desire to affiliate with and be influenced by another individual in highly significant ways that are not necessarily the

follower's preference (Ward and Ellis, 2008). Ward and Ellis's (2008) study acknowledged six major characteristics to explain what makes peers follow peer teachers. These include: willingness to provide social support and to enter into close friendships; opportunity for increased social status through affiliation with a popular leader; similarity of values; possibility for idealized influence; and little potential for interpersonal rivalry (Ward and Ellis, 2008).

Additionally, high school youth with experience in formal leadership training scored higher on nine out of the top ten personal qualities sought by employers compared with youth lacking experience in leadership (Ricketts and Rudd, 2002). With peer teaching comes a support network that allows the teens to have access to educational opportunities in contexts that are encouraging and that prepare them for adult roles later in life (Cowie, 1999). The peer teachers are provided with the opportunity to realize their potential at an early age so that they may utilize that potential to the utmost (Cowie, 1999). This also provides a societal role for youth to engage in community responsibilities and ownership (Cowie, 1999). "Throughout childhood and adolescence the quality of a young person's peer relationships, their participant roles in the peer group and their sense of responsibility towards their own community each have a crucial influence on the individual's constructions of self, others and the social world" (Cowie, 1999, p.433). In addition to this, Cate and Durning (2007) report that peer teachers have a tendency to learn twice when they are required to learn the material and then reiterate it by teaching it to others. They learn doubly but also in two different contexts, which solidifies knowledge retention (Cate and Durning, 2007).

Recruitment of Peer Health Teachers

Recruiting participants for peer teaching is one of the initial steps in the program implementation process. When it comes to peer teaching surrounding health issues, the following studies used various methods of recruiting these peer teachers. One study held a school assembly and invited the high school students who were interested in being a peer teacher to attend a workshop and complete questionnaires relevant to the program (Backett-Milburn and Wilson, 2000). In another case, seventh graders elected those peers that they most admired (Story et al., 2002). When registering for school, applications for being a peer teacher would be distributed to the high school students; and, in other cases, informational meetings would be held and flyers posted (Lee and Murdock, 2001). Other models used an application process that included financial incentives so that the teen teachers were compensated for their time (Lee and Murdock, 2001). Teens who were already involved in a youth organization, such as 4-H, were recruited to be teen science teachers to five- to eight-year-olds (Ponzio et al., 2000). Ripberger et al.'s (2009) program recruited twenty teens from the local Boys and Girls Club and other youth organizations to become Food and Fitness Ambassadors. In this study, the teens also had to attend an orientation, complete an application and receive approval from their youth advisor (Ripberger et al., 2009). Furthermore, some high schools have a minimum number of hours that the students need to fulfill in community service; and, therefore, a "teens as teachers" project was one of the service opportunities brought to the teens' attention (Ward and Ellis, 2008).. Overall, the general recruitment strategy involved the youth volunteering for the leadership position.

Models of Peer Health Teaching

While various models of peer health teaching exist in the literature, there remain unexplored areas in this research field. Several examples from the literature demonstrated effective models of peer health teaching. Klein and Sondag's (1994) study focused on university students whose role consisted of serving as peer health educators. The researchers conducted focus group interviews with these peer health educators that asked them what their motivations were for signing up to be a peer health educator. The results showed that these peer health educators were motivated primarily by one or a combination of the following factors: family experiences, interactions with friends, personal experiences, intrinsic motivations (such as wanting to help others), and extrinsic motivations (such as gaining public speaking experience). They concluded that the social learning theory helped clarify and contribute to their understanding of why the students chose to become peer health educators. In addition, they found that there is no "typical" peer health educator but that recurring themes emerged among the motivations, such as wanting to help others and recognizing the importance of health education. Among other findings, this study also concluded that the peer health educators benefit from these programs in addition to their peers receiving the instruction (Klein and Sondag, 1994).

Wawrzynski and colleagues (2011) developed the National Survey on Peer Education and conducted a study based on this survey to look at the learning outcomes for college-age peer educators (Wawrzynski et al., 2011). According to this study, "little is known about the outcomes of being a peer educator" (Wawrzynski et al., 2011, p.18). This study held 12 focus groups consisting of over 100 traditional-aged undergraduate peer educators from over 60 institutions that attended a national conference in 2004.

These peer educators volunteered to be in the focus groups, and these focus groups became the basis for developing the National Peer Educator Survey (Wawrzynski et al., 2011). Outcomes associated with the focus group interviews included the opportunity for students to reflect on their unique experiences as peer health educators and to provide the research team with a clearer understanding of the benefits and impacts of being a peer health educator. Items on the finished survey pertained to a self-analysis, wherein the peer educators rated their perception of personal confidence levels, leadership abilities, and knowledge on a variety of health issues. Since the initial administration of the National Peer Educator Survey in 2005, over 1,700 college-age peer educators representing over 200 institutions in the U.S. have completed the survey. Interestingly, the peer educators in this sample were found to most likely be women (83 percent) and Caucasian (78 percent), and less than one-third (29 percent) of these peer educators in college had been involved in peer education in high school. Moreover, the primary reason that these individuals became peer educators was attributed to their desire to help others (66 percent). Overall, this study looked at a wide variety of health behaviors, ranging from alcohol and drug abuse to sexual health to nutrition and body image (Wawrzynski et al., 2011).

Guldal and colleagues (2012) researched the feelings, thoughts and self-affections of the peer educators in a program focused on sexual and reproductive health education in Izmir, Turkey, a project supported by the European Union. Eighteen peer educators between the ages of 16 and 25 years old participated in two focus group interviews. All peer educators reported that they chose to participate as a peer educator in order “to enhance their knowledge” and “to inform their social circle” (Guldal et al., 2012).

Researchers from this study concluded that “peer educators internalize a substantial amount of knowledge and gain self-confidence and important skills such as communication, problem solving and access to information” (Guldal et al., 2012, p.349). Four categories were recognized as the primary experiences felt by the peer educators. These include how it feels to be a peer educator, fears and difficulties faced by the peer educators, how they dealt with the obstacles and what they gained as a result of being a peer educator (Guldal et al., 2012).

As part of a “Goals for Health” program in rural Virginia and New York, Meyer et al. (2000) examined the integrity of using peer-led programs. In this study, high-school students taught sixth-graders a 12-workshop program focused on health practices that would encourage cancer-preventative habits. This “Goals for Health” program was a life skills program based on an earlier model called “Going for the Goal,” and it addressed “the special needs of rural, minority adolescents to change dietary fat and fiber intake and tobacco-related behaviors” (Meyer et al., 2000, p. 224). This study recruited 133 high school leaders to teach the program to the sixth-graders as part of their community service fulfillment. Although the researchers of this study focused on the outcomes of the learners, in this case, the sixth-graders, it also showed that using the high school students as the teachers was a success because the program integrity remained constant. Additionally, they concluded that peer-led programs hold a promising place in health promotion (Meyer et al., 2000).

Hammond-Diedrich et al. (2006) conducted a study on cross-age teaching wherein eight 11- to 15-year-old boys from underserved communities taught physical activity skills to a group of 40 fourth-graders as part of a university-sponsored program.

The participants, the teachers in this case, were called the "Urban Youth Leaders" and taught eight sessions in the program. This project aimed to promote leadership among urban youth and provide them with new opportunities and civic responsibilities. The "Urban Youth Leaders" were interviewed after the eight-session program delivery, and the interviews focused on the leaders' perceptions of the program rather than on particular behavioral outcomes. This is due to the fact that the purpose of this program was to effectively develop leadership and responsibility in the leaders as they led fourth graders during a summer sports camp. Themes resulting from this study included program expectations, perceptions of the program, progression of teaching skills, familiarization with a university, personal growth and responsibility development. This study successfully examined the potential benefits of recruiting underserved youth to be leaders in the community. These benefits included the leadership opportunities provided to the urban youth which allowed development of useful interpersonal skills as well as the establishment of meaningful relationships between adults and the youth (Hammond-Diedrich et al., 2006).

In a study published in the Journal of Nutrition Education and Behavior, Perez-Escamilla and colleagues (2008) assessed the impact of peer education on nutrition and health outcomes in the Latino population. These health outcomes related to education pertaining to Type 2 diabetes and metabolic conditions, breastfeeding practices and nutrition attitudes, knowledge and behaviors. The adult peer educators in this study included a variety of titles but were mainly referred to as "community health workers," which are defined as "community members who work almost exclusively in community settings and serve as connectors between health care consumers and providers to promote

health among groups that have traditionally lacked access to adequate care" (Perez-Escamilla et al., 2008, p.209). Researchers for this study concluded that peer nutrition education had a positive impact on the aforementioned education topics. One important implication of this study was that the optimal role of the community health workers was not carefully studied but should be more closely monitored in the future in order to maximize on the possible community and healthcare benefits (Perez-Escamilla et al., 2008).

In the 4-H Youth Experiences in Sciences (YES) project, teens taught a science-based curriculum to five- to eight-year-old children in an after-school care setting. The YES program was implemented in a wide array of settings in rural, suburban, and urban areas of California and included school-age child care programs, summer camps, and migrant education programs. The program was based on a curriculum comprised of five or six two-hour sessions focused on science education. The teen teachers were all volunteers coming from 4-H clubs or other youth organizations. This study conducted by Ponzio et al. (2000) provided a basis for using the cross-age teaching model. One strength of using this model is the cooperative learning situation that is created when both the teen teacher and the younger student perform their own roles yet they depend on each other for reciprocal learning. According to Ponzio and his colleagues, "the research literature on using teens as teachers of young children is positive regarding the anticipated benefits for both the adolescents and their pupils" (Ponzio et al., 2000, p.76). This benefit is dependent, however, on the development of good relationships among the teen teachers and the students as well as the type and amount of training provided for the teen teacher. The YES program study described three new implications for teen teachers. These

include: teens can be self-engaged learners when it comes to hands-on activities; the teen teachers' "can do" approach with their optimism and confidence encouraged enhanced scientific inquiry for the students; and the psychosocial attraction, identification and modeling provided by the teen teachers as they actively instructed a science curriculum created by adults (Ponzio et al., 2000).

