From MyPlate to McTeacher's Night: a communication-centered and ecological investigation of nutrition education in middle school: a case study

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FROM MYPLATE TO MCTEACHER'S NIGHT:
A COMMUNICATION-CENTERED AND ECOLOGICAL INVESTIGATION OF
NUTRITION EDUCATION IN MIDDLE SCHOOL | A CASE STUDY

by

Crystal L. Brandow

A Dissertation
Submitted to the University at Albany, State University of New York
In Partial Fulfillment of
the Requirements for the Degree of
Doctor of Philosophy

College of Arts and Sciences
Department of Communication
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Dedication

I'm a health communication scholar, and maybe just one of a dozen with experiences that might resemble mine. In 2014, 664 communication doctorates were conferred in the United States (National Communication Association [NCA], 2015). Of those graduates, 39 identified as Black, and 58% were women. Yet, only 24 of the 664 graduates identified as “two or more races” or “other” (NCA, 2015). If 58% of those 24 were women, that leaves just 14 who share some characteristics with me. And, these numbers represent degrees earned in communication as a general field. I study, and am passionate about, communication as a mechanism for improving population health outcomes. So, of those 14 women, I may be just one, or one among a dozen perhaps, who explores the ways in which communication research and application can improve health disparities faced by marginalized populations. I’m interested in the ways in which communication can help decrease disproportionate rates of morbidity and mortality in communities of color, and among vulnerable populations, like children. I stand by the premise that "one cannot not communicate." I believe everything is a form of communication. I can see how that’s a challenge to comprehend, but if we step outside of dominant discourse, the subtle and not so subtle messages and interactions directed towards marginalized and vulnerable populations are communicating a larger hegemonic ideology, I believe.

With great humility, I recognize that I am one of a few who are, in at least some ways, like me doing this work with the doctoral degree to give it perceived credibility and power. The numbers doing the work are countless, but the numbers with the symbolic degree that our society values are few. Many people, many women, many women of color share these passions. I'm privileged to have Dr. in front of my name—which many of my sisters and queens did not have
the opportunity to attain, whether that be due lack of access, lack of resources, lack of support, or they otherwise made the choice not to. Either way, it's in solidarity with you all that I recognize this accomplishment, and I aim to maximize the privilege our society associates with it to create, shape, support, or reinforce work to build us up, always.

Aligning in the struggle for social justice, I dedicate this work, and my work, to all—regardless of race, gender, class, sexuality, religion—who are seeking to improve the standard of living and to promote the betterment of life for our brothers and sisters, in the face of odds that so quickly and easily stack against the vulnerable: children, those in poverty, those with behavioral health challenges, people of color, and so on and so forth. I acknowledge you, because even if I don't see or hear you, I feel you when I'm pushed toward this work.
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I thank my family, biological and chosen, for all of the love, light, and support along this journey; for listening to all of my complaints and celebrations along the way. No matter what, my family supported me in this process. My parents were amazing, as always, and a constant support and reminder of my autonomy and abilities in this doctoral program. My sister, and best friend, reviewed drafts of my chapters and took an active part in the data immersion phase of this dissertation. I love you, and thank you, always.

I thank the school district that allowed me to conduct this study: the students who participated in my study, the superintendent who showed an initial interest and allowed me access to her schools, all of the faculty and staff who allowed me into their world, and the teacher. For the latter, I'm grateful for her kindness, generosity, and her passion for improving the lives of the youth in the community. I couldn't have done this without you and your willingness to support my work, my yearlong presence in your classroom, and my daily emails.

I'd also like to acknowledge Policy Research Associates, Inc., where I was employed when my doctoral journey started, and am employed now as I submit this manuscript. Thank you to the leadership there who supported me in this process, had countless conversations with me on my progress, and provided invaluable insight and guidance.

And, last but certainly not least, I acknowledge my dissertation committee, Dr. Annis Golden, Dr. Janine Jurkowski, and my advisor, Dr. Matthew Matsaganis—without whom no one would ever be reading these words. Thank you for your time, your energy, your input, and your assistance.
Matthew and I had countless meetings on campus and at coffee shops making progress in this work. Matthew joined the communication department shortly after I finished my master’s program, and accepted the invitation to be my doctoral advisor at the suggestion of Mihye Seo due to our shared interest in health communication and health disparities. Mihye was my master’s advisor and original member of my dissertation committee. From a distance, I thank you, too, for helping me get to where I am.

And, a special thank you to Janine for joining my committee upon Mihye’s departure, and sharing your expertise in qualitative research and public health.

It’s hard to believe that I’ve been a student of Annis’ since I took COM100: Language and Social Action in 2004. I was 18 years old when I walked into that classroom in January. Now, at 31, I’m grateful for the support, opportunities, and guidance over the years.

Outside of my role of student, I worked with Annis, Matthew, and Janine in different capacities over the years, whether on researching reproductive health disparities or exploring childhood obesity in low-income families. I’m grateful for that exposure and experience, helping to shape the work I do today.
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ABSTRACT

We have an undeniable awareness about the rates of obesity in our country, and we know that rates of obesity among children and youth are higher than ever. In fact, this is predicted to be the first generation of children who will not live longer than their parents. An abundance of research has identified the challenges and the causes of childhood obesity, and even proposed solutions for addressing this growing public health concern. One of the suggested solutions, or at least preventative measures, involves schools playing an active role in combating the obesity epidemic through the provision of nutrition interventions. Accordingly, research has explored the impact of in-school nutrition education on obesity. However, gaps remain in the literature. From a health communication perspective, the mechanisms for combating obesity via nutrition education remain relatively unknown. This is largely because observation of school nutrition programs is widely underutilized, so we lack an understanding of what and how children learn about nutrition in school and thus how that education influences their behaviors. This case study sought to help address that gap, and provide insight into the constellation of factors that shaped children’s nutrition-related attitudes and behaviors in the school environment. A secondary objective of this study was to determine if nutrition education in a school provided children with media literacy skills for interpreting food marketing messages, further strengthening their abilities for healthful nutrition decision-making.

I employed an ecological approach to social cognitive theory to research the communicative influences on children’s nutrition behaviors. My study uncovered a number of factors previously understudied in the literature. The data suggested that schools can serve as positive nutrition influences, and the primary mechanism for shaping nutrition attitudes and behaviors was through improvements in behavioral capability and self-efficacy. And,
communication was the vehicle through behavioral capability and self-efficacy improved. With these improvements, children were able to effectively apply media literacy strategies to food marketing messages, adopt healthier nutrition behaviors, and become more cognizant of their food choices through increased nutrition literacy. Communication was not always positive, though. Environmental communication in the school, like vending machine content and signage, often contradicted the nutrition education received in the classroom. This created a complex nutrition environment for children to navigate. For some children, this was an indication that "the school doesn’t really care," which is fundamentally out of alignment with schools being a source of meaningful nutrition education and guidance. This study details the school nutrition environment from a communication-centered perspective in an upstate New York middle school Family and Consumer Sciences class, and identifies the nutrition influences that impacted seventh and eighth grade students in this school. I engaged in participant observation, held focus groups and interviews with students (n=28), and interviewed key informants in the school (n=2). In this work, I discuss the nutrition influences that were illuminated in the data from a communication-centered approach, and offer practical implications for improving the role schools can play in addressing childhood obesity.
Chapter One:

Introduction—Purpose of the Research, Existing Knowledge, and Goals of the Study

In 2004, Albert Bandura wrote, “Human health is a social matter, not just an individual one. A comprehensive approach to health promotion also requires changing the practices of social systems that have widespread effects on human health” (p. 143). For children, a comprehensive approach to health promotion includes the social system designed to have significant effects on American children and the system children interact with the most, the school system. My research explored the role of the school system in influencing children’s nutrition behaviors through the lens of health communication. More specifically, I considered communication in this context to be “verbal, nonverbal, and environmental” (Sue, 2010). This means my research not only explored traditional acts of communication in a school, such as verbal talk between teacher and student, but also environmental aspects of the school and interactions across environmental levels.

I consider the health of children a social matter that extends beyond their individual choices, or even the choices of their parents and guardians, as one that involves communication from not only the school system, but the media also. Understanding the complex intersection between food marketing on television, food marketing in schools—how children interpret these messages—, nutrition education in the classroom, and what children are actually eating is essential for putting an end to the childhood obesity epidemic. A number of organizations have identified the school system as a site for approaching the health care needs of children, especially for addressing the obesity epidemic (e.g.: Centers for Disease Control and Prevention [CDC], 2015a; Robert Wood Johnson Foundation, 2015; U.S. Department of Health and Human Services, 2012). Not only have schools been identified as mechanisms for addressing childhood
obesity, but the media have been called upon too (e.g.: Federal Communications Commission, 2010; Robert Wood Johnson Foundation, 2009). In New York State, 24.4% of adolescents are overweight or obese; and 27.4% of them watch television for more than three hours each day (CDC, 2015b). As articulated by Kean, Prvidera, Boyce, and Curry (2012), “At the intersection of the areas of health communication and public health lay media intervention strategies” (p. 203).

If both schools and food marketing have been identified for at least one decade as venues for addressing childhood obesity and reversing the current trends, then we need to understand children’s perceptions of the nutrition education they receive, and of the food marketing messages they are exposed to, as well as how these messages are interpreted. That is, it is moot to say schools can impact children’s nutrition behaviors and transform rates of obesity and overweight if children do not embody healthful messages received in school. And, if schools teach healthful eating in the classroom, but then contradictory food marketing messages are sent to the children in the halls of the school, we, as a society, cannot expect that schools will serve as helpful mechanisms for addressing childhood obesity. This study explored these complicated factors in the school environment through an ecological perspective, developing an understanding of not only how children perceive nutrition education, but also of the ways in which they view food marketing as factors that influence their nutrition attitudes and behaviors.

**Background and Statement of the Problem**

Obesity in America has been on the rise for 20 years. Today, more than one-third of adults in this country and nearly one-fifth of children and youth are obese (CDC, 2012a). Obesity is a significant issue in our society, costing an estimated $147 billion in 2008 (Finkelstein, Trogdon, Cohen, & Dietz, 2009) – more than the cost of smoking at $133 billion (American
The costs of obesity include both direct and indirect costs: The healthcare costs of obesity, or direct costs, are estimated to be anywhere from $147 billion to $210 billion each year. Indirect costs like days lost at work, for adults, due to obesity-related complications are additional societal costs. These indirect costs are estimated to be an additional $4.3 billion each year (State of Obesity, 2014). The direct cost of childhood obesity is estimated to be $19,000 per child (Finkelstein, Graham, & Malhotra, 2014), which is only expected to increase as the children age, should they maintain obese status. Based on current trends, it is predicted that the population of obese adults will increase by 65 million, or to more than 44% of adults, in 2030, with a direct cost of $550 billion between now and 2030 (Robert Wood Johnson Foundation, 2012b). While the cost of obesity at $19,000 per child may seem rather benign during childhood, these price tags forecast the ways in which the cost will increase, taking into account comorbid diseases like diabetes and hypertension, for example, as today's obese children grow into adulthood. The proper interventions, however, may change the trajectory of this trend.

Contributing to our unprecedented obesity crisis has been an increase in unhealthy nutrition behaviors, like increases in consumption of sugar-sweetened drinks, frequent snacking, and eating more food away from home. When dining out, more families are choosing fast food restaurants; when dining in, they are choosing low cost, ready-to-eat meals (U.S. Department of Health and Human Services [HHS], n.d.). We know obesity is often caused by unhealthy eating habits. And, one of the strategies for creating new habits or eliminating old habits is developing awareness (Nemec, Swarbrick, & Merlo, 2015). Consistent with this, my research explored the ways in which children develop awareness of their eating habits, and subsequently adopt new, healthful nutrition attitudes and behaviors. This study investigated messages children
received about nutrition in schools, and examined how these messages were processed in a larger environment.

Explorations of nutrition education in schools and media effects on nutrition behaviors are not new. Rather, they are becoming increasingly popular. A simple Google Scholar search of articles including the term “school nutrition” yields 61,400 results published in 2015 alone. In EBSCO Academic Search Premiere, 853 results are found for the key terms and year 2015. EBSCO reveals six results for “media effects” and “nutrition,” while Google Scholar produces 467 results published in 2015. Figure 1.1 better illustrates the increasing trends of these studies over the past two decades.

**Figure 1.1. Results for Relevant Key Words Searches Using Google Scholar**

![Graph showing results for relevant key words searches using Google Scholar](image)

*Figure 1.1. This figure illustrates the increasing trends of research on topic areas relevant to the current study. While no means a substitution for a systematic review of the content of this literature, this depicts the growing amount of attention paid to topics related to nutrition and media effects on nutrition behaviors based on sample keywords.*
Clearly, these are highly researched topic areas. Adding to the research, my study offered insight on the complicated intersection of the school environment as both a source of classroom nutrition education and a venue for food marketing. In 2016, a Google Scholar search of "food marketing" "school" and "nutrition education" yielded only 244 results. This intersection of multiple levels of influence in the school was explored through a health communication perspective in my study, adding to a relatively understudied area. My study examined the ways the school environment contributed to awareness of eating habits through the development of attitudes toward healthful eating and subsequent behaviors aligned with a healthful diet. To further outline the significance of this study, I will now discuss the role of schools in obesity prevention, the complexities of food marketing both inside and outside of schools, and draw attention to relevant research on the topic of food marketing – highlighting the importance of media literacy skills for helping children navigate these environments.

The Role of Schools in Obesity Prevention: A Prime Venue for Interventions

In response to the growing issue of childhood obesity, public health officials and government agencies have called upon schools to support the health and wellness of our nation’s children. At the 2012 Weight of the Nation Conference, the development of food literacy skills in schools was identified as a strategy for achieving good health and for preventing obesity (Nihiser, Merlo, & Lee, 2013). Further, Healthy People 2020, a document that outlined federal prevention initiatives for 2010-2020, has an overarching goal of promoting good health for all, including through the development of adequate “social and physical environments” in order to achieve this goal nationwide (HHS, 2012). Schools are clear social and physical environments: They are physical structures that children go to; and, within that structure, they include physical artifacts, like advertising and promotions, vending machines, and school stores. They are also
social environments, serving as places where children socialize with their peers and interact with adult faculty and staff.

U.S. children ages six to 17 spend nearly 33 hours each week in school (Swanbrow, 2004), making these prime spaces for addressing health promotion and disease prevention. And, the literature proves that schools play a role in the development of nutrition beliefs, attitudes, and behaviors. This influence occurs on a number of different levels. To begin, the opinions of and communication from individual teachers at the school impact children’s nutrition attitudes. For example, a study illustrated that children as young as eight years old will consider the words of teachers who tell them that certain foods are unhealthful and should be avoided (Atik & Ozdamar Ertekin, 2013). These teachers may serve as credible sources of authority, or individuals with social attractiveness or liking (McCroskey & McCain, 1974), which students are influenced by. This influence can exist even if the teacher is not a health or nutrition teacher, for example. A formal health education classroom is another vehicle through which schools impact children’s nutrition beliefs, attitudes, and behaviors. Health education classes may include nutrition information, and schools may incorporate food and media literacy concepts into these classes. These health education classes are specifically designed to influence beliefs and attitudes, while increasing nutrition, health, and media knowledge among students. To achieve these classroom goals and effectively facilitate behavior change, nutrition education curricula are often guided by self-efficacy promotion techniques (Roseman, Riddell, & Haynes, 2011). In many instances, nutrition education is grounded in theoretical frameworks for behavior change, such as the transtheoretical model, the social ecological model, and the theories of reasoned action and planned behavior, with social cognitive theory being the most largely utilized
framework for developing and evaluating such interventions (Hoelscher, Evans, Parcel, & Kelder, 2002; Sharma, 2011).

**Types of Nutrition Education in Schools.** Many schools do not have dedicated nutrition education classes, nor do they employ codified evidence-based interventions. Instead, many schools weave nutrition education topics into other classes. *This is an area of nutrition education that is understudied.* For example, a health class may include a module on diet, or a physical education class may include some discussion about health and nutrition. In both instances, these are classes on larger topic areas that weave nutrition into the lesson plans. These examples of integrated classes, e.g.: a health class where there is one section or module on nutrition, usually lack the implementation of a formal evidence-based curriculum for obesity prevention. Instead, they often incorporate information on nutrition and diet in relevant class settings where the teacher designs the educational content, e.g.: a health or gym teacher creating her or his own nutrition lesson plan. In fact, 90% of teachers develop their own materials for teaching nutrition (Westat, Inc., 1996).¹

To delineate the types of nutrition education delivery, I distinguish between “curricula,” “evidence-based toolkits,” and “teacher-developed lesson plans,” as well as between “nutrition class” and “nutrition education.” Curricula are pre-established and *codified educational frameworks* for implementing nutrition interventions. Evidence-based toolkits are *practice-tested or research-tested* frameworks for implementing a *proven* nutrition intervention. Teacher-developed lesson plans are nutrition interventions *created by the teacher.* For example, Take 10! is a “program designed to help children understand the importance of fun physical activity and other healthful behaviors, including nutrition” (United States Department of Agriculture [USDA], 2014, p. 17). Educators can visit the website www.take10.net and order a curriculum
kit that includes activities, assessments, posters, and other materials (Flaghouse, Inc., 2015). While Take 10! may indeed be a reputable curriculum, it is not an evidence-based intervention. On the other hand, KidsCook is practice-tested and therefore is an evidence-based curriculum. KidsCook is a “program encouraging children and families to adopt healthier behaviors through hands-on preparation of a variety of nutrient-rich foods paired with daily physical activity (USDA, 2014, p. 15). Educators can visit www.kidscook.biz and purchase the curriculum, including a training guide, book, aprons, safety tips, and more (HM Consulting, LLC, 2015). A teacher-developed lesson plan does not include the purchase of these curricula, and is instead created by the teacher using available, and often free, resources.

A *nutrition class* is a class dedicated to teaching nutrition and health; whereas *nutrition education* is the pedagogical approach to the topic in any class, like the example of a nutrition module in a health class. A review of the literature indicated that *little research has been done to analyze and evaluate the effectiveness of teacher-developed lesson plans on nutrition education.*

**Purpose of Nutrition Education in Schools.** The purpose of nutrition education, according to a report on nutrition education in public schools, is to:

- accomplish three important objectives. The first is to convey needed information, or the facts about nutrition, so students are knowledgeable about healthy eating practices. The second is to change unhealthy attitudes so students have the motivation to establish healthy eating practices. The third is to teach positive skills so students have all the tools to accomplish their nutritional goals. (Westat, Inc., 1996, p. 7)

To accomplish these objectives, nutrition education in school environments is believed to take one of two approaches: One approach, known as a *knowledge-based approach*, is to increase children’s knowledge, attitudes, and skills; ultimately promoting nutrition literacy. The second
approach, a *behaviorally-focused perspective*, is aimed at behavior change and preventing chronic diseases by reducing risk factors in children through diet change. In other words, some interventions are designed to facilitate increased knowledge, e.g.: understanding which foods are healthier options; whereas others are intended to focus on actual behavior change, e.g.: learning the skills for packing a lunch and practicing this (Lytle, 1994).

In order to create *nutrition knowledge*, addressing the first objective of nutrition education in public schools, it is suggested that 15 hours of nutrition education be administered in schools (Connell, Turner, & Mason, 1985). To actually create *changes in nutrition behaviors*, 40 to 50 hours of nutrition education is suggested (Connell, Turner, & Mason, 1985; Contento et al., 1995 as cited in Watts, Piñero, Alter, & Lancaster, 2012). However, few hours seem to actually be spent teaching nutrition education in schools across the country, inspiring the inquiry into the impact, if any, of fewer than 15 or 40/50 educational hours spent in this area. One 2008 study found that only 3.4 hours of elementary education were spent on nutrition education per year (Bergman, 2010), a decrease from the 4.6 hours taught in 2000 (CDC, 2006). In middle schools, an average of 5 hours per academic year is spent on nutrition education (Story, Nanney, & Schwartz, 2009). Not only is time spent teaching the topic of nutrition important, but the type of nutrition intervention utilized in schools also has an impact on outcomes.

According to Pérez-Rodrigo and Aranceta (2001), successful school-based nutrition programs utilize a “multiple component prevention model,” where nutrition education begins in elementary school and continues through high school. An example of such a model is Nutrition in a Changing World, a chronological curriculum for children in kindergarten through twelfth grade. An evaluation of this curriculum, from a *knowledge-based approach*, found that it led to increases in knowledge across all grade levels, and attitudes changed in some areas. From a
behaviorally-focused perspective, and consistent with expectancy-value theories that posit behavior is determined by behavioral beliefs and, subsequently, attitudes (Ajzen, 1988), the lack of meaningful attitude changes predicted the intervention’s minimal effect on actual behavior change.

Of course, not all interventions fail to change children’s nutrition behaviors. Planet Health, an interdisciplinary health behavior intervention, was implemented in five Massachusetts schools, and is believed to be the first randomized controlled field trial of a school-wide health intervention targeting obesity among middle school children. The program was implemented with students in grades six through eight, and was shown to increase consumption of fruits and vegetables, decrease prevalence of obesity among female participants, and decrease hours spent watching television. The research on Planet Health was guided by behavioral choice theory and social cognitive theory, and illustrated the positive impact nutrition education can have on children’s nutrition behaviors (Gortmaker et al., 1999).

The work of Gortmaker et al. (1999) identified television consumption as an impediment to physical activity and thus a contributor to obesity. In their study, television was assessed in the evaluation of Planet Health as an activity that prevented children from being active. More time spent watching television was an indicator of less time practically available for physical activity to promote wellness. There is a large body of research investigating health behaviors; and television viewing has largely been identified as one of the activities that keep people inside, sedentary, and inactive, contributing to the obesity epidemic (Brownell, 2004). Few studies evaluate the impact of nutrition interventions on children’s media literacy skills. Such study would be able to investigate the influence of food marketing on cognitive, or intrapersonal, factors (e.g. beliefs, attitudes, preferences) of children who enrolled in the intervention. In the
study being described here, such exploration would look at whether Planet Health also changed
the ways in which children perceived the food marketing efforts they saw on television, not just
whether the intervention influenced time spent watching television.

Whether nutrition education programs can simultaneously improve children’s capacity to
interpret food marketing efforts, or increase media literacy, seems to be a relatively understudied
area that my study explored. While a class or curricula may not have the explicit goal of
building media literacy and all that the term encompasses (i.e.: recognizing deception, decoding,
understanding notions of corporate ownership, issues of credibility, etc.), the hypothesis of my
study is that school-based nutrition education can play a role in the development of the skills
needed to interpret food marketing messages. To this end, I investigated whether nutrition
education can provide children with a filter or lens for the critical interpretation of food
marketing messages. For example, are children able to compare what is shown in advertisements
to what they learn in the classroom and determine where there are inconsistencies? These
critical interpretation skills would apply to the food marketing messages encountered by children
both in the school environment and their larger environments.

**Food Marketing Both Inside and Outside of School: A Constant in Children’s Lives**

While schools serve as formal venues for nutrition education, they also informally
communicate with students about food and nutrition via food marketing. Food marketing in
schools includes product sales, direct and indirect advertising, and market research (Wootan,
2011). Pizza Hut supporting a school reading program by offering rewards of personal pan
pizzas when a certain number of books are read by a child; McDonald’s collaborating with
educators to host McTeacher’s Night to raise money for a school; promotional posters featuring
celebrities and displaying the familiar “Got Milk?” slogan; and brands provided in a vending
machine on a school campus are just some examples of food marketing in schools. In fact, the Federal Trade Commission (2012) estimates that $149 million was spent on youth-directed food marketing in schools in 2009.

According to a National Education Policy Center (NPEC) Report, “commercial activities in schools continue to extend their reach, and the threats they pose to children’s well-being remain as serious, if not more serious, than they have ever been” (Molnar, Boninger, Libby, & Fogarty, 2014, p. 29). These threats include psychological threats, such as the promotion of a consumer- and material-oriented youth culture; health threats, including the promotion of unhealthy foods that fail to meet dietary guidelines; and education threats, as these commercial activities in schools, such as food marketing efforts, may contradict and even undermine the attempts of educators to influence children’s eating behaviors in a positive way. Reporting on a study of school-based environmental influences of children’s nutrition and physical activity behaviors, Bauer, Yang, and Austin (2004) emphasized this contradictory nature of food marketing efforts in schools, as identified by both students and staff. For example, the authors pointed out:

Lunches meeting the USDA minimum nutritional standards for the National School Lunch Program were served in the cafeterias, and yet these meals were often unpalatable. Easy access to nonnutritious snack foods in the cafeteria, combined with unpalatability and insufficient time in which to finish eating a full lunch, leads students to select nonnutritious snacks instead of the provided lunch. (p. 43)

Those commercial foods, and often nonnutritious snacks, that are not just marketed in schools but are also available for purchase are known as competitive foods.
Competitive foods are foods and beverages that are available and sold to students outside of the federally funded breakfast and lunch programs (USDA, 2013). Competitive foods are increasingly popular, with nearly 90% of schools across the country selling competitive foods during the 2003-2004 academic year (U.S. Government Accountability Office, 2005). Historically, most competitive foods sold to children have been high fat, salty snacks, and sweetened drinks, or otherwise foods and beverages that lack nutritional value (Pasch et al., 2011; Wechsler et al., 2001). In vending machines, for example, more than three-fourths of the beverage and snack options available in middle schools and high schools are of poor nutritional quality, failing to meet dietary guidelines for healthful foods (Center for Science in the Public Interest, 2004). The poor nutritional value of vending machine foods is significant considering that 62% of middle schools have at least one vending machine for students to purchase snacks and beverages (Wechsler, Brener, Keuster, & Miller, 2001). The poor nutritional value of vending content is an example of a commercial activity that poses both health and education threats.

Recent legislation known as the Healthy, Hunger-Free Kids Act of 2010 requires federal standards for competitive foods sold in schools, as well as the development of nutrition guidelines for competitive foods – the latter to be developed by the local schools themselves and incorporated into a local wellness policy (CDC, 2012b; Healthy, Hunger-Free Kids Act of 2010). A state policy analysis of all 50 states found that 39 states, or 78% of the country, have these nutrition guidelines and policies for competitive foods in place. No state has enacted wellness policies that meet the recommendations of the Institute of Medicine’s Nutrition Standards for Foods in Schools, which is considered the gold standard for the provision of competitive foods in schools (CDC, 2012b).
While schools may be able to play a crucial role in obesity prevention, food marketing in schools, including the availability of competitive foods, seems to blur the lines between the influence of school-based education on nutrition attitudes and behaviors and the influence of commercial marketers on nutrition attitudes and behaviors. Nationwide, more than 50% of school districts permit the sale or availability of “brand-name fast foods” in the school environment, while only 29% and 12% of districts required or recommended, respectively, that brand-name fast foods be removed from the school environment (CDC, 2013). The availability of foods in school influences what children will consume during the school day, and healthful vending machine policies can encourage consumption of healthy snacks and beverages rather than sugary, or otherwise unhealthy snacks and beverages.

The food marketing efforts for these unhealthy snacks and beverages are visible in school environments, serving as forms of communication to the students, but the marketers are not affiliated with the educational institutions. Instead, they are the same food marketers present in the larger environment outside of school, i.e.: the California Milk Processor Board (creator of the Got Milk? campaign), Coca-Cola, General Mills. Outside of the school environment, children are also exposed to food marketing messages in their larger, mediated environments. Although my study did not investigate the role of television on nutrition behaviors, it aimed to determine whether nutrition education could equip children with skills for interpreting food marketing efforts in order to make healthful nutrition decisions. To establish the importance of these critical interpretation skills, I will provide a summary of some of the literature on food marketing and children.

**Research Related to Food Marketing Targeting Children.** Although children spend nearly 33 hours each week in school, by the time he or she graduates high school, the average
American child will have spent more time watching television than in a classroom (American Academy of Child and Adolescent Psychiatry, 2012). A substantial amount of research explores the types of products and the nature of the messages related to food, nutrition, and health featured in mass media. Television is the primary medium for food marketing and promotion (Henderson & Kelly, 2005). The food, beverage, and restaurant industry spent $5 billion on television advertising alone in 2004, with 20%, or $1 billion, specifically targeting children (Keller & Schulz, 2010).

Thirty years ago, Dietz and Gortmaker (1985) were among the first to report a correlation between television consumption and the body weight of American children. They found, “for 12- to 17-year-old adolescents, the prevalence of obesity increased by 2% for each additional hour of television viewed” (p. 807). There is a positive correlation between hours of television consumed per day and body fat percentage (de Jong et al., 2013; Freeman, 2007) and a negative correlation with consumption of healthful foods (Godbold Kean, Prividera, Boyce, & Curry, 2012). To assess any correlation between television viewing and nutrition habits, a longitudinal study by Barr-Anderson, Larson, Nelson, Neumark-Sztainer, and Story (2009) evaluated television viewing and eating habits over a span of five years. This study appeared to be the only of its type, and concluded that heavy television viewing was associated with less healthful eating habits among adolescents.

Among the available literature on food choices, research indicates that children largely make food decisions based on taste (Atik & Ozdamar Ertekin, 2013), rather than features such as nutritional value. Perhaps for this reason food advertisers on television largely appeal to the taste of the items being marketed (Gantz, Schwartz, Angelini, & Rideout, 2007). And, these food advertisements air quite frequently on television: Research consistently indicates that children’s
programming is more likely to include advertisements for food than programming targeting adults (Bell, Cassady, Culp, & Alcalay, 2009; Gantz et al., 2007). In a study of 13 broadcast and cable networks frequently watched by children ages 2 to 17, 50% of advertising for the children’s programming on these networks was selling food (Gantz et al., 2007). Marketing of fruits and vegetables rarely airs on television (Bell et al., 2009; Harrison, 2006; Harrison & Marske, 2005; Mink, Evans, Moore, Calderon, & Deger, 2010), occupying about 10 seconds per hour of advertising (Gantz et al., 2007). Instead, most advertisements are for foods that are high in fat, salt, and sugar, such as fast food (Batada, Seitz, Wootan, & Story, 2008; Bell et al., 2009; Chandon & Wansink, 2012; Hawkes & Harris, 2011; Henderson & Kelly, 2005; Mink et al., 2010). And, this advertising matters: Children request from their parents the items they see on television, which are largely fast foods and sweets (Mehta et al., 2010).