Although the literature provides helpful insights on the topic of peer health education, there remain gaps in the research, such as what motivates teens to teach about health and how teen teachers are impacted by their teaching roles. Many of these studies chose to look at just one aspect of the outcomes affecting the peer teachers in their respective program rather than on multiple factors. Those addressing multiple factors did not closely examine nutrition and physical activity as part of their educational materials and how it directly affected the peer teachers' health habits. Very few studies addressed the motives behind why the peer teachers chose that particular leadership role.

Motives of Peer Health Teachers

The reasons as to why peer health teachers decide to engage in such a role are multi-faceted. The majority of studies on this subject examined the outcomes of the teaching programs as a whole. A few studies that examined the motivations of the peer health teachers showed no one reason as to why the youth decided to become peer health teachers. Ponzio et al.'s (2000) study researched 4-H teens as science teachers for five- to eight-year-olds and found that most of these teens reported a desire to fulfill service-related high school graduation requirements. Additional reasons from the same study included an interest in teaching, enjoyment of children, a chance to be of service to

others, and simply a passion for science and the material being taught (Ponzio et al., 2000). The college students that participated in the national survey on peer education said that they were involved in clubs in high school and, therefore, wanted to continue belonging in that type of setting (Wawrzynski et al., 2011). In the same study, the teachers attributed their reasons to having been mentored by someone that encouraged them to take on a leadership role, while others simply participated because they wanted to make a difference (Wawrzynski et al., 2011). According to Klein and Sondag's study, "the peer health educators' motivations for volunteering were altruistic, such as wanting to help others; egotistic, such as wanting job training; or related to self-efficacy beliefs, such as satisfying a personal need for health education" (1994, p.126). In a study conducted by Guldal et al. (2012), peer health teachers (between 16 and 25 years) desired the opportunity to increase knowledge in a certain area and to act as an effective vehicle to inform their social circles. These represent the multi-variant motivations for why these teens and young adults decided to become peer health teachers.

Analyses and Study Designs Used

In order to gather and record outcomes pertaining to the effectiveness of these peer-led education programs, researchers used a variety of study designs. Many of the research studies used qualitative research methods to collect data from the peer teachers, as they were exploratory in nature and explanatory (Lee and Murdock, 2001). Likewise, many of the studies conducted individual interviews as well as focus groups with the peer teachers. One study conducted in the United Kingdom required that the peer teachers keep a diary to document their experiences (Backett-Milburn and Wilson, 2000). Overall, the reports of the peer teachers' experiences for that study were not thoroughly

documented, and those that were reported were few in number (Backett-Milburn and Wilson, 2000). Surveys were another tool utilized to collect data to support findings on the effects of peer education programs. For example, peer health teachers in seventh grade completed a Likert Scale survey at the end of a program to assess their perception of being a peer leader (Story et al., 2002). This study showed high acceptability by the peer teachers, classroom students and adult teachers in that they all held positive perceptions of the peer leaders and their effectiveness in teaching the health curriculum (Story et al., 2002).

Interviews in Lee and Murdock's (2001) study used audio tapes to record the sessions that were then transcribed, coded and analyzed. During these interviews, key questions were asked several times in different contexts in order to obtain the most accurate account (Lee and Murdock, 2001). As a result, Lee and Murdock found ten elements that created a successful "teens as teachers" program with the strongest element being the presence of strong adult mentors (Lee and Murdock, 2001).

4-H Extension personnel in New Jersey conducted a study with teen teachers in which they used a fifteen-item retrospective pre- and post-life skills survey and a ten-item retrospective pre-post teaching skills survey (Ripberger et al., 2009). This study found that the teen teachers improved in valuable life and teaching skills as a result of teaching a health-based curriculum focused on healthy eating and physical activity practices (Ripberger et al., 2009). In another peer education program study, six teen teachers were interviewed about their participation, strategies, and effectiveness, including areas pertaining to their relationships with children, techniques for encouraging involvement, communication strategies, and how this work fit into their own lives (Ponzio et al., 2000).

Ponzio et al.'s (2000) study found that the teens were effective as science instructors to the younger audiences because they were active participants, related well with the children, and were self-engaged learners.

Outcomes

Physical Behavioral Outcomes

In a school-based nutrition education study on young adolescents, Story et al. (2002) demonstrated that those youth that became peer leaders experienced the largest increases in their consumption of fruits, vegetables and lower-fat foods. These same youth found that they learned more about healthy eating by being a peer leader and that they were more conscious of making healthy choices as a result (Story et al., 2002). Perez-Escamilla et al.'s (2008) peer nutrition education study focused on the health outcomes of Latinos and found that the Latinos reported solid improvements in their ability to maintain a healthy diet, eating more vegetables as well as lower-fat foods, and reducing intake of salt and sugar. The Latinos also experienced an increased awareness of diabetes care practices, increased motivation to exercise for 30 minutes and in their ability to control weight (Perez-Escamilla et al., 2008). The student facilitators or teachers in this study showed encouraging results as they increased their knowledge and skills, although it was not thoroughly discussed to what extent (Perez-Escamilla et al., 2008). These examples represent the outcomes directly related to the peer teachers' dietary and exercise practices. Few studies adopted this approach of focusing on the health outcomes of the teacher population; rather, most of the studies on peer teaching focused on the health outcomes of the student population.

Social Behavioral Outcomes

With the research conducted, so far, in the area of peer health education, most studies have reported positive outcomes on behalf of both the peer teachers as well as the students being taught. Backett-Milburn's (2000) study on understanding peer education showed that the peer health teachers reported an increase in self-confidence and ability to represent their own thoughts and opinions (Backett-Milburn and Wilson, 2000). A national survey of peer education demonstrated that college students who implemented a peer health education program saw improvements in their knowledge of health, wellness and safety issues, improved teaching, public speaking skills, research and organizational abilities, improved self-confidence levels as a peer teacher, and heightened self-efficacy and self-understanding as they also became more sensitive to diversity (Wawrzynski et al., 2011).

Two major outcomes resulted from Wawrzynski's survey study that helped broaden the research on peer health education. These included providing the opportunity to share personal experiences as a peer health teacher and helping the research team better understand the benefits and impacts of being a peer health teacher (Wawrzynski et al., 2011). Adding to this, Guldal et al.'s (2012) study on the perspectives of peer health teachers displayed very positive results in changing health behaviors as well as the teachers feeling more responsible for their own health; increasing their understanding of social norms and culture, which allowed them to better identify with others; gaining experience in behavioral and attitudinal changes by being a peer teacher; having the opportunity to act as a role model; and proving that "learning by teaching" is among the most effective modes of learning. Some of the most prominent characteristics that led to

peers following the peer teachers were due to the social support provided by the peer teacher and the particular social status of the peer teacher (Ward and Ellis, 2008). In addition, Meyer et al.'s study (2000) showed that high-school health leaders who implemented a health promotion program for sixth-graders came away from their training convinced that health-related interventions are integral to their own health as well as to the health of those around them (Meyer et al., 2000). Meyer et al.'s study did not thoroughly discuss to what extent the high school leaders changed in their health behaviors; yet it concluded that this positive outcome provided a deeper understanding of effective health programming and interventions (2000).

These outcomes provided by the research conducted so far on this subject demonstrate the success related to the health improvements made by the peer health teachers and carry important implications for further research. As another source adds, "perhaps the most promising aspect of a peer-led intervention is its potential for promoting system-level changes, given the dual impact of the program on the participants and the leaders" (Meyer et al., 2000, p.248).

Social Cognitive Theory

A theoretical model used in peer education programming is Bandura's social cognitive theory. Social cognitive theory, also termed social learning theory, was introduced by Albert Bandura in the 1960s. His first publication of social learning theory came in 1963 (Moore, 1999). "This theory posits a multifaceted causal structure in which self-efficacy beliefs operate together with goals, outcome expectations, and perceived environmental impediments and facilitators in the regulation of human motivation,

behavior, and well-being'' (Bandura, 2004, p.143). These expectancies include factors of behavioral cues, personal performance and self-efficacy. For example, the teen health teachers may be motivated by a desire to enhance body image, feel good about themselves, or increase athletic performance.

When referring to social cognitive theory, in terms of health education, Bandura states,

> The core determinants include knowledge of health risks and benefits of different health practices, perceived self-efficacy that one can exercise control over one's health habits, outcome expectations about the expected costs and benefits for different health habits, the health goals people set for themselves and the concrete plans and strategies for realizing them, and the perceived facilitators and social and structural impediments to the changes they seek (Bandura, 2004, p.144).

In addition, Bandura discusses social cognitive theory as a way to explain that an individual's level of self-efficacy determines, in part, his/her levels of motivation, interest in a particular area and performance (Bandura, 1990). The individual must exhibit the motivation or desire to obtain knowledge in an area of health and then weigh whether or not the effort to make a behavioral change will not only be worthwhile to her but also whether or not she has the confidence in her abilities to carry out the specific skills and tasks necessary to be successful (Bandura, 2004). There are multiple factors that influence a behavioral change and, consequently, lead to an anticipated outcome.

Several examples from the literature illustrate the use of social cognitive theory or other related models. A study on the peer teachers' motivations with respect to social

cognitive theory conducted focus groups asking what the teachers' expectations and motivations were for joining the health education program (Klein and Sondag, 1994). The peer health educators from this study attributed their motivations to the following: their desire to help others, a desire for job training or to satisfy a personal need for health education (Klein and Sondag, 1994). Klein and Sondag examined the social learning constructs of environment, such as family experiences; expectations of the peer health teachers; self-efficacy; and reinforcement, such as gaining satisfaction from helping others (1994).

In conjunction, a study on fruit and vegetable consumption in fourth- and fifth-graders used social cognitive theory to design an intervention to promote eating five to nine servings of fruits, juices and vegetables daily. The program was termed Gimme 5! (Glanz et al., 2002).With this model, the researchers found that the children were eating well below the recommended servings of fruits, juices and vegetables due to environmental, personal and behavioral factors. For example, some of the children did not have access to such foods in their homes (environment); some lacked positive outcome expectancies, such as preference or taste when eating vegetables (personal); and still some of the children had to prepare their own food and lacked the necessary skills to properly pack a snack or cook a meal using fruits, juices and vegetables (behavioral) (Glanz et al., 2002).

Bandura's list of major constructs of social cognitive theory include: environment, situation, behavioral capability, expectations, expectancies, self-control, observational learning, reinforcements, self-efficacy, emotional coping responses and reciprocal determinism (Glanz et al., 2002). This study focuses mainly on behavioral

capability, which is the knowledge and skills set to perform a certain behavior; expectations or anticipatory outcomes of certain behaviors; and self-efficacy or the individual's confidence in performing a certain behavior and in overcoming challenges to that behavior (Glanz et al., 2002).

Regarding participation in the 4-H Eat 4-Health program, the teens were motivated by a desire to improve themselves in their leadership abilities, knowledge and confidence. The teens were confident that they could accomplish the task of teaching a health curriculum to other youth and considered the outcomes associated with being a teen health teacher (such as positive self-esteem, increasing knowledge, helping others, taking on a new challenge and becoming a better leader) as worthwhile. Social cognitive theory clarifies the role that self-efficacy plays in determining these factors that ultimately affect behavioral change, as evidenced by the teens' reported changes in dietary and communicative behaviors.

Critique of the Literature Research

Various needs exist in the area of exploring the effects of peer teaching, specifically on those who are performing the teaching. Story and her colleagues (2002) reported that "a need exists for further nutrition education studies using peer-led approaches, both formal and informal methods, in school and community settings" (Story et al., 2002, p.125). Likewise, there is also a need for nutrition interventions for pregnant or parenting adolescents, youth in Girl and Boy Scouts, as well as in after-school programs (Story et al., 2002). These exemplify the opportunities where peer health education has the potential to thrive, notably in underserved or vulnerable populations.

Regarding the teen health teachers, the optimal role for them has not been carefully studied nor clearly identified (Perez-Escamilla et al., 2008). Another study pointed out that "very little research and even fewer applications of teaching adolescents' leadership development have been conducted" (Ricketts and Rudd, 2002, p.15). The current research fails to provide a complete understanding of the student experiences when placed in teaching roles, specifically how they fit into their own roles and either thrive or fail in their teaching abilities (Puchner, 2003). Likewise, Guldal et al. supports this idea that there is a lack of information in this area of peer education, that the "feelings, thoughts and self-affection of peer educators are not very well known" (2012, p.349).

Not only this, but many of the programs investigated in these studies were performed using peer educators that were adults or young adults older than eighteen years of age, so the experiences of the *teenage* (13 to 19-year old) peer teacher group has not been thoroughly examined. Therefore, this particular area of research is important in its pursuit to better understand those unique experiences of not only the peer health teachers in general, but the peer health teachers that are between the ages of 13 and 19 years old.

4-H Eat 4-Health Program

This study focused on the 4-H Eat 4-Health program that included teens ranging in age from 13 to 19 years old and uses the term "teen health teachers" to describe this teaching population. In addition, the teens in the 4-H Eat 4-Health program taught to an array of grades, from Kindergarten through twelfth grade; therefore, this represents a cross-age teaching model.

This study explored numerous aspects of the teen health teachers' experiences, including: the intrinsic reasons why the teens chose to be nutrition and physical activity teachers; how the teen health teachers perceived their strides in nutrition knowledge and physical activity habits; and the teen teachers' perceived improvements in leadership and teaching abilities. Rather than focusing on gains made upon the youth taught, this study focuses on the personal gains of the teen health teachers. Another differing aspect about this study is that the teen health teachers selected the educational settings in which they taught the health lessons, whether to a 4-H club, after-school program, in-school lesson, youth group, or other audience. The peer health teachers taught in formal (structured) classroom settings or informal (unstructured) settings. The focus of this peer teaching program on physical activity and nutrition provides the rationale for calling it peer or teen "health" teachers, since the curriculum being taught centered on matters of physical health relating to both dietary and physical activity habits. This study focused on the behavioral changes that the teen health teachers made as a result of their leadership roles, and it assessed the improvements in the teen health teachers' confidence levels as a result of teaching.

As previously suggested, this research study took on a multi-faceted approach as it looked at the behavioral and social effects on the teen health teachers after delivering a health education program. The teen health teachers in this study were all part of a grant-funded National 4-H program called Eat 4-Health, which is a healthy living program focused on teaching nutrition and physical activity practices using Cornell University Cooperative Extension's 2012 curriculum called 4-H Choose Health Action Teen (CHAT) program. The peer health teachers were all between the ages of 13 and 19 years

old and, therefore, are termed “teen health teachers.” The setting in which the teen health teachers taught the nutrition and physical activity lessons were in formal and informal settings. This study will provide a description of the effects had on the teen health teachers that underwent training and then taught the health curriculum to the Nebraska youth. The results from this study provide the program coordinators with knowledge and understanding regarding the youth’s motivations to volunteer for a peer health education program and how participation impacts behavior.

CHAPTER 3

METHODOLOGY

The aim of this qualitative study was to explore the motivations for why teens chose to become peer health teachers and to assess the health behavior modifications of being a peer teacher. The data for this study was collected using a survey questionnaire to assess the participants' knowledge and understanding of nutrition and physical activity. In-depth phone interviews were conducted to investigate the motivations to why the participants' initially chose to be in the peer health education program as well as to learn the specific successes and challenges experienced by the participants throughout program implementation. Participants in this study were under the age of nineteen, parental consent was requested and youth informed assent was provided before any data collection took place. IRB approval was granted on January 5th, 2014 (see Appendix A).

Participants

Recruitment

The participants were recruited from the 4-H Eat 4-Health program. The program investigator solicited e-mails to the Eat 4-Health program teen teachers to inquire about participation in this study. Out of the twelve teen teachers in the Eat 4-Health program, ten volunteered to be in the study. Those teens that were interested in participating were provided informed consent forms for their parents to sign as well as informed assent forms for the participants to sign at their approval. Once the consent and assent forms were returned via e-mail, the interviewer set up a time with the interviewee to conduct the phone interview. After the initial interview, the program investigator sent the survey to

the participants via e-mail and provided the $15.00 Target gift card upon receipt of the completed survey. This sample represents "homogeneous sampling" where the researcher purposefully samples individuals based on membership in a subgroup that has defining characteristics (Creswell, 2006), which, in this case, was participation in the 4-H Eat 4-Health program.

Data Collection: Tools and Procedures

Survey

The participants' knowledge of nutrition and physical activity and levels of self-efficacy were measured using the 4-H Universal Common Measures Survey Tool for grades eight thru twelve (See Appendix F). The survey was an approved instrument developed by National 4-H Council and the USDA 4-H Headquarters using questions from other validated instruments. This survey was designed for 8th thru 12th graders and asked questions pertaining to nutrition knowledge and physical activity recommendations as a result of participation in the 4-H program. The instrument asked demographic questions regarding age, grade, gender, race, ethnicity, dwelling, participation in 4-H, hours per week involved in 4-H, and what kind of involvement in 4-H. In addition, the survey contained questions about the participants' comfort level working with adult leaders, communicating with others in group settings, and with public speaking. This survey is a sixteen-item retrospective survey. It was administered via e-mail and returned to the primary investigator via addressed mail or returned as a scanned document through e-mail. The teen teachers completed the survey during the winter of 2014. Some

completed it once they were finished with teaching their lessons, while others completed the survey prior to finishing their teaching sessions.

In-Depth Phone Interviews

Permission was granted by the participants and their parents to conduct the recorded phone interview portion of the study. The program investigator chose to use in-depth phone interviews as the data collection method in order to obtain individual detailed accounts of the teen teachers' experiences in the health program. A time was scheduled via e-mail for the phone interview portion with each interviewee, and the initial phone interviews lasted eight to ten minutes. The follow-up phone interviews were scheduled one month later, and each interview ranged from 15-30 minutes. Phone interviews occurred in the evenings from 5:00PM to 8:30PM, and all occurred during January through March of 2014. Participants were at home when the phone interviews were conducted. The participants were asked why they chose to be a teen health teacher and what they gained in nutrition and physical activity knowledge as a result of the program. The phone interviews were recorded and transcribed using an Apple application called NoNotes.com Call Recording Service. Once transcriptions were processed and delivered, the investigator listened to the recordings to ensure accuracy of the transcripts and made revisions as necessary. A script of the phone interview questions are located in Appendix G.

Confidentiality of participant information was maintained through the personal account of the program investigator who was the only individual with access to the recordings and transcriptions. Following IRB procedures, participants and their parents

were invited and encouraged to ask questions or raise concerns at any time throughout the study.