When nutritional content is presented in food marketing, it is often deceptive and creates what Chandon and Wansink (2012) referred to as “health halos” (p. 578). That is, “when branding and labeling efforts emphasize one aspect of the food as healthy, it can lead to a ‘health halo,’ whereby people generalize that the food scores highly on all nutrition aspects” (p. 578). Fast food advertisers in both television and magazine advertisements will make claims about health content in respect to a menu item being “lower-fat” or “low-fat,” for example (Godbold Kean & Prividera, 2007; Henderson & Kelly, 2005), or low in calories (Harrison & Marske, 2005). Through the health halo perspective, advertisements touting foods as low-fat have the propensity to contribute to a generalization by the consumer that the food is a healthy choice, or that it is also low-calorie and low-sodium, for example, simply as a result of the “low-fat” promotion. This tactic influences the consumption of unhealthy foods because consumers
conceive of them as healthy food choices. This is a frequent strategy in food marketing, and arguably a deceptive one.

Advertising that includes non-deceptive, objective information about nutrition and obesity takes the shape of public service announcements (PSAs). However, these advertisements are rare and underutilized. It is far more common to see advertisements for unhealthy food products than a PSA promoting a balanced diet (Bell et al., 2009; Byrd-Bredbenner & Grasso, 2000; Gantz et al., 2007). While PSAs serve as important mechanisms for countering some of the unhealthy food advertisements on television, they “air too infrequently to serve as an antidote to unhealthful food ads” (Bell et al., 2009, p. 411). For example, a study by Gantz et al. (2007) found that children ages two to seven may be exposed to 4,427 food ads per year on television, but only 164 PSAs on fitness or nutrition. Children ages eight to 12 may be exposed to even more food advertisements per year (n=7,609), but fewer PSAs (n=158). And, teenagers ages 13 to 17, may be exposed to 6,098 food ads but only 47 PSAs. Interestingly, evidence suggests that PSAs reminding people who are at-risk of obesity about “mindful eating,” physical activity, and dietary choices can be effective at prompting this group to be conscious of the foods they eat, and they can also be a prompt for exercise for this largely sedentary group (Kolodinsky & Reynolds, 2009). Television, then, can indeed serve as a vehicle for positively impacting viewers’ health behaviors if appropriate messages are conveyed through the medium.

I would be remiss if I failed to mention a new brand that is emerging as I write this dissertation, FNV. According to the September 1, 2015 press release by Partnership for a Healthier America:

FNV, a brand focused on increasing fruit and vegetable consumption and sales, has launched its first round of television ads, which urge celebrities and athletes to use their
influence to sell teens fruits and vegetables. The ads appear in FNV’s two lead markets—Fresno, CA and Hampton Roads, VA—and are accompanied by a digital campaign across FNV’s social media channels. (para. 1)

This has the potential to be a major moment in televisual history, with celebrities, children, and youth engaging in commercial food marketing efforts for fruits and vegetables. Researching the effectiveness of this campaign in the lead markets to determine whether commercial advertisements and celebrities are successful at selling fruits and vegetables, and perhaps comparing that to the success of commercial advertisements and celebrities in selling unhealthful foods, is worthy of future investigations. However, until now—and still today in nearly 100% of markets—the promotion of fruits and vegetables in advertising has been minimal.

Related to current happenings in the field, that the U.S. Food and Drug Administration (FDA) recently announced their new nutrition label requirements, taking effect in 2018, for food products sold across the country. According to the FDA (2016):

“For more than 20 years, Americans have relied on the Nutrition Facts label as a leading source of information regarding calories, fat and other nutrients to help them understand more about the foods they eat in a day,” said FDA Commissioner Robert Califf, M.D.

“The updated label makes improvements to this valuable resource so consumers can make more informed food choices – one of the most important steps a person can take to reduce the risk of heart disease and obesity.” (para. 3)

The new requirements mandate that items like calories and servings be highlighted nutrition labels to facilitate increased understanding of the package contents; and that select nutrition labels offer “dual-column” labels to indicate the nutrition facts per serving and per package, e.g.: for a 3-ounce bag of chips (FDA, 2016). These changes, among others, help to increase
accessibility of nutrition facts, meeting the needs of those who might lack nutrition literacy skills in relation to the existing labeling system. Issues of literacy—media literacy in particular—were central to my investigation.

**Media Literacy as a Tool for Interpreting Food Marketing.** In light of the lack of actual nutrition information presented in food advertisements, as well as the insufficient production of PSAs to offer counter messages to those being produced by branded food companies, the topic of media literacy is increasingly salient. The Center for Media Literacy (2011) defines media literacy in three parts:

- Media Literacy is a 21st century approach to education.
- It provides a framework to access, analyze, evaluate and create messages in a variety of forms – from print to video to the Internet.
- Media literacy builds an understanding of the role of media in society as well as essential skills of inquiry and self-expression necessary for citizens of a democracy.

(para. 2)

Simply put, “media literacy is the ability to ‘read’ television and mass media” (DeBenedittis, 2015). This ability to “read” the media has implications for health behaviors of both adults and children. For example, a study by Godbold Kean et al. (2012) found that “those individuals who are more media literate are more likely to choose healthy food options and avoid unhealthy ones” (p. 211). Media literacy is an essential skill for resisting the marketing of foods that contribute to obesity. For some children, simply one episode of a television program can impact their behavioral intention as it relates to nutrition choices (Byrd-Bredbenner, Grenci, & Quick, 2010). To change this trend, media literacy is necessary to decipher and decode the nutrition and health
claims propagated by the mass media and to give children tools for critically interpreting food marketing messages.

My research focused on the second bullet in the Center for Media Literacy’s (n.d.) definition, and explored whether nutrition education, without explicitly teaching media literacy, provided children with a framework for analyzing and evaluating food marketing messages. Can school-based nutrition education can provide children with a filter for decoding food marketing messages, particularly considering the fact that these ads often contradict federal diet recommendations, i.e.: a wholesome diet based on the food pyramid or MyPlate? For example, when watching an advertisement for a Big Food company like McDonald’s, do children rely on information learned in school to determine what the advertisement is actually selling them, and how it is being sold?

My study investigated these topics with seventh and eighth grade students in a Family and Consumer Sciences class at a small middle school in upstate New York. Exploring these topics with seventh and eighth graders was aligned with research on both media literacy and childhood development. For example, a study by Mehta et al. (2010) illustrated that children ages eight to 11 do indeed have media literacy skills; and Piaget (1971) referred to the ages from seven to 11 as the concrete operational stage, where children become better at logical and systematic thinking and analysis. Investigating whether nutrition education implicitly develops skills for interpreting food marketing efforts with seventh and eighth graders is well-suited, as the age group has already developed basic media literacy skills and become engaged in logical thinking and analysis. By incorporating this inquiry into my research, I not only provided a practical means for addressing this intersection of food marketing and nutrition education in schools, but also offered a number of contributions to public health communication literature.
Contributions to Public Health Communication and Education Literature

My study contributed to public health communication literature by investigating the intersection of food marketing and schools, which I have identified as an understudied area. The crosswalk between education, communication, mass media, and public health examined embraces an interdisciplinary approach to a nationwide concern that cannot plausibly be addressed or rectified in the silos of any one discipline. This interdisciplinary approach is illustrated in my study through the adaption of a socioenvironmental perspective to social cognitive theory. This work also contributes by employing an underutilized research methodology, namely, participant observation as a qualitative means for understanding the school as a physical and social environment. Finally, by exploring teacher-developed nutrition education rather than formal curricula or evidence-based toolkits, this study helps address a gap in the literature that predominantly focuses on evidence-based and codified interventions. This study also has the potential to contribute to the larger dialogue on policies related to children’s health and nutrition.

Exploring the Intersection of Food Marketing and Education. This study sought not only understand the impact of nutrition education on children’s nutrition attitudes and behaviors, but also to explore whether this nutrition education provided children with a lens for interpreting the food marketing efforts they encounter both inside and outside of school. While there are substantial amounts of research looking at television’s effects on nutrition behavior, as well as on the relationship between school-based nutrition education and behaviors, seeking to determine whether school-based nutrition education has the ability to equip students with the skills needed to decipher food marketing, i.e.: advertisements and promotions for snacks and beverages is understudied. My research examined this ability of nutrition education through
photo elicitation with food marketing messages in focus groups, as well as through ethnographic field observations as a participant observer.

**Experiencing the School Environment: The Value of Participant Observation.** In addition to the interpersonal communication that takes place in the classroom between teachers and students, I argue that the artifacts in the school environment serve as forms of communication. As previously stated, I consider communication to be verbal, nonverbal, and environmental—expanding traditional conceptions of communication. Environmental communication was extremely important in my study, and participant observation allowed me to see, firsthand, how the school environment communicated to students about nutrition via signage, food offerings, etc. One study reported, “teachers said that increasing nutrition education in the classroom would not impact students’ eating patterns unless the information taught in the classroom was reflected throughout the entire school environment” (Henderson, 2004, p. 71). The rationale existed for looking beyond the classroom and exploring the school environment and what it communicated to students to determine if it helped shape nutrition attitudes or behaviors; or if it otherwise supported or undermined nutrition education received in the classroom. Although many nutrition education efforts fail to meet the recommended hours for creating actual attitude or behavior change (Watts et al., 2012), the lack of quantity in terms of hours spent on nutrition could be supplemented by the quality of a healthy, nutrition-focused environment in order to create meaningful attitude and behavior changes. That is, a larger nutrition-oriented environment may serve as a means for reinforcing messages from the nutrition education class, and supporting the skills necessary for interpreting food marketing messages. Exploring the environment via observation is a way to determine the validity of such claims, but observation of nutrition education has been underutilized in the field. A systematic review of
qualitative studies exploring children’s fruit and vegetable consumption was conducted by Krølner et al. (2011) and yielded 31 papers published between 1973 and 2009 that met the standards for the study. Inclusion criteria limited the study to those papers that showcased:

- qualitative methodology and perceived quality of methodology,
- internal and external validity,
- original research that addressed children’s and adolescents’ experiences with fruits and vegetables, and
- papers that were peer-reviewed, among other criteria.

Of these 31, two studies, or 6%, employed observation as a form of data collection. Of these two studies, one included one observational visit at five schools (Khunti et al., 2007) and the other referenced observation of a school gardening program, the classroom, and lunch activities, but did not indicate the number of observational visits (Libman, 2007). While observation was very time consuming and labor intensive, perhaps a deterrent to studies in this area, it illuminated aspects of the school environment and children’s interactions with the environment that wouldn’t have otherwise been exposed, or that could have been misrepresented if I solely relied on self-reports of key informants.

**Investigating Nutrition Behaviors from the Child’s Perspective.** The use of focus groups in my study allowed the voices and perspectives of children to be heard. One study on nutrition and school environments offered a systematic review of research on barriers and facilitators to healthy eating. In this review, eight studies were identified as reporting the views of children on barriers and facilitators. “All eight studies asked young people about their perceptions of, or attitudes towards, healthy eating, while none explicitly asked them what prevents them from eating healthily [emphasis added]. Only two studies asked them what they
thought helped them to eat healthy foods, and only one asked for their ideas about what could or should be done to promote nutrition” (Shepherd et al., 2006, p. 248). I asked children what prevented them and their peers from eating healthy foods – asking a question that had, at the time of this systematic review, not yet been asked. This question, along with the other focus group questions, allowed for increased access to what children believe to be the impediments to healthy eating and how they communicated about these barriers. Again, my study helped to address gaps in the research, and takes a health communication approach to children’s nutrition attitudes and behaviors in such a way that can identify the mechanisms that shape these personal factors. Learning from children what influences contribute to their eating habits can help shape nutrition interventions, help inform the ways in which communication can be harnessed to transform behaviors, and highlight the ways policy and environmental changes can better encourage healthy eating among children to fight the childhood obesity epidemic.

**Studying Nutrition Education Embedded in a Larger Class.** Much of the research on nutrition education programs explores codified, or systematically organized, curricula, i.e.: evidence-based toolkits. Few studies look at the integrated practice of incorporating nutrition education into a larger classroom context through the development of individual teacher lesson plans, i.e.: teacher-developed nutrition education lesson plans. This means, little research investigates nutrition education programs like the one I studied in this case. The nutrition education program that my case study explored was a part of a larger class known as Family and Consumer Sciences. The instructor did not purchase an evidence-based, practice-tested intervention protocol, and the class was not a nutrition or health class designed to focus solely on nutrition or wellness. Instead, nutrition was one of many topics covered throughout the school year, along with topics such as recycling, sewing, and “dream bedroom” design. These
integrated nutrition lessons did not necessarily follow any particular curriculum, but instead were created and tailored by the instructor.

The individual coordination of nutrition education by the Family and Consumer Sciences teacher in this study was consistent with how most public schools offer nutrition education to students. In 61% of U.S. schools, the teacher is responsible for his or her own nutrition curriculum; and 90% of teachers develop their own materials for teaching nutrition (Westat, Inc., 1996).¹ These rates emphasize the importance of a study that investigated this model of nutrition education rather than continuing to explore the evidence-based interventions and codified curricula taught in some schools. Since most studies explore codified interventions in schools, yet most schools are not using these evidence-based interventions, the nutrition education received in classrooms where teachers are making their own teaching materials clearly matters if we are to develop an understanding of the roles of schools in addressing childhood obesity.

**Possibilities for a Wider Impact.** Understanding the ways in which school-based nutrition education programs may be effective in countering the unhealthful effects of commercial food marketing or otherwise addressing the obesity epidemic may have both education and public policy implications. Through education and public policy changes, there may be opportunities to help to improve the health of children. Understanding the role of the school environment, children’s perceptions of the effectiveness of the teacher’s communication style on the subject, and the reception of information taught in a nutrition education class, in particular, contributes to a better understanding of the role schools can play in promoting children’s dietary health.

This study has the capacity to impact larger nutrition and education policy, and to further emphasize the promise of ecological models as appropriate frameworks for doing so. As a result
of the ecological approach used in this study, the findings are a relevant contribution to the larger dialogue on the roles of schools in obesity prevention and the complex relationships between schools and funding streams – with funding being a significant reason many schools feature competitive foods and partner with commercial food brands. While it is not part of the purpose of the current study, I argue that capitalism requires schools to compete for money. In that competition, schools may collaborate with companies whose intentions are out of alignment with their nutrition goals in order to establish private-public partnerships that contribute funds to the school. When those partners are Big Food companies, for example, the schools can then undermine the very education they seek to offer children. Identifying these idiosyncrasies and hypocrisies in the current study may serve the common good, even if solely through societal reflection on the purpose of America’s schools and what policies ought to be in place to support that purpose. In a more applied sense, this study contributes to the research that seeks to modify nutrition policies in schools in the interest of America’s children and youth.

As I mentioned, increasing amounts of attention have been given to children’s dietary intake, as illustrated by the new FNV brand and the amount of research on the topic. This study contributes to the discussion by highlighting, not so much the need for children to eat well in order to live well, but the fact that children spend a significant amount of time in schools and with media/surrounded by marketing. These are prime opportunities for us, as a society, to present a cohesive and consistent message to children about nutrition. The way schools, as both physical and social environments, communicate about nutrition matters. What children’s favorite television characters are eating, and the advertisements that display during those programs, matters. Ultimately, children’s lives – all dimensions of their wellness and health – matter. From a policy perspective, more can be enacted and more can be enforced to ensure
healthful environments for children. There is a price for failing to provide our children with effective nutrition education. And, that cost is $19,000 per obese child (Finkelstein, Graham, & Malhotra, 2014).

The available research, data, and literature on childhood obesity—as well as observations we have all made in our day-to-day experiences of the growing sizes of all our children—contribute to the rationale for this study. In places like New York State, where this study is conducted, school days are growing increasingly longer. With all of that time in a classroom, it is fair to wonder if what is being taught actually changes children’s behaviors. In 2013, some schools in New York State were selected for an extended school day pilot, adding 300 hours of education to the academic calendar year. And, nationally, more than 1,000 schools have extended their school day since 2009 (Associated Press, 2012). If children are required to attend a longer school day, decreasing the amount of time available for the family to educate the child on topics such as nutrition, and if schools are not meeting the nutrition hour guidelines for nutrition attitude or behavior change, it is worth investigating the impact of the schools in this area. The role of communication here is paramount, on various levels. I hope my research illuminates some of these forms of communication as they relate to children’s nutrition behaviors, and helps lead us in a direction that promotes the development of nutrition education and media literacy in various levels of the school environment.

**Overview of Research Design**

To understand how school-based nutrition education influences children’s attitudes and behaviors related to nutrition, and whether this education provides them with a lens to interpret food marketing efforts, this study utilized interpretive methods, namely a) focus groups with children enrolled in the Family and Consumer Sciences course at the middle school serving as
the subject of this case; b) interviews with the Family and Consumer Sciences teacher and the school district superintendent; and c) observation of Family and Consumer Sciences nutrition education during the 2014-2015 academic year.

**Observation and Becoming an Insider at the School.** Observation allowed me to gain an understanding of the ways in which the class was taught, such as teacher’s style, activities, and teaching tools. It also allowed me to observe the ways in which the children in the class appeared to understand the content and become involved with the nutrition material. Through observation, both the people and environment of the nutrition education delivery were observed and documented. As described by Boyle (1994), “participant observation sets the stage for other techniques, such as interviews…and other data collection procedures…participant observation provides the baseline of meaning and the contextual data…” (p. 163). As such, my field notes set the stage for focus groups and interviews, providing a baseline for understanding nutrition education in the middle school.

**Focus Groups and the Open Exchange of Ideas.** Focus groups were successfully carried out in a similar study by Neumark-Sztainer, Story, Perry, and Casey (1999) who also recruited seventh graders, in addition to tenth graders, from a mandatory health education class in order to determine the myriad of factors that influence adolescents’ food choices. These authors found the “[focus group] data collection procedures…allowed for idea generation through group interaction” (p. 935). Focus groups were also successfully used by O’Dea (2003) with students in grades two through 11 in an attempt to discover benefits and barriers to healthy eating; by Croll, Neumark-Sztainer, and Story (2001) in their investigation of the ways in which adolescents define healthy eating; as well as by Bauer, Yang, and Austin (2004) in their exploration of social and environmental influences on student physical activity and nutrition.
We see, then, that numerous studies have taken a focus group approach for discussion of nutrition with adolescents, and my study is aligned with those practices. Additionally, this particular methodology was appropriate for answering the proposed research questions, presented in Chapter 2, that sought to understand how nutrition education happened and in what ways the school influenced children’s nutrition attitudes and behaviors. Supplementing the observation and focus groups in this study were interviews with the class teacher and the school district superintendent.

**Interviews and an Understanding of Administrative Intentions for Nutrition Education.** The interview with the class teacher provided additional insight into the intentions and goals of the class, and her expectations for what students would incorporate in their lives as a result of her class. This included whether she expected nutrition attitude, behavior, goals, behavioral capability, and outcome expectations to change as a result of her class, for example. The interview with the class teacher also focused on interpersonal communication, how the course was developed, how larger organizational policies influenced the course, and the nature of interactions with the students. The interview with the superintendent was designed to obtain more information about the larger institutional culture and context this nutrition education module is embedded in, such as goals and intentions for the district as a whole. She provided insight into nutrition changes in a larger cultural context at the school, including whether the initiatives implemented by the school led to any meaningful increases in the health of students, which may be captured through BMI reporting, for example, and indicative of actual behavior change.
Summary and Overview of Dissertation

In Chapter One: Introduction and Purpose of the Study, I illustrated my rationale for this case study: identifying and detailing the issue of childhood obesity, discussing the role schools have the potential to play in addressing this epidemic, and highlighting the complexities of food marketing as an enterprise that has the capacity to undermine the efforts of nutrition education in schools. I provided an overview of some literature on the topics of nutrition education and food marketing toward children. Television was chosen as the focus here because there is an expansive amount of literature highlighting the role of marketing, namely advertising, of food products toward children on TV. This research gives a flavor for the larger mediated environment children are exposed to as it relates to commercial food marketing and existing findings related to that exposure. I also drew attention to the concept of media literacy, which is ultimately what I am looking at when exploring whether school-based nutrition education provides students with the behavioral capability for interpreting food marketing. I identified the significance of this study, further, in its contribution to health communication literature, particularly in a public health and health education context. And, I provided a preliminary rationale for my research design.

Chapter Two: Applying a Communication-Centered and Ecological Model of Social Cognitive Theory to Study the Impact of the School Environment on Children’s Nutrition Attitudes and Behaviors highlights some of the current and relevant scholarship about school-based nutrition education and nutrition behaviors that utilize social cognitive theory, identifying relevant applications of and the rationale for using this framework. The benefits of an ecological approach to this topic are described. I present my research questions at the conclusion of the chapter.
In Chapter Three: Research Design and Methods, an explanation of the research methodology utilized in this case study is presented. I present details on the research site, sample, data collection methods, and analysis procedures, including detail on the grounded theory practices adopted for this study. I also provide sample focus group and interview questions in this chapter, and offer a conceptual model for interpreting and making sense of the data.

Chapter Four: Findings and Interpretation Part One: Understanding the School as a Physical Environment is where I present the findings of the case study as it pertains to the school as a physical environment. This chapter starts with the outside layer of this model and discusses the school as a physical environment, utilizing data from the thematic analysis of key informant interviews, observations, and focus group discussions. This exploration of the physical environment pays special attention to nutrition-related signage in the school, cafeteria offerings for lunch, and vending machine availability. I describe the physical artifacts in the school and explain the ways in which the school, as a physical environment, served as a facilitator for shaping children’s nutrition attitudes and behaviors, addressing Research Question 1a.

Chapter Five: Findings and Interpretation Part Two: Understanding the School as a Social Environment is where I present the findings of the case study, including the analysis of field notes, focus group, and interview data, which elucidate the mechanisms in the school as a social space that served as a facilitator for shaping children’s nutrition attitudes and behaviors. Special attention is given to the role of food marketing as an aspect of the social environment in this chapter, addressing Research Question 1b.

Chapter Six: Findings and Interpretation Part Three: The Impact of Nutrition Education on Children’s Nutrition Attitudes and Behaviors relies on focus group data to showcase the ways
in which the nutrition education offered in this case shaped children’s nutrition attitudes and behaviors. This chapter highlights facilitators and impediments of the incorporation of the nutrition guidance received in the classroom into the lives of the students and their families. This chapter addresses Research Question 2, and includes discussion of personal factors and the ways in which children communicated about their own nutrition attitudes and behaviors.

My final data analysis chapter, Chapter Seven: Findings and Interpretation Part Four: Children’s Skills for Interpreting Food Marketing Messages, responds to Research Question 3. The chapter offers a discussion of my perceptions of students’ displays of media literacy skills in their interpretation of food marketing messages in the focus groups, including both the photo elicitation conversation designed to prompt discussion on media as well as their organic discussions of the influences of media and marketing.

In Chapter Eight: Summary, Discussion, and Recommendations, I summarize the findings of the study, and draw attention to its theoretical implications and practical implications. I also highlight the limitations of the case study, and propose possible directions for future health communication research.
Chapter Two:

Applying a Communication-Centered and Ecological Model of Social Cognitive Theory to Study the Impact of the School Environment on Children’s Nutrition Attitudes and Behaviors

My research investigated whether school-based nutrition education impacted children’s nutrition attitudes and behaviors, as well as whether such education offered techniques and resources children could use to interpret commercial food marketing efforts. This qualitative study involved focus groups, interviews, and participant observation in order to discover the constellation of factors that contributed to nutrition-related attitude formation and behavior change among middle school students. This approach provided depth and breadth to the topic of children’s nutrition, guided by an ecological approach to social cognitive theory. In this chapter, I outline the rationale for the theoretical framework, define key terms, and present my guiding conceptual framework. I present my research questions at the conclusion of the chapter.

Theoretical Framework

Although some argue that qualitative research “does not begin with a theory” (Creswell, 1994, p. 94), I followed Yin’s (1994) recommendation of identifying an appropriate theoretical framework to help guide this case study in order to establish a “sufficient blueprint” (p. 38), aiding with the interpretation of the data. To that end, this study, theoretically, had two primary components: 1) guidance offered by social cognitive theory and 2) an ecological approach.

Social Cognitive Theory. Social cognitive theory posits that “people are neither driven by inner forces nor automatically shaped and controlled by the environment…but function as contributors to their own motivation, behavior, and development within a network of reciprocally interacting influences” (Bandura, 1989, p. 8). While my study was not designed based on social
cognitive theory, it was informed by the theory and how constructs such as self-efficacy (perceived ability to engage in a behavior) and behavioral capability (knowledge and skills to engage in a behavior) were developed and sustained in a specific sociostructural context. A summary of the key social cognitive theory constructs explored in this study are provided in Table 2.1. My study considered social cognitive theory factors—self-efficacy, behavioral capability, outcome expectations (beliefs about the consequences of performing a behavior), goals (intentions set by performing or not performing a behavior), facilitators (those environmental elements that contribute to performing a behavior), and impediments (those environmental elements that prevent a behavior, or serve as barriers)—to provide an in-depth look at the role and impact of nutrition education and the school environment on nutrition behaviors. Four elements of social cognitive theory made it particularly salient for my study: 1) the inclusion of sociostructural factors, 2) self-efficacy, 3) the concept of behavioral capability, and 4) reciprocal determinism. To better contextualize these concepts, I first offer examples of social cognitive theory’s use in research on children’s nutrition behaviors.
Table 2.1. *Social Cognitive Theory Constructs and Definitions as Applied in the Current Study*

<table>
<thead>
<tr>
<th>Construct</th>
<th>Definition</th>
<th>Nutrition Behaviors Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavioral capability</td>
<td>Knowledge or skills to perform a behavior</td>
<td>A student learns the skills necessary for measuring portion sizes</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>Perceived ability for performing a behavior</td>
<td>A student believes she/he can substitute unhealthy snacks for healthy ones because the teacher modeled examples in class</td>
</tr>
<tr>
<td>Outcome expectations</td>
<td>Expected outcomes from performing or not performing a behavior</td>
<td>A student believes changing her/his eating habits will cause them to live longer</td>
</tr>
<tr>
<td>Goals</td>
<td>Intentions for performing a behavior</td>
<td>A student expresses desire to reduce her/his soda intake</td>
</tr>
<tr>
<td>Perceived facilitators</td>
<td>Aspects of the social or physical environment that contribute to or detract from performing a behavior</td>
<td>A student identifies the posters in the cafeteria as promoting healthy eating behaviors</td>
</tr>
<tr>
<td>Impediments</td>
<td>Aspects of the social or physical environment or personal factors that prevent behavior change</td>
<td>A student identifies the cost of healthy food as a reason for not changing diet</td>
</tr>
</tbody>
</table>


**Use of Social Cognitive Theory in Investigations of Nutrition Behaviors.** Social cognitive theory, including the notion that behavior, personal factors, and environment are constantly being affected by while also affecting one another, has been used extensively to explore the relationship between children and nutrition behaviors. For example, McCabe et al. (2015) applied Bandura’s social cognitive theory to the dietary intake of adolescent females attending school in low-income communities. As noted in Chapter 1, most research on school nutrition education explores codified interventions. Consistent with this, McCabe and colleagues’ study investigated social cognitive theory constructs as it pertained to a 12-month
obesity prevention intervention, NEAT Girls. The authors noted the role of peer and parental influence in shaping dietary behaviors. In my study, the influence of peers and parents were assessed in the social environment as perceived facilitators to healthful eating. I also assessed the media as a perceived facilitator, following the recommendation of Gaines and Turner (2009) that researchers ought to evaluate the impact of media influence on various health behaviors, including healthful eating.

In addition to investigating perceived facilitators, social cognitive theory provided the construct for assessing perceived barriers, or impediments. Shepherd et al. (2006) conducted a systematic review of the perceived facilitators and perceived barriers to healthful eating among children ages 11-16, synthesizing data from seven interventions. They found, for example, that family was identified as a perceived facilitator, while lack of lack of healthy competitive foods on campus was a perceived barrier. In their study, teachers were reported to have “low status” as sources of nutrition information. My research took a more in depth look at the role of teachers, and the school environment, as possible facilitators or barriers to healthy eating among seventh and eighth graders.

Bandura (1998, 2004) outlined various factors that contribute to individual behaviors that include ecological or environmental considerations. In his chapter, *Health Promotion and Disease Prevention from the Perspective of Social Cognitive Theory*, Bandura (1998) presented factors such as knowledge, perceived self-efficacy, outcome expectations, goals, perceived facilitators, and impediments from a *public health perspective*, describing them as vehicles for both health promotion and disease prevention. Facilitators and impediments are sociostructural factors that exist outside of the individual. Although we might perceive of self-efficacy as something that occurs *within* the individual, so to speak, the facilitators of the development of
that self-efficacy may be *outside of* the individual. This is a crucial component of social
cognitive theory that made it incredibly applicable to my work of exploring both sociostructural
factors, e.g.: the school as a social and physical environment, and personal/intrapersonal factors
of the students, e.g: attitude, behavior.

**The Sociostructural Factors of Social Cognitive Theory.** What people eat is not merely
an individual act, but it is an act shaped by a variety of societal and structural forces that are
often overlooked in considerations of nutrition behaviors and obesity that tend to focus on
individual behaviors. Inclusion of sociostructural factors in social cognitive theory causes
Bandura’s (2004) model of social cognitive theory and structural paths of influence (Figure 2.1)
to lend itself to a more ecological or environmental approach to behavior change than expectancy
approaches, which focus on the individual and his or her own capacity without explicit
acknowledgement of the various factors that may facilitate or hinder behavior change. What
many of the expectancy value approaches, such as the theory of reasoned action, theory of
planned behavior, and health belief model, lack is a comprehensive schematic that embeds the
constructs of the theory into a larger context. They fail to unequivocally account for
environment and interpersonal interactions. Social cognitive theory does take these factors into
account, giving it high utility for my research. Originally, this study was based on an expectancy
value approach, the theory of planned behavior. However, the data indicated that there were
elements at play that were not explained by that theory. Hence, social cognitive theory was
adopted; the sociostructural and socioenvironmental factors included in the theory better
supported the interpretation of the data collected in this study.
The Role of Self-Efficacy. Self-efficacy is perhaps the most popular construct of social cognitive theory (McAlister, Perry, & Parcel, 2008), and is defined as one’s perceived ability for engaging in a behavior. In my study, self-efficacy was explored through the lens of the four dimensions for increasing self-efficacy: social modeling or vicarious experiences, verbal or social persuasion, physiological or emotional state, and mastery experiences (Bandura, 2012).