Data Analysis

Quantitative Data Analysis

The sixteen-item retrospective survey was used to provide descriptive statistics to display general tendencies in the data (Creswell, 2005, p. 181). These tendencies are illustrated by the Common Measures survey in Appendix F. The table shows the response rates of the ten participants using a Likert Scale. The percentages are representative of the number of respondents out of ten that chose that answer. All other questions were used to obtain demographic information, such as age, grade, gender, ethnicity and involvement in 4-H.

Qualitative Data Treatment

During the phone interviews, the interviewer took notes of the interviewees' responses. The recordings were then processed through the NoNotes service and transcriptions delivered thereafter. Following transcription of the phone interview recordings, the program investigator reviewed the transcriptions against the recordings to correct any errors. The program investigator initially read the transcripts two to three times to become familiarized with the respondents' statements. After this, the program investigator continued to read the transcripts while highlighting recurring words and phrases used by the participants. From this, themes began to emerge.

In order to validate the data, the program investigator provided two colleagues with the transcripts so that they could independently review them and note emerging themes. Once this was accomplished, the three reviewers, the program investigator and her two colleagues, met to discuss and then agree upon themes. From there, respondents' answers were coded accordingly and, thereby, outlined the core themes of the study. These procedures followed those outlined by Creswell of how to evaluate qualitative research regarding the treatment of interview transcripts (Creswell, 2005). Once four core themes were identified for the set of questions, respondents' answers were categorized under the appropriate theme. In addition, several meetings were conducted with the Nebraska Evaluation and Research Center to organize and implement the appropriate data analysis strategies.

Qualitative Data Analysis

Each initial interview lasted approximately eight to ten minutes with a follow-up interview ranging from 15 to 30 minutes. The majority of the questions were open-ended and provided room for the respondent to expand upon the questions and express deeper insights as a result. The in-depth interviews were conducted, recorded and transcribed using the NoNotes Call Recording service. A hand-held recording device was used to record the phone calls as a backup in case the NoNotes service malfunctioned. Upon transcription, the program investigator printed the transcripts, listened to each recording again, and made the necessary corrections to any transcription errors. Following this, the program investigator read and re-read through the transcripts, searching for recurring themes in order to develop a coding system that was representative of the interviewees' responses. Four themes were identified from the interviews which coordinated with the

research objectives. The program co-investigator, Michelle Krehbiel, as well as a third colleague, then independently reviewed the codes along with the interviewee responses to verify the validity of the coding strategy. Once this took place, the qualitative program software, MAXQDA, was then used to organize the codes.

The four identified themes are:

1. Skills Gained
2. Role Modeling
3. Personal Behavior Change
4. Motivation

CHAPTER 4

FINDINGS

Quantitative Findings

Description of Participants

The average age of the participants was 15.5 years old. Participants were all female and represented grades eighth thru eleventh. Of the ten participants, nine (90%) were White, while one (10%) was Asian. Six (60%) of the ten lived on a farm, three (30%) in a rural area (non-farm residence, population < 10,000), and one (10%) in a town or city (population 10,000-50,000). Ten (100%) of the participants had been participating in 4-H for three or more years and were involved in 4-H clubs. Answers varied on how involved they were, but seven (70%) of the ten marked that they spent up to three hours a week working on various 4-H projects. Demographic characteristics of the subjects are represented in Table 1. Participants were from nine different cities throughout Nebraska. Ten (100%) of the participants completed the interview and survey portions.

Quantitative Survey Findings

In addition to the subject description, the survey questions were administered following program implementation to show the participants' knowledge and skill development as a result of the program. The survey focused on nutrition knowledge, food choices, positive choices and communication, and elements of positive youth development, such as connections and contributions. The survey results suggest positive outcomes associated with increased nutrition knowledge, heightened awareness of what

constitutes a positive food choice, valuing the importance of eating as a family at mealtime, having the confidence to make positive choices and communicate well with others, and being able to connect with others and contribute to society. All survey questions were asked in reference to the Eat 4-Health program.

Regarding the participants' nutrition knowledge, ten (100%) of the ten participants either strongly agreed or agreed that they learned the foods they should eat every day, learned what makes a balanced diet, learned why it is important for them to eat a healthy diet, learned how to make healthy food choices and learned the importance of fruits and vegetables in their diets as a result of the 4-H Eat 4-Health program. Considering food choices, nine (90%) out of the ten reported that they strongly agreed or agreed that they think about what foods their bodies need during the day, while ten (100%) either strongly agreed or agreed that they make healthy food choices whenever they can and that they encourage their families to eat meals together. Additionally, ten (100%) said that they eat more fruits and vegetables, eat less junk food, and drink more water. Out of the ten participants, eight (80%) stated that they drink less soda as a result of the program. Not only this, but nine (90%) out of the ten participants reported that their families ate together at least one meal a day.

In the areas of positive choices and communication, ten (100%) participants reported that they always or usually took responsibility for their actions, were respectful of others, and nine (90%) said that they had the confidence to speak in front of groups. As a result of their experience in the 4-H Eat 4-Health program, ten (100%) participants reported that they were comfortable making their own decisions, sharing their thoughts and feelings with others, and standing up for things that were important to them.

Regarding positive youth development, ten (100%) of the ten participants reported that they knew community leaders who supported them, that they learned things that helped them make a difference in their communities, and that they led a project that made a difference. Nine (90%) out of the ten characterized themselves as someone that wanted to help others. The survey is located in Appendix F.

Due to the low *n*, the investigator decided not to run advanced statistical analyses. The quantitative results are illustrated in Tables 1 and 2.

Table 1

Demographic Characteristics of Study Participants n=10

Age	Mean= 15.5 years old
Grade Level	8^{th}-11^{th}
Gender	10 (100%) Female
Ethnicity	9 (90%) White; 1 (10%) Asian
Race	10 (100%) Not Hispanic or Latino
Dwelling	6 (60%) Farm; 3 (30%) rural (non-farm residence, pop. <10,000); 1 (10%) town or city (pop. 10,000-50,000)

Table 2: Participant Survey Questionnaire Responses					
NUTRITION KNOWLEDGE					
As a result of participation in a 4-H Healthy Living Program…	Strongly Agree	Agree	Disagree	Strongly Disagree	NA
I learned the foods that I should eat every day	50%	50%			
I learned what makes up a balanced diet	50%	50%			
I learned why it is important for me to eat a healthy diet	50%	50%			
I learned how to make healthy food choices	60%	40%			
I learned how many calories I need to eat each day	20%	40%	40%		
I learned the importance of whole grains in my diet	50%	40%	10%		
FOOD CHOICES					
As a result of participating in a 4-H Healthy Living Program I now take the following actions….	Strongly Agree	Agree	Disagree	Strongly Disagree	NA
I think about what foods my body needs during the day	70%	20%	10%		
I make food choices based on what I know my body needs	40%	60%			
I make healthy food choices whenever I can	40%	60%			
I match my food intake to the number of calories I need to eat each day	10%	40%	40%	10%	
I encourage my family to eat meals together	50%	40%			10%
As a result of participation in a 4-H Healthy Living Program I now take the following actions…	Strongly Agree	Agree	Disagree	Strongly Disagree	NA
I eat more fruits and vegetables	40%	60%			

Table 2 Continued					
I eat more whole grains	50%	30%	20%		
I eat less junk foods	40%	60%			
I drink less soda	50%	30%	20%		
I drink more water	60%	40%			
My family eats at least one meal a day together	90% Yes	10% No			
POSITIVE CHOICES AND COMMUNICATION					
In this 4-H program or project…	Always	Usually	Sometimes	Never	
I use information to make decisions	60%	40%			
I set goals for myself	60%	20%	20%		
I take responsibility for my actions	80%	20%			
I can explain why my decision is a good one	60%	40%			
I consider the consequences of my choices	60%	30%	10%		
I can resist negative social pressures	60%	30%	10%		
I listen well to others	40%	50%	10%		
I am respectful of others	70%	30%			
I have the confidence to speak in front of groups	50%	40%	10%		
I can resolve differences with others in positive ways	50%	40%	10%		
I work well with other youth	70%	20%	10%		
As a result of my experience in this 4-H program or project…	Strongly Agree	Agree	Disagree	Strongly Agree	
I am comfortable making my own decisions	70%	30%			

Table 2 Continued					
I am comfortable sharing my thoughts and feelings with others	80%	20%			
I have a plan for reaching my goals	60%	30%	10%		
I know how to deal with stress in positive ways	40%	50%			10%
I can make alternative plans if something doesn't work	50%	50%			
I can use technology to help me express my ideas	60%	40%			
I know who I can go to if I need help with a problem	70%	30%			
I am willing to consider the ideas of others even if they are different than mine	60%	40%			
I can stand up for things that are important to me	90%	10%			
CONNECTIONS AND CONTRIBUTIONS					
As a result of my experience in this 4-H program or project…	Strongly Agree	Agree	Disagree	Strongly Agree	
I can work successfully with adults	80%	20%			
I have friends who care about me	70%	30%			
I know community leaders who support me	80%	20%			
I have adults in my life who care about me and are interested in my success	70%	30%			
I am someone who wants to help others	70%	20%	10%		
I like to work with others to solve problems	60%	30%	10%		
I have talents I can offer to others	70%	20%	10%		
I learned things that helped me make a difference in my community	70%	30%			
I led a project that made a difference	80%	20%			

Qualitative Findings

After collection and interpretation of the data from the in-depth interviews, four core themes emerged as: skills gained, role modeling, health behavior changes and motivations. These themes suggest that the teens gained valuable skills in leadership, teaching, communication, and in their health knowledge. They reported that they felt more empowered and confident to lead others, share their health knowledge and add to their knowledge base. Not only this, but the teens found themselves in role modeling positions wherein they felt the responsibility to accurately represent a healthy lifestyle. Examples of supporting quotes coinciding with the themes can be found in Table 3.

Table 3: Supporting Quantitative and Qualitative Examples

Qualitative Theme	**Supporting Quotation**	**Supporting Quantitative Results**
Skills Gained	<u>Leadership</u> "I learned how to be a leader and to lead the kids in the right direction." –Interviewee 1 "I think the most valuable thing I've learned from this is probably leadership because you have to control an entire room in order to get people to listen to the lesson" -Interviewee 6 <u>Interpersonal Communication</u> "So being able to, say my dad he obviously eats more than I do, so being able to cater for the serving sizes and the healthy foods to the other people in my family and myself really helped in my perspective of healthy eating" –Interviewee 2 <u>Public Speaking</u> "I feel so much more comfortable in front of children and teaching to them and giving information across to knowing how to do so in a way that it will keep their attention" –Interviewee 3 "My confidence and like stuttering is something that has faded away from being able to talk like in front of a meeting, say in front of people to explain to them and like in front of the girls….I was more educated in it and it came a	<u>Leadership</u> I take responsibility for my actions (80% Always; 20% Usually) I led a project that made a difference in my community (80% Strongly Agree; 20% Agree) <u>Interpersonal Communication</u> I am respectful of others (70% Always; 30% Usually) I am comfortable sharing my thoughts and feelings with others (80% Strongly Agree; 20% Agree) <u>Public Speaking</u> I have the confidence to speak in front of groups (50% Always; 40% Usually; 10% Sometimes)

Table 3 Continued		
Skills Gained Continued	lot easier to me" –Interviewee 1 "…just being able to cooperatively interact will different age groups and get message across" –Interviewee 4 "I have a very loud voice when I need it" –Interviewee 9 <u>Health Knowledge</u> "Yes as I learned more about health and nutrition, I have educated myself and, like I said, I have tried to implement that into my own lifestyle and I try to encourage my family and some of my friends to eat healthier too" –Interviewee 7 "As much as it was for the younger kids to learn about the fast foods, it was the exact same for me" –Interviewee 3	<u>Health Knowledge</u> I learned the foods I should eat every day (50% Strongly Agree; 50% Agree) I learned how to make healthy food choices (60% Strongly Agree; 40% Agree) I learned the importance of fruits and vegetables in my diet (60% Strongly Agree; 40% Agree)
Role Modeling	"When I see an obese kid, instead of just like letting them pass by, you want to say something to them and lead them in a healthier way and help them out…anyone like that, even the older people, like you just want to help them now that you know how to help them; it's a lot different, I feel like I am a lot more outgoing; and I could just come and help people know that I'm educated in this area" – Interviewee 1 "I like that I learned about nutrition and that I could implement that in my own life to make better choices and help my family to make better choices, so we can live healthier and have longer lives, so that is really rewarding" –Interviewee 7 "I like teaching the little kids because they look up to you as their role model so it's just figuring out how to direct a lesson more toward the ages that I am teaching and that's what I have learned like when you are a teen teacher you have to make sure that you are really applying the lessons just to the age group that you are teaching." –Interviewee 2	I encourage my family to eat meals together (50% Strongly Agree; 40% Agree; 10% Not Applicable) I work well with other youth (70% Always; 20% Usually; 10% Sometimes) I can stand up for things that are important to me (90% Strongly Agree; 10% Agree)
Personal Behavior Change	<u>Sugars, Fat Content, and Portions</u> "I've really cut down the pop, knowing how much sugar is in the pop is just not even worth drinking it; and really trying to get in more vegetables…" –Interviewee 4 "…when you act it out and are able to show it to the children like with the fats and the sugars, and when you are able to put that into a physical form,	I eat less junk foods (40% Strongly Agree; 60% Agree) I drink less soda (50% Strongly Agree; 30% Agree; 20% Disagree) I make food choices based on what I know my body needs (40% Strongly Agree; 60% Agree)

Table 3 Continued ***Personal Behavior Change Continued***	it changes your perspective on how much fat and how much sugar is in a lot of foods we eat" –Interviewee 3 "I thought the sugar cube lesson was really cool, and I haven't drunk much soda since teaching it" –Interviewee 6 "I really try to stay away from fast food now" –Interviewee 4 "Well we learned like the correct portion sizes, like when we measured out the trail mix and stuff and then like when we were picking out the recipes and stuff, we looked for like what had nutritional value in it" –Interviewee 7	I think about what foods my body needs during the day (70% Strongly Agree; 20% Agree; 10% Disagree)
Motivation	<u>New Opportunity/ Challenge</u> "I am glad that I am doing it because it is a new experience for me. And it's pushing me out of my boundaries, especially with teaching"-Interviewee "Just like going into college I always wanted to major in that (health) so that would help me with learning the process…" –Interviewee 1 <u>Self-Improvement</u> "When I first started to get into this, I wanted to kind of learn more about nutrition myself and not only that, but then go on and be able to tell more people about it, especially children" –Interviewee 3 "Because I thought it would be a good way to [help with] leadership and deal more with 4-H" –Interviewee 8 "Having good leadership skills and stuff" –Interviewee 9 <u>Fun</u> "I hadn't heard of it other than her (friend) talking to me and she's been talking to me about it and it sounded fun and so I decided to do it"-Interviewee 5 "I did it because the year earlier in Youth and Government, I had been making sense of it with little kids, I thought it'd be fun to do it again, except different things to teach" –Interviewee 6 <u>Educating Others</u> "Because I feel like healthy lifestyles are important and initiating that in youth, then they'll grow up with that healthy lifestyle and then pass it down to people they know, so I just want to take part in that" –Interviewee 4	I have a plan for reaching my goals (60% Strongly Agree; 30% Agree; 10% Disagree) I am someone who wants to help others (70% Strongly Agree; 20% Agree; 10% Disagree) I have talents I can offer to others (70% Strongly Agree; 20% Agree; 10% Disagree)

Table 3 Continued ***Motivation Continued***	"Probably…because of the healthy eating thing, I have noticed that many kids, even at school, keep becoming more overweight and stuff and just tell them about the good and bad of the foods." – Interviewee 5 "So that I can tell kids how to be healthy and make healthy decisions and be a leader" –Interviewee 1	

Skills Gained

Based on the in-depth phone interviews, the teen health teachers reported gaining skills in leadership, communication, teaching and nutrition and physical activity knowledge. Leadership was a prominent concept used by the teens to describe what they learned and gained from the 4-H Eat 4-Health program. It was evident that being a leader was an important and valuable concept to them and something they wanted to exude. As Interviewee Six stated, "I think the most valuable thing I've learned from this is probably leadership because you have to control an entire room in order to get people to listen to the lesson."

Communication was another skill acquired by the teens. There were, however, two different ways in which communication skills were developed: interpersonally with family members and friends and in front of an audience when speaking publicly. The teens talked about how they shared their new knowledge with their families and challenged others in their daily environment to adopt healthier lifestyle habits. Regarding public speaking, all of the teens reported gaining confidence in their comfort and abilities when speaking in front of a group of people. When referring to her experience as a teen health teacher, Interviewee Two said, "So being able to, say my dad he obviously eats

more than I do, so being able to cater for the serving sizes and the healthy foods to the other people in my family and myself really helped in my perspective of healthy eating."

Yet another skill gained was teaching. The teens learned how to teach a health-based curriculum to a variety of ages. Therefore, they were challenged to adjust their teaching methods according to what was age-appropriate. They learned how to effectively control a room and how to add their own spin to the lessons to make it more relevant and engaging for the age group they were teaching.

Lastly, health knowledge was yet another skill acquired by the teens. Although most of them had a basic foundation of nutrition know-how, all of them reported having learned more facts and becoming more educated as a result of the experience. "As much as it was for the younger kids to learn about the fast foods, it was the exact same for me," said Interviewee Three.

Role Modeling

The teen health teachers in this study reported that they felt more responsibility being a teacher because they had to lead by example. They felt compelled to eat healthier and promote exercise because they were teaching it. The teens talked about being a role model to both their peers and other youth as well as to their families. As Interviewee Seven indicated, "I like that I learned about nutrition and that I could implement that in my own life to make better choices and help my family to make better choices, so we can live healthier and have longer lives, so that is really rewarding."

Personal Behavior Change

Another area of note was the teens' behavioral modifications, specifically relating to nutrition and physical activity. While most of the teens said they were already pretty active in sports, all of them gained new insights with nutrition practices. The most common answers to what they learned about nutrition included the amount of sugar in drinks, such as soda; the fat content in fast foods; and portion sizes. Interviewee Four said, "I've really cut down the pop, knowing how much sugar is in the pop is just not even worth drinking it; and really trying to get in more vegetables…" Likewise, Interviewee Six reported, "I thought the sugar cube lesson was really cool, and I haven't drunk much soda since teaching it."

Motivation

Lastly but perhaps most importantly, the teens expressed their motivations for initially signing up for the 4-H Eat 4-Health program. The answers were multi-faceted and some surprising. All ten participants claimed a strong loyalty to 4-H and said that they would have opted for the program if it was on a different subject just because it was associated with 4-H. Many, however, were interested in learning more about nutrition and health and wanted to be challenged in a new way. In addition, they desired to be a leader to others and to improve their teaching skills. Not only this, but they expressed a desire to impact future generations by promoting health and educating younger children on the subject so that they could begin healthier habits at an early stage. The most interesting motivation, though, was evidenced by the teens' sense of self-improvement. They were looking for an opportunity that would advance their status as a leader and that

would make them stand out in some way. This was an unanticipated outcome because their answers were more self-focused than others-focused. This shows that developmental stages are indicative of these trends and that these types of answers could display the unique issues of adolescent development.