Self-efficacy is a significant predictor of behavior in social cognitive theory, functioning as something that shapes outcome expectations, forms beliefs about facilitators and impediments, contributes to the creation of goals, and ultimately helps to determine whether a behavior is performed. Bandura (2004) articulated:

Self-efficacy is a focal determinant because it affects health behavior both directly and by its influence on the other determinants. Efficacy beliefs influence goals and aspirations. The stronger the perceived self-efficacy, the higher the goals people set for themselves and the firmer their commitment to them. Self-efficacy beliefs shape the
outcomes people expect their efforts to produce. Those of high efficacy expect to realize favorable outcomes. Those of low efficacy expect their efforts to bring poor outcome beliefs also determine how obstacles and impediments are viewed. People of low efficacy are easily convinced of the futility of effort in the face of difficulties. They quickly give up trying. Those of high efficacy view impediments as surmountable by improvement of self-management skills and perseverant effort. They stay the course in the face of difficulties. (p. 145)

Self-efficacy is a filter that impacts one’s perceptions of outcome expectations, sociostructural factors, and goals. Meanwhile, outcome expectations, sociostructural factors, and goals, independently, contribute to whether a behavior is performed. Although self-efficacy is indeed a prime determinant for behavior, I consider behavioral capability a precedent to self-efficacy in this “sociocognitive causal model” (Bandura, 2004, p. 145), suggesting that our perceived ability to perform a behavior is shaped by our knowledge on, and skills for, performing the behavior. For example, a child’s self-efficacy for engaging in healthy eating behaviors will be shaped by that child’s knowledge and acquired skills for doing so.

**The Role of Behavioral Capability.** The public health-oriented iteration of social cognitive theory helping to guide my study incorporates various factors that contribute to whether behavior change occurs, including facilitators, like the Family and Consumer Sciences teacher, and impediments, like the availability of foods in the school. While the model of social cognitive theory applied in my study incorporates these sociostructural elements, it does not make explicit mention of the behavioral capability construct. However, behavioral capability is found in other applications of social cognitive theory in researching children’s nutrition behaviors (e.g.: Berlin, Norris, Kolodinsky, & Nelson, 2013; Freedman & Nickell, 2010; Safdie,
Cargo, Richard, & Lévesque, 2014). Behavioral capability, also known as behavioral capacity, is “knowledge of what to do and how to do it” (Kelder, Hoelscher, & Perry, 2015, p. 166). Behavioral capability is essentially having both the skills and knowledge of how to apply skills in order to adopt a behavior. It is important to note that behavioral capability is not the same as the theory of planned behavior’s perceived behavioral control. Perceived behavioral control relates to one’s perceptions of controlling external factors that can facilitate or impede behavior. On the other hand, behavioral capability is internal, relating to self and one’s knowledge and skills. For example, the Coordinated Approach to Child Health (CATCH) program, which was designed to improve children’s eating habits and other behaviors to prevent cardiovascular risk factors, conceptualized behavioral capability as a social cognitive theory construct that influenced positive nutrition behaviors. Students in the CATCH intervention gained knowledge of healthy foods, and learned skills for identifying foods as healthy and unhealthy using a GO, SLOW, and WHOA system for classifying foods (Luepker et al., 1996), increasing behavioral capability.

While self-efficacy describes one’s perceived ability to perform a behavior, behavioral capability speaks to an individual having the knowledge and skill to perform the behavior. If a child has no experience cooking and thus lacks behavioral capability for food preparation, I think it is unlikely that child would have high self-efficacy for preparing her/his own breakfast in the morning, for example. And, it would ultimately be unlikely that the behavior of daily breakfast preparation would be adopted unless cooking skills and knowledge were developed. Once the skills are developed and the knowledge is there, space is created for self-efficacy. Based on skills and knowledge, this hypothetical child could then develop a perception of his or her ability to cook, or not cook, breakfast in the mornings. Bandura (1998) noted, “knowledge creates the
precondition for change” (p. 3). I agree, and incorporate the behavioral capability construct in my research, considering it a precursor to self-efficacy, as shown in Figure 2.2. This is in alignment with the claims of Safdie et al. (2014) that “behavioral capacity is a pre-requisite for self-efficacy and self-confidence” (p. 2).

In the context of my study, behavioral capability was paramount to whether or not children could apply what they learned in the classroom. In a class that incorporated hands on food preparation and experience in a cooking lab, it was important to evaluate the role of behavioral capability in determining behavior change. As a result, the model guiding my study merged knowledge, a cognitive factor, and skills, a behavioral factor, to add the behavioral capability construct to Bandura’s (2004) model of the structural paths of influence. This allowed me to apply social cognitive theory in a comprehensive manner that addressed personal and sociostructural factors of behavior change, and allowed for attention to be paid to this construct. In fact, it was noted:

Health promotion and prevention programs often produce short-lived or weak results because they rely too heavily on didactic, knowledge-based strategies and place too little emphasis on the development of behavioral capability [emphasis in original]. It is a straightforward task to deliver health knowledge, but far more difficult to change a person’s level of self-efficacy, outcome expectations, social support, or opportunities that require careful planning, resources, and qualified personnel. (Kelder, Hoelscher, & Perry, 2015, p. 177)

In alignment with this, Figure 2.2 offers a depiction of the structural paths of influence (Bandura, 2004) with the inclusion of behavioral capability as a prerequisite to self-efficacy.
**Figure 2.2. Conceptual Model of Social Cognitive Theory Applied in this Study**

![Conceptual Model of Social Cognitive Theory](image)

*Figure 2.2. Adapted from Bandura’s (2004) illustration of the structural paths of influence, incorporating behavioral capability, or the knowledge and skills needed to perform a behavior, as a prerequisite to self-efficacy. This includes the assumption that an individual will not have the perceived ability to perform a behavior if she/he lacks the knowledge to perform the behavior.*

While Figure 2.2 presents a sociocognitive causal model, it is worth noting that this causality takes place in a complicated arena where behavior and environment are constantly influencing and shaping one another. For example, just as there are arrows going from self-efficacy to sociostructural factors, I could also place arrows from sociostructural factors back to self-efficacy because those facilitators and impediments shape perceptions of one’s abilities. Rather than complicate the model and create an endless loop of interactions, a brief discussion of the concept of reciprocal determinism follows.

**Reciprocal Determinism as an Essential Aspect of Social Cognitive Theory.** A central tenet of social cognitive theory is the concept of reciprocal determinism, or the idea that there is a bidirectional relationship between behavior and environment. As Bandura (1978) wrote, “it is true that behavior is influenced by the environment, but the environment is partly of a person’s own making” (p. 345). As such, there is a reciprocal relationship between behavior, cognitive events/personal factors, and environment (Figure 2.3).
This concept of reciprocal determinism speaks to the ways self-efficacy can be increased or decreased by environmental factors, such as by perceived facilitators, e.g.: a classroom teacher. The double-sided arrows between these three factors addresses what was described regarding Figure 2.2, showing how environment not only contributes to self-efficacy, but self-efficacy also shapes perceptions of our environment. Similarly, behavioral capability can influence or be influenced by environment: A perceived impediment, such as lack of education, can prevent a child from learning the skills needed to improve nutrition behaviors, for example. On the other hand, having a strong degree of behavioral capability may lead a child to consider what would normally be an impediment, like a limited budget, an opportunity for creatively shopping with parents to meet dietary needs with limited money. Reciprocal determinism functions across the conceptual model, creating an ecosystem that shapes children’s nutrition behaviors. This rationalizes the third theoretical element of this study, an ecological approach.

**An Ecological Approach to Social Cognitive Theory.** Literature indicates that social determinants of nutrition behaviors vary, and are best viewed through an *ecological perspective*, or a perspective that views nutrition behaviors as the result of factors that exist at various levels. Health outcomes are not merely the result of individual behaviors or factors. Through an
ecological perspective, socioeconomic status, race, ethnicity, and neighborhood are all factors that contribute to nutrition behaviors (Viswanath & Bond, 2007). Social and physical environments are additional social determinants of health, and, as discussed previously, schools are examples of these environments. The ecological model was used to explain and describe behavior as early as 1931 when Kurt Lewin explored the various environmental factors that shaped child development, and later, in 1951, proposed the notion of “ecological psychology.” This was “an attempt to shift the emphasis in psychology away from individual organisms and their mental processes to organism-environment relationships” (Charles & Sommer, 2012, p. 7). Lewin (1931) pointed out that exploration of environmental factors has to take into consideration the larger situation. This larger situation is what we see incorporated today’s ecological models. Later, in 1979, Urie Bronfenbrenner suggested investigations beyond the “microsystem,” and considerations of the “mesosystem.” That is, behaviors are shaped not only by proximal, immediate factors but also by influences where people interact and participate, like schools. Consistent with this, more recently, an ecological model has been described as:

a model of health that emphasizes the linkages and relationships among multiple factors (or determinants) affecting health….

an ecological model assumes that health and well being are affected by interaction among multiple determinants including biology, behavior, and the environment...

evidence is emerging that societal-level factors are critical to understanding and improving the health of the public. (Institute of Medicine, 2003, p. 32)

Since the development of an ecological model, various theories and models of behavior have been used to guide the development and evaluation of behavior change interventions using a social ecological approach, including Bandura’s social cognitive theory, which offered
sensitizing concepts for this study. Before Bandura’s exploration of outcome expectations and reinforcements in social cognitive theory, Skinner (1953) posited operant learning theory, which looked at the role of reinforcements and consequences in shaping behavior, incorporating the environment as determinant of behaviors. Skinner (1977) wrote “By arranging a reinforcing-consequence, we increase the rate at which a response occurs; by eliminating the consequence, we decrease the rate” (p. 506). In other words, external rewards or other stimuli can serve as forms of motivation that contribute to an individual engaging, or not engaging, in certain behaviors—indicating the role of environment in shaping behavior. Ecological approaches are very common in childhood development/education and public health, both of which are relevant in my study.

To achieve the goals of this study, a theoretical framework that incorporated both personal and environmental factors was necessary. Accordingly, an ecological approach to social cognitive theory was selected as a relevant framework for studying behavior with consideration to both the individual and environment. Bandura (1998) acknowledged this ecological necessity for health promotion in schools, writing:

Schools provide a good setting for health promotion and early intervention. But this does not mean that educators should be the standard-bearers for the health mission. Health promotion must be structured as part of a societal commitment that makes children's health a matter of high priority. A serious commitment must provide the multidisciplinary personnel and the resources needed to foster the health of its youth. This requires creating new school-based models of health promotion that operate in concert with the home, community and the society at large. (p. 20)

The validity of an ecological approach and use of social cognitive theory as a framework for
researching the topic at hand is supported by the fact that 45% (14/31) of qualitative studies investigating children’s fruit and vegetable consumption employed either an (social) ecological approach or social cognitive theory (Krølner et al., 2011). Moreover, Safdie et al. (2014) noted: “SCT [social cognitive theory] is consistent with an ecological approach because it postulates a reciprocal relationship between people and their environment; each interact and influence each other” (p. 2). On its own, social cognitive theory is not inherently ecological. Although it takes into account constructs outside of the individual, whereas theories like the health belief model and theory of reasoned action are largely intrapersonal, it does not innately call upon multiple environmental levels and broad determinants of behavior. Social cognitive theory can be viewed solely on an interpersonal level, for example, looking at intrapersonal factors and interpersonal influences like other individuals who serve as facilitators or barriers to adoption of a behavior. As noted by Buchan, Ollis, Thomas, and Baker (2012) “…this reliance upon traditional cognitive rationale paradigms [like social cognitive theory] has done little to eradicate current health problems” (p. 1). Instead, the ecological approach to social cognitive theory in my study allowed social cognitive theory to “provide specific mechanisms through which particular influences may interact and influence specific behaviors” (Buchan et al., 2012, p. 7) in a larger ecological context that includes social and physical environments and influences.

As claimed by Kelder, Hoelscher, and Perry (2015), “…it is important to consider the constructs associated with SCT [social cognitive theory], but at multiple levels of the social and physical environment” (p. 177). My environmental consideration of social cognitive theory constructs, like perceived facilitators and perceived barriers, was aligned with the work of Story, Kaphingst, Robinson-O’Brien, and Glanz (2008) who identified the ecological framework as an appropriate approach for exploring nutrition environments, and identified the school food
environment as a particularly relevant environment affecting children’s nutrition behaviors. These authors presented an ecological framework that illustrated the various influences on people’s nutrition behaviors (Figure 2.4). This framework shows the ways in which various levels and factors shape nutrition behaviors and eating habits. On an individual level, characteristics like behavioral capability and self-efficacy can influence food choices or otherwise shape food attitudes and beliefs. The social environment is an additional level that includes those interactions with people, friends, family, colleagues, neighbors, etc. who influence eating behaviors through mechanisms like social modeling and social support. Outside of the social environment is physical environment. This is not only the environment holds various social experiences—such as interactions with a coworker at a work site, with a teacher in a classroom, or with a neighbor in the community—, it also includes the physical settings in which people eat food or purchase/acquire food. And, this has an impact on nutrition behaviors when we consider how factors like accessibility and availability of foods influence consumption.

These three levels (individual factors, social environment, and physical environment) make up the *micro-level influences* on the ecological model. These are the areas that my study explored in relation to children, and I intentionally narrowed the physical environment to the school setting. The *macro-level influences*, as illustrated in Figure 2.4, are sectors like the food and beverage industry, policies, food marketing, etc. The authors described these as the “‘upstream’ policy and environmental factors that work at the highest levels of influence and have an impact at the population level” (Story et al., 2008, p. 255).

There is no definitive list of layers in the social ecological model. For example, the CDC used individual, relationship, community, and societal as layers for addressing one public health issue (2015c), and individual, interpersonal, organizational, community, and policy as layers for
another (2013). And, the CDC considered media as part of the community level in their social ecological model of health promotion, whereas Story et al. (2008) assigned media as part of the macro-level environment. In my study, I recognized the media as something that exists in the physical level—shaping interactions—, but also as something we interact and engage with on the social level. While there are generally accepted components to ecological models for health promotion, there is no concrete rubric for the labeling of layers and the attributes of those layers. Instead, it is shared and recognized that:

An ecologic or population health model takes a broader perspective and examines the relationship between the innate biologic characteristics of individuals and their interactions with their peer groups, families, communities, schools and workplaces, as well as the broad economic, cultural, social, and physical environmental conditions at the local, national, and global levels. It emphasizes the importance of the social and physical environments that strongly shape patterns of disease and injury as well as our responses to them over the entire life cycle, providing a broader conceptualization of important determinants of health not easily identifiable or rectifiable within the medical model.

(Fielding, Teutsch, & Breslow, 2010, p. 176)
Figure 2.4. An Ecological Framework for Exploring Nutrition Environments

Conceptual Model Guiding the Investigation. To best demonstrate the application of social cognitive theory constructs through the ecological approach guiding this study, a conceptual model provided a schematic for my investigation (See Figure 2.5). This conceptual model illustrates the concepts hypothesized to shape children’s nutrition behaviors in my case study. Adapted from Story et al. (2008; Figure 2.4), it illustrates the significance of personal factors (cognitions, behaviors, skills, demographics) and how they are affected by behavioral capability, self-efficacy, goals, and outcome expectations. It also shows the influence of social environment and networks on that individual level; and how friends, peers, family, teachers, and food marketing and media help shape personal factors through social modeling, vicarious experiences, and perceived facilitators and impediments. Unlike Story et al. (2008), I consider food marketing and media as an aspect of the social environment, something that children are interacting with and something that is part of their network. Today, when media like YouTube Kids, which launched as a mobile app in February 2015, includes food marketing for children to interact with in order to watch their desired programming, food marketing becomes less of an aspect of the physical environment and more of an additional influence in social environments and interactions. Using YouTube Kids as an example, “advertisements regularly show up in the form of funny contests and animated stories” (Kang, 2015, para. 1), forcing children to interact with the ads to proceed to the desired content. In fact, food marketing is becoming increasingly “social,” with six billion fast food advertisements appearing on Facebook and smartphone apps that allow users to interact with them to place food orders or receive coupons for deals (Yale Rudd Center for Food Policy & Obesity, 2013).

Beyond the social environment and influencing both social and personal levels of the ecological model is the physical environment. Physical environments include schools, fast food
outlets, restaurants, home, and grocery stores. And, the physical environment corresponds with a number of impediments and facilitators to eating, like food access, food availability, barriers, and opportunities. The physical environment I focused on in my study was the school physical environment. Focus groups led to discussion on other environments in the community, though. However, since my focus was on the school, I considered the school physical environment in detail, identifying signage, posters, vending machines, and school lunch as forms of communication present in the physical environment that shaped social and individual levels of the ecological model. That is, not only is the school a physical structure where people eat food, as conceptualized in Figure 2.4, it is also a physical structure that, through selected vehicles, communicates about food.

Consistent with the notion of reciprocal determinism, it is assumed that there is interaction between physical, social, and individual factors. There is not unidirectional influence from the physical level down to the individual, but instead physical, social, and individual levels are all constantly influencing and shaping one another. I did take a unidirectional approach to my research, though, focusing on the ways in which the school as a physical and social environment impacted children’s nutrition behaviors, and determining whether the environment provided children with tools for interpreting food marketing messages.

This figure depicts the conceptual model guiding the current study, providing a schematic for the investigation of how physical and social environment factors shape personal or individual factors. Consistent with the notion of reciprocal determinism, it is assumed that there is interaction between physical, social, and individual factors, though focus is given to the ways in which the context (i.e.: physical and social environments) impact children’s nutrition behaviors, and whether the context provides children with the tools for processing nutrition messages from the social environment, i.e.: media/marketing.
Research Questions

I set out to uncover the forms and processes of communication about nutrition in a middle school. The role of communication is particularly salient in examining the efficacy of nutrition education in schools, offering insight into whether particularly types of communication can positively influence nutrition behaviors. An investigation of both interpersonal and organizational communication about nutrition can help determine effective strategies for promoting healthy eating habits among children. To that end, my case study explored the process of nutrition education at a middle school with hopes of understanding how children received, interpreted, and applied that education. The study also explored whether the nutrition education equipped children with skills for resisting food marketing efforts for unhealthy foods, beverages, and snacks, both inside and outside of school. The central questions, then, were a) what are middle school students taught about nutrition? b) how do children talk about this nutrition education? c) how does this nutrition education change the attitudes or behaviors of the students, including their interpretation of food marketing? To answer these central questions, a number of associated subquestions were posed:

- RQ1a: In what ways does the school as a physical environment, serve as a facilitator for shaping children’s nutrition attitudes or behaviors? This question is addressed in Chapter 4.
- RQ1b: In what ways does the school as a social environment, serve as a facilitator for shaping children’s nutrition attitudes or behaviors? This question is addressed in Chapter 5.
- RQ2: How does nutrition education affect children’s nutrition attitudes or behaviors, if at all? This question is addressed in Chapter 6.
• RQ3: Is there evidence that students who participate in nutrition education apply concepts from the class in their interpretation of food marketing? This question is addressed in Chapter 7.

Details regarding the research site and study participants follows in Chapter Three: Research Design and Methods, where I also outline my data collection and analysis procedures, and call attention to the ethical considerations associated with both the ethnographic observational approach taken in my study and with research involving children as subjects.
Chapter Three:

Research Design and Methods—Using Qualitative Methodology to Explore Nutrition Communication and Influences in the School Environment

The intention of this study was to investigate a) what and how seventh and eighth grade children in an upstate New York middle school learn about nutrition, b) whether what they learn changes their attitudes or behaviors, and c) if nutrition education equips them with the skills needed to decipher targeted food marketing messages. The following chapter outlines the research design and methods employed to answer the research questions identified in Chapter 2. These questions focus on “how” and “what” with the aim of understanding and exploration, consistent with Creswell’s (2009) description of qualitative research questions. Qualitative methods were appropriate for this study as I sought to get a full understanding of the nutrition education received by seventh and eighth graders, and to learn how they made sense of their experiences in the school environment. I further detail the benefits of a qualitative approach to answering the posited research questions in this chapter, describe the research setting and participants, outline the data collection procedures utilized, and provide a description of how data were analyzed and integrated. I conclude this chapter with a review of ethical considerations that were taken into account given the methodology used, the research site, and the participants selected.

Benefits of a Qualitative Approach

This study complements and expands health communication scholarship, and took a qualitative approach to a topic often explored using quasi-experimental and randomized experiment designs. Nutrition education, self-efficacy, and children’s nutrition behaviors have been the topic of a number of quantitative studies (e.g.: Fahlman, Dake, McCaughtry, & Martin,
Each one of these studies took a quantitative approach and a largely Knowledge-Attitude-Behavior (KAB) approach to the topic area. And, KAB models have not been demonstrated to be particularly effective for in-school interventions designed to change children’s nutrition behaviors (Hoelscher, Evans, Parcel, & Kelder, 2002). Quantitative approaches have utility for a) determining the effect and possible causality of nutrition education; evaluating nutrition education programs; b) assessing changes in children’s nutritional knowledge, food behaviors, or food preferences; c) exploring interventions; and d) determining correlates of healthy eating, among others. But, I believe these quantitative approaches lack the ability to determine, with depth, how these changes happen.

Few studies have taken a qualitative approach to this topic, and even fewer incorporated observation as a means of data collection to attain that depth. Taking a qualitative and ecological approach, as I did, allowed for the study of both personal factors, such as attitude and behavioral capability, and environmental factors, such as interpersonal communication and artifacts in school. It offered an in-depth investigation of the various elements that impact children’s nutrition behaviors in the school environment. And, conducting observation, focus groups, and interviews took into account various perspectives on the topic, from the voice of the children to the intentions of the school district. It also allowed for the triangulation of this data to further the sensemaking process. Unlike quantitative approaches, the qualitative methods used in my study allowed for key informants and students to elaborate on the topics that were meaningful to them, and to speak on aspects of the school environment and nutrition education that may not have been incorporated in or revealed through a survey, for example. In doing so, it provided them the opportunity to communicate in detail about their perceptions and experiences.
As discussed previously, the participant observation used here also illuminated aspects of the school environment and classroom interactions that could not have possibly been acquired in a quantitative design. Instead, with my own experience as a data collection instrument, using an ethnographic approach, I was able to add to the data collected. For the most part, we do not know what or how children are taught in teacher-developed nutrition lessons, nor do we know what or how they learn from those lessons. For this reason, the data collection methods used in my study help deepen the understanding of nutrition education in schools by addressing those unknown areas of inquiry.

Qualitative research can help with gaining an understanding of the human experience, such as an individual’s attitudes or behaviors (Castro, Kellison, Boyd, & Kopak, 2010); it offers a description of the experience that cannot necessarily be measured. For me, a qualitative approach helped to create an understanding of the mechanisms through which both food marketing and the school environment can facilitate positive nutrition attitudes and behaviors. The research questions my study sought to address were not asking if children’s nutrition attitudes and behaviors are shaped by nutrition education, which could be measured through a quasi-experimental design. Instead, my investigation asked how and in what ways the school served as an environment for facilitating changes in nutrition attitudes and behaviors, and whether discussion with children illuminated evidence of nutrition education as an appropriate mechanism for developing skills for interpreting food marketing. There are a myriad of factors shaping the relationships between food marketing, education, and nutrition attitudes and behaviors that can be thoroughly investigated through qualitative research. Also, a case study, I was not attempting to generalize the data, which quantitative research lends itself to. Instead, I hoped to explore and understand the factors involved in the development of nutrition attitudes
and behaviors from both the perspective of the students and the school, hence the solicitation of multiple perspectives (key informants [teacher, superintendent], students, my own observations).

Neumark-Sztainer et al. (2003) suggested a need for qualitative research in this area. The authors explored fruit and vegetable intake with children using a quantitative research methodology grounded in social cognitive theory. They discovered that attitudes, social support, family meal patterns, food security, availability of fruits and vegetables at home, and taste preferences all contributed to fruit and vegetable intake among adolescents. They found some limitations to social cognitive theory’s application, but also suggested future qualitative studies on the topic. They noted:

Additional research studies using qualitative and quantitative research methodologies, longitudinal study designs, and more behavior-specific measures of possible predictors of fruit/vegetable intake are needed to further enhance our understanding of factors associated with fruit and vegetable intake among youth. Qualitative research may elucidate additional influencing factors that were not included in the current study. (p. 207)

The authors recognized that additional factors influenced children’s nutrition behaviors, however, these factors weren’t captured with the 149-item Youth and Adolescent Food Frequency Questionnaire (YAQ) used in their study. For example, this questionnaire asks about the frequency of consumption of certain fruits and vegetables. The questionnaire does not allow for conversation and exploration of the factors that influence consumption like the focus groups in my study were able to illuminate and to help develop an understanding of. For instance, the scale includes the statement “my mother cares about eating healthy food” (Neumark-Sztainer et al., 2003, p. 201), for which students responded to a Likert-type scale ranging from “not at all” to
“very much.” In my study, we were able to go into detail on topics like parents’ wishes for the child’s diet, why concern existed, and how that care was communicated. Participant observation in the classroom revealed that one mother worried about her daughter’s eating habits because of heart disease risks in the family. Focus groups highlighted that one boy’s mother was concerned with his eating healthy food because he had severe dietary restrictions for a digestive disorder. Qualitative methods allowed for rich exploration.

Setting and Participants

The Research Site. In order to address the research questions and identify the complicated constellation of factors that impacted children’s nutrition behaviors, this case study took place at a middle school in upstate New York, and focused on a Family and Consumer Sciences class. According to the New York State Education Department (NYSED) (2011):

The mission of Family & Consumer Sciences Education is to prepare students for family life, work life, and careers in Family & Consumer Sciences by providing opportunities to develop the knowledge, skills, attitudes, and behaviors needed for:

- Strengthening the well-being of individuals and families across the life span
- Becoming responsible citizens and leaders in family, community, and work settings
- Promoting optimal nutrition and wellness across the life span
- Managing resources to meet the material needs of individuals and families
- Balancing personal, home, family, and work lives
- Using critical and creative thinking skills to address problems in diverse family, community, and work environments
- Successful life management, employment, and career development
• Functioning effectively as providers and consumers of goods and services
• Appreciating human worth and accepting responsibility for one’s actions and successes in family and work life. (para. 2)

At the middle school level, Family and Consumer Sciences is known as Home and Careers Skills, and is a mandatory class for students. In the district that served as the subject for this case study, seventh and eighth graders participated in Home and Careers Skills in a combined session. A variety of topics were covered in the class, like sewing and recycling, following a New York State Education Department core curriculum (2005) that outlines expected skills and proficiencies. The teacher for this class had seven years of teaching experience, including two years as a health teacher and five years teaching Family and Consumer Sciences at the research site.

The middle school selected is a public school in a small upstate New York town, enrolling children from two zip codes. As a small town, the school selected for this case study is certainly not representative of New York State. The location of the research site is a relatively small and homogenous area compared to other areas of the State and country. The town the school is located in has a total population of 11,775. Of this population, 88% of residents are white, 6% are black, 6% Hispanic or Latino (any race), and 1% Asian (U.S. Census, 2010). The racial makeup at the middle school did not reflect that of the town the school is located. Of 334 students in the middle school, 69% were white, 14% were black, 12% were Hispanic or Latino, and 1% were Asian (NYSED, 2015).

Socioeconomically, 20% of families with children under the age of 18 lived in poverty in the town the research site is located in, and that number nearly doubled (36%) for families with children under the age of 5 (U.S. Census, 2013). These poverty levels reflected the enrollment in
the federal lunch program at the research site: In the 2013-2014 school year, 39% of children enrolled in the middle school were eligible for free lunch, and another 10% were eligible for reduced price lunch. Overall, 52% of the students in the middle school were determined “economically disadvantaged students” (NYSED, 2015). Although data for the 2014-2015 school year during which this study was conducted is not available at this time, Table 3.1 uses the most recent data to offer a closer look at the demographics of the students and their families, taking into account the two zip codes that populate the school. The data from the U.S. Census coupled with the available information from the New York State Education Department further illustrate that this case study is not generalizable to the larger population in this particular county, the state, or the country. Nonetheless, increasing the knowledge around nutrition education and understanding the mechanisms through which children receive this education is valuable and the goal of this case study.
### Table 3.1. Demographic Profile of Zip Codes Served by the Middle School

<table>
<thead>
<tr>
<th>Selected Characteristics</th>
<th>Middle School</th>
<th>Zip Code 1 (School Location)</th>
<th>Zip Code 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Population</td>
<td>334</td>
<td>10,510</td>
<td>1,484</td>
</tr>
<tr>
<td>Children Ages 10-14</td>
<td>-</td>
<td>5.8%</td>
<td>6.3%</td>
</tr>
<tr>
<td><strong>Race</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>69%</td>
<td>86.9%</td>
<td>96%</td>
</tr>
<tr>
<td>Black</td>
<td>14%</td>
<td>6.9%</td>
<td>.7%</td>
</tr>
<tr>
<td>Asian</td>
<td>1%</td>
<td>.9%</td>
<td>1.3%</td>
</tr>
<tr>
<td>Hispanic or Latino</td>
<td>12%</td>
<td>6.3%</td>
<td>3.2%</td>
</tr>
<tr>
<td><strong>Household Type</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Families with Children under 18</td>
<td>-</td>
<td>23.9%</td>
<td>24.7%</td>
</tr>
<tr>
<td>Average Household Size</td>
<td>-</td>
<td>2.28</td>
<td>2.32</td>
</tr>
<tr>
<td>Average Family Size</td>
<td>-</td>
<td>2.90</td>
<td>2.85</td>
</tr>
<tr>
<td><strong>Income</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Median Household Income</td>
<td>-</td>
<td>$49,396</td>
<td>$44,938</td>
</tr>
<tr>
<td>Median Family Income</td>
<td>-</td>
<td>$55,144</td>
<td>$57,833</td>
</tr>
<tr>
<td>Poverty – Families with Related Children Under 18</td>
<td>52% Economically Disadvantaged</td>
<td>20.3%</td>
<td>0%</td>
</tr>
<tr>
<td><strong>Education (Population 25 and Older [Except Middle School])</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less Than High School Graduate</td>
<td>100%</td>
<td>13.2%</td>
<td>5.5%</td>
</tr>
<tr>
<td>Middle School: 6&lt;sup&gt;th&lt;/sup&gt; Grade</td>
<td>111</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Middle School: 7&lt;sup&gt;th&lt;/sup&gt; Grade</td>
<td>112</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Middle School: 8&lt;sup&gt;th&lt;/sup&gt; Grade</td>
<td>111</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>High School Graduate (includes equivalency)</td>
<td>-</td>
<td>40.2%</td>
<td>35.9%</td>
</tr>
<tr>
<td>Some College/Associate’s</td>
<td>-</td>
<td>29.3%</td>
<td>42.6%</td>
</tr>
<tr>
<td>Bachelor’s/Graduate or Professional</td>
<td>-</td>
<td>17.1%</td>
<td>15.9%</td>
</tr>
</tbody>
</table>

*Table 3.1. Data Source: New York State Education Department (2015); U.S. Census Bureau (2010)*

County data related to nutrition and related obesity risk factors was available through the New York State Department of Health’s 2011-2013 Obesity and Related Indicators (2016). At the time of this study, the middle school was gathering data for 2016 BMI reporting, so the most up-to-date statistics were not available. The county data available still provides a general perspective on levels of obesity in the community (Table 3.2).
### Table 3.2. Student Obesity Rates*

<table>
<thead>
<tr>
<th>Indicator</th>
<th>District Rate</th>
<th>County Rate</th>
<th>New York State Rate (Excluding NYC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Students in District (Pre-K, K, 2nd, 4th, 7th, 10th grades)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overweight</td>
<td>15.3%</td>
<td>16.7%</td>
<td>16.7%</td>
</tr>
<tr>
<td>Overweight or Obese (Above 85th percentile for BMI)</td>
<td>39%</td>
<td>37.5%</td>
<td>33.9%</td>
</tr>
<tr>
<td>Obese (Above 95th percentile for BMI)</td>
<td>23.7%</td>
<td>20.8%</td>
<td>17.3%</td>
</tr>
<tr>
<td>Middle and High School Students (7th and 10th grades)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overweight</td>
<td>14.3%</td>
<td>17.7%</td>
<td>17.1%</td>
</tr>
<tr>
<td>Overweight or Obese (Above 85th percentile for BMI)</td>
<td>45.2%</td>
<td>40.4%</td>
<td>35.2%</td>
</tr>
<tr>
<td>Obese (Above 95th percentile for BMI)</td>
<td>31%</td>
<td>22.7%</td>
<td>18.1%</td>
</tr>
</tbody>
</table>

*Table 3.2. Data Source: New York State Department of Health (2016); New York State Department of Health (2014) * District Rate is 2010-2012, County and State Rates are 2011-2013. District level detail is not available at this time for the more recent academic years.