"I am glad that I am doing it because it is a new experience for me. And it's pushing me out of my boundaries, especially with teaching," said Interviewee Two. In conjunction, Interviewee Four adds, "Because I feel like healthy lifestyles are important and initiating that in youth, then they'll grow up with that healthy lifestyle and then pass it down to people they know, so I just want to take part in that."

Comparing Quantitative and Qualitative Findings

This study used what Creswell calls a "triangulation mixed methods design" where both qualitative and quantitative data are collected and used to strengthen the weaknesses of the other (Creswell, 2005). Additionally, this study design was exploratory in nature as the qualitative data was gathered before the quantitative data and used to compare the similar and dissimilar results (Creswell, 2005). The majority of the answers pertaining to a perceived increase in communication skills, nutrition knowledge and confidence levels were all very positive in both the survey and the interview. The survey results showed that as a result of the 4-H Eat 4-Health program, the majority of participants either strongly agreed or agreed to improving nutrition knowledge, making positive food choices, and developing the confidence to communicate well and contribute to society. These are all areas in which the participants positively responded in the

interview or qualitative portion of the data collection. Therefore, the quantitative and qualitative data parallel each other and confirm the outcomes of this study.

CHAPTER 5

DISCUSSION

Positive outcomes associated with this study included the positive behavioral impact had on the teens teaching nutrition and physical activity lessons. This study confirmed that peer health education is effective for improving the teen teachers' skills in leadership and communication as well as their ability to make healthier food choices. The quantitative results served as a reference for the demographics and a way to test the accurate representation of the data when compared with the qualitative data. The qualitative results indicated strong implications since the respondents gave consistently similar responses to the questions. These responses were reflective of the themes, which included: skills gained, role modeling, personal behavior change and motivation.

Notable Outcomes

Several positive outcomes emerging from this study include: the teen teachers' heightened awareness, knowledge and practice of nutrition and physical activity practices; their increase in self-confidence with leading, teaching, public speaking, and making healthy choices; their motivation for self-improvement; their conscientiousness to role model and be an example of health to the community and to those in their inner circles; and their desire to become a leader. All of these outcomes were apparent in both the qualitative and quantitative results and proved to be very encouraging. All but one of the teens reported their experience as highly positive. The one that was not as positive was due to the fact that she was hoping for a better teaching experience since that is the

career she thought she wanted to pursue, yet she learned that she did not enjoy teaching as much as she thought she would.

Regarding personal behavior change, the teens reported that they not only knew more about certain health practices but that they applied that new knowledge. They reported being better equipped when making positive food choices as well as decreasing their intake of sugars and fats. Additionally, most of them mentioned being more mindful about portion sizes. Supporting this, Story et al.'s TEENS study found that the students who were peer leaders reported the highest increases in consumption of fruits, vegetables and lower-fat foods versus the students to whom they were teaching the nutrition lessons (Story et al., 2002).

The teen health teachers in this program reported that they gained and strengthened their leadership skills. They increased their self-confidence and were able to communicate more effectively with others, notably when public speaking. Ricketts and Rudd (2002) addressed DesMaria, Yang, and Farzenhkia's (2000) study that found certain necessary elements in the development of youth leadership; these included: "youth/adult partnerships, granting young people decision-making power and responsibility for consequences, a broad context for learning and service, and recognition of young people's experience, knowledge and skills"(Ricketts and Rudd, 2002, p.4). Accordingly, Hammond-Diedrich et al. (2006) reported that the benefits of their peer health teaching program were the leadership opportunities provided to the urban youth which allowed development of useful interpersonal skills as well as the establishment of meaningful relationships between adults and the youth.

While other studies have confirmed that young adults have increased leadership and teaching skills as a result of being a peer teacher (Wawrzynski et al., 2011) (Klein and Sondag, 1994) (Guldal et al., 2012), this 4-H Eat 4-Health study confirms that this is also true for adolescents. The teen participants had been involved in 4-H for three or more years and, therefore, their desire to be involved in another 4-H program is sensible. This indicates that they already had an interest in leadership and, most likely, wanted to practice and expand their leadership skills in the area of health.

Finally, the teens' motivation to join the 4-H Eat 4-Health program was multi-variant. They expressed a desire to acquire knowledge, stay involved in a 4-H program, to push themselves with a new challenge and to better themselves. One frequent statement was that they thought it would be "fun" to participate in the program. Although the word "fun" was not thoroughly defined, it was clear that having fun is valuable to the teens and that they wanted to do something in which they would find enjoyment. Some aspects of the program that could potentially seem fun to teens include: high engagement with peers; opportunity to teach young children; participating in an active learning environment; and leading an extracurricular activity. The term "fun" requires further examination in order to clearly define what it means to this age group.

With more practice, knowledge and experience comes more confidence. This was a common occurrence for all the teens in this study. The confidence that they were able to build upon became the foundation for their ability to communicate well with others, to push themselves as teachers and to break through personal barriers. It was evident that their life stage of adolescence affected the content of their answers and how they answered the questions. Their desire to be a leader and example to their communities was

encouraging; however, their motivations for self-betterment are most likely attributed to their developmental stage as they felt a need to improve themselves and increase their confidence.

Although the teens expressed a desire to help educate others, they frequently mentioned their desire to better themselves through the 4-H Eat 4-Health program. Additionally, fulfilling school community service requirements was a common motive for the peer teachers signing up to teach a peer education program. Surprisingly, none of the participants from this study gave that response. This is an issue that can most likely be attributed to their developmental stage and their tendency to sometimes focus on themselves before others. In their TEENS study, Story and colleagues (2002) addressed this developmental issue relating it to the cognitive and social developmental processes and changes that occur during adolescence. This age differs from others in that the adolescents are seeking independence from parents, expanding their problem-solving skills and increasingly identifying themselves with their peers (Story et al., 2002). Likewise, Richard Lerner explains theories of human development and states that "many possible types of adolescent development can occur" (Lerner, 2002). Consequently, there is not one particular reason to explain these self-betterment motivations. Therefore, this is a developmental topic that calls for further attention.

Limitations of the Study

Participants made up a convenience sample as all of them were active in 4-H. Some of these teens were encouraged by an extension educator to sign up for the program and were chosen according to either their interest in health or for their involvement in

previous 4-H activities. Additionally, all participants were female, so it would be helpful to know the male teen population's responses and to compare the differences among the genders. Moreover, all ten (100%) of the teens came from either a farm, rural or town (population 10,000-50,000) setting and nine (90%) of them were White. A more racially diverse population would show if the results are true for different groups. These factors show that the study population lacked diversity and, therefore, was not representative of all backgrounds.

Secondly, the interview portion was somewhat short and, therefore, a follow-up interview ensued due to a lack of depth to the teens' responses. Interviewing teens can be difficult depending on their age and maturity. For several of the interviews, it was a challenge to extract detailed accounts of their experiences in the program.

Implications for Future Research

Several implications for further research emerged from this study. One question would be to follow-up with the teen/peer teachers regarding their involvement in nutrition, careers, and leadership positions in the future. It would be interesting to examine whether or not they continue in a leadership or teaching role and the ways in which they contribute to society. The teen teachers reported that they not only desired to be better leaders but they felt like more effective leaders as a result of the program. This suggests that leadership should be a central factor to highlight when promoting a similar teen health teaching program.

Since the teens reported that they wanted to sign up for the program in order to improve their own lives, it would be helpful to know why it is that they are so focused on

their own betterment. This is an interesting age that could provide helpful insights into what the teens are looking for in a health-centered program. This could help future teen health teaching programs know how to effectively recruit and engage teens in a peer health teaching program.

Another implication is that only females joined this particular program. This holds the possible implication that females at this stage are more inclined to focus on self-betterment, self-confidence, and being involved in various organizations. It would be important to find out why the male teen population was not involved and whether or not they would experience the same gains. It would be helpful to figure out ways to engage the male adolescent population in the recruitment efforts.

Lastly, the findings show that the teens improved their knowledge of nutrition and health practices as well as applying this knowledge in their daily lives. Since the teens used the given health curriculum, this suggests that the accurate nutrition information needs to be provided to them. The teen health teachers need to be equipped with research-based health information that is up-to-date and reflective of national health guidelines. This will ensure that the teens are learning and implementing the correct nutrition educational material that will lead them and others in a healthy lifestyle. This program used Cornell University's CHAT (Choose Health Action Teens) curriculum. The curriculum was provided to the teens to use for their educational purposes, and, according to the teens, it proved to be effective and easy to understand and teach.

Conclusion

This study showed that teen health education is an effective model for health programming and should continue to be implemented. More research should focus on the adolescent age group in a peer teaching context to further evaluate the specific advantages of this teaching model. Through practice, the teens grew increasingly confident in their abilities to teach and to lead others, both to those similar and younger in age. They acquired knowledge about nutrition and reported a noticeable change in their dietary habits, notably with sugars, fats and portions. With this, the teens felt compelled to set an example and role model to others as health ambassadors in their families and communities. This is why peer health education is proving to be one way to combat childhood obesity.

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Appendices

Appendix A

University of Nebraska-Lincoln

Institutional Review Board Approval—4-H Eat 4-Health Study

myWheaton

Ashlie Pace < ashlie.pace@my.wheaton.edu>

NUgrant Message - Official Approval Letter for IRB project #13747

nugrant-irb@unl.edu < nugrant-irb@unl.edu> Mon, Jan 6, 2014 at 2:37 PM
To: mkrehbiel2@unl.edu, ashlie.pace@my.wheaton.edu

January 5, 2014

Ashlie Smith
Department of Nutrition and Health Sciences
10719 Brentwood Dr. Apt. 3A La Vista, NE 68128

Michelle Krehbiel
4-H State Office
114 AGH, UNL, 68583-0700

IRB Number: 20140113747EP
Project ID: 13747
Project Title: Peer education: A focus on teen teachers' motivations to teach their peers and youth as well as their behavioral modifications as a result of teaching a peer health program.

Dear Ashlie:

This letter is to officially notify you of the approval of your project by the Institutional Review Board (IRB) for the Protection of Human Subjects. It is the Board's opinion that you have provided adequate safeguards for the rights and welfare of the participants in this study based on the information provided. Your proposal is in compliance with this institution's Federal Wide Assurance 00002258 and the DHHS Regulations for the Protection of Human Subjects (45 CFR 46). Your project was approved as an Expedited protocol, category 6 & 7.

Date of EP Review: 11/17/2013

You are authorized to implement this study as of the Date of Final Approval: 01/05/2014. This approval is Valid Until: 01/04/2015.

We wish to remind you that the principal investigator is responsible for reporting to this Board any of the following events within 48 hours of the event:
* Any serious event (including on-site and off-site adverse events, injuries, side effects, deaths, or other problems) which in the opinion of the local investigator was unanticipated, involved risk to subjects or others, and was possibly related to the research procedures;
* Any serious accidental or unintentional change to the IRB-approved protocol that involves risk or has the potential to recur;
* Any publication in the literature, safety monitoring report, interim result or other finding that indicates an unexpected change to the risk/benefit ratio of the research;
* Any breach in confidentiality or compromise in data privacy related to the subject or others; or
* Any complaint of a subject that indicates an unanticipated risk or that cannot be resolved by the research staff.

For projects which continue beyond one year from the starting date, the IRB will request continuing review and update of the research project. Your study will be due for continuing review as indicated above. The investigator must also advise the Board when this study is finished or discontinued by completing the enclosed Protocol Final Report form and returning it to the Institutional Review Board.

If you have any questions, please contact the IRB office at 472-6965.

Sincerely,

Julia C. Torquati

Julia Torquati, Ph.D.
Chair for the IRB

Full Accreditation

2 attachments

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Appendix B

University of Nebraska-Lincoln, Letter of Approval—Protocol Change (Title and Assent Form)

myWheaton

Ashlie Pace < ashlie.pace@my.wheaton.edu>

NUgrant Message - Official Approval Letter for IRB project #13747
1 message

nugrant-irb@unl.edu < nugrant-irb@unl.edu> Thu, Feb 20, 2014 at 6:09 AM
To: mkrehbiel2@unl.edu, ashlie.pace@my.wheaton.edu

February 19, 2014

Ashlie Smith
Department of Nutrition and Health Sciences
10719 Brentwood Dr. Apt. 3A La Vista, NE 68128

Michelle Krehbiel
4-H State Office
114 AGH, UNL, 68583-0700

IRB Number: 20140113747EP
Project ID: 13747
Project Title: Peer health education: The motivations of becoming a peer health teacher and the behavioral modifications made as a result

Dear Ashlie:

The Institutional Review Board for the Protection of Human Subjects has completed its review of the Request for Change in Protocol submitted to the IRB.

****It has been approved to revise the title for simplification purposes and to include contact information for purposes of phone interviews.****

We wish to remind you that the principal investigator is responsible for reporting to this Board any of the following events within 48 hours of the event:
* Any serious event (including on-site and off-site adverse events, injuries, side effects, deaths, or other problems) which in the opinion of the local investigator was unanticipated, involved risk to subjects or others, and was possibly related to the research procedures;
* Any serious accidental or unintentional change to the IRB-approved protocol that involves risk or has the potential to recur;
* Any publication in the literature, safety monitoring report, interim result or other finding that indicates an unexpected change to the risk/benefit ratio of the research;
* Any breach in confidentiality or compromise in data privacy related to the subject or others; or
* Any complaint of a subject that indicates an unanticipated risk or that cannot be resolved by the research staff.

This letter constitutes official notification of the approval of the protocol change. You are therefore authorized to implement this change accordingly.

If you have any questions, please contact the IRB office at 472-6965.

Sincerely,

Julia C. Torquati

Julia Torquati, Ph.D.
Chair for the IRB

Full Accreditation

2 attachments

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Appendix C

Parent Email, Child's Participation in the 4-H Eat 4-Health Study

Dear Parent,

My name is Ashlie Smith, and I am a graduate assistant for the University of Nebraska-Lincoln under 4-H Extension educator, Michelle Krehbiel. I am also the program co-director for the Eat 4-Health program in which your child is participating. I am sending you this e-mail because your child is a participant in the Eat 4-Health program. Attached to this e-mail message is a description of the requests pertaining to the research participation aspect of this Eat 4-Health program. This research participation is completely voluntary by your child and you. You will find additional information on the attached parent informed consent form.

Thank you very much!

Sincerely,

Ashlie Smith

MS candidate, Nutrition and Health Sciences

University of Nebraska-Lincoln

Appendix D

Parental Informed Consent, 4-H Eat 4-Health Surveys and Phone Interviews

University of Nebraska Lincoln

COLLEGE OF EDUCATION AND HUMAN SCIENCES

Department of Nutrition & Health Sciences

Parent Informed Consent Form

Title:
Peer health education: A focus on teen teachers' motivations to teach their peers and youth as well as their behavioral modifications as a result of teaching a peer health program.

Purpose:
The purpose of this study is to assess the motivational reasons as well as the behavioral modifications made by teen teachers ages 13 to 19 after delivering a peer health education program.

Procedures:
Upon program completion, your child will be asked to complete a 10-15 minute survey as well as a 10-15 minute recorded phone interview with program leader, Ashlie Smith. The survey and interview only relate to your child's knowledge in the areas of health and wellness as we want to gauge how effective this program was in developing their leadership skills as well as increase their knowledge in the areas of health and well-being. Interviews will be audio recorded for data collection purposes.

Benefits:
The benefits of participating in this study include the knowledge that we can obtain from conducting this study to find the correlation between being a peer health leader and how it affects or benefits the leaders (teens) in aspects of nutrition, physical activity, and self-efficacy.

Risks:
There are no known risks associated with this study.

Confidentiality:
Any information obtained during this study which could identify your child will be kept strictly confidential. The data will be locked in a cabinet only accessible by the investigator and co-investigator (Ashlie Smith and/or Michelle Krehbiel). The information obtained from this study may be published in scientific journals or presented at scientific meetings, and the data will be reported as aggregated data.

Compensation:
Your child will receive a Target gift card amounting to $15.00 for participating in this study, which entails completing one survey and one recorded phone interview.

Opportunity to Ask Questions:
You may ask any questions regarding this research and are free to contact the program investigator, Ashlie Smith, or the co-investigator, Michelle Krehbiel, with any concerns.

Phone number: (760)533-1304
Email: ashlie.pace@my.wheaton.edu

110 Ruth Leverton Hall / P.O. Box 830806 / Lincoln, NE 68583-0806 / (402) 472-3716 / FAX (402) 472-1587

Michelle Krehbiel, 4-H Youth Specialist and Co-Investigator
Phone number: 402-472-9020
Email: mkrehbiel2@unl.edu

Sometimes participants have questions or concerns about their rights. In this case, please contact UNL's Research Compliance Services at 402-472-6965.

Freedom to Withdraw:
Participation in this study is voluntary. You can refuse to participate or withdraw at any time without harming your relationship with the researchers or the University of Nebraska-Lincoln, or in any other way receive a penalty or loss of benefits to which you are otherwise entitled.

Consent, Right to Receive a Copy:
You are making a voluntary decision whether or not to have your child participate in this research study. Your signature certifies that you have decided to allow your child to participate having read and understood the information presented. You will be given a copy of this consent form to keep.
Signature of Participant's Parent/ Guardian:

_____	_____
Parent/Guardian Signature	Date
_____	_____
Name of Child/Participant	Date

☐ Please check the box if you allow your child to be audio taped in the phone interview session regarding their experience in the program.

Please scan this form and email it to ashlie.pace@my.wheaton.edu once completed.

THANK YOU!!!

Appendix E

Participants Informed Assent, 4-H Eat 4-Health Study Participation

University of Nebraska Lincoln

COLLEGE OF EDUCATION AND HUMAN SCIENCES

Department of Nutrition & Health Sciences

Participant Informed Assent Form

Title:
Peer health education: The motivations of becoming a peer health teacher and the behavioral modifications made as a result

Procedures:
You are being asked about participating in a research study relating to the Eat 4-Health Program. You will be asked to complete a short survey (10-15 minutes) as well as a brief recorded phone interview (10-15 minutes) with program leader, Ashlie Smith toward the end of the Eat 4-Health program. The survey and interview only relate to your knowledge in the areas of health and wellness as we want to know how effective this program was in developing leadership skills as well as increasing knowledge in the areas of health and well-being.

Benefits:
The benefits of participating in this study include the knowledge that we can gain by finding out whether or not you the participant were able to improve leadership skills and increase knowledge in the areas of nutrition, physical activity and self-confidence.

Risks:
There are no known risks associated with this study.

Confidentiality:
Any information obtained during this study which could identify you will be kept strictly confidential.

Compensation:
You will receive a Target gift card amounting to $15.00 for participating in this study, which entails completing one survey and one 10-15 minute recorded phone interview.

Opportunity to Ask Questions:
You may ask any questions regarding this research and are free to contact the program investigator, Ashlie Smith, or the co-investigator, Michelle Krehbiel, with any concerns.

Phone number: (760)533-1304
Email: ashlie.pace@my.wheaton.edu

Michelle Krehbiel, 4-H Youth Specialist and Co-Investigator
Phone number: 402-472-9020
Email: mkrehbiel2@unl.edu

Sometimes participants have questions or concerns about their rights. In this case, please contact UNL's

110 Ruth Leverton Hall / P.O. Box 830806 / Lincoln, NE 68583-0806 / (402) 472-3716 / FAX (402) 472-1587

Research Compliance Services at 402-472-6965.