Available data, though not directly specific to the participants in my study, provides a glimpse into obesity indicators among adults in the county the school is located in, as shown in Table 3.3.

### Table 3.3. Obesity Indicators

<table>
<thead>
<tr>
<th>Indicator</th>
<th>County Rate</th>
<th>New York State Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age-adjusted percentage of adults who are overweight or obese (BMI of 25 or higher)</td>
<td>65.9%</td>
<td>60.5%</td>
</tr>
<tr>
<td>Age-adjusted percentage of adults who are obese (BMI of 30 or higher)</td>
<td>31.4%</td>
<td>24.6%</td>
</tr>
<tr>
<td>Age-adjusted percentage of adults who did not participate in physical activity</td>
<td>30.2%</td>
<td>27.1%</td>
</tr>
<tr>
<td>Age-adjusted percentage of adults who eat five or more fruits or vegetables per day</td>
<td>23.4%</td>
<td>27.1%</td>
</tr>
</tbody>
</table>

*Table 3.3. Data Source: New York State Department of Health (2016)
The data show that, in general, the obesity and related indicators in the county the research site is located in are slightly poorer than statewide averages. Both children and adults in the area are more likely to be obese, and adults are less likely to achieve suggested rates of physical activity and fruit and vegetable consumption for developing or maintaining good health. Consistent with this lack of adherence to physical activity and dietary recommendations, data indicate that 10.2% of adults are diagnosed with diabetes in this county, compared to 8.9% of adults in New York State, and 8.2% of adults in New York State excluding New York City. The rate of premature deaths in the county (death before age 75) is 45.5% compared to New York State’s 39.9%, and the State excluding New York City at 37.5% (New York State Department of Health, 2015). This adult data matters because this is part of the population that makes up both the parents of the children who enrolled in this study, as well as the faculty and staff at the middle school. And, as discussed in the introduction in respects to the costs of obesity, without proper interventions, obese children will contribute to these statistics as obese adults.

*Description of the School as a Physical Space.* The middle school is connected by a corridor to the high school. The Family and Consumer Sciences class studied in this case is located in a hallway that extends off of that corridor. Therefore, the middle school students that attend this class often encounter students, faculty, and staff from the high school. The middle school cafeteria is located in this corridor, and is across the hall from the high school cafeteria. Outside of the cafeteria are three vending machines selling snacks, beverages, and ice cream.

The classroom itself is divided into two rows of four long tables, each table seating three to four students. The teacher’s desk is in the back of the classroom, and a whiteboard is at the front. At the time of my study, there was a lone desk in the back center of the classroom, which often served as my seat during observations. The classroom had posters on the wall. The
nutrition-related poster in the room was a 2001 poster developed by Learning Zone Express on fat intake (Figure 3.1) and was located in the back of the classroom. In the front of the room were two 8x11 sheets published by the USDA on MyPlate (Figure 3.2). Directly across the hall from the middle school Home and Careers Skills classroom is the classroom of the high school Family and Consumer Sciences teacher. The middle school students use this high school classroom at various points during the semester because it contains a cooking lab. The front of the high school room is divided into four kitchen spaces that mirror one another, complete with ovens, stoves, microwaves, blenders, mixers, dehydrators, and refrigerators.

Figure 3.1. Poster in the Family and Consumer Sciences Classroom

Figure 3.1. Photo taken by author. This is an image of a poster on the back wall in the Family and Consumer Sciences classroom.
Recruitment. A total of 109 seventh and eighth grade students participated in Home and Careers/Family and Consumer Sciences during the 2014-2015 academic year. Of these 109 students, 19 were identified as special needs students, requiring one-to-one aids throughout the school day. Due to the complex and sensitive nature of recruiting these children and the requirement that the adult aid accompany them to focus group discussions, possibly jeopardizing the integrity of a safe space for children to communicate sans school faculty or staff present, the number of students eligible to participate in my study was 90. From these 90 students, 28 students, or 31% of those who took the class, participated in my research. The participants included 19 females and 9 males. The larger number of female participants resulted from the fact that more females were enrolled in the Home and Careers classes offered during the 2014-2015 school year (for example, the class that became my primary observation site for the fall semester, period four, had 18 students, 11 of whom were females [61%]), and the majority of the student body was female (NYSED, 2015). The participants included eight students of color, or
29% of participants, which was also representative of the larger student body: 27% of middle school students were non-white. Although it was not the intention that this case would be generalizable to any other schools, it was a goal that the sample would indeed be as representative as possible of the students who enrolled in this class during the 2014-2015 school year. Table 3.4 provides an at-a-glance view of the sex and race of the sample compared with the larger seventh and eighth grade population.

Table 3.4. Population Characteristics vs. Sample Characteristics

<table>
<thead>
<tr>
<th></th>
<th>7th and 8th Grade Middle School Population</th>
<th>Study Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Race</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>162 (73%)</td>
<td>20 (71%)</td>
</tr>
<tr>
<td>Nonwhite</td>
<td>59 (27%)</td>
<td>8 (29%)</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>98 (44%)</td>
<td>9 (32%)</td>
</tr>
<tr>
<td>Female</td>
<td>123 (56%)</td>
<td>19 (68%)</td>
</tr>
</tbody>
</table>

Table 3.4. This table depicts race and gender makeup for the larger 7th and 8th grade student body (NYSED, 2015), as well as the makeup of the sample (n=28) of this study.

I recruited the majority of the 28 students through my visits to the classroom. Since my study included observation, I had substantial time with the students in advance of the focus groups, allowing for time to speak with them about the study. I spoke in front of the class to students about the study over the course of the school year, and also attended the classes with recruitment flyers for students to take home to their parents or guardians (Figure 3.3). Other students were recruited through:

- word-of-mouth and conversation with peers,
- individual one-on-one conversations with me in the classroom,
- discussion with the superintendent at a Board of Education meeting,
• a Facebook post the President Secondary Schools Parent Teacher Student Organization (PTSO) posted in her excitement about my research, or
• phone calls the teacher made to parents explaining my study.

All students self-selected to participate in the study and completed child assent forms; their parents or guardians completed parental consent forms. In addition, recruitment efforts included an incentive offer: children who returned their assent and consent forms were entered into a raffle to win one of ten $25 Visa gift cards.

Figure 3.3. Recruitment Flyer

Exploring the Impact of Nutrition Education

You’re Invited... To help a doctoral student complete her dissertation research to earn her PhD!

I am conducting a study to explore the nutrition education lessons taught in the Home and Careers class. I am interested in how effective the class is at shaping nutrition attitudes and behaviors, and how you will help me do this. I am recruiting students who are enrolled in the Home and Careers class as well as one of their parents or guardians for participation in this research.

This study is not affiliated with but will take place at Middle School. The results of this study may be shared with the school and the district as a whole for improving nutrition education and wellness efforts. Participation in this study is not a requirement of the Home and Careers class, but would be extremely valuable for the completion of my research.

If you want to participate...

You will be asked to complete a survey and have your child’s participation in the study. You will also be asked to answer key questions about your household and your child. This survey should not take more than a few moments of your time.

Your child brought this flyer home because they already expressed interest in the study. For your son or daughter, participation means joining some of their classmates and me in a one-hour group discussion on the nutrition education they received in school. If you agree that your child can participate, your child will be approached in his/her Home and Careers class to verify that he/she still wants to participate; and together you’ll part of an exciting and innovative study.

Contact me to Join This Exciting Study!

Thank you!

Figure 3.3. This is an image of one of the recruitment flyers used to inform students and their parents about my study.

I originally planned to observe the Family and Consumer Sciences classroom during the fall semester and then hold focus groups following the observation of the nutrition module. However, I remained in the classroom during the spring semester to continue recruitment and
increase the participation in the focus groups. Therefore, observation and, subsequently, focus group recruitment took place twice, in both the fall and spring semesters with separate groups of students. I first entered the classroom on October 14, 2014 to observe and recruit during the fall semester. I concluded fall observation on December 22, 2014 and held the last fall focus group on February 4, 2015. I resumed observation and recruitment on March 5, 2015 for the spring semester, and held the last spring focus group on May 20, 2015. Although I was permitted to recruit from all classes, as there were three sessions of this class each semester, my primary and regular observation classes were period four during the fall semester (9:50am – 10:32am) and period six during the spring semester (11:20am – 12:02pm). These classes inevitably received more reminders for focus group participation. I did visit each of the six 2014-2015 class periods at the beginning of the nutrition module and intermittently throughout the semester for additional recruitment and supplementary observations.

My focus group data collection was guided by securing a sample size that was consistent with the sample sizes in some of the related qualitative studies on this topic, and one that was representative of the students who participated in the Family and Consumer Sciences course. There are various conditions under which I considered my sample being complete that are aligned with existing best practices in qualitative research. Sample size determination included factors such as the homogeneity of the group, the narrow selection criteria for participation (seventh and eighth graders at this particular middle school who enrolled in Family and Consumer Sciences) and thus the number of eligible students, and even the time and financial restrictions (Ritchie, Lewis, Elam, Tennant, & Rahim, 2014).

In addition to the children who would participate in focus groups, recruitment also entailed the class teacher and the district superintendent agreeing to participate in interviews,
which was accomplished via face-to-face discussion. The superintendent permitted my presence in the classroom without formally recruiting students to assent (or parents to consent) to observation since I would not be releasing any identifying information about the public school students. Outside of my role as researcher and related to work I have done with Head Start and K-5 children, I had previously undergone Statewide Central Register clearance (a register of child abuse and maltreatment reports maintained by the New York State Office of Children and Family Services), a background check, and completed a Mandated Reporter training—all of which supported my access to the classroom with the permission of both the superintendent and the teacher without the need for individual assent and consent from students and guardians.

**Data Collection**

My study included multiple modes of qualitative data collection, namely, observation of the classroom, focus groups with students, and interviews with key informants. Matsaganis (2016) stated, “Single-method studies continue to be the norm in the communication literature” (p. 1333). Straying from the norm, I took a multi-method qualitative data collection approach—consistent with a pragmatist approach (Creswell, 2013), expanding the scope of communication research. Three different methods served three different functions: Focus group data gave voice to the students. My field notes helped to provide a context for the focus groups, and shaped my awareness of the various environmental factors that served as facilitators and impediments in the school. The interviews further provided context from an institutional perspective, giving a voice to the teacher and superintendent about their intentions for nutrition education and expectations for the school environment.

**Observation.** It is a logical step to observe nutrition education in a school prior to asking children what they have learned about nutrition education in a school. Observation allowed for a
more complete understanding of the various types of communication that took place in the classroom and larger school environment as it pertained to nutrition and healthy eating. The information gleaned from observation would not be attainable through survey administration. While quantitative methods like surveys are useful at exploring children’s nutrition education, a qualitative observation approach offered an in-depth exploration of the communication and nutrition education that took place in a seventh and eighth grade classroom and the larger school environment. Observing the Family and Consumer Sciences classroom provided an understanding of the various dimensions in the classroom: relationship between teacher and student, the class content covered and how it was taught, and the various types of talk that took place. These are items that could not reasonably be asked of a child or teacher on a survey; sitting in the classroom offered a rich amount of data.

In this study, I had the opportunity to occupy the role of participant observer. In this capacity, I “participate[d] in the daily life of the people under study…openly in the role of researcher…observing things that happen, listening to what is said, and questioning people” (Becker & Geer, 1957, p.28). While I clearly did not fully embody the participant observer role, as my age alone distinguished me from the seventh and eighth grade students, I did sit at a desk in the classroom just like the students. I participated in class activities, engaged in discussions with students, and raised my hand if I had a question for the teacher. Simultaneously, I came to occupy the role of a teaching assistant. There were times I would walk around the classroom and reiterate activity instructions and help students complete their assignments, and other times when the teacher would ask me to address a student’s question if she was not sure of the answer. In one instance, I came into the class late, and a student remarked, “see, even teachers are late,” which speaks to the insider role I ultimately established.
During the data collection period, I unexpectedly became employed by a local nonprofit organization that operated a New York State Office of Children and Family Services Advantage After School Program contract at the local elementary school. By working at the elementary school (though not as a district employee), my credentials facilitated increased access to the middle school, such as the ability to enter and exit the school without security screenings, to access areas generally closed to staff, and to freely walk the halls of the middle school. This increased access deepened my observations and allowed me to “witness events that outsiders would not be invited to attend, and to access situations that might be hidden from the public” (Schensul, Schensul, & LeCompte, 1999, p. 92). This was an advantage in this case, and one that enriched the research experience. I truly became an insider at this institution through the selected methodology. My daily life often mirrored that of the students, arriving for first period at 7:35am, leaving after eighth period at 2:20pm; and visiting the cafeteria, library, gym, and track and field during periods when the Family and Consumer Sciences teacher had a prep period, a sixth grade class, or was covering another class. I made visits to the nurses’ office, the principal’s office…living a typical middle school student day.

Over the course of the academic year, I observed the Family and Consumer Sciences classroom on 33 days. There were 188 instructional days during the 2014-2015 school year; I observed 18% of those days and more than 30 hours of class time. I only observed the classroom when invited by the teacher on days when nutrition education was delivered. That is, I did not observe the classroom on days that other lessons were offered, such as lessons on recycling or sewing. There were instances where I did indeed visit the classroom on those days, such as time spent in a class during dream bedroom design; however, those visits were for rapport building with students to facilitate focus group recruitment—not for formal observations. Of the 33 visits
for which records were kept, I actively observed multiple nutrition education classes (i.e.: periods 4, 6, and 8 during the fall semester; periods 1, 2, and 6 in the spring semester), on numerous occasions; and was able to develop a summary of the nutrition topics taught by the teacher, as illustrated in Table 3.5.
Table 3.5. Summary of Nutrition Topics

<table>
<thead>
<tr>
<th>Topic</th>
<th>Primary Takeaway</th>
<th>Example from Lesson</th>
<th>Sample Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nutrients</td>
<td>The six nutrient groups</td>
<td>Healthy fats (avocado) vs. unhealthy fats (fried foods)</td>
<td>Reading nutrition labels</td>
</tr>
<tr>
<td>Food Groups</td>
<td>MyPlate and the five food groups</td>
<td>Vegetables should be ¼ - ½ of the plate</td>
<td>Cut and paste magazine images of each food group onto a handout that shows suggested portion sizes</td>
</tr>
<tr>
<td>Importance of Breakfast</td>
<td>Breaking the nighttime fast as necessary for being alert</td>
<td>Add food groups to breakfast to make it more of complete meal</td>
<td>Toss a ball to illustrate how breakfast improves response time</td>
</tr>
<tr>
<td>Nutrition and Health</td>
<td>BMI; morbidity associated with poor nutrition</td>
<td>“What you do now affects you later in life.”</td>
<td>Teacher shows how a body fat caliper can be used on the tricep to calculate BMI</td>
</tr>
<tr>
<td>Calories</td>
<td>A calorie is a measurement of energy in your food</td>
<td>Multiple the number of calories from the nutrition facts panel by the number of servings consumed to determine how many calories are being eaten</td>
<td>Finding calories on a nutrition facts panel and multiplying them by serving sizes</td>
</tr>
<tr>
<td>Diabetes</td>
<td>Kids are at-risk for diabetes and should be mindful of sugar consumption</td>
<td>Type 2 diabetes requires people to keep a healthy weight and limit sugars</td>
<td>Visit the supertracker at myplate.gov to learn how many calories/day should be consumed and the recommended source of the calories</td>
</tr>
<tr>
<td>National, generic, and store brand foods</td>
<td>Nutrition, cost, and quantity should be the focus when purchasing food</td>
<td>National brand of pretzels has nearly twice the amount of sodium in the store brand</td>
<td>Taste test to compare brands of cereal, pretzels, and oyster crackers; compare nutrition facts and cost for each</td>
</tr>
<tr>
<td>Nutrition Jeopardy</td>
<td>Review</td>
<td>Review</td>
<td>Jeopardy game to review nutrition lessons; winning team gets 5 points added to their nutrition exam</td>
</tr>
</tbody>
</table>

Cooking Lab: Students participate in cooking lab activities, learning about kitchen utensils, measuring, and operating kitchen equipment, among other items. They also prepare, in demo kitchens, healthy recipes like granola, smoothies, and butternut squash macaroni and cheese.

*Table 3.5. A summary of the nutrition topics taught in the combined seventh and eighth grade Family and Consumer Sciences class, as recorded through my observations.*
Focus Groups. Seven focus groups were conducted with a total of 24 students. I established that seven focus groups and 24 students would offer enough data for this study based on similar research conducted with comparable numbers of focus groups and students, e.g.: Bauer, Yang, and Austin (2004) and their investigation of the various factors in the school environment that impacted student physical activity and nutrition. In my study, the focus groups were heterogeneous, small group discussions involving seventh and eighth grade children who participated in Family and Consumer Sciences. Focus groups were selected as a methodology for this study largely because of the group setting. The children were learning about nutrition as a group in the classroom, and focus groups provided an opportunity to explore my research questions as a group. Krueger and Casey (2009) noted this group setting is significant because it “presents a more natural environment than that of an individual interview because participants are influencing and influenced by others – just as they are in life” (p. 7). The intention was to create a natural environment, and one where children did not feel overwhelmed or dominated by an adult interviewer.

Rather than serve a dominant role, as in an interview, the focus groups allowed the students to exchange ideas and voices while I, the researcher, served a less authoritative position (Krueger, 2009). Furthermore, multiple focus groups allowed for identification of “trends and patterns of perception” (Krueger, 2009, p. 2), providing insight into how nutrition education was perceived by students, as well as their perceptions of the larger school environment. Considering the sociostructural approach to health communication employed in this study via an ecological approach to social cognitive theory, the focus groups served as a means for evaluating the physical and social environments the children are embedded in (Krueger, 2009) by offering an
opportunity to discuss these environments, and to capture students’ perceptions of these environments.

The average duration of the focus groups was 38 minutes. The original intention was to hold 60 minute discussions. However, based on conversations with the teacher, students, and parents, recruitment was more successful when the focus groups were guaranteed to conclude in time for the late bus—alleviating burden on the parents to pick the children up from school afterhours. Parents were also averse to weekend focus group discussions at the local library. As such, the time slot available for focus groups was at the end of the school day, from 2:20pm - 3:05pm, accommodating preferences and availability. Focus groups took place in the Family and Consumer Sciences classroom. While focus groups with adults may be up to two hours long, it is noted that discussions with children generally take less time (Krueger & Casey, 2009). Groups of a 45-minute duration on similar topics have been studied by Atik and Ozdamar Ertekin (2013), Bauer, Yang, and Austin (2004), and Croll, Neumark-Sztainer, and Story (2001); and groups of 20-30 minutes have been studied by O’Dea (2003). The seven focus groups, detailed in Table 3.6, yielded 183 pages of typed transcripts.

Among the characteristics highlighted in Table 3.6 are the sizes of the focus groups. With the exception of focus group #5, which was an anomaly, discussions included three to five students. Some literature indicates that focus groups with children should not exceed eight participants, but there should be five or more participants per group (Hennessy & Heary, 2005; Sloper & Beresford, 2014). However, other researchers have conducted focus groups with two children (Morgan, Gibbs, Maxwell & Britten, 2002); three and four children (Atik and Ozdamar Ertekin, 2013; Bauer, Yang, & Austin, 2004) and four and five children (Mehta et al., 2010). Morgan et al. (2002) noted that, when conducting focus groups with children, “small groups
[reflect] the practicalities of recruitment and last-minute dropouts due to other family commitments” (p. 8), which is consistent with my experience and hence groups with as few as two and three participants.

Table 3.6. Details on focus groups and interviews

<table>
<thead>
<tr>
<th>Number of Participants</th>
<th>Sex</th>
<th>Duration mm:ss</th>
<th>Number of Transcript Pages</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Focus Groups</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Focus Group #1:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>January 30, 2015</td>
<td>4</td>
<td>3 Girls</td>
<td>45:08</td>
<td>Classroom</td>
</tr>
<tr>
<td>Focus Group #2:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>February 4, 2015</td>
<td>3</td>
<td>2 Girls, 1 Boy</td>
<td>34:16</td>
<td>Classroom</td>
</tr>
<tr>
<td>Focus Group #3:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>March 30, 2015</td>
<td>4</td>
<td>4 Girls</td>
<td>38:56</td>
<td>Classroom</td>
</tr>
<tr>
<td>Focus Group #4:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>April 15, 2015</td>
<td>3</td>
<td>1 Girl, 2 Boys</td>
<td>34:32</td>
<td>Classroom</td>
</tr>
<tr>
<td>Focus Group #5:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>April 27, 2015*</td>
<td>2</td>
<td>1 Girl, 1 Boy</td>
<td>35:27</td>
<td>Classroom</td>
</tr>
<tr>
<td>Focus Group #6:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>May 14, 2015</td>
<td>5</td>
<td>4 Girls, 1 Boy</td>
<td>42:00</td>
<td>Classroom</td>
</tr>
<tr>
<td>Focus Group #7:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>May 20, 2015</td>
<td>3</td>
<td>2 Girls, 1 Boy</td>
<td>38:03</td>
<td>Classroom</td>
</tr>
<tr>
<td><strong>Interviews</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interview #1:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>May 13, 2015</td>
<td>1</td>
<td>1 Girl</td>
<td>Not Recorded</td>
<td>Library</td>
</tr>
<tr>
<td>Interview #2:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>May 28, 2015</td>
<td>1</td>
<td>1 Boy</td>
<td>19:55</td>
<td>Library</td>
</tr>
<tr>
<td>Interview #3:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>May 28, 2015</td>
<td>1</td>
<td>1 Boy</td>
<td>21:35</td>
<td>Library</td>
</tr>
<tr>
<td>Interview #4:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>June 5, 2015</td>
<td>1</td>
<td>1 Boy</td>
<td>Not Recorded</td>
<td>Cafeteria</td>
</tr>
</tbody>
</table>

*With two students, this serves as a dyad rather than a true focus group. However, rather than risk the children not returning for a subsequent scheduling, discussion was held with the permission of the two.

While focus groups were the primary means of data collection with students, there were some children who participated in interviews (n=4). These participants joined me in one-on-one
semi-structured interviews rather than focus group discussions for two primary reasons: 1) lack of availability afterschool or on weekends (so the interview was conducted during class time with the teacher’s permission); and 2) lack of consent or assent for audio recording the focus group discussion. The same protocol used for focus groups was used with these children, in a loosely structured, conversational format. The use of both interviews and focus groups was consistent with other researcher’s practices, e.g.: Atik and Ozdamar Ertekin, 2013. The audio recorded interviews (n=2) yielded 32 pages of typed transcript; while the two interviews that were not audio recorded had handwritten notes taken directly on the six-page protocol. Data from both focus groups and interviews with children were analyzed and reported in the findings of this study.

Despite some of the groups having fewer participants than anticipated, the protocol for this semi-structured discussion was designed in such a way that meaningful conversation still took place—in both smaller focus groups and the individual interviews. These questions and probes were designed to explore the ways in which the students talk about nutrition, their recall of material from class, application of this material, and any evidence of change in their own nutrition attitudes or behaviors. A sample of key focus group questions can be found in Table 3.7.
Table 3.7. Key Focus Group Questions

<table>
<thead>
<tr>
<th>Topic</th>
<th>Questions</th>
<th>Probes</th>
</tr>
</thead>
</table>
| Food Choices         | There is a sheet of paper and a pen in front of you. Think about the past 24-hours, and write down what you ate, everything you can remember, from the past 24 hours. Then, write down your reasons for eating those foods. Tell me about what you ate and the reason(s) you chose to eat those foods. | • Common factors like: access, cost, parent’s preference, taste  
• Indicators of mass media influence  
• Indicators of the teacher’s influence  
• Indicators of school environment influence |
| Nutrition Education  | What did you learn in class about healthy eating? What do you remember most from the activities or lessons in the class? Did anything you learn change the way you think about food or your attitude about food? Where else did you learn about healthy eating while in school, outside of this class? | • Social ecological model constructs  
• Whether the larger school environment at the school is a source of knowledge and attitude-shaping |
| Food Marketing       | *Image of MyPlate on projector*  
Do you think most kids eat like this? What makes it hard to eat like this? What makes it easier? *Transition from MyPlate to TV*  
Does what you learned in class help you determine if foods advertised on TV are healthy? | • Social ecological model constructs  
• Evidence of food ads being out of alignment with healthy eating  
• Fast food on TV  
• Specific knowledge from class that helps interpret ads |
| Photo Elicitation    | How does this seem to compare to MyPlate? How does this seem to compare to what you learned in class? What’s happening here? Does this ad make you want to buy this product or go to this restaurant? Why or why not? | • Evidence of media literacy constructs  
• Evidence that the class offered tools to interpret ad  
• Evidence of class impact, school environment impact, other sources of nutrition knowledge |

*Table 3.7. This table highlights key focus group questions used in all focus groups and interviews with children. These key questions were adapted from Neumark-Sztainer, Story, Perry, & Casey (1999) and the Mississippi Department of Education (2013). The protocol format and introductory and agreement text, e.g. language on confidentiality (See Ethical Considerations), were adapted from the Mississippi Department of Education (2013) and the Rhode Island Department of Education (2013). The full protocol can be found in Appendix A.*
Photo elicitation, borrowed from sociology and anthropology (Harper, 2002), was used in focus groups to encourage participants to interpret the meaning of advertising texts, and to relate the images to their own nutrition experiences, both inside and outside of school. An image of a McDonald’s billboard (“You have about 10,000 tastebuds. Use them all”), a super sized fast food meal, and of an obese child eating at McDonald’s were displayed for the children. In addition, a McDonald’s advertisement featuring Venus and Serena Williams and the Hamburglar promoting the dollar menu was shown (Figure 3.4 offers a still shot of this advertisement) with the intention of further exploring awareness of food marketing tactics like celebrity endorsements and costumed characters. Also, the use of the Hamburglar distinguished this particular advertisement as a marketing effort aimed toward children, giving students an opportunity to interpret and discuss a marketing message targeting their demographic, versus the general population.3

**Figure 3.4. Still from McDonald’s Dollar Menu Advertisement Displayed in Focus Groups**

*Figure 3.4. This image is a still from a McDonald’s advertisement featuring Venus and Serena Williams, promoting dollar menu offerings at the fast food chain. This advertisement was played during the photo elicitation section of the focus groups. Source: YouTube.*
Interviews. In-depth, semi-structured interviews took place with two key informants, the Family and Consumer Sciences teacher and the school district superintendent. Both interviews included open-ended questions, as well as ranking questions with Likert-type scale options followed by relevant discussion. For example, a question from the superintendent interview was:

In the context of the overall school environment, how important do you think it is for schools to promote fruit and vegetables to students? Would you say it is very unimportant, somewhat unimportant, neither unimportant nor important, somewhat important, or very important?

The superintendent interview was designed to get a flavor for the larger school environment and nutrition intentions, not only in the middle school, but in the school district. It also provided an opportunity for the superintendent to comment on some of the successes and challenges of implementing nutrition education. This interview took place after the focus groups, and after the interview with the teacher, allowing me to organically speak to some discoveries from those other discussions and gain insight and perspective from the superintendent. This interview was 32 minutes in duration, generating a 14-page transcript.

The interview with the class teacher provided an understanding of the intentions and goals of the class. It shed light on her expectations for what students would achieve in the nutrition module, including whether attitude and behavioral capability, and thus behavioral intention, were intended to change throughout the module. The interview with the class teacher also focused on interpersonal communication, how the course was developed, how larger organizational policies influenced the course, and the nature of interactions with the students. This interview took place after the focus groups, and provided the teacher with an opportunity to
comment on some of the findings from the focus groups. Again, Likert-type questions were asked. From the teacher interview, an example of a scaled question was: “On a scale of 1 to 5, how would you rate the success of your most recent nutrition education module?” There were also open-ended questions, giving the teacher an opportunity to expand on her experiences in the classroom and her perceptions of whether or not nutrition education in the 2014-2015 school year was a success. The interview with the teacher lasted 38 minutes, leading to an 18-page transcript. Table 3.8 speaks to the objectives for the two key informant interviews.
Table 3.8. Interview Objectives

<table>
<thead>
<tr>
<th>Superintendent</th>
<th>Teacher</th>
</tr>
</thead>
<tbody>
<tr>
<td>To obtain information about the larger institutional culture and context the</td>
<td>To obtain information about the goals and intentions of nutrition education</td>
</tr>
<tr>
<td>Home and Careers class is embedded in.</td>
<td>module.</td>
</tr>
<tr>
<td>To obtain information about the goals and intentions of the nutrition-oriented</td>
<td>To obtain teacher’s perspective regarding students’ nutrition behaviors</td>
</tr>
<tr>
<td>culture in the larger school district.</td>
<td>and how they are shaped as a result of participating in the nutrition</td>
</tr>
<tr>
<td></td>
<td>education module.</td>
</tr>
<tr>
<td>To obtain information about changes in students’ health as a result of the</td>
<td>To obtain teacher’s perspective regarding key facilitators and barriers</td>
</tr>
<tr>
<td>nutrition-oriented culture in the district.</td>
<td>to changing students’ unhealthful nutrition behaviors.</td>
</tr>
</tbody>
</table>

Table 3.8. This table highlights the objectives for the interviews with the district superintendent and Family and Consumer Sciences teacher. The protocols were designed to meet these objectives, and were adapted from the Mississippi Department of Education (2013). The full protocols can be found as Appendix B (teacher) and C (superintendent).

**Instruments.** The protocol used for the interviews and focus groups are included with this dissertation as Appendices A, D, and F.

Key focus group questions were adopted from Neumark-Sztainer et al. (1999), who conducted focus groups with seventh and tenth graders from two urban schools to assess the students’ perceptions of the various influences on their eating behaviors. Items such as the introductory ice breaker where participants recorded what they ate over the past 24-hours and why were borrowed from this study. Focus group questions and key informant interview questions were also adapted from the Mississippi Department of Education (2013). Rather than reinvent the wheel, I discovered protocols used by the Mississippi Department of Education for evaluating the Mississippi Fruit and Vegetable Pilot. These instruments were accessed through the CDC Division of Adolescent and School Health (DASH) website, supplied as sample evaluation tools. They were developed by the Mississippi Department of Education with technical assistance from CDC DASH, making them reliable instruments to use for evaluating
the nutrition education I studied. The protocol was designed for food service managers, program coordinators, principals, or others. I modified the protocol for the teacher based on questions designed for the nutrition program coordinator in the original copy. Questions were also modified for the superintendent, expanding on the original questions designed for a principal. Not all questions were relevant and some were therefore omitted, while other questions were modified for relevancy or used as developed by Mississippi.

The layout of the focus group template and introductory agreement was adopted from the Rhode Island School Nutrition Environment Evaluation: Vending and a La Carte Food Policies Focus Group Protocol (2005), also highlighted on the CDC DASH website, and developed by the State Department of Education with technical assistance from CDC DASH.

Instruments were also reviewed by and approved by my dissertation committee, and reviewed by the Institutional Review Board of the University of Albany, State University of New York, prior to use.

**Data Analysis**

This study yielded an abundance of valuable data. Focus groups and interviews were audio recorded, when permitted, and transcribed verbatim, yielding 247 pages of transcripts. The handwritten field notes from my classroom observations were subsequently transcribed. Computer-aided qualitative data analysis software (CAQDAS) was used to organize, manage, and code the data obtained through observations, focus groups, and interviews. Specifically, NVivo was purchased and utilized to help make sense of the data collected and to facilitate the analysis process.

To analyze the data, I took an approach informed by practical grounded theory methodology, one that was influenced by Tracy (2013) and Charmaz (2014). Grounded theory,
as noted by Charmaz (2012), “is primarily a method of analysis” (p. 4). Use of practical grounded theory ensured “that the theory emerging arises from the data and not from some other source” (Crotty, 1998, p. 78). In my work, an approach to data analysis with strategies borrowed from grounded theory allowed the data to shape the study, rather than the original research questions or the literature determining the results of the study (Tracy, 2013). A grounded theory approach often means that researchers are going back to rewrite their research questions and literature reviews to be in alignment with what the data is telling them. In my research, the research questions and the literature certainly guided the direction of the study. At the same time, the data collected and analyzed presented new perspectives and voices not previously considered at the outset of my work—resulting in rewriting and revisiting, adhering to the iterative process of grounded theory data analysis. Grounded theory allowed for deeper exploration and interpretation of the rich data collected for this study without “reliance on stock disciplinary categories” (Charmaz, 2014, p. 42).

According to Tracy (2013), the most important aspect of grounded theory is to “study your emerging data” (p. 184). The data, through an ongoing interpretive and iterative process, was used to create categories of analysis in a process that is ongoing and constantly being refined, which “differs from sorting topics” (Charmaz, 2014, p. 15). Incorporating a constant comparative approach (Charmaz, 2006) offered flexibility and for the exploration of new constructs and concepts that are not identified explicitly in social cognitive theory. The data were constantly compared to other parts of the data. This meant focus group data were constantly compared other focus group data, as well as to the data collected during observation, for example.
During the data analysis process, I remained cognizant of social cognitive theory constructs that helped to make sense of the vast amount of data collected during the study. The guidance offered by social cognitive theory helped keep the focus on the research questions and objectives for the study, consistent with Charmaz’s (2006) recommendation to engage in research whilst equipped with some “sensitizing concepts and general disciplinary perspectives” (p. 11). Table 3.9 provides a summary of the data analysis procedures utilized in this study. These activities did not necessarily take place in any particular or linear order. Instead, many activities were ongoing, revisited, or otherwise living aspects of the data analysis process.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Description</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Memo-writing (Charmaz, 2014)</td>
<td>Writing and jotting notes throughout the research process, including thoughts, theoretical categories, connections to literature and theory, etc.</td>
<td>Observations, focus groups, interviews</td>
</tr>
<tr>
<td>Data immersion phase (Tracy, 2013)</td>
<td>Spending time with the data–thinking about it, talking about it, reading it and re-reading it</td>
<td>Observations, focus groups, interviews</td>
</tr>
<tr>
<td>Open coding (Charmaz, 2014)</td>
<td>Reviewing the data for patterns and trends</td>
<td>Observations, focus groups, interviews</td>
</tr>
<tr>
<td>Codebook development</td>
<td>Ongoing, iterative process to categorize the data and create hierarchy from the categories</td>
<td>Focus groups</td>
</tr>
<tr>
<td>Focused coding (Charmaz, 2014)</td>
<td>Refining the codes and categories developed during open coding, create hierarchy from the categories, evolution of the sense making process</td>
<td>Focus groups</td>
</tr>
<tr>
<td>Prospective conjecture (Hallier &amp; Forbes, 2004; Tracy, 2013)</td>
<td>Looking for connections between my codes and theoretical frameworks, modifying the codebook accordingly</td>
<td>Focus groups (incorporating themes and relationships acquired from observations and interviews)</td>
</tr>
<tr>
<td>Development of networks (e.g. Miles, Huberman, &amp; Saldaña, 2014)</td>
<td>Creating visual displays of the data to tell the story and contribute to sense making (Figure 3.6)</td>
<td>Focus groups (incorporating themes and relationships acquired from observations and interviews)</td>
</tr>
</tbody>
</table>

Table 3.9. This table provides an at-a-glance description of the study’s data analysis processes.
Data analysis was conducted using general inductive approach (Thomas, 2006). The purpose of a general inductive approach is to a) condense raw data into a palatable format; b) to connect the findings to the research questions or objectives; and c) to develop, from the data, a model that explains the processes being investigated. This approach is often utilized in qualitative analysis processes (Thomas, 2006).

The process of coding also borrowed from practical grounded theory practices. According to Charmaz and Belgrave (2012), coding in grounded theory requires, at a minimum, two steps: 1) open coding 2) focused coding; and these two strategies “suffice for many projects” (Charmaz, 2014, p. 147). This was adhered to in the current study, where data were first reflected on in a data immersion phase (Tracy, 2013). This included ongoing reading and re-reading of the data (field notes, focus groups, interviews), as well as discussions with others about the data and general thought about what was transcribed. Following this immersion phase, I used the practice of open coding. Here, an initial coding took place, looking for patterns and trends, while still re-reading the data, and noting “what is present in the data” (Tracy, 2013, p. 189). Open coding of the field notes and the focus group and interview data took place. From this open coding, which started with gerunds and also included topics and themes, a codebook was created and continuously refined throughout the data analysis process for the focus groups. Concurrent with the open coding process was an ongoing memoing process, which was also present during the data collection phase. Charmaz (2014) noted, “memo-writing encourages you to stop, focus, take your codes and data apart, compare them, and define links between them. Stop and catch meanings and actions. Get them down on paper and into your computer files” (p. 164).
Observation and interview data underwent open coding and thematic analysis to provide context for the focus group analysis. This open coding of field notes and interview data proved helpful for making sense of the focus group data and students’ experience of the school and the class. For example, my field notes indicated that the teacher said on numerous occasions that the purpose of the nutrition lessons was for students to learn “what you do now affects you later in life.” This same statement was spoken by students in a number of focus groups. Likewise, gleaning information from the teacher on her perspective of school’s role in changing nutrition behaviors and comparing this with the responses of the superintendent painted an interesting picture of the internal workings of the school environment with both policy and program implications. Also, this multi-method triangulation helped to ensure the validity of my study.

Following open coding of the focus group data, the initial codes were refined as I “compare[d] codes with codes and [thought] about the ones that may be promising tentative categories,” as described by Charmaz (2014, p. 140). Focused codes helped to make meaningful sense of the data, illuminated patterns, and identified those codes that arose in initial coding that were not particularly relevant to the objectives of this study, though were perhaps significant or interesting, nonetheless. To quote Miles, Huberman, and Saldaña (2014), this was a process of “tightening up the data even further by making a smaller number of patterns from a larger number of patterns, or a smaller number of categories from a larger number of categories” (p. 286). While I did not necessarily engage in strict definition of grounded theory’s axial coding, which entails “procedural application” of concepts rather than descriptions (Charmaz, 2014) and testing relationships against data, revising interview and focus group protocol based on data analysis (Corbin & Strauss, 1990, p. 13), this is where I developed hierarchical codes. 

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systematically grouped the focused codes and developed a logical structure for interpreting the
data and expanding knowledge on the subject.

In addition, the coding process included “prospective conjecture.” This means that I
looked for connections between the data and other theories, including social cognitive theory and
its assumptions, to better make sense of the data and refine the codebook (Tracy, 2013). Not
only did I borrow from the model and assumptions of social cognitive theory here, I reflected on
the literature and considered the ways in which the data from this case study were novel and
unique; and how the data expanded the theoretical framework and further contributed to the
literature. This is the phase where I determined social cognitive theory to be a better fit for my
research than the originally selected theory of planned behavior. Throughout the data analysis
process, I also revised my research questions and revisited my literature review. Ultimately, the
data analysis process concluded with the development of a visual display.

The data were arranged and re-arranged in visual displays, concentrating and refining the
data into palatable and meaningful networks to fine-tune the analysis process and facilitate the
interpretation process (Miles, Huberman, & Saldaña, 2014). Networks are, essentially, visual
displays for linking data; more specifically defined as “a collection of ‘nodes’ or points
connected by lines (links)” (Miles, Huberman, & Saldaña, 2014, p. 94). An illustration and
description of the most significant network for understanding the data from this study is
presented as Figure 3.6 in the following section. If an endpoint to the analysis process were to be
identified, it would be through the development of the final version of the network as a visual
display of the data and relationships explored in my study.

Using a Network Display to Aid in Data Interpretation. Upon initial organization and
analysis of the various data sources obtained in this study, I developed a Network Display for
Children’s Nutrition Behaviors. According to Miles, Huberman, and Saldaña (2014), “networks lend themselves well as a case-oriented approach that re-creates the ‘plot’ of events over time, as well as showing complex interrelationships between variables” (p. 111). This is particularly fitting for this case study that is seeking to describe the process of nutrition education, relying on interrelationships of various data sets and ecological environments. The visual display aided in the analysis process, providing a guiding structure for deeper interpretation work.

A Network Display for Children’s Nutrition Behaviors adhering to a theory of change logic model format (Knowlton & Phillips, 2012) was developed. The logical model format is just one type of network format, for which the styles are limitless based upon the creative brainstorming of the researcher. This network model (Figure 3.6) is ecological in nature, remaining true to the original conceptual model, and illustrates various influences on children’s nutrition behaviors on environmental and physical levels based on the data.

**Figure 3.6. Network Display for Children’s Nutrition Behaviors**

![Network Display for Children’s Nutrition Behaviors](image)

*Figure 3.6. A network display for children’s nutrition behaviors, depicting the influence of social and physical environments on personal factors which then determine behavior. Attention is drawn to the role of parents and guardians as part of the social environment, with clear and explicit reciprocal determinism existing as parents’ shape children’s personal factors, e.g.: attitude, behavioral capability, while children simultaneously influence parents, e.g.: attitude, knowledge. The relationship between parents and children is unique and thus extracted from the larger social environment. Additionally, the position of food marketing as occupying space in the physical environment yet influencing the social environment is highlighted here.*
The network display developed through the data analysis process helped to facilitate an understanding of the data collected. It depicts the interactions between multiple environments and factors that were captured through the various qualitative data collection methods employed in this study.

**Ethical Considerations**

The nature of this study and the focus group and interview protocols were reviewed and approved by my dissertation committee and the Institutional Review Board (IRB) for the University of Albany, State University of New York. This included supplemental forms and approval for data collection using focus groups, as well as approval for research involving children as participants. The school I observed did not require their own IRB approval for the study.

Consent forms were obtained from the teacher and superintendent for their participation in the study. Consent forms from parents and guardians of the children who participated in focus groups were obtained, as were assent forms from these children. The voluntary nature of this study was expressed in all interactions with children and their parents. During interviews and focus groups, participants were reminded of the option to decline responding to any questions.

For children or guardians who declined focus group audio recording, this was respected and those children participated in one-on-one interviews with me. In these instances, I relied on note taking rather than audio recording to document the discussion.

The confidentiality of the children was assured and steps were taken to guarantee this. All electronic records were kept in a password protected file on my password protected personal computer. Any hard copy documents, such as consent forms, were kept locked in my personal office.
Since the post-focus group communication among students about the study and any related breaches to confidentiality was out of the realm of my control, focus groups began with the following introduction and agreement:

Everything we talk about will be confidential. This means that I will use general ideas from our conversations in a report but there will not be any names used and no one at your school will know specifically who said what. You can let me know what you really think. I also ask you to respect this confidentiality to assure that everything that is said in this room stays in this room. So, while I will keep your responses confidential, you should realize there are other students present, and these other students may or may not share information outside of the focus group, including information that you may feel is sensitive or private. While I ask everyone to keep this information confidential and not repeat anything said here today, it’s also important for each of you to consider that someone may share something, and to try not to share information too sensitive or private.

To my knowledge, no confidentiality transgressions took place during or after the study. The students appeared to honor the commitment to limit the discussion to the designated focus group time, place, and participants.
Chapter Four:

Findings and Interpretation, Part One—Understanding the School as a Physical Environment - “One Cannot Not Communicate”

Research Question 1a asked about the ways in which the school as physical environment served as a facilitator for shaping children’s nutrition attitudes or behaviors. To address this research question, this chapter relies heavily upon thematic analysis of the interviews with the Family and Consumer Sciences teacher and the district superintendent, and of my observations of the school and classroom. I will also detail students’ perceptions of and reactions to the school physical environment as communicated in the focus groups.

The conceptual model guiding this study considers the school physical environment to be those tangible and visible elements in the school, e.g. signage, posters, vending machine content, school lunch offerings. I consider these items to be part of the school’s physical environment, but also forms of communication from the school to the students about nutrition. Generally speaking, the physical environment in the social ecological model is shaped by access, availability, and other perceived facilitators and impediments, e.g.: the availability of water in vending machines can promote water consumption for students with the economic means to purchase it. I will point out that I am not alone in my argument that signage, food, and food availability in the physical environment are forms of communication. Barthes (2008) discussed food as a “system of communication” (p. 30). Take, for example, the low cost milk available in schools through the National School Lunch Program and what that communicates to students about a vegan diet (Bruner & Meek, 2011).

Essentially, the foods available in the school and the signage about food and nutrition serve as signs, forms of nonverbal communication to be interpreted by the students. In other
words, as described by Mabrey (2014), “food shapes and reshapes our production or destruction of meaning, relationships and community” (para. 1); and this valuable form of communication is no less significant when it takes place in the confines of the school setting. Each level of influence in the ecological model serves as a source of communication about nutrition and food. This communication is dynamic, and not just interpersonal in the social environment. It includes organizational communication via the physical environment, too. As written by Bauer, Yang, and Austin (2004):

Individual and family influences are important in shaping childhood health habits, but school physical and social environments may be especially important influences on the dietary and physical activity patterns of early adolescents. Many have recommended the development of such interventions, but there has been little formative research to identify specific factors in the social and physical environments of schools that may facilitate or undermine efforts to promote healthful nutrition and physical activity. (p. 35).

What follows is identification and description of, some of these elements of the school physical environment.

**Exposure to the School as a Physical Environment**

The students in the middle school selected as the site of this study began their school day at 7:32am, and ended it at 2:17pm. In that time period, children spent one 42-minute session in Family and Consumer Sciences, one 42-minute session in lunch, and the rest of the day participating in their other classes. Their walks through the halls exposed them to signage in the school, and allowed them access to school vending machines, like the vending machine pictured as Figure 4.1. As reported by the majority of students in the focus groups in this study, these experiences in the physical environment were not perceived as healthy nutrition influences.
When asked if the school, overall, promoted healthy eating outside of the Family and Consumer Sciences class, the focus groups overwhelmingly claimed it did not. There was modest tension in the focus groups as some students did indeed feel the school, as a physical environment, promoted healthy eating. These students put the responsibility on the individual student to make healthful decisions. Rather than identify the school as an unhealthy physical space simply because not all of the food options adhered to MyPlate, they expressed how their peers had individual responsibility in making their own food decisions.
Perceptions of the School Physical Environment as a Positive Nutrition Influence

In the minority, a handful of students perceived the school as being a positive nutrition influence. Among this group of children, one student noted that it was not the offerings of the school that were particularly unhealthy, but the ways in which students chose to consume the foods available. A boy, on the wrestling team, described what the school offered in the cafeteria: “I think that's what they're supposed to give us and we just eat too much of it, so we're used to bigger helpings” (FG2, S4).

In regards to the vending machines, a girl claimed to have read the packages of the food items, and disagreed with her peers about the quality of the foods: “I was reading all the packages, and it's all like whole grain stuff, and really healthy stuff” (FG3, S2). In this particular group discussion, another girl agreed with this claim and said, “like the drinks vending machine, they have like water and 100% fruit juice and stuff, but the only really unhealthy thing that I've seen is Powerade, but it's also Powerade Zero” (FG3, S3). “Zero” may make this student believe that the beverage is healthy because it lacks traditional sugar. In class, which will be described in more detail as part of the social environment in Chapter 5, the Family and Consumer Sciences teacher advised against the consumption of artificial sweeteners like aspartame, which is present in many sugar-free products like Powerade Zero.

To highlight the disparities of the school physical environment being perceived as a positive influence of healthy eating, and the school as a negative influence, I will note my analysis of the focus groups included 51 references to the school being a negative influence, while there were only 13 references to the school environment as a positive influence. Interestingly, the perception of the school physical environment as a positive influence was echoed by the superintendent, feeling both the elementary and middle schools in the district were
promoting healthful eating. On the other hand, the Family and Consumer Sciences teacher described the school as an environment that did not fully support healthful nutrition behaviors. An overwhelming majority of students shared the concerns of the teacher, and believed the school physical environment was not a positive influence on healthy eating. These seventh and eighth graders thought the foods available in the school were “unhealthy,” and thus felt the school was not promoting healthy eating. In some instances, these perceptions of food as unhealthy were artifacts of their participation in class. In others, students cited their parents as sources of authority for determining the healthfulness of school foods, while some did not offer details as to what influenced their beliefs about whether a school lunch or vending machine snack was healthy or not.

Perceptions of the School Physical Environment as a Negative Nutrition Influence

The school physical environment served as the host for multiple forms of communication, including signage, e.g.: a MyPlate poster in the cafeteria; and food offerings, e.g.: food and drink in the vending machines. A girl referenced the cafeteria when asked about whether or not the school promoted unhealthy eating, “Not the cafeteria, that's for sure” (FG3, S3). One student commented the vending machines, stating, “I mean, ice cream vending machines?” (FG1, S3). In another group, a girl pointed out “I don't think they should have an ice cream one. A lot more students use that” (FG7, S3). Although some students purchased foods from the vending machines, there was a general consensus that the vending machine foods were not particularly healthy.

Lack of Nutritious Foods in Vending Machines. Substantial conversation took place in focus group discussions and interviews, and was witnessed in observations, about the vending machines available in the middle school. In fact, “vending” was mentioned 68 times in the data,
including focus groups, informant interviews, and field notes—which were not verbatim recordings of communication—indicating the frequency of this particular topic in conversations. There were three vending machines available outside of the cafeteria. One supplied beverages, one snacks, and one ice cream.

**Concern Regarding Beverage Quality.** The beverage vending machine contained Powerade Zero, Dasani water, Minute Maid orange and grape juices, and Smart Water Zero. The availability of flavored waters was interesting because it directly contradicted messages the children received in the Family and Consumer Sciences classroom that discouraged the consumption of these items. In one of the class sessions, a student asked the teacher if strawberry water was good to drink. Once it was deduced that the student was not talking about seltzer water, the teacher explained to him that any flavored waters are bad because they are likely to contain artificial sweeteners (like the products labeled “Zero” in the vending machine do).

In a focus group discussion, a girl, who was not in this particular class during the artificial sweetener discussion, said about the vending machines, “they have sugary drinks with artificial flavoring. That's not good for you either” (FG7, S3). This triangulation of seeing the vending machine content, observing class discussions, and recording focus group responses illuminated the complex nature of the school as a physical and social environment. Forms of communication from the school, e.g. vending machine content, occasionally contradicted communication from the teacher in her lessons, e.g.: avoiding artificial sweeteners.

**Concerns Regarding Healthfulness of Snacks.** The snack vending machines contained a variety of items, such as Snyders of Hanover pretzels, Welch’s fruit snacks, oven baked Cheetos, Linden chocolate chip cookies, Vic’s kettle style popcorn, Ker’s sunflower kernels, Nature’s
Valley peanut butter and peanut granola bars, goldfish, and Pop Tarts, among others. The ice cream vending machine had low-fat cookies and cream ice cream cones, Perry’s Ice Cream strawberry fruit bar, Perry’s Ice Cream vanilla and chocolate sandwiches, Chloe’s soft serve fruit pops (labeled as being made with just fruit, water, and a touch of organic cane sugar), and a low-fat orange cream bar, among others. A student described the vending machines:

I mean, the stuff in the vending machine, I mean the drinks could be healthier, to be honest. In the school environment, I think that it might just be better to have maybe just different kinds of like carbonated water with no added sugars or anything like that. And with the snacks, maybe those are all right, but with the ice cream, I think I’d have to be careful with that. (FG3, S3)

There was specific concern voiced by both students and the teacher about the one vending machine that only sold ice cream. Concern was not limited to the ice cream vending machine, though. When asked about the food available in the school, a student said, “it’s unhealthy…there’s chips, cookies, candies, and sodas” (FG2, S4). In another discussion, a girl pointed out “sometimes they have cookies, popcorn, and stuff like that, that is not really healthy for you. But they have a little healthy stuff like [granola] bars and stuff. Not really that's good for you” (FG7, S3).

Although the healthfulness of some of the content of the vending machines was debated by the Family and Consumer Sciences teacher and students, ultimately, the snacks were all in compliance with federal competitive food regulations. According to the superintendent, the vending machine items were evaluated based on fat, sodium, and sugar. And, the district was “meeting the guidelines that we're required to for both the state and feds.” The school met the federal guidelines, though children perceived the foods available in schools as unhealthy, and
thus the school as a negative influence—or at least, not a positive influence—on nutrition behavior.

A student spoke to this conundrum:

I also think that if schools tried every day to influence eating what the government advises, then I think that people would start to eat like that more at home. And I think that kids would be more informed, and therefore their parents would be more informed and healthier eating would become more normal. (FG6, S4)

The student remarked on the need for the school to promote foods that the government advises are healthful options, perhaps not knowing that all foods in the school meet government guidelines. This could be indicative of contradiction in federal school policies themselves, where the USDA developed MyPlate while simultaneously approving of ice cream vending machines. Because of the nutrition education they received, students might not conceive of ice cream as meeting dairy serving suggestions the way the federal guidelines permit.

**Competitive Food Policy.** In 2013, USDA competitive food guidelines (guidelines for foods and beverages sold to children outside the federal breakfast and lunch programs) were released, as required through the Healthy, Hunger-Free Kids Act of 2010. These guidelines require that foods sold to children in schools must:

- Be a “whole grain-rich” grain product; or
- Have as the first ingredient a fruit, a vegetable, a dairy product, or a protein food; or
- Be a combination food that contains at least ¼ cup of fruit and/or vegetable; or
- Contain 10% of the Daily Value (DV) of one of the nutrients of public health concern in the 2010 Dietary Guidelines for Americans (calcium, potassium, vitamin D, or dietary fiber. (USDA, 2015, p. 1)
Many students were unaware of the macro-level influences that determine what foods and drinks are allowable and available on campus. There seemed to be a very modest understanding of the guidelines for school foods:

Yeah, [a teacher] told us when we were in the food lab that in order to serve lunch they have to have certain things in what they’re serving, so they always have a side fruit. And they have chocolate milk or milk, which is dairy. They have grain, and pizza as an exception because it is grain, but it’s not really the best because it’s greasy. But she told us that they have to go by some of the food groups. I think it was something like if you don’t have a certain amount of food groups you can’t serve it. (FG7, S3)

As a result of this lack of understanding of the rules and regulations behind school foods, many students perceived the offerings in the school as a form of communication indicating that nutrition was not a priority. “The school doesn’t really care” (FG3, S3), was stated by one student. Another elaborated:

It’s just like they stop caring, so they let us go free, and I mean I guess it’s good to let us on our own and make our own choices, but then again, they should at least have a limit to how much sugar we can consume. (FG3, S4)

Some students felt empowered to communicate their concerns about the school food availability, but the perception was that these complaints went unnoticed. A girl pointed out, “some people complain about it. But they just don’t do anything” (FG5, S4). Public policy pertaining to school nutrition guidelines has a direct effect on what is available to students, and thus what they consume. Through my own observations, I saw children at the vending machines throughout the course of the day, and snacking on goldish and other food items in class and other school settings, like the library. The availability and accessibility of these foods undoubtedly
contributed to their consumption. The foods were all in compliance with state and federal mandates, even if the mandates contradicted what the teacher included in her lessons (largely based on free, federal nutrition resources) in order to improve children’s nutrition attitudes and behaviors.

Studies indicate that this lack of consistency between federally-approved foods in schools and the nutrition best-practices that are taught in schools was not isolated to this case study. A study of two New England middle schools found that the unhealthful snacks and beverages in the school vending machines were an influence on students’ food selections, as discussed by both students and teachers (Bauer, Yang, & Austin, 2004). In their study, a teacher stated, “When kids are in that situation like that, how can they not go to the snack machine?” (p. 41). Similarly, in my study, the teacher responded in the interview, “I think it's inconsistent” when asked about whether the larger school environment was helpful at reinforcing her lessons. She was confronted with instances where students would be eating something she recommended they avoid eating, but the students purchased it from the vending machine right down the hall from her classroom.

A study of 106 schools with a total of 829 vending machines in the St. Paul-Minneapolis area found that, on average, the snacks and beverages offered in these vending machines were high calorie and high fat. More than half of the beverages available were sugary and sports drinks, and more than 90% of snacks were salty snacks, candy bars, and baked treats (Pasch et al., 2011). Consistent with this, a survey of the content of vending machine snacks and beverages in middle and high schools across the nation found that 75% of beverages and 85% of snacks lack substantial nutritional value (Center for Science in the Public Interest, 2004). In another study of 222 schools nationwide, students attending schools that sold sweets in the
vending machines were more likely to consume sweets than their peers from schools without the sugary options on the school campus (Rovner, Nansel, Wang, & Iannotti, 2011). The foods available in vending machines are associated with overall consumption of those types of foods by students. This is aligned with the findings of Patel (2007) who found that Body Mass Index (BMI) showed a trend (though, not statistically significant) toward healthier levels with the removal of vending machines at a Pennsylvania high school. All of these findings point, for me, to a curiosity of why these snacks are even available in school, particularly when studies show children in schools without vending machines maintain healthier weights. Dority, McGarvey, and Kennedy (2010), in their quantitative study on the effect of school food policy on student levels of overweight and obesity, discovered:

…if we compare two schools, each with the same overall mix of nutrition policies and the same student population, the proportion of overweight or obese students would be predicted to be .28 lower at the school that prohibits junk food sales at meal times. (p. 213)

Yet, vending machines with processed snacks are still prevalent in U.S. schools, while schools try to combat the obesity epidemic. Albert Bandura seemed to share a concern about this irony. In “Health Promotion by Social Cognitive Means,” Bandura (2004) wrote:

It is the height of irony to strive to promote healthful habits in schoolchildren while schools promote in their lunch program fast foods and house vending machines that dispense sodas and candy in return for substantial payments to schools by commercial enterprise. (p. 158)

This articulates the fact that the items in the vending machines at schools, including the school in this case study, are not simply selected by a Food Service Manager, nor simply
determined by federal or state nutrition policies. There is also an economic incentive to the school for offering these items, yet another factor in the macro-level of influences on children’s nutrition behaviors. Economic incentive and regulations are also relevant to school lunch policies and offerings.