Freedom to Withdraw:
Participation in this study is voluntary. You can refuse to participate or withdraw at any time without harming your relationship with the researchers or the University of Nebraska-Lincoln.

Consent, Right to Receive a Copy:
You are making a voluntary decision whether or not to participate in this research study. Your signature certifies that you have decided to participate having read and understood the information presented. You will be given a copy of this assent form to keep. Ashlie Smith will plan to contact you at your preferred time with the phone number you provide below so as to conduct the brief interview about the program.

Signature of Participant:

_____
Printed Name

_____ _____
Signature Date

_____ _____
Phone # Time of Day to reach you

THANK YOU!!!

110 Ruth Leverton Hall / P.O. Box 830806 / Lincoln, NE 68583-0806 / (402) 472-3716 / FAX (402) 472-1587

Appendix F

4-H Common Measures Survey Questionnaire

4-H Common Measures
8th – 12th Grade Healthy Living Items

Dear Participant:

You are being given this survey **because you are part of a 4-H program or project,** and we are surveying young people like you to learn about your experiences.

This survey is voluntary. If you do not want to fill out the survey, you do not need to. However, we hope you will take a few minutes to fill it out because your answers are important.

This survey is private. No one at your school, home, or 4-H program or project will see your answers. Please answer all of the questions as honestly as you can. If you are uncomfortable answering a question, you may leave it blank.

This is not a test. There are no right or wrong answers, and your answers will not affect your participation or place in the program in any way.

Thank you for your help!

Section I: Tell us about your 4-H Experience

Please select the responses that best describe you.

1. **How many years have you been participating in 4-H?** (Mark one box ☒.)
   - ☐ This is my first year
   - ☐ This is my second year
   - ☐ Three or more years

2. **Which one of the following best describes how many hours you typically spend in 4-H programs/projects each week?** (Mark one box ☒.)
   - ☐ Less than one hour
   - ☐ Between one and three hours
   - ☐ More than three hours

3. **Which of the following best describes how you are involved in 4-H?** (Mark each box ☒that applies to you.)
   - ☐ Clubs
   - ☐ Camps
   - ☐ After-school programs
   - ☐ In-school programs
   - ☐ Local fairs/events
   - ☐ Community service projects
   - ☐ Working on my projects at home
   - ☐ Other

Section II: Nutrition Knowledge

4. **Please indicate to what extent you agree or disagree that your experience in this 4-H program or project has resulted in the following outcomes.** (Select one response in each row by marking the appropriate box ☒.)

As a result of participating in a 4-H Healthy Living Program...	***Strongly Agree***	***Agree***	***Disagree***	***Strongly Disagree***	***Not Applicable to my 4-H Experience***
I learned the foods that I should eat every day	☐	☐	☐	☐	☐
I learned what makes up a balanced diet	☐	☐	☐	☐	☐
I learned why it is important for me to eat a healthy diet	☐	☐	☐	☐	☐
I learned how to make healthy food choices	☐	☐	☐	☐	☐
I learned how many calories I need to eat each day	☐	☐	☐	☐	☐
I learned the importance of fruits and vegetables in my diet	☐	☐	☐	☐	☐
I learned the importance of whole grains in my diet	☐	☐	☐	☐	☐

Section III: Food Choices

5. **Please indicate to what extent you agree or disagree that your experience in this 4-H program or project has resulted in the following outcomes.** (Select one response in each row by marking the appropriate box ☒.)

As a result of participating in a 4-H Healthy Living Program I now take the following actions...	***Strongly Agree***	***Agree***	***Disagree***	***Strongly Disagree***	***Not Applicable to my 4-H Experience***
I think about what foods my body needs during the day	☐	☐	☐	☐	☐
I make food choices based on what I know my body needs	☐	☐	☐	☐	☐
I make healthy food choices whenever I can	☐	☐	☐	☐	☐
I match my food intake to the number of calories I need to eat each day	☐	☐	☐	☐	☐
I encourage my family to eat meals together	☐	☐	☐	☐	☐

6. **Please indicate to what extent you agree or disagree that your experience in this 4-H program or project has resulted in the following outcomes.** (Select one response in each row by marking the appropriate box ☒.)

As a result of participating in a 4-H Healthy Living Program I now take the following actions...	***Strongly Agree***	***Agree***	***Disagree***	***Strongly Disagree***	***Not Applicable to my 4-H Experience***
I eat more fruits and vegetables	☐	☐	☐	☐	☐
I eat more whole grains	☐	☐	☐	☐	☐
I eat less junk foods	☐	☐	☐	☐	☐
I drink less soda	☐	☐	☐	☐	☐
I drink more water	☐	☐	☐	☐	☐

Please select the response that best describes you.

7. **My family eats at least one meal a day together.**
   - ☐ Yes
   - ☐ No

Section II: Positive Choices and Communication

8. **Please indicate how often your experience in this 4-H program or project has resulted in the following outcomes?** (Select one response in each row by marking the appropriate box ☒.)

In this 4-H program or project ...	***Always***	***Usually***	***Sometimes***	**Never**
I use information to make decisions	☐	☐	☐	☐
I set goals for myself	☐	☐	☐	☐
I take responsibility for my actions	☐	☐	☐	☐
I can explain why my decision is a good one	☐	☐	☐	☐
I consider the consequences of my choices	☐	☐	☐	☐
I can resist negative social pressures	☐	☐	☐	☐
I listen well to others	☐	☐	☐	☐
I am respectful of others	☐	☐	☐	☐
I have the confidence to speak in front of groups	☐	☐	☐	☐
I can resolve differences with others in positive ways	☐	☐	☐	☐
I work well with other youth	☐	☐	☐	☐

9. **Please indicate to what extent you agree or disagree that your experience in this 4-H program or project has resulted in the following outcomes?** (Select one response in each row by marking the appropriate box ☒.)

As a result of my experience in this 4-H program or project ...	***Strongly Agree***	***Agree***	***Disagree***	***Strongly Disagree***
I am comfortable making my own decisions	☐	☐	☐	☐
I am comfortable sharing my thoughts and feelings with others	☐	☐	☐	☐
I have a plan for reaching my goals	☐	☐	☐	☐
I know how to deal with stress in positive ways	☐	☐	☐	☐
I can make alternative plans if something doesn't work	☐	☐	☐	☐
I can use technology to help me express my ideas	☐	☐	☐	☐
I know who I can go to if I need help with a problem	☐	☐	☐	☐
I am willing to consider the ideas of others even if they are different than mine	☐	☐	☐	☐
I can stand up for things that are important to me	☐	☐	☐	☐

Section III: Connections and Contributions

10. **Please indicate to what extent you agree or disagree that your experience in this 4-H program or project has resulted in the following outcomes?** (Select one response in each row by marking the appropriate box ☒.)

As a result of my experience in this 4-H program or project ...	***Strongly Agree***	***Agree***	***Disagree***	***Strongly Disagree***
I can work successfully with adults	☐	☐	☐	☐
I have friends who care about me	☐	☐	☐	☐
I know community leaders who support me	☐	☐	☐	☐
I have adults in my life who care about me and are interested in my success	☐	☐	☐	☐
I am someone who wants to help others.	☐	☐	☐	☐
I like to work with others to solve problems	☐	☐	☐	☐
I have talents I can offer to others	☐	☐	☐	☐
I learned things that helped me make a difference in my community	☐	☐	☐	☐
I led a project that made a difference in my community	☐	☐	☐	☐

Section VI: Tell us about You

Please select the responses that best describes you.

11. **How old are you?**

_____ Age (in years)

Please select the responses that best describes you.

12. **What grade are you in?**

_____ Grade

13. **Which of the following best describes your gender?** (Mark one box ☒.)
- ☐ Female
- ☐ Male

14. **Which of the following best describe your race?** (Mark each box ☒that applies to you.)
- ☐ American Indian or Alaskan Native
- ☐ Asian
- ☐ Black or African American
- ☐ Native Hawaiian or Other Pacific Islander
- ☐ White

15. **Which of the following best describe your ethnicity?** (Mark one box ☒.)
- ☐ Hispanic or Latino
- ☐ Not Hispanic or Latino

16. **Which of the following best describes the primary place where you live?** (Mark one box ☒.)
- ☐ Farm
- ☐ Rural (non-farm residence, pop. < 10,000)
- ☐ Town or City (pop. 10,000 – 50,000)
- ☐ Suburb of a City (pop. > 50,000)
- ☐ City (pop. > 50,000)

THANK YOU!

Appendix G

Phone Interview Questions

Phone Interview Questions

(There are no 'wrong' answers, so just be honest and try to be specific.)

1. Why did you initially want to sign up for this healthy teen ambassador program? / What made you want to join this program?

2. Did being in this program so far meet the expectations and hopes you had for it? Why or why not?

3. What are some of the challenges of being a teacher to other youth?

4. What is the most valuable thing you learned about yourself by being a teen teacher?

5. How have you improved your teaching abilities? In what ways?

6. How have you gained more confidence in the area of teaching as a result of this experience?

7. Do you think you would have applied for this program if it was on a different subject matter other than healthy living or do you have a passion for this subject in particular?

8. How have you changed your perspective on a healthy diet since becoming a teen teacher?

9. How have you changed your perspective on being physically active since becoming a teen teacher?

THANK YOU!

(The only other thing left on your part is answering a survey that you will print, fill out, and mail back to me, and then I will immediately mail you your Target gift card using the address with which you mail me your survey!!!)