**Lack of Interest in Lunch and Ineffective Communication in the Cafeteria.** School lunch for the population studied here is served in the middle school cafeteria. Lunch took place during periods 5, 6, and 7 at 10:35am, 11:20am, and 12:05pm, respectively. The students’ lunch period is based on the periods in which they have other classes assigned. The lunch period, like class sessions, was 42 minutes. Students were offered 20 minutes to eat, and then they either go to the gym, go outside, or stay in the cafeteria and quietly socialize. I observed many children choosing to go to the gym or outside, contingent on weather, to either play games or socialize. While only 20 minutes of eating may seem rather rapid, a study found that the average New York middle school lunch service time is 3.8 minutes, eating time is 7.9 minutes, and clearing trays takes 17 to 35 seconds (National Food Service Management Institute, 2001).

Lunch in the middle school, and entire district, is supported by the National School Lunch Program, a federally-funded program offering free or low-cost lunches to students. The National School Lunch Program follows the school meal nutrition standards, issued by the USDA in 2012. The 2012 standards:

- Increased the amount of fruits and vegetables served, emphasized whole grain-rich foods, required only low fat and nonfat milk, limited calories, and reduced saturated fat and sodium.
- Required school lunch standards to be implemented in all schools for the 2012-2013 school year.
• Phased in implementation of school breakfast standards over a three-year period.

• Allowed “offer versus serve” fruit and vegetable serving options consistent with the Institute of Medicine recommendations.

• Improved cultural food options, such as allowing tofu to qualify as a meat/meat alternate. (Food Research and Action Center, 2015, para. 3)

Even with these new standards in place, school lunch appeared to be relatively unpopular among students and the Family and Consumer Sciences teacher. In one focus group of five students, four females and one male, none of them ate lunch from the cafeteria. One of the students described the food as “all processed” (FG1, S1). The teacher also explained what she perceived as the lack of exciting and healthy choices in the school cafeteria:

Other than bananas, oranges, apples, I’ve seen some steamed vegetables. Other than that, I don't see it being really a huge promotion. I think that they could encourage it by even more farm to table. You know, frozen berries or yogurt parfaits with berries and granola.

Children overwhelmingly identified the school lunch as being unhealthy and as lacking appealing, healthy options during focus groups. Some students even cited their parents as sources of information to substantiate these claims. A student pointed out that the healthiest part of the school lunch was “just a side salad on the tray” (FG4, S2). In a discussion, this boy shared “… it’s unhealthy, and—I heard it was unhealthy, I don’t know for sure it’s unhealthy, but I heard—my dad told me that it was unhealthy” (FG4, S2) when talking about the turkey available during school lunch. He later referenced that it is turkey with gravy poured over it that is unhealthy, and noted that the fat in the gravy can impact the heart. This comment related to the Family and Consumer Sciences classroom where the teacher spent substantial time talking about fat intake and heart disease, and referencing her father’s personal experience with heart disease (I
return to this topic of disclosing of personal stories in Chapter 5). Another boy expressed that the school lunch just did not “look healthy” (FG5, S3). A girl in the group supported this perception, stating that “they just buy frozen food, and then they just heat it up for us. I don’t think they really care. But they should change it” (FG5, S4).

**Taste and Appearance of Food.** Discussion around the school lunch related to research that supports the idea that children’s nutrition decisions are largely based upon taste and appearance. In a study on cognitive development and children’s perceptions of fruits and vegetables, a group of children disliked certain foods because of “texture, taste and appearance” (Zeinstra, Koelen, Kok, & de Graaf, 2007). Taste and appearance were also identified as factors in children’s food consumption by McKinley et al. (2005) and Neumark-Sztainer et al. (1999), among others. A girl spoke to these factors in my study:

> They don’t look edible. I mean, for us kids, at this age, if we don’t like what we see, let’s say it’s a sloppy joe, if it looks nice, we’re going to eat it, but if it’s all nasty and the bun is on the side, and it’s just all over the plate, we’re going to say, “What is this?” and we’re not going to eat it. (FG3, S4)

I revisit the impact of taste and appearance in Chapter 6’s exploration of children’s cognitions and attitudes.

**Unsatisfactory Lunches Relate to Unhealthy Eating Behaviors.** The majority of students who participated in this study communicated their lack of interest in the school lunches available. Students opted out of the cafeteria lunch option when it was not desirable to them and purchased snacks from the vending machine in lieu of a full meal. However, in talking about the content of the school vending machines, the majority of students communicated their lack of interest in those food items, too; or otherwise noted that the contents of the vending machines
were unhealthy. One student said the vending machine content was “mostly junk” (FG4, S4), and students discussed how the vending machines may, at a minimum, be a factor that contributed to students at least eating something during the day. That is, if a student did not like the school lunch, or have enough money for lunch, they could always purchase something from the vending machine. This use of the vending machines in lieu of eating the school lunch led one student to deduce that this means “they [the school] have to have a better and healthier lunch” (FG4, S3) so children actually eat a meal versus just eat snacks during the school day. When students disliked the school lunch and ended up eating from the vending machine, they often purchased “cookies, popcorn” (FG4, S3), “Powerade” (FG5, S4), and other options were out of alignment with the nutrition education received in Family and Consumer Sciences. In a discussion, a girl also identified this consumption of snacks rather than a complete meal as concern:

If you don't bring food, but you do bring money, there aren't that many healthy choices, so normally I would just skip lunch if I forgot my food, because there's not that much stuff that I would be happy eating… I don't eat cafeteria food but even vending machines, there's nothing in there that I would be okay with eating. (FG6, S4)

This student appeared to allude to the fact that some students may just opt not to eat at all throughout the course of their school day rather than eat the foods in the vending machine, or eat the cafeteria offerings. This lack of consumption of the federally-funded school lunch program may relate to the superintendent’s concern about some students being hungry during the school day. The superintendent shared:

Maybe the biggest concern we had this year was, occasionally we had students, because of the balance of calorie intake - sometimes they're hungry. And, we have tried our best
to find ways to bulk up some of the volume without corrupting that balance we have to
maintain legally to meet federal and state requirements, and also offer things that are
appealing… Where it becomes the biggest issue is for kids who are athletes or who are
involved in extracurricular.

And, this is something that parents were aware of and raised as concerns. However,
whether students were hungry because they were not eating the full, available school lunch and
opting to snack or just not eat at all is unknown and not the subject of this study.

Avoiding school lunch was not unique to the site of my case study. For example, in San
Francisco, it was estimated that only 40% of students in San Francisco Unified School District
consume their cafeteria lunches (Stinson, 2014). And, nationwide, the USDA (2016) reported a
steady decrease in school lunch consumption since Fiscal Year 2010. Representatives from the
USDA write:

In recent years, however, the share of children paying full price for their lunches has
declined, falling from 40 percent in fiscal 2008 to 28 percent in fiscal 2014, continuing a
longer downward trend….

In fiscal 2008, 47 percent of students who were not certified for free or reduced-
price lunches chose to buy the full-price lunch. By fiscal 2014, the full-price participation
rate was 37 percent, somewhat below the average level during the 1990s. A combination
of reasons—both economic factors and policy changes—are affecting participation
decisions in the Nation’s school lunchrooms. (Ralston & Newman, 2015, para. 2, 3)

In passing, the school nurses also agreed with a general sentiment that school lunches,
despite being in compliance with mandates, were not healthy. They referred to Congress’ 2011
legislation allowing pizza to continue to be considered a vegetable due to the tomato paste. This
topic also came up in a classroom observation. The teacher was sharing a story about two soccer players coming into her classroom with junk food from the vending machines. She then spoke about how the ice cream vending machine satisfying MyPlate dairy recommendations was like the sauce on a pizza counting as a vegetable serving. In another class session, a student asked if a tomato is a fruit. The teacher responded yes, which created confusion for the student because she thought it was a vegetable. The teacher said that it is indeed a fruit, and referenced the bill that allows tomato on pizza to fulfill a vegetable serving, noting that she would allow students to categorize a tomato as either a fruit or vegetable on activities and exams. The legislation surrounding pizza, then, created contradictions in the classroom when students received different messages about food groups. Notably, pizza was cited as the most liked cafeteria food in the focus groups, followed by tacos. Again, the macro-level environment influenced the physical (and social) environments, which influenced children’s eating behaviors.

Ultimately, my study supported research that claims school lunch options matter. Children will eat what they like, and not eat what they do not like. It behooves schools to provide healthy meals students will like, and they will eat it: A case study of San Francisco middle and high schools by Wojcicki and Heyman (2006) showed that healthier lunch options led to an increase in student participation in the school lunch program. This was evidenced by increased revenue after the school created healthier lunches by decreasing portion sizes and eliminating sodas, chips, cakes, and other snacks. Students’ liking of cafeteria foods has significant costs associated with it. One study of school lunch waste in Boston found 26% of the food budget, or $432,349, was uneaten lunch that was thrown out in area middle schools (Cohen, Richardson, Austin, Economos, & Rimm, 2013). Not only are food and money wasted when
students dislike the school lunch, but these students are then not receiving adequate nutrients during their days at school.

**Accessibility of Information Regarding Lunch Offerings.** In my case study, students and parents had the ability to view the lunch options in advance of each school day. With that information, families could theoretically plan for lunch in advance, as the Family and Consumer Sciences teacher encouraged them to do, especially if they knew the student would not eat the school lunch option on a particular day. The lunch offerings at the school were available to students and parents, should they chose to access it, on the district website. In addition to being available online, there were hard copies of the lunch menu in the middle and high school offices for students or parents to pick up. The Family and Consumer Sciences teacher also kept a copy of the monthly menu in the front of her classroom. A sample week of lunch offerings is presented as Figure 4.1. These dates were selected using Random.org Random Calendar Date Generator. The dates were run through the system multiple times to avoid multiple Thursday or Friday listings (Thursdays were generally tacos; Fridays were generally pizza), as well as to avoid dates where there was recess and thus no school.
<table>
<thead>
<tr>
<th>Calendar Date</th>
<th>Day of the Week</th>
<th>Lunch Offering</th>
</tr>
</thead>
<tbody>
<tr>
<td>October 28, 2014</td>
<td>Tuesday</td>
<td>Chicken Fajita&lt;br&gt;Whole Wheat Wrap&lt;br&gt;Salsa, Sour Cream&lt;br&gt;Leafy Green Salad&lt;br&gt;Chilled Fruit de Jour&lt;br&gt;Chilled Milk</td>
</tr>
<tr>
<td>December 11, 2014</td>
<td>Thursday</td>
<td>Spicy tacos on whole grain wrap&lt;br&gt;Tomato, romaine, and onion&lt;br&gt;Cheese, black beans&lt;br&gt;Chilled Fruit&lt;br&gt;Chilled Milk</td>
</tr>
<tr>
<td>March 6, 2015</td>
<td>Friday</td>
<td>Stuffed Crust Whole Grain Pizza&lt;br&gt;Leafy Green Salad&lt;br&gt;Apple or Banana&lt;br&gt;Chilled Milk</td>
</tr>
<tr>
<td>March 9, 2015</td>
<td>Monday</td>
<td>Chicken or Fish Nuggets, Roll&lt;br&gt;Green Beans&lt;br&gt;Tomato Juice&lt;br&gt;Chilled Pieces&lt;br&gt;Chilled Milk</td>
</tr>
<tr>
<td>April 29, 2015</td>
<td>Wednesday</td>
<td>Oven Baked Ziti&lt;br&gt;Whole Grain Mozzarella Stix&lt;br&gt;Whole Grain Roll&lt;br&gt;Leafy Green Salad&lt;br&gt;Chilled Fruit de Jour&lt;br&gt;Chilled Milk</td>
</tr>
</tbody>
</table>

Table 4.1. A sample of school lunch offerings is presented. These five dates from the 2014-2015 school year were randomly selected using random.org Random Calendar Date Generator. Multiple Thursday and Friday picks were avoided due to those dates consistently serving tacos and pizza, respectively.

For each day of the week, there was an alternative offered to the hot lunch. On Mondays, this was chicken or tuna salad on whole wheat, bologna on whole wheat on Tuesdays, turkey on whole wheat for Wednesday, ham on whole wheat on Thursdays, and Friday was peanut butter and jelly on whole wheat. Daily milk choices were skim, 1% white, and fat free chocolate. Lunch is available for $1.85, or $9.25 for the week if it was pre-paid. The district participates in
Free and Reduced Price School Meals, where children, if eligible, received free or reduced lunch, the latter costing 25 cents.

**Lack of Influential Nutrition Signage in the Cafeteria.** In the cafeteria, there was a large USDA poster on the wall at the start of the line for food trays. The poster stated, “What’s a meal? Choose 3-5 colors. One must be a fruit or vegetable;” and showed an image of the MyPlate placemat as well as a graphic of the school’s logo (Figure 4.2). The cafeteria also had a “be a buddy, not a bully” poster hanging, an American flag, and a flat screen television mounted to the wall.

**Figure 4.2. Poster in the Middle School Cafeteria**

![MyPlate poster](image)

*Figure 4.2. Photo taken by author. This is an image of the MyPlate sign in the middle school cafeteria. The background has been removed to avoid any identifiable marks in the photo.*

Although there was a MyPlate poster in the cafeteria, a child suggested that the cafeteria certainly was not an area for learning about healthy eating (FG3, S3), responding “not the cafeteria, that’s for sure,” when asked about areas for learning about healthy eating in the school. Another student seconded this, saying, “In the cafeteria there’s a food plate [MyPlate] and there
used to be posters that said, ‘Got Milk?’” (FG3, S5). Another commented, “No one looks at that…nobody pays attention to it because school doesn’t teach us anything about nutrition” (FG3, S2). In one focus group (FG6), three girls talked about the signage in the cafeteria:

S2: I think this school’s pretty unhealthy.

S4: Honestly.

S2: They have the food plate [MyPlate] thing.

S4: They have the food plate up, but they don’t follow it.

S2: I never even noticed [the MyPlate poster] until she’s [the teacher] like, “They have it.” I’m like, “Where?”

S5: They’re not really healthy.

S4: They have it, but they don’t follow what it has on it. What’s the point in having it if you’re not going to support it?

These girls mentioned how there used to be “Got Milk?” posters and now there is only the one MyPlate poster, as far as nutrition signage goes in the middle school cafeteria. This highlights an interesting contrast between cafeteria signage in the middle school, the subject of this study, and the elementary school. In the middle school cafeteria, the only communication about nutrition was the MyPlate poster at the start of the food tray line up. On the other hand, in the elementary school cafeteria, children walk by posters for Fuel Up to Play 60; Got Milk posters featuring singers Carrie Underwood, Usher (Figure 4.3), and Jordan Sparks; Olympic gymnast Shawn Johnson, and skateboarder Tony Hawk; signage promoting milk and fruit; and posters on how to choose a balanced meal when getting their food trays.
This promotion was consistent with the superintendent’s discussion on focusing on healthy eating in pre-kindergarten through five:

We fold in as much as possible about healthy eating habits and balancing activity with nutrition to maintain a healthy lifestyle through our health classes, as well as presentations in the cafeteria with healthy foods. And, our food service director, in particular, spends time with our youngest students at the elementary school introducing new food items that they may not have in their regular diet, for example, they'll take kiwis into the pre-K class and explain the nutritional value of it, have them taste them, etcetera…There's a high level of support [from staff] for [implementing changes in the school nutrition environment in the elementary school]. And, I think that has a lot to do with pushing classroom visits at the elementary school to introduce new foods to our younger students, or to plan special activities with food offerings with classes…Elementary parents love those activities and changes. Middle school, it's relatively quiet.
The signage and forms of communication in the middle school cafeteria, as compared with the elementary cafeteria, spoke for themselves in illustrating the emphasis the district was placing on changing unhealthful nutrition behaviors at an early age. My study was designed to explore the middle school, not the elementary school. Therefore, I have neither data nor knowledge of whether the increased signage in the elementary school cafeteria, using celebrities to promote milk and athletes to promote physical activity, caused elementary students to consider their school more or less of a healthy physical environment than middle school students did. Nonetheless, the difference in signage was an interesting contrast that I observed after working in the elementary school but completing my research in the middle school. And, literature indicates that children’s liking of various foods decreases as they get older (Cooke & Wardle, 2005), so increasing exposure to new, varied, and tasty foods at a younger age would be a better predictor of children consuming and liking those foods in middle school. At the same time, best practices in nutrition interventions suggest that the education begin in elementary school and continue through high school, presumably maintaining that momentum from elementary school.

The only area the majority of children identified as a source for healthful food messaging and information in the school was the education received in the Family and Consumer Sciences class, where they spent a fraction of their day. Students did mention that some teachers would comment when they saw a student consuming something unhealthy, saying things like, “don’t drink that, do you know how unhealthful that is for you?” (FG1, S2). I will elaborate on this in Chapter 5’s discussion of the school as a social environment. As a physical environment, the vast majority of students perceive the school as lacking healthful nutrition influences.
Discussion: The School as a Communicative Physical Space

While there was modest disagreement among students about the healthfulness of the school physical environment, the majority of students felt as though the school did not have their best interest in mind in terms of offering and promoting healthy foods on campus. The talk of the students in both focus groups and interviews was generally aligned with the notion that the school was not a health-inducing/health-enhancing environment, as it related to nutrition. A recurring theme in the discussions was that the school displayed the USDA MyPlate image, and students received education on it, however adherence to the dietary guidelines was perceived as lacking. Another salient issue was the level of attention nutrition received in the elementary school as compared to the middle school. There was a clear emphasis on nutrition education in kindergarten through fifth grade at the elementary level, though the level of effort seemed to decrease at the middle school level, or grades six through eight.

The reactions to the school lunch and vending machines described in this chapter were consistent with the work of Bauer, Yang, and Austin (2004). These researchers found that both “students and staff described several overwhelming barriers to healthful nutrition: (1) poor quality and palatability of food served in the cafeteria; (2) presence of snack carts and vending machines that serve nonnutritious foods…” (p. 40). In the context of my study, however, the school lunch and vending machines were not assessed for whether they were facilitators or barriers to healthful nutrition. Instead, they were explored as forms of communication from the school to the student, and, subsequently, the students’ perceptions of this communication were evaluated.

The student quotes provided in this chapter were representative of the popular perception of children who participated in this study. From the concerns voiced by students, we can see the
vast majority of them perceived the components of the school physical environment, e.g.: signage, lunch options, and vending options, to be an indicator that the school was not supporting healthy eating habits. Given the data offered by this study, the analysis, and the applied theory, this chapter supports the applicability of an ecological approach to social cognitive theory, though it emphasizes the role of the ecological components of the theory. Sociostructural factors are immensely influential. The physical environment is a significant determinant of children’s nutrition attitudes and behaviors. Although social cognitive theory posits the concept of reciprocal determinism, it is questionable how much influence over the environment children have, or perceive having, in an academic institution. Children have personal agency, or the ability to control their “thought processes, motivation, affect, and action” (Bandura, 1999). Based on their perceptions of the school environment, they did not appear to have, or did not feel empowered about having, the ability to control their physical environment. Their voices of concern about the school not “caring” about them did not change the school. This also raises issues of self-efficacy: how can students perceive themselves as having the ability to eat healthy foods if the school physical environment does not offer food options that children think are healthy? As such, the school physical environment may serve as an impediment to healthy eating, but also as an impediment to the development of self-efficacy related to healthy nutrition behaviors.

Macro-level influences shape the school more so than the children have the ability to. Food policies and funding streams are more influential than children who would rather not eat at all than eat the food in the cafeteria. There appeared to be unidirectional causation in the school environment, rather than the bidirectional influences inherent in social cognitive theory. This makes the ecological approach particularly relevant in this study, as the personal perceptions of
what the sociostructural factors are, and as such what the facilitators and impediments are, is shaped by the physical environment. This also puts communication at the forefront of the discussion of children’s nutrition, illuminating the ways in which the physical environment is a communicator. It emphasizes the notion that “one cannot not communicate.” “One,” in this case, was the school as a physical space; and all of the elements of the school environment served as forms of communication. If the signs in the school displayed MyPlate, but the school lunch did not seem to align with MyPlate, this was contradictory communication that the students noticed. Communication is not just about what is communicated verbally, but includes these nonverbal and mediated forms of communication in the school. The inconsistency was recognized by students, and did not serve to further goals of improving nutrition attitudes and behaviors.

The primary venue for learning about and adhering to healthy eating standards—facilitating healthy nutrition attitudes and behaviors—was the Family and Consumer Sciences class, where nutrition was just one module in the curriculum. I turn to this discussion of the school as a social environment in Chapter 5.
Chapter Five:

Findings and Interpretation, Part Two—Understanding the School as a Social Environment, Teacher-Student Communication as a Primary Influence on Positive Nutrition Behaviors

Chapter 5 explores the school as a social environment, or as a space for social interaction and engagement, to address Research Question 1b. Chapter 4 concluded that, as a physical environment, the school provided inconsistent communication about nutrition to students, and was perceived as an unhealthy nutrition environment by the majority of students in the study. To further explore the school, this chapter includes discussion of students’ interactions with friends, peers, teachers, and food marketing. Attention is given to the role of food marketing as part of the social environment. I discuss the social interactions and communication about nutrition that took place in the classroom via the thematic analysis of field notes and key informant interview data, and integrate this with relevant focus group findings. This chapter reveals that while the larger built environment was perceived as unsupportive of healthful nutrition attitudes and behaviors, the social environment, on the contrary, did support positive nutrition attitudes and behaviors—largely through interactions and communication that took place in the Family and Consumer Sciences classroom.

A Closer Look at Food Marketing in the Classroom

There was an ongoing influence between food marketing and class lesson plans in the social environment (Figure 5.1): In this ongoing interaction in the social environment, food marketing and media influenced classroom discussions, including peer-to-peer conversations, questions raised to the teacher from the students, and examples used by the teacher to present a topic. Without an explicit food marketing or media literacy component in the classroom—that is, without a unit or class day designed to focus on these concepts—the teacher subtly incorporated
tools for interpreting food marketing in her nutrition education lessons on an ad hoc basis. One can argue that food marketing is part of the physical environment (e.g. a sign), but it comes into the social environment (e.g. the media) and therefore it was folded into classroom communication. For example, in one class, the teacher was talking about the importance of drinking water. During this lesson, a student was drinking a Gatorade in the classroom. The teacher informed the student that it was not permissible to drink Gatorade in her classroom, and asked the student to think about how Gatorade is marketed. The student replied, “they drink it on the bench, it’s not marketing.” Later, in my interview with the teacher, she explained, “I think it was really helpful for them to see…the fact that the sports teams you see on TV aren't necessarily drinking Gatorade in those cups.” The teacher went on to discuss how students were generally shocked by the serving size and nutritional content of the Gatorades they were used to drinking, and equally shocked to learn about the marketing strategies for this product. According to an assistant professor of pediatrics at Harvard Medical School, “children definitely don’t need sports drinks” (Skerrett, 2012), yet, Gatorade was a hot topic in the classroom. Gatorade came up in at least six of the classes I observed, was discussed in one interview with a student, one focus group, and the interview with the teacher (not to mention Powerade being discussed in four focus groups, one student interview, and the interview with the teacher).

Many of the students enrolled in this class were athletes, thus many of them consumed Gatorade because it is consumed by athletes on television, among other reasons. And, Powerade was available in the school vending machines, as described in Chapter 4. As a result of what the children saw on television, the teacher modified her discussions accordingly to have ad hoc talks about things like Gatorade marketing during class. Again, there was a pattern here where food marketing influenced class discussions; where the teacher then attempted to provide information,
resources, and tools to the students so they could identify marketing messages and critically analyze them. Figure 5.1 depicts what has been described thus far in the social environment of the school, or the elements of the school environment that interact with one another and serve as sites of interpersonal communication.

**Figure 5.1. A Closer Look at the Social Environment**

![Diagram of social environment](image)

*Figure 5.1. This figure depicts a second unique aspect of the social environment, namely the reciprocal determinism that exists between food marketing and the content of nutrition education lessons. Food marketing and media shape some of the interactions in the classroom (dotted line), and the teacher responds accordingly by incorporating antidotes to these messages in her lessons (solid line). From the point of view of the theoretical framework selected in this study, this figure illustrates how social cognitive theory constructs, e.g.: self-efficacy, perceived facilitators, and impediments, are well suited for an ecological approach to exploring nutrition environments.*

The factors for increasing self-efficacy were present in the social environment. For example, *social modeling* (e.g.: communication with classmates who improved their eating behaviors) and *vicarious experiences* (e.g.: observing classmates engage in healthy eating behaviors and experience positive outcomes as a result) were observable in the school’s social
environment. The social environment also served as a space where discussions and exchanges with *perceived facilitators* (e.g. teacher’s communication as positively influencing nutrition attitudes) and *impediments* (e.g. media influence as creating attitudes that service as a barrier to healthy eating) took place.

Within the social environment, there was a unique dynamic related to food marketing and media where children prompted conversation on food marketing and media, e.g.: through their consumption of heavily marketed foods, like the Gatorade example, in the classroom; or mentioned a commercial they saw, and the teacher then responded to these prompts with tools for identifying and critically evaluating food marketing messages. This is indicated by the callout box of Figure 5.1, highlighting that food marketing and media, and the classroom and teacher, were not simply static and isolated parts of the social environment, but there was reciprocation between the two, as per social cognitive theory, and constant interaction between two social influences.

The impromptu conversations about food marketing were generally generated by student behaviors or talk. In one instance, the teacher asked the students what “eat the rainbow” meant, referring to eating a variety of colors of fruits and vegetables. One student responded Trix (cereal) and another Skittles (candy). Finally, a third answered correctly, eat the colors of the rainbow in terms of eating a variety of colorful fruits and vegetables. In our interview, the superintendent spoke to this ubiquitous nature of food marketing:

*We only have the kids for x amount of time, x amount of days. When they leave us, they eat what they have available to consume at home or in the community. And, a lot of that is influenced by media. It influences adult buying patterns, what's marketed, what's*
affordable, what's easy to prepare in a home where kids don't sit down to a full cooked, fresh vegetable, home cooked meal every night because of working conditions.

Although food marketing and media are indeed static aspects of the physical environment, e.g. a poster, they are also implicated in the social environment where children are actually interacting, e.g.: clicking the close button on a McDonald’s pop up ad on a website; sharing media via social media; communicating about marketed products. In the Family and Consumer Sciences classroom, for example, I observed students visiting various websites, including those for fast food restaurants in order to complete a calorie-calculation exercise. In the classroom, students also shared nutrition-related social media sites they visit with me, like the YouTube channel Maurice’s Munchie Moments a girl spoke with me about, or Freelee the Banana Girl another girl mentioned in our focus group. Consistent with the ecological model, the physical environment shaped the social environment. As such, marketing may be part of the physical environment, but it shaped communication at the social level – which was my focus as a communication scholar.

One of the key principles of the ecological model is that “influences interact across [emphasis added] levels” (Sallis, Owen, & Fisher, 2008, p. 470). This is most certainly true. I add that the influence of food marketing on class lesson plans in the social environment point to influences interacting within levels of the ecological model. That is, not only does the macro-level affect the physical environment, which in turn impacts the social environment; but, within each level there are constant and ongoing influences. Multi-level interventions are encouraged through ecological approaches to behavior change. For example, “educational interventions designed to change beliefs and behavioral skills are likely to work better when policies and environments support the targeted behavior change” (Sallis, Owen, & Fisher, 2008, p. 470). And, the various components of each environment matter. As discussed in Chapter 4, signs for
healthy eating in the school physical environment were not effective at influencing healthy
eating when vending machines in that same level of the ecological model were perceived as
unhealthy. Influences interact within the physical level. Similarly, in the social environment,
influences interact with one another. Essentially, consistency and cohesion within each level
support greater influential interactions across levels. School signage and vending content that
send cohesive messages about healthy eating would better support communication in the social
environment about healthy eating. Message consistency within the physical environment
coupled with supportive messages in the social environment are essential for nutrition
interventions.

This marketing influence in the social environment was seen in other areas outside of the
classroom, too. In the library, one of the students from the Family and Consumer Sciences
classroom was sitting with two friends, snacking on cakes, Doritos, and fruit snacks from the
vending machine. While using the computers in the library, one of the students said, “I’m
getting the Fruity Pebbles with Fruity Pebble socks.” This conversation took place in January,
and they were referring to new Nike sneakers that would later debut in 2015, in kid-sizes only.
(Nike originally released Fruity Pebbles as a color scheme on sneakers in 2006 with the release
of Zoom LeBron IV, because Fruity Pebbles is allegedly Lebron James’ cereal [Kim, 2015]).
While these conversations were heard outside of the classroom, my focus on the school social
environment centered around the communication and interactions observed in the classroom, as
follows.

Communication in a Social Environment: The Classroom

Observation allowed me to gain an understanding of the teacher’s methods and practices
and the role of communication in the classroom. Considering this as a contribution to
communication literature, rather than education studies, I will not go into substantial detail about the pedagogical practices employed by the teacher and observed during my time in the school. Instead, a thematic analysis developed from my role as participant observer, without a background in secondary school education, is presented. The themes pertaining to the class social environment identified through my analysis included: a) the teacher’s knowledge of the content b) personal connection and role modeling c) the role of children as teachers d) experiential learning and e) the use of media and marketing as teaching tools.

**Knowledge of Content.** One of the elements present in the classroom was the teacher’s clear knowledge of the content being taught. Brighton (2003) points to a teacher’s knowledge of the content as a factor that contributes to students’ absorption of information and learning in the classroom. This 2003 article suggested that teachers who lack knowledge have to rely on textbooks and may send inconsistent messages to the students. These concerns would certainly impact the education the students receive, as heavy reliance on textbooks may create very structured lessons that do not allow for cultural or environmental shifts. On the other hand, in this classroom, the teacher was prepared to modify the lessons and content based on student interest; or, as mentioned, in order to address unexpected conversation on things like good marketing.

My field notes indicated that the primary factor that precluded the teacher from addressing a topic was lack of time. The teacher was responsible for getting through the nutrition education module within a certain time frame as a result of the availability of the cooking lab across the hall, state testing schedules, and the general need to navigate her syllabus over the course of the semester. Of course, there were times in class when a hand was raised and went unnoticed, but, generally, the teacher was clearly not relying on any textbook and was able
to send consistent messages to the students based on her knowledge of nutrition with time being the only factor that prevented elaboration on any particular topic. Rather than work from a textbook, nutrition education in this case relied on teacher-developed lesson plans—an understudied area. The teacher illuminated this when asked about how she developed her content:

New York State has a Family and Consumer Sciences curriculum. The CDC has recommendations, MyPlate has recommendations, and a little bit of me knowing my student population. [The Family and Consumer Sciences curriculum has guidelines] of what we should be incorporating, and then it’s up to us to make it so that it's engaging to the students to apply it to their lives. I think my health education background, having a master's in that, assists because I had to take master's level nutrition classes, and, it's an area that I'm constantly reading. Last summer I did curriculum work: Forty plus hours in the area where I went to some immersion conferences and talking about agricultural and farms, and farm to table. I think that helped to infuse that into my teachings.

The teacher is clearly knowledgeable in this subject area. In class, the teacher was approached with countless questions about the lesson content. In one class, a student asked if pasta is good for you. The teacher responded to the effect of “everything in moderation.” The student wanted a more concrete answer, and shouted a bit “how is it good for you, though?” The teacher had food models of carbohydrates and showed the class serving sizes of pasta, potatoes, crackers. She explained how carbohydrates can be used for quick energy, using a personal example of her “carbing up” on Saturday before running 13.1 miles on Sunday. The teacher never fully articulated the biological or physiological ways in which pasta could be good to consume, but
she provided anecdotal evidence to contextualize its occasional benefit to address the student’s inquiry.

The teacher had a knowledge of nutrition information that allowed her to field a significant number of questions in 42 minutes. Questions ranged from “is a banana a fruit,” “is an orange a fruit or a vegetable,” and “is wheat bread good for you;” to “why is Greek yogurt healthier than sour cream,” “does making a garden save you money,” and “do McDonald’s French fries have a lot of chemicals in them.” For the most part, the teacher had responses to every question she heard being asked, even when the questions caused her to digress from her intended lesson plan. For example, the inquiry about gardening saving money came up while the teacher was defining the term “diet” and describing the difference between “diet,” as “what we eat and drink,” and the meaning of “diet” on a soda bottle. In instances where the teacher did not have an answer to a question, such as the number of chemicals in McDonald’s French fries, she would admit to being unsure. Even in these cases, she would create a teachable moment and, in this particular example, remind students not to believe everything they see online.

The teacher’s knowledge also allowed her to modify and adapt the lesson plans for the day based on student interest. For example, when the student in the fourth period class asked “doesn’t making a garden save you money,” the teacher did not only respond yes, but she added that families can also save money by purchasing frozen foods in the winter. She then used an example from first period where those students were asking her how to persuade their parents to change what they eat and to change their behaviors to try new things, like start a garden. The teacher emphasized that if the children know how to do something, they can influence their parents to do it. (This child-to-parent education will be discussed in more detail later in this chapter). This instance was an example of the teacher’s knowledge of the content putting her in
a position to expand on questions and rather than answer “yes,” or “no,” equipping the students with information that enhanced their own self-efficacy for changing their nutrition behaviors.

By being knowledgeable about the subject area, the teacher also seemed to have high self-efficacy in her competence and her ability to enact change among students. She rated the success of her 2014-2015 nutrition education modules as “good” (4), on a scale from poor to excellent (1-5). For the teacher, this meant:

that I have students that have some recipes that they can go to that are quick and easy, that are healthy, that incorporate vegetables and possibly fruit. I think last semester we did the pureed butternut squash mac and cheese. And, I think I had an overall and overwhelming number of students come back for that recipe because they shared it with their families. So, I think last semester may have been more successful than this semester. I had four sections of seventh grade last semester, and three this semester. So, it could've just been that we changed up the recipes a little bit, or, teaching the first time around, I am much more excited coming up off a fresh summer off type of thing. And I had a lot of new information that I was pulling from. So, I mean, I always have room for improvement. I couldn't, I don't know as though I could ever give it a five, but I think it's very neat to be able to apply it the way that we do, whereas, I think health teachers don't necessarily get that.

Even with high self-efficacy, the teacher was aware of her varied excitement levels in the classroom, coming back to school after summer break with new information versus returning from the winter break. This was also observable in my field notes of the spring semester (January 2015 - June 2015) where the teacher did not teach, and to the same degree of depth, the same exact topics. For example, the students who took the class during the fall semester
received definitions and examples of nutrient dense, a test question, whereas the spring semester did not. However, in my observation, this was not credited to lack of knowledge or lack of competence on the teacher’s behalf. She noted in class on March 23 that the spring semester had state testing interrupting the class schedule, something that the fall semester did not experience. Therefore, the scheduling and time for teaching course content was affected.

Overall, there seemed to be lack of time in the 42-minute class sessions and number of nutrition education days for the teacher to fully communicate her expertise and share knowledge with the students. This speaks to the discussion from Chapter 1 regarding states across the nation spending insufficient hours on nutrition education. Nonetheless, despite these time restrictions, the majority of children in the focus groups reported that they felt the teacher did a good job and covered what they felt to be a helpful amount of nutrition information during the nutrition module. A minority of students, in one focus group, felt as though the teacher moved too quickly through the content. A girl explained: “she doesn't really-- I can't really take time to like break it down and try to remember it, because she just goes so fast” (FG3, S2). This student later elaborated:

    I don't really like this class, honestly, because she just goes so fast, and you can't learn anything, and then it's so difficult to try. We have a test on Wednesday about something that she taught us in like five minutes. (FG3, S2)

In agreement, another girl pointed out “we just fly through, she'll maybe ask us once, and then we move on. I just feel like maybe we should spend a little bit more time on these lessons” (FG3, S4).

    These students’ concerns might have been a direct reflection of the scheduling constraints the teacher had to navigate when trying to teach this content. These scheduling restraints relate
to the macro-level influences of the social ecological model, e.g.: policy. The class day is broken down into 42-minute periods, and these are programming and policy decisions outside of the immediate control of the teacher, relating to larger legislative and regulatory requirements faced by the school. Also in the minority were the students who felt the teacher should have spent more time operationalizing nutrition, giving students ideas of substitutions to make in their own diet. A boy shared: “She tells you this is what you can eat and this is what you can't, but she tells you like five things. And then she doesn't tell you the rest” (FG2, S4). This was interesting because I observed the teacher offering these recommendations, e.g. advising students to replace cookies with an apple or orange for a snack; suggesting to a student who felt he didn’t have time for breakfast that he pack a banana and eat it on his way to school in the morning; and sharing with students that they can make a snack like pretzels healthier by pairing it with hummus to add to their protein intake for the day. These were instances where the teacher was illustrating her knowledge of the content, as well as offering information to truly help the students change their behaviors—which might have been facilitated by her developing a personal connection with her classes. However, for some students, the recommendations offered were not enough for giving them the information needed to actually improve their eating habits.

**Personal Connection and Role Modeling.** Not only was the teacher clearly knowledgeable in the subject area, which was visible in her responses to questions and ability to stray from her lesson plan to engage students when they expressed interest in a certain area, another theme present in the field notes collected from my observations was the teacher’s efforts at developing a personal connection with the students. In turn, I saw students sharing personal information with the teacher, too.
During my time in the classroom, I witnessed the teacher tell any number of personal stories. She shared, for example:

- that she ate carbohydrates to prepare for a race
- that her father had a heart attack and stroke, and is now paralyzed on the right side; she mentioned that he did not have the nutrition information that they were getting, and that he ate fast food, ate a lot of fat, ate out a lot, and smoked
- that her daughter was having chronic ear infections, and shared that the pediatrician informed her that the infections were linked to animal dairy (She connected this anecdote to the lesson, discussing MyPlate recommendations of two or three glasses of cow’s milk each day, but mentioned that there are some debates about the integrity and benefit of cow’s milk)
- how she has a farm and gets eggs for her family from the chickens, and meat and milk from her goats
- how she used to be addicted to sugar, but took it out of regular diet and now only uses it sparingly and occasionally to reward herself
- that she had to get lab work done in the morning and would also fast to do so, defining “breakfast” and “fast”
- how she decreased her carbohydrate intake and has since experienced less sluggishness and joint pain

These personal connections through storytelling offered vicarious experiences, negative and positive, related to nutrition behaviors in order to influence the behaviors of the students. As I have discussed, vicarious experiences are one mechanism for increasing self-efficacy. In these stories, the teacher was making personal connections but also enhancing her lessons through
contributions to the development of student self-efficacy for engaging in healthful nutrition behaviors. Clearly, these anecdotes were not part of any curriculum or in any textbook, but instead were instances of the teacher sharing her personal experiences with the students. Some of these experiences, such as her father’s health, were quite intimate. Others, while perhaps less intimate, such as personal diet changes, were still unique to the teacher’s experience, and were shared as a way to illustrate her lessons. In doing so, the teacher also created personal connection and rapport with the students. Through these stories, the communication in the class reinforced the concept of self-efficacy and provided the mechanisms for building self-efficacy to the students: The teacher offered role modeling/social modeling, verbal persuasion, and vicarious experiences to the students in her lessons.

While the teacher was not directed to share these stories through any particular curriculum or guidelines for teaching nutrition, the personal connections she attempted to make are in line with accepted scientific findings on rapport building with students. In fact, “personal connections between teachers and students can be the key motivator in student interest and achievement in school,” according to Bradley, Pauley, and Pauley (2006, back cover). Personal connections help relate the content being taught to the students, offering them opportunities to understand the content outside of the classroom, grasping the real world implications. It has been suggested that:

To teach someone any subject adequately, the subject must be embedded in all the elements that give it meaning. People must have a way to relate to the subject in terms of what is personally important, and this means acknowledging both the emotional impact and their deeply held needs and drives. (Caine & Caine, 1991, p. 58)
Sharing stories about self and family most certainly makes the subject of nutrition personally relevant.

The underlying tone of these shared stories and personal connections was that the teacher actually cared about the students. In one class, she described what an angioplasty is, and said, “I want you to make good decisions now so you don’t pay for it later.” “What you do now will affect you later on. Choose wisely” was the mantra of the class, repeated almost daily by the teacher, appearing on quizzes and tests, and in Jeopardy-style lesson reviews. When they talked about what they learned from the class, the students repeated this mantra in focus groups. This sense of caring about, and wanting the children to care about, what they ate at their age in order to avoid illness later adds to the personal connection developed in the classroom.

The teacher’s sharing of personal stories may be related to the students’ sharing of personal information in the classroom. The students’ sharing ranged in degrees of intimacy and detail, similar to the teacher’s stories. For example, a student shared how her mother made granola bars, while another student shared how he told his father about what the teacher taught them about sugar when his father bought soda from the store. In response to the teacher sharing information about her father’s stroke, a student shared that her uncle had a stroke. In another class, a student shared how her grandfather died from a heart attack and stroke, and that her mother worried about the amount of sodium she and her father consumed as a result. When the teacher talked about living on a farm, in one class, two students talked about how they lived on farms too. One boy talked about how he hunted with his father during hunting season, and that his family only ate venison, rather than purchase meat, during hunting season. It was not the intention of this study to explore the sharing of these personal stories and what prompted them, but the sharing itself contributes to the discussion of the role of the social environment in shaping
children’s nutrition attitudes and behaviors. Not only did the stories shared by the teacher serve as a method for influencing self-efficacy and shaping outcome expectations, the stories the students shared could enhance the self-efficacy of their peers.

In the context of a social cognitive theory model, this lends itself to the idea that communication is a mechanism for shaping self-efficacy, a key construct of the theory. The tools for increasing self-efficacy do not have to be observed first hand, but they can be communicated. For example, sharing a vicarious experience through interpersonal, verbal communication can be meaningful and contribute to building self-efficacy. Self-efficacy does not require witnessing an experience, or observing an experience firsthand, for it to be vicarious—communication can supplement that subjective experience and provide a vicarious experience that can boost self-efficacy for engaging in healthful behaviors. Of the factors that influence self-efficacy (social modeling, verbal persuasion, vicarious experience, physiological/affective state), only one is explicitly an act of communication: verbal persuasion. But, the analysis indicated that the other factors for influencing self-efficacy can indeed be communicated, verbally, and do not require experience or observation to induce learning. While social learning theory posits that we learn through observation, this lends itself to the notion that we also learn through communication of experiences in lieu of direct observations.

**Disclosure and Liking.** This mutual sharing of personal information is aligned with the engaged pedagogy of disclosure in education. Milam et al. (2014) refer to four types of disclosure: “self-disclosure, disclosure reciprocity, disclosures of the world, and growth through disclosures” (p. 17). *Self-disclosures* are those instances where an instructor lets his or her guard down and presents an authentic version of self. *Disclosures of the world* refers to those instances where the social world communicates and illuminates something of the world. An example of
this type of disclosure is the teacher’s reference to *Forks Over Knives*, a documentary that discloses issues of wellness and food. *Disclosure reciprocity* occurs when, in my case, the teacher self-disclosed and the students also disclosed in return. Disclosure reciprocity is “a marked contrast with ‘professional discussions’ or ‘traditional lectures’...” It is an “…engaged pedagogy in which knowledge is constructed and mediated with/through/about lived experiences” (Milam et al., 2014, p. 17). This personal disclosure seemed to contribute to students’ liking of who the teacher was as a person. The majority of students seemed to care what the teacher thought about their nutrition behaviors; they liked and had respect for the teacher and didn’t want to disappoint her with their eating habits. This was addressed in the interview with the teacher, as she talked about seeing her former students who are now in the high school:

I have students being able to stop and think about their choices before they consume.
And, I think that it's something that lasts with them, from here until forever. I've seen students, like I was telling and sharing before the interview, in the high school that will see me and say "this isn't the best food, but this is all I had - this is what I had for breakfast" or, "this is all I have.” They'll make excuses, but they know at least - they have the knowledge power.

While there were some dissenters, the focus group data indicated that the students were aware of what was healthy and what was not, had positive attitudes toward healthy foods, and were inspired to change their behaviors because of their teacher. The role of the teacher, as an individual, was significant in this case. Personal connection and disclosure with students supplemented the objective course content in meaningful and influential ways that led students to express a desire to adhere to the education they received in the class.
The fourth type of disclosure in education, *growth through disclosures*, refers to the growth attained through the described concepts of self-disclosure, disclosure reciprocity, and disclosures of the world. Self-disclosure, disclosure reciprocity, and disclosures of the world led to desire for growth and change as expressed by the students. For example, in one focus group, a girl said, “I'm actually trying to go vegan because of her [the teacher]” (FG2, S3). In another focus group, a student said she was considering going vegetarian as a result of the Family and Consumer Sciences class and a film her mom shared on meat processing and the meat industry. In this instance, the student said, “She [the teacher] told us about it, and I’m just like ‘hey, this is not cool’” (FG1, S2). It is in this growth that the influence of the social environment was visible, as students communicated about their attitudes, goals, and behavioral intentions. Through communication, and disclosure specifically, the children were influenced and began to contemplate changing their behaviors to adopt healthy nutrition behaviors. From the perspective of the ecological model, this indicates that, despite the physical environment’s lack of influence on children, the communication that took place in the social environment was very powerful for promoting behavior change. And, from the lens of social cognitive theory, communication was a mechanism for creating environmental facilitators for positive nutrition behaviors. Through this facilitation, children were also encouraged to serve as teachers, sharing nutrition information with their families, and even peers, to educate and improve nutrition behaviors.

**Children as Teachers.** Another prevalent theme in my analysis of classroom observations related to the role of the students as teachers and educators for their families. Figure 5.2 depicts the teacher’s intention for the flow of the nutrition education she provided, illustrating how she taught the students but explicitly called on them to teach their parents what they learned in class. The teacher delivered nutrition education in the classroom, and this
education was designed to impact children’s nutrition attitudes and behaviors. This was the first impact level of the intervention, or of the nutrition education delivered in the Family and Consumer Sciences classroom. In addition, beyond influencing the children’s nutrition attitudes and behaviors, a second level of intervention was for the nutrition education to have an impact of the nutrition attitudes and behaviors of the parents/guardians of the students.

Figure 5.2. *Flow of Nutrition Education Information*

![Diagram](image)

*Figure 5.2.* This flow chart illustrates the intended flow of nutrition information as communicated in the classroom environment. Over the course of each semester, the teacher makes several references to the responsibility of the students for sharing this information with their parents to improve nutrition attitudes and behaviors in the household. This leads to the conclusion that the nutrition education, conceived as an intervention, is not only designed to change the attitudes and behaviors of children as well as those of their parents/guardians.

This role of the students as teachers was identified numerous times in the classroom and took two forms: a) examples of social modeling where the teacher referenced other students who attempted to, or desired to, change their parents’ attitudes or behaviors; and b) explicit directives for students to discuss the class material with their parents. An example of the use of social modeling took place in a period 6 class when the teacher told the classroom that a student in period 1 asked how to get her parents to change what they eat and to start new, healthy habits like planting a garden. In another period 6 class, the teacher shared how a period 1 student...
expressed interest in going home that day and sharing information about caloric intake with his family. The teacher communicated stories about students to other students, which may be another example of disclosures of the world (those instances where the social world communicates and illuminates something of the world), identifying instances when peers in the shared social environment were communicating class content back to their families. The teacher wanted the students to share the nutrition information with their families, so identifying students who followed this recommendation may have been a form of motivation. She may have been pointing out that the other class periods were following her suggestions, encouraging the class she was speaking to do to the same. This could have been a call to action for the students to relay the information they learned to their parents, and then inform her of that family conversation. By doing so, the students would then be rewarded, so to speak, and the teacher would tell the other periods that they were sharing the information from class at home.

Examples of the second form of persuasion to influence students to educate their families were more explicit. One day, a “Do Now” on the board was “Give one example of information you can share with your parents/guardians to improve your family’s food choices.” (A “Do Now” is a teaching strategy for priming students for the day’s content and engaging them in an activity as soon as they enter the classroom). The teacher emphasized the importance of going grocery shopping with parents to pick healthy foods and to help the parents to pick healthy foods. On this day, the homework assignment was for the students to talk with their families about what foods to buy. To support shopping with parents, class lessons included details such as calculating unit price; and the differences between national, generic, and store brand foods—the latter learned with hands on experience of taste-testing different foods, reviewing ingredients,
calculating serving sizes, and determining unit price, all to determine the best buy for both budgeting and nutrition.

In the interview, the teacher spoke to this goal of reaching the parents through the children:

They have to share that information with their parents, who may not have that knowledge or attitude towards food. Our lives are so fast-paced, and some of these children are in single parent families who have multiple jobs, could have multiple families, so part of the week they're in one set. To have these conversations and really have them be cohesive, they should be sitting down to a meal every night. But I know that with extra-curricular activities and jobs being what they are, that this is a challenge for these students because you have different ends of the spectrum. You have some students who don't have the economic backgrounds to support it, or the area to grow fruits and vegetables, even though we spoke about putting them on your porch or windowsill, then we have students who are involved in everything, that go and have two games a night or multiple teams, and they're eating on the fly.

The teacher’s goal of reaching the parents through the students was something that the children communicated organically about during the focus groups, too. Of course, children are greatly influenced by their parents. Given the age group, the children did not have their own drivers’ licenses and were not fully independent or autonomous. In focus groups, it was not uncommon for me to ask if a particular topic was learned in the Family and Consumer Sciences classroom, e.g.: eating enough protein, only to find it was actually the parent that spoke with the child about that particular topic. On the other hand, there were many times that the focus groups included conversation about the children influencing their parents by sharing nutrition
information with them. The students seemed interested in sharing with me and their peers that they often served the role of teacher for their parents, like their teacher had encouraged them to do. For example, in one group, a girl explained how she prepared a snack for her mom: “I actually looked up on YouTube at my house on my phone some healthy lunch ideas. So what I did is I made one and then my mom actually liked it, so I made one for her” (FG2, S2). In another discussion, a boy mentioned:

We learned about what's healthy for you and what's not [in Family and Consumer Sciences]; and when I see something that really is healthy for you, I'll just ask [my parents] if we can buy that and we usually do get that. (FG4, S2)

One girl fairly concisely articulated the role of children as teachers as I understood it through my observations of the classroom. In a focus group, when discussion focused on barriers to healthy eating, she said:

I think that if schools tried every day to influence eating what the government advises, then I think that people would start to eat like that more at home. And I think that kids would be more informed, and therefore their parents would be more informed and healthier eating would become more normal. (FG6, S4)

In another focus group, a girl echoed this sentiment. She noted, “if the parents don’t have like a good food influence on them…if the parents don’t want to cook or whatever ‘oh, just eat your cereal’ or ‘we’ll order pizza or Chinese’ like every night, constantly” (FG1, S3). This student was alluding to the fact that without parents being taught about nutrition, they could be the cause for children in the household eating unhealthy or incomplete meals. The responsibility was on the student, in this case, to teach the parent what was learned in the classroom to try to promote healthy nutrition behaviors in the home.
In the focus groups, as part of the photo elicitation described in Chapter 3, students were shown an image of an obese child eating at McDonald’s and were asked to respond to it. They were asked to a) share their perceptions of the healthfulness of the meal the child depicted was eating, b) discuss whether this child appeared to be healthy, and c) to consider the information they learned in their Family and Consumer Sciences class about nutrition that they might want to share with this child. Although the question asked during the focus groups inquired about sharing information from their class with the child, some participants discussed what they would share with the child’s parents. In other words, when faced with a hypothetical opportunity to engage in peer-to-peer education and asked about what they would say to a fellow child about his eating habits, the participants responded with what they would say to the child’s parents—embodying the role of teacher and taking on the responsibility to teach adults what they learned in class. An example of the students embodying the role of teacher and educating parents on nutrition is highlighted in part of a focus group discussion (FG2), below. In this example, the students discussed how they would want to talk to the parents of this obese child, rather than the child himself, about healthy eating and nutrition. Again, I asked the students what they would share with the boy, but they replied with what they would share with his parents about healthy eating:

Me: If you look at this kid, does he look healthy to you?

S3: No.

S2: No.

S4: No [chuckles].

Me: Why?

S2: Because he's sitting down at a fast food place with McDonald's, that is the worst.
S4: And he's 100 pounds and he's like 4 or 5.

S3: All I have to say is that's horrible parenting.

S4: Yeah, right.

S3: Nice parenting.

Me: Is there anything that you learned in [teacher’s] class that you would want to share with this kid?

S4: There's a lot of trans fat at McDonald's. But that's not even his fault, like--

S3: I would want to tell it to the parents.

S4: Yeah, I would talk to them. The kid can't do anything. He doesn't know any better.

S2: Most of the times if it's like-- it depends on if it's money, because sometimes they might have special deals at McDonald's and the parents might be like, "Oh yeah, this is cheaper let's just go here." And then they might have gotten to really like it, and they might have kept doing it and eating.

The comments that wrap up this exchange, e.g.: impediments to healthy eating, like cost, will be explored in Chapter 6 when discussion hones in on the individual level of the ecological model. This conversation illustrated the ways in which children took on the role of teacher and educator for parents through this class. This role of students as teachers was observed by the teacher, too. She said: “I have seen where students that pack their own lunches have made those changes, asked for certain things on their grocery list from their parents, or gone shopping with them.”

The Role of Parents. This unique relationship between children and parents was identified during the analysis process, and was included in the network display in Chapter 3,
inserted as Figure 5.3 for convenience. While the original conceptual model included parents and family as part of the social environment, I extracted the family in the network display because analysis determined that the dynamics are unique when compared to other aspects of the physical and social environments. The family was unique because this is where Bandura’s concept of reciprocal determinism was most clearly seen. This reciprocal determinism was clear and explicit in a way that was not as obvious and influential in other aspects of the environment. The network display shows the factors that contribute to behavior change as illuminated through this study of children’s nutrition behaviors in the context of a school environment and, more specifically, through participation in nutrition education. The role of parents and guardians as part of the social environment was unique, as there was constant interaction and interpersonal communication between parent/guardian and children about nutrition, shaping one another’s nutrition cognitions and, ultimately, behaviors.

**Figure 5.3. Network Display for Children’s Nutrition Behaviors**

![Network Display for Children's Nutrition Behaviors](image)

*Figure 5.3. A network display for children’s nutrition behaviors, depicting the influence of social and physical environments on personal factors which then determine behavior. Attention is drawn to the role of parents and guardians as part of the social environment, with clear and explicit reciprocal determinism existing as parents’ shape children’s personal factors, e.g.: attitude, behavioral capability, while children simultaneously influence parents, e.g.: attitude, knowledge. The relationship between parents and children is unique and thus extracted from the larger social environment. Additionally, the position of food marketing as occupying space in the physical environment yet influencing the social environment is highlighted here.*
In the visual display, factors in the social and physical environment shape individual/personal factors, like knowledge, behavioral capability, attitude, outcome expectations, and self-efficacy. Although the social environment consists of several elements, parents as part of this environment play a particular role in shaping children’s nutrition-related attitudes and behaviors. There was a unique pattern between parents and children, where parents (part of the social environment) influenced personal factors (in the children), while the children simultaneously created and re-created the role of the parents and influenced the parents’ personal factors. For example, the teacher emphasized the need for the students to shop with their parents during classroom nutrition lessons. The children described shopping with their parents in the focus groups, and talked about asking their parents to get healthier foods, thus influencing parent shopping behaviors which in turn effected family nutrition behaviors. This reciprocation between parents and children was clearly articulated by both the teacher and the students. It was an explicit cycle of knowledge sharing and mutual influence (leading to behavior change) that was not seen in the other ecological levels or relationships in my study. For example, students and teachers alike talked about disliking the nutritional quality of the school lunch, however, it remained the lunch. The effect of personal factors, e.g.: attitude, and even behavior, e.g.: refusing to eat from the cafeteria and bringing lunch from home, did not have a clear impact on the environment, e.g.: school lunches, the way that the interpersonal connection and communication between parent and child impacted and fostered behavior change.

**Empowering the Students.** This theme of *empowerment* of the students as teachers is also noteworthy since this classroom sits in a corridor between the middle and high schools. As a result, the seventh and eighth grade students studied were exposed to high school students who sometimes walked the halls with beverages the teacher told the middle school students to refrain
from consuming, like the McDonald’s Shamrock Shake (530 calories, 15 grams of fat in a small [McDonald’s, 2016]), or the Dunkin’ Donuts Coolatta (330 calories, 4.5 grams of fat in a small mocha with whole milk [Dunkin’ Donuts, 2011]). In a class activity, the teacher had the students look up the nutrition facts of four frequently consumed beverages, including these two, the Starbucks Frappuccino, and Wendy’s Frosty. This was an activity designed to promote nutrition label literacy and empower the students to learn about nutritional content and to make healthy choices accordingly. For example, just because a senior was drinking a Shamrock Shake does not mean the younger students should drink them too, particularly after learning about the lack of nutrients and the unhealthful content of the shake. The Shamrock Shakes were popular in the middle and high schools in March, and are clearly unhealthy beverages. Still, in one class, only 2 of 11 students had never had one. The superintendent spoke to this:

Someone sees somebody with a green shake and they all want it. They run it a lot on TV. It’s a limited item, and it's connected to a particular holiday. And, St. Patrick's Day, for better or worse, many people think of St. Patrick's Day as a day to consume liquids, if you're an adult. So the Shamrock Shake is a teenagers dream version of participating in St. Patrick's Day.

The teacher, also:

I think that the high school needs to have similar rules to the middle school. I see high school students and middle school students in the same hallway, and the high school students have a coffee Coolatta or one of those fruit shakes from Dunkin’ Donuts with the whipped cream on top, and it's large, and they're carrying it in the hallway and their teachers are permitting it. I don't - just because they're rules - we're attached to the high school, so I think it needs to be consistent.
Although the students were exposed to influences in the social environment that could encourage unhealthy behavior (seeing high school students eating unhealthy drinks; seeing unhealthy food marketing), empowering the students as teachers may very well increase their self-efficacy for making better nutrition decisions. Without the empowerment and encouragement that the students can influence others (e.g. their parents), it could be even more difficult to navigate the school nutrition environment. However, the teacher empowered the students to be teachers, which could help them reject negative nutrition influences in the social environment. One vehicle for empowering students to make healthy food choices was through teaching nutrition label literacy. This was visible in the focus group discussions, where children talked about no longer eating hot dogs, replacing soda with water, and substituting unhealthy snacks for healthy ones. One student said, “there was a bag of chips sitting right there, but I ate the vegetable” (FG3, S3), and another commented “before I had careers [Family and Consumer Sciences], I used to buy all this junk food, but now I buy some fruit and stuff” (FG4, S4).

This study was not designed to explore the role of empowerment in the classroom, like whether empowerment affected children’s responses to peer influences, e.g. seeing a high schooler drinking an unhealthy beverage. Still, the empowerment of encouraging students to go back and teach their families may indeed contribute to some form of self-efficacy that helps children navigate aspects of their social environment. More broadly, empowerment has been found to increase self-efficacy. In fact, a study on engagement in diabetes self-care behaviors found that empowerment led to increased health literacy on the topic, and increased health literacy contributed to increased self-efficacy (Lee, Shin, Wang, Lin, Lee, & Wang, 2016). This is consistent with my hypothesis that empowering students and offering nutrition literacy skills will increase their self-efficacy for engaging in healthful nutrition behaviors. Determining the
validity of this hypothesis would be a separate study, however, the general idea of empowering students to promote a sense of ownership over their education is not a new one. And, empowering students to teach others puts them in the position of “expert,” which can boost self-esteem and perhaps, then, self-efficacy. For example, Brennan (2012) wrote:

By allowing students to teach students we enlarge the learning platform. We suggest to them that there are other experts present in the learning environment. Teaching empowers students to demonstrate and share knowledge, deepening their own understanding…

(para. 8)

The most valuable voice in the learning environment is that of the student. (para. 12)

With this empowerment comes the idea that students can teach other students, not just their parents. The CDC Morbidity and Mortality Weekly Report (1996) noted:

schools can teach students how to resist social pressures. Eating is a socially learned behavior that is influenced by social pressures. School-based programs can directly address peer pressure that discourages healthy eating and harness the power of peer pressure to reinforce healthy eating habits. (para. 32)

Students can be empowered to be both teachers and role models for their parents and their peers.

Perhaps not surprisingly, while the superintendent and teacher expressed concern over peer influence, it was not a topic that was frequently addressed in focus groups. Admitting to being influenced by others is something people may avoid admitting to. Few students mentioned being persuaded by peer influence over their eating behaviors or nutrition habits. One girl did mention:
I wouldn't really eat something just because someone was doing it, but like say I heard about something and I think I'd like it, I'll try it. But I wouldn't, if I didn't like it I wouldn't keep eating it. People brought up on deep fried Oreos, its sounds pretty cool so I was like, "I'll try that one day." (FG2, S2)

Rather than peers serving as an influence, the media seemed to be an influence, as exemplified by a girl mentioning seeing an ad on YouTube for Trader Joe’s Cookie Butter and then wanting to try it (FG2, S3). This is consistent with the concerns of the teacher and superintendent outlined at the beginning of this chapter regarding media, and will be more thoroughly addressed when the following chapter looks at the facilitators and impediments to healthful eating outside of the school environment.

**Experiential Learning.** Another theme from my field notes related to the teacher’s emphasis on an experiential approach to learning. This included hands-on opportunities to prepare, cook, and serve meals in the cooking lab, but also experiences created by the teacher in delivering her lessons. For example, to illustrate how breakfast helps students to be alert, aware, and ready for the school day, the teacher tossed a ball around the classroom in her talk about reaction time. The teacher walked through the rows of desks, bumping into them and knocking things over to show how blood has a difficult time pushing through clogged arteries. In another class, she walked through the classroom hunched over to the height of the children and pointed out where stores place the sugary cereals (at children’s eye levels) in her talk about shopping the perimeter of the store. While there were indeed days of PowerPoint presentations, the bulk of the teacher’s nutrition lessons were experiences for the children. They involved the teacher illustrating something with a vivid example, or hands-on activities in the classroom, such as each
student using the MyPlate SuperTracker from a laptop to determine how many calories to consume each day.

The experiential learning was explicit in the cooking lab where students made granola, breakfast burritos, smoothies, macaroni and cheese, and other items. They received hands-on experience with cooking, from making a shopping list based on a recipe to clearing the table after their classmates had eaten. This hands-on exposure is an explicit goal of the teacher. She described her nutrition education module:

An overview of what I do with my seventh grade students would be to teach them, not just the basic food groups, but to have healthful, balanced meal planning, as well as preparing and potential adoption of more fruits and vegetables in their diets. That's really my overall goal. And, to expose them to some of that within the food lab. I also touch on areas of drinking sugar; and, when they're grocery shopping with their families, making sure they're not buying processed as much and, even frozen foods - Staying on the perimeter of the store, that type of thing.

In the cooking lab, there were also reminders of the personal connection theme. The teacher said on one occasion while the students were cleaning the cooking lab, “we are a family,” we will eat, clean, and cook together. These forms of communication with the children shaped their nutrition education in the Family and Consumer Sciences class.

The experiential learning was largely embraced by students. In focus groups, students reported that the cooking was the most memorable aspect of the Family and Consumer Sciences class. One student explained “it was actually really fun to cook healthy, I love cooking healthy. Chopping all the vegetables and stuff.” When asked about the class activities in another focus group, a girl shared:
The one I think really helped and I'll remember, is when we were in the food lab, it was like a hands-on activity, and we learned about nutrients and cooking healthy dishes, we also learned about being clean and having a good kitchen and good hygiene and stuff like that. We have to have hands-on activities to do, otherwise we're more likely we're probably going to not to do so good on tests and things like that. (FG3, S4)

The experiential learning also included events that I did not witness through observation, but was informed of through my interview with the teacher, namely, field trips. Field trips are an effective form of learning. A study of elementary students (fifth graders) found that field trips designed to promote nutrition and fitness greatly impacted students: “Students who attended the field trip completed a pre-test and post-test for nutrition knowledge. They showed a knowledge gain of 37% in 2006; 43% in 2007; 44% in 2008; and 52% in 2009” (seemingly, different groups of fifth graders attended the field trip in the respective year; this is not a longitudinal study tracking knowledge gains from fifth to eighth grade) (DelCampo, Baca, Jimenez, Sánchez, & DelCampo, 2011). Supporting the use of field trips in nutrition education, an article by Berlin, Norris, Kolodinsky, and Nelson (2013) noted:

School food service professionals interviewed in a set of case studies observed that students are more willing to eat fresh fruits and vegetables if they have interacted with the farmer who grew them, through activities such as field trips to the farm or visits by the farmer to the school. (p. 592)

The teacher explained how she took students on field trips. In some instances, she accompanied the high school Family and Consumer Sciences teacher and travels with ninth and tenth graders:
I've taken a lot of those students on field trips, especially recently to the culinary institute, where they've chosen certain things off of the menu that they wouldn't necessarily have chosen. We've had really great discussions and conversations on the health benefits of the foods and why this why may taste differently than when you prepare it at home, and how you can get the same effect and budget friendly ideas.

The teacher also explained how she planned to build field trips into the summer sessions and the 2015-2016 school year:

There was a summer camp with Farm On. I'm giving 20 applicants where they'll have a similar Shark Tank approach where they'll visit various farms and try to solve business issues within the farms. And then this fall we're actually taking a trip with Farm On with 43 middle school students and a few high school leader students to immerse them from farm to table, seed to plate - planting, pulling on the farm for a day.

The teacher’s reference to Shark Tank in this discussion leads to the final theme from the observation, media and marketing. I will limit the discussion here to the ways in which media and marketing were integrated into the classroom and the school, and explore food marketing as a contributor to children’s nutrition attitudes and behaviors in the next chapter.

**Media and Marketing as Teaching Tools.** The teacher did not include a specific media literacy lesson in the nutrition education, but references to media and marketing were indeed prevalent throughout the school year. Some examples have already been discussed, such as the students’ perceptions of Gatorade promotions and the ways in which food marketing influences the class lessons as the teacher attempts to give students the tools for interpreting those messages, or otherwise recognizing the nature of the messages.
Media mostly appeared in the classroom in reference to documentaries. In class, students watched the documentary *Fresh*:

FRESH celebrates the farmers, thinkers and business people across America who are re-inventing our food system. Each has witnessed the rapid transformation of our agriculture into an industrial model, and confronted the consequences: food contamination, environmental pollution, depletion of natural resources, and morbid obesity. Forging healthier, sustainable alternatives, they offer a practical vision for a future of our food and our planet. Among several main characters, FRESH features urban farmer and activist, Will Allen, the recipient of MacArthur's 2008 Genius Award; sustainable farmer and entrepreneur, Joel Salatin, made famous by Michael Pollan's book, The Omnivore's Dilemma; and supermarket owner, David Ball, challenging our Wal-Mart dominated economy. (Internet Movie Database [IMDb], 2016b)

In addition to *Fresh*, the teacher asked the students if they saw the film *Supersize Me* in her discussion of trans fats and the risks associated with them. The IMDb summarizes *Supersize Me*: “While examining the influence of the fast food industry, Morgan Spurlock personally explores the consequences on his health of a diet of solely McDonald's food for one month,” 2016c). And, as mentioned, the teacher referenced the movie *Forks Over Knives* (“Examines the profound claim that most, if not all, of the degenerative diseases that afflict us can be controlled, or even reversed, by rejecting our present menu of animal-based and processed foods,” IMDb 2016a) in her discussion about milk consumption. It was rare for the teacher to call upon explicit food marketing in the lessons, e.g.: fast food commercials, but she did indeed refer to media, namely documentaries, on numerous occasions.
When food marketing was discussed, it was often as an aside or a supplement; again, not the priority of the lesson. For example, the teacher asked the students if they felt deceived by the intentional marketing efforts of impulse items in the store, or unhealthy cereals at their eye level. (In this class, one of 17 students spoke up to say he felt deceived; a few responded “no”). In another class, the teacher was discussing cholesterol, and she mentioned the reference she had made to her father’s health in class the previous day. A student said, “he should’ve had Cheerios,” to which the teacher replied, directed toward me, “there you go, some marketing.” The underlying assumption is that this seventh grade boy was aware that Cheerios may reduce cholesterol levels because he saw it advertised. However, the teacher did not fully engage in a marketing discussion. Instead, she acknowledged the comment and continued her lesson.

This chapter largely focused on the interactions and interpersonal communication that took place in the classroom in its exploration of the school as a social environment and the influence on nutrition attitudes and behaviors. The students spent just 42 minutes each day in the Family and Consumer Sciences classroom, and had countless interactions and conversations with other faculty, staff, and peers who were not in the Family and Consumer Sciences classroom with them.

**Outside the Classroom: Other Sources of Nutrition Information in the School Social Environment**

The school included additional social environmental influences on nutrition attitudes and behaviors that extended beyond the communication in the Family and Consumer Sciences classroom. Beyond the classroom but still in the larger school environment, McTeacher’s Night and sports coaches were identified by students as the primary sources of nutrition information in the school social environment.
**Extracurricular Participation at McTeacher’s Night.** An interesting food marketing effort students were exposed to in the school social environment was the district’s McTeacher’s Night. This event was introduced to me during my first focus group, and I later came across a flyer promoting it. McTeacher’s Night highlighted the complex nature of food marketing as occupying space in both the school physical and social environments. The school physical environment featured signage that promoted this social event (while I did not come across signage in the middle school—again, the classroom I observed was in a corridor connecting the middle and high schools, so my visits to the middle school, proper, were minimal—, I did see a sign promoting this event in the elementary school). The signs encouraged students and their families to go to their local McDonald’s, where faculty and staff from the school district served McDonald’s food to customers as part of an annual fundraiser. A girl attended McTeacher’s Night and shared, “last year we went to McDonald’s during McTeacher’s night and we bought almost the whole menu. I’m like, who’s gonna eat all this?” (FG1, S2). Some students expressed that they did not attend this event because it would be awkward to be served food by their teachers; some joked that they would not trust their teachers not to tamper with their order. On the other hand, for those more involved in the goings-on of the school, attending McTeacher’s Night is an annual event.

**Additional Nutrition Guidance from Coaches.** Outside of the Family and Consumer Sciences classroom, a common discussion about sources of healthful nutrition information in the school related to the extra attention athletes receive, and wrestlers in particular. In the interview, the superintendent noted how “wrestlers are always at risk for binging and dieting,” and thus the wrestling team receives a large amount of nutrition information from their coach. The students recognized this and pointed out the lack of consistent and overall nutrition messages being
communicated to students, with athletes receiving additional support and information compared to the larger student body:

In a lot of sports, like wrestling, they'll have their nutrition packet, and then the coach will always sit down and talk to the boys, because they have to stay in a certain range and weight, or keep it at like one kind of steady area, so I mean that's really the only way that we could get some kind of education on this certain area outside of the classroom, but honestly if you're the kind of person that just doesn't do sports, not as athletic. Like me, I do some sports, like seasonal sports, stuff like that, like archery, a lot of stuff, but there are going to be times when I have nothing to do and I'm just eating and eating, not really know whatever I'm eating. (FG3, S4)

A wrestler supported this focus group comment during our interview, claiming the only areas he learned about nutrition in the school were from the Family and Consumer Sciences teacher and the wrestling coach (I2, S1). This is consistent with a study by Douglas and Douglas (1984), which posited, “sport participation may be a catalyst for learning about nutrition” in schools (p. 1198). Being an athlete positions students at an advantage for receiving more detailed nutrition information. This may be valuable for some students since the lack of time and speed of the lessons in Family and Consumer Sciences was voiced as a concern. Being an athlete allowed for additional communication of information on nutrition that was not otherwise afforded to the larger student body.

Other instances of nutrition education being received in the social environment were minimal, just as there were minimal reports of the physical environment facilitating healthful nutrition habits. Students reported instances of teachers sharing personal weight loss stories, like a math teacher who incorporated her weight loss journey into class math exercises. There were
instances where a teacher might comment on something a student is eating if the item is particularly unhealthy, but the general sentiment was that the Family and Consumer Sciences classroom was the source of nutrition information in the social environment.

Discussion: The Power of Communication in the Classroom

While the school as a physical environment seemed to send inconsistent messages about nutrition to students and have minimal impact on their nutrition attitudes and behaviors, the school social environment, and the classroom’s social environment in particular, was described as being influential. In the classroom, the Family and Consumer Sciences teacher engaged in a number of pedagogical techniques that seemed to establish both connection and rapport with the students. Many students, in both the focus groups and interviews, shared an understanding that the teacher truly cared about them and their well-being. The role of communication was particularly salient, as communication was used to share lesson content, but was also used on an intimate, interpersonal level as both students and teachers disclosed aspects of themselves and their families as it related to healthy eating.

Communication had the power to empower students to be leaders on this topic, and share their knowledge and skills with not only their parents, but with their peers, too. Through empowerment, self-efficacy is improved, allowing students to influence others in their lives. Communication is a tool that can be used to set in motion each of the four mechanisms for improving self-efficacy, and is also a way to influence other social cognitive theory constructs. For example, communication can shape outcome expectations through storytelling and disclosure. And, through communication, students shared their goals and intentions for engaging, or not engaging, in a particular behavior—like the goal to become a vegetarian. Communication is essential to each of the structural paths of influence, and to self-efficacy.
development. And, this self-efficacy development is certainly meaningful in predicting children’s nutrition behaviors. While I proposed at the outset of my dissertation that I conceive of behavioral capability as a precursor to self-efficacy, a study seeking to develop and validate a survey for elementary nutrition education using social cognitive theory suggested that “self-efficacy may be more relevant than knowledge [i.e., behavioral capability] in terms of influencing children’s eating behaviors” (Hall, Chai, Koszewski, Albrecht, 2015a, p. 9).

The role of food marketing and media was highlighted in this chapter. Food marketing and media can occupy part of the physical environment, while also facilitating interactions in the social environment. For social cognitive theory, food marketing and media can be either perceived environmental impediments or facilitators. McTeacher’s Night might be a perceived impediment to healthy eating, when the school is actively encouraging students to go to McDonald’s (though the Family and Consumer Sciences teacher encourages them not to go to McDonald’s), whereas the documentaries the teacher showed in the classroom may be perceived facilitators to healthy eating. The documentaries can serve to increase behavioral capability by providing students with knowledge about fast food (Supersize Me), obesity (Fresh), or the relationship between food and disease (Forks Over Knives). In Chapter 7, I report my findings on food marketing through the lens of media literacy (a personal factor), rather than as an element of the school (an environmental factor). This discussion lends itself to an exploration of children’s interpretations of food marketing, rather than a description of food marketing in the school. For now, I turn to discussion on how children’s nutrition attitudes and behaviors were actually influenced in the middle school, using the experiences and beliefs shared during focus groups.
Chapter Six:

Findings and Interpretation, Part Three–Understanding the Influence of Nutrition Education on Children’s Nutrition Attitudes and Behaviors

Chapter 6 addresses Research Question 2 and explores how the nutrition education received in the classroom affected children’s nutrition attitudes and behaviors. That is, how did the communicative acts in the classroom described thus far actually affect children’s nutrition attitudes and behaviors? What were the mechanisms through which these attitudes and behaviors were transformed? And, how did children communicate about these changes? This discussion is based upon findings from the focus groups held with children who participated in the Family and Consumer Sciences class during the 2014-2015 school year.

Chapter 4 offered a figure that depicts the levels of nutrition influence among children as informed by this case study. This chapter focuses on the level of personal factors from that figure, displayed below (Figure 6.1). These personal factors include cognitions, taste, preferences, self-efficacy, skills, and, ultimately, behavior. The discussions that took place during the seven focus groups did indeed illustrate an impact of the nutrition education on each of these personal factor domains. Nutrition education:

- changed cognitions or thoughts about nutrition,
- helped to expand the palate of the children who began to accept new tastes as intriguing and thus changed their preferences,
- strengthened self-efficacy regarding healthy eating, and
- equipped children with skills and knowledge for engaging in healthy eating habits.

Ultimately, the majority of students in the group discussions expressed positive changes in nutrition behavior as a result of the class.
Figure 6.1. *Personal Factors Influencing Children’s Nutrition Behaviors*

![Personal Factors Diagram]

Figure 6.1. This figure displays the personal factors that were revealed during focus group discussions regarding nutrition influences on the individual level, and ultimately shows how these factors—which are influenced by social and physical environments—influence behavior.

### Changing Cognitions and Behaviors

The nutrition education received in the classroom changed students’ cognitions. That is, it changed the way students thought about food, including their attitudes and beliefs about nutrition. The sociostructural model guiding this study indicates that these changes are largely influenced by, and influence (*reciprocal determinism*), outcome expectations, sociostructural factors, facilitators, impediments, and goals. *How* these changes manifested is based on the improvements in self-efficacy and behavioral capability I will describe later in this chapter. What those changes *were* is discussed here.

**Increasing Fruit and Vegetable Intake.** In the focus group discussions, the majority of children discussed changing their nutrition behaviors by increasing their intake of fruits and vegetables as a result of the class. The students who expressed not making any diet changes were in the minority. For these children, it was generally noted that they felt they already ate healthy, that they already learned these healthy behaviors from their parents and adhered to them, or that the class simply did not change their attitudes or behaviors.
Interestingly, from my observations, those students who claimed that the class did not influence their beliefs, attitudes, or behaviors were the ones I saw eating the least healthy foods during the school day. For example, I once saw a girl in the cafeteria eating Lay’s potato chips, Oreo cookies, and a bologna sandwich for lunch, with the school milk as a drink. This is not a lunch the teacher would have approved as being healthy. It was missing fruits and vegetables and included too much salt and sugar. In a focus group, this girl said, somewhat defiantly, how she ate “Oreos, Doritos, chocolate chip cookies” (FG3, S2) in a conversation about whether students’ eating habits had changed as a result of the class. And, she was one of the few students that shared a general dislike for the class because she felt as though the teacher moved through the material too quickly and she was unable to absorb the information.

Also, of the small handful of students who said the nutrition education did not change their beliefs, attitudes, or behaviors, it seemed significant that many of them were clearly overweight or obese. My study did not include recording of student weights or BMIs, so I cannot scientifically make connections between rates of obesity and self-reported learning in the classroom. But, from my observations and focus group discussions, it was not uncommon for those children who were clearly and visibly overweight to say the nutrition education did not change their habits. For example, one girl who was undoubtedly overweight (FG1, S4), talked about eating “all you can eat Chinese, Taco Bell, and turkey” in one day, told the group how she loved fried Oreos, and shared, “Sam’s Club has these huge hot dogs, I’ll eat those. Any other hot dog, I won’t.” To illustrate the extent to which she claims the nutrition education did not influence her, I will highlight a couple of the focus group (FG1) exchanges:

Me:  Do you think that anything you learned about, in terms of nutrition, in Home and Careers, influences your food choices? Or, not particularly?
S4: No.

Later in the focus group discussion:

Me: Thinking about Home and Careers and the nutrition module that you did here, what can you think of that you learned in class about healthy eating? What can you recall? I know it was a few weeks ago now that you did that, but does anything stand out?

S4: No.

And, still later in the discussion:

Me: Did you learn anything in Home and Careers about healthier eating then you were already doing?

S4: No.

Toward the end of the discussion:

Me: Is there anything that any of you would’ve liked to have learned about healthy eating that you did not learn about in class this year?

S4: Um, let’s see here. Nope.

To this comment, another girl (S2) responded and said this student’s name, almost in a scolding fashion. This was one of the isolated instances of a student who did not credit the class with teaching them something, or influencing them somehow. Other than the few isolated instances of children saying how they were not planning on changing their nutrition behaviors as a result of the class, most students described improving their diets by increasing fruit and vegetable intake. Across the focus groups, the students talked about increasing their fruit and vegetable intake:

• “There was a bag of chips sitting right there, but I ate the vegetable” (FG3, S3)
• “Yeah, before I had careers [Family and Consumer Sciences], I used to buy all this junk food, but now I buy some fruit and stuff” (FG4, S4)
• “I knew the vegetables were there [on MyPlate] but I didn't really know that the fruits were on the plan, so I started eating more of them” (FG4, S3)
• “Well, when we did that food plate diagram thing we, at my house, I wanted more of the vegetables, and stuff, and fruits, just to have on occasion as a snack or something. And at dinner, added that in like a protein, vegetables and stuff” (FG6, S5)
• “I realized I wasn't getting enough fruits and I asked my parents to get more fruits” (FG6, S2)

**Decreasing Caloric, Sugar, and Fat Intake.** Another common change that was discussed in focus groups was that some students began reading the nutrition label on their foods and decreasing their consumption of calories, sugars, and fats as a result. Some students admitted to reading the label and determining a food to be unhealthy, but still consuming it because it was what they wanted. In these instances, the behavioral capability was there, but the efficacy to *not* eat the food and thus the behavior of not eating the food was not present. A girl said, “actually it [the class] changed the way I think about it but it doesn't really change what I ate, because once I like something I won't stop liking it unless it turns really disgusting” (FG2, S2). These instances of changing cognitions but not changing, or wanting to change, behavior were limited. Most students talked about the new skill of knowing how to read a nutrition label as something that did change their nutrition behaviors. A series of quotes, taken from different focus groups, exemplify the changes related to nutrition literacy and reading the nutrition label:
  • “I watch all of the calories in like all of my food” (FG1, S1)
• “Well now, whenever I eat something, most of the time I look on the back to see what
the main ingredient is, if it's good or not” (FG5, S4)

• “I learned to eat more healthier and to watch for the nutritional facts and for how
much sugar [is in food]” (FG7, S4)

• “I remember she [the teacher] told me if you're looking at the ingredients and sugar is
one of the first things there, then it's most likely made out of sugar. So I started
looking for that and stayed away from those foods” (FG7, S3)

• “What I look for in a snack is–what draws my attention most is the sugar content. I
hate it when it has over ten grams of sugar. It's just like, ‘Why is that necessary? Why
do you need to put that much sugar in it?’” (FG2, S3)

Overall, the students described acquiring knowledge about how to read a nutrition label,
and some described putting this knowledge to practice in their daily lives to make better nutrition
choices. Learning the skills and acquiring the knowledge, in many cases, did indeed lead to
improved nutrition behaviors. Relatedly, the skill of reading nutrition labels also changed
attitudes toward food. For example, one student (FG4, S4) talked about how he always drank
McDonald’s Shamrock Shakes in March. But, after doing the nutrition label exercise in class
and learning the nutritional value of the shake, he did not get one the year of the study. His
attitude toward what foods were appropriate to eat changed, and his behavior changed.

In discussions about reading nutrition labels, students talked about the amount of sugar
and the types of fats in the foods more often than they talked about looking for calories, protein,
fiber, or other nutrients in the food. In fact, across the discussions with children, “calorie” was
referenced 22 times whereas “sugar” was referenced 35 times and “fat” was referenced 57 times.
This attention paid to sugar and types of fats in food is interesting: The new nutrition label
guidance announced by the FDA (mentioned in Chapter 1) includes “added sugar” as a new label item and removes “calories from fat” as a label item because “research shows the type of fat is more important than the amount” (HealthDay News, 2016, para. 14). Although these nutrition label changes were announced in May 2016, some of the students’ talk in 2014 and 2015 mirrored the priorities of the FDA labeling updates.

In class, the students learned about different types of fat, and which types to avoid. In one discussion, a boy (FG2, S4) referenced fat multiple times, but with inconsistencies. Early in the discussion, he said, when asked about what he learned about healthy eating:

…like trans fat. It's necessary not to eat a lot of fats, because it's unhealthy for you. I still eat a lot of trans fat, like I don't just like, ‘Nope, I'm not having any fats now.’ You know how hard it is to eat something with no fat? It's like a cracker.

Later, when asked if anything learned in class actually changed habits, he said, “Like I said about the fats, the fats changed a lot of things.” When asked, then, if he eats less fat as a result of the class, he replied “No, I eat the same amount of fat. I just don't eat trans. Like, not as much trans fat at least. Like I eat a lot of white meat fat. It's really good for you, so I eat a lot of that.” From the discussion, it’s unclear whether this student was eating a lot of trans fat, a little, or none. Despite what his actual behaviors were, it was clear that he knew trans fat was something he should avoid. During the photo elicitation section of the discussion, when asked if there was something they learned in class that they’d want to share with the obese child eating McDonald’s, this student said, “There's a lot of trans fat at McDonald's.” Again, he was aware that trans fat is unhealthy, and appeared to be cognizant of fat on the food labels, seemingly trying to avoid trans fat while recognizing that completely omitting it from his diet wasn’t realistic.
Substituting Unhealthy Foods for Healthy Foods. One of the strategies for improving diet and increasing fruit and vegetable intake discussed by students was that they learned to replace unhealthy foods with healthy foods, and to make substitutions to improve their diets. This was illustrated in an exchange with a girl during a small focus group discussion (FG5):

Me: Okay. Does anything that you learned in Home and Careers with [teacher] influence what you eat?

S4: Yes.

Me: Yeah, how so, would you say?

S4: Like, replacing. Like, say I brought a bag of chips to lunch, instead of bringing that, bring something more healthy to replace it.

In another group, a girl mentioned this same practice for increasing her intake of healthy foods:

Like, if I’m eating a meal, like, I’ll be like maybe I should have this instead of this because of like, the five food groups, I guess. Like, I’ll be like, oh well I’ll grab grapes instead of cookies because I’m already having, I don’t know, something unhealthy. So, I’ll be like, oh, grapes and chips. (FG1, S3)

This idea of substituting or enhancing foods was something the teacher addressed in class. During a review of nutrition facts on pretzels, she mentioned that pretzels are okay to eat, and a good idea is to eat them with hummus to add nutritional value to the snack. And, the students seemed to learn and embrace these efforts for improving their diets. The students talked about the idea of substitutions or enhancements across the focus group discussions, not only for increasing fruit and vegetable intake, but also for incorporating other food groups. A student shared, “now, when I eat dinner now, I used to have just some pasta and stuff, but now I just try
to balance it all out” (FG4, S4). She later added, “I usually drink milk when I eat dinner now because I didn't know that dairy was part of food plate [MyPlate], now I do.”

Additional changes in cognitions and behaviors were revealed in the focus groups, most of which have been discussed at various points in this paper, such as desires to adopt a vegetarian or even vegan diet. Changes in nutrition attitudes and behaviors occurred as a result of this class. When discussing these personal factors, I refer back to my statement in Chapter 2 where I note that while my study is not designed based on social cognitive theory, it is informed by the theory and how constructs such as self-efficacy (perceived ability to engage in a behavior) and behavioral capability (knowledge and skills to engage in a behavior) were developed and sustained in a specific sociostructural context. How the changed I just described manifested largely relates to these two constructs.

**Improvements in Behavioral Capacity**

I conceive of behavioral capability a precedent to self-efficacy in the “sociocognitive causal model” (Bandura, 2004, p. 145) informing this study, suggesting that our perceived ability to perform a behavior is shaped by our knowledge on how to perform a behavior and skills for doing so. That is, a child may have low self-efficacy for packing a healthy lunch without a command of the knowledge and skills for identifying what foods are healthy foods and an understanding of how to assemble foods into reasonable meals. Nutrition education received in this case study affected children’s behavioral capability through the provision of knowledge and skills for performing positive nutrition behaviors. The focus group discussions with children offered insight into the ways in which nutrition education received in the classroom, in particular, improved their behavioral capability for engaging in positive nutrition behaviors. And, the focus group participants identified behavioral capability, in their own words, as a factor
that determined whether or not they, and their peers, engaged in healthy eating habits. Their discussions support my hypothesis that the behavioral capability construct is a precedent to self-efficacy. In the focus groups, students were shown an image of MyPlate and asked about whether they thought most children ate the food groups depicted in MyPlate, and the reason for their peers eating or not eating in accordance with the recommendations. In response, a girl explained, “I guess if there was more knowledge as to what was healthier” (FG1, S2), then children would improve their eating habits. While the student identified knowledge, specifically, as a factor that contributed to healthy eating among her peers, she also noted, which I’ll be discussing in the context of taste, preferences, and liking, “but, you have to make it look and sound good” (FG1, S2).

**Increased Knowledge.** Behavioral capability, or having the knowledge and skills to perform a behavior, is essential to changing behavior. In a broad sense, children who participated in the Family and Consumer Sciences nutrition education illustrated an increase in nutrition knowledge. While my study was not designed to be a quantitative quasi-experimental design, the teacher did share her own pre- and post-test results with me. The teacher issued a brief test to fall semester students before and after the nutrition education module to assess improvements in nutrition knowledge. Due to time restrictions, these tests were not offered during the spring semester.

The test included 20-open ended questions, provided in Table 6.1. The teacher shared the anonymous scores with me to supplement the discussion on how the nutrition education class affected children. Since the data shared were anonymous, there was no analysis of the results beyond a basic and fundamental look at whether scores improved. No data attributes (e.g.: sex, grade, class attendance, race, etc. associated with the scores) were provided, also limiting my
ability to make additional sense of the data beyond whether scores changed, and self-reported knowledge increased, during the course of the education.

During the fall semester, the pre/post-tests were distributed to 61 students across four periods. The test featured 20 questions, weighted at five points each for a total score out of 100. The average pre-test score for all students was 26%. The average post-test score was 79%. This ranged with students scoring as low as 18% on the pre-test, then 100% on the post-test. A breakdown of the test scores is provided in Table 6.2.

Table 6.1. Nutrition Knowledge Questions from Teacher Administered Pre-Test/Post-Test

<table>
<thead>
<tr>
<th>20 Test Questions</th>
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<tbody>
<tr>
<td>What is a nutrient?</td>
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<tr>
<td>What is a diet?</td>
</tr>
<tr>
<td>Where does digestion begin?</td>
</tr>
<tr>
<td>What is a calorie?</td>
</tr>
<tr>
<td>What fat is considered the worst fat for you, saturated, unsaturated, or trans fats?</td>
</tr>
<tr>
<td>If we eliminated or reduced our intake of _______ drink, it would make our health “better”. Name one.</td>
</tr>
<tr>
<td>How do you calculate calories in a serving?</td>
</tr>
<tr>
<td>What does BMI stand for? And define.</td>
</tr>
<tr>
<td>Vegetables should cover what amount of your plate?</td>
</tr>
<tr>
<td>How many glasses of milk should you drink in one day?</td>
</tr>
</tbody>
</table>

Table 6.1. These are questions from the 20-question pre-test/post-test the Family and Consumer Sciences teacher provided students during the fall semester.
Table 6.2. *Nutrition Knowledge Test Scores: Fall 2014*

<table>
<thead>
<tr>
<th></th>
<th>Period 1</th>
<th>Period 4</th>
<th>Period 6</th>
<th>Period 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre</td>
<td>Post</td>
<td>Pre</td>
<td>Post</td>
<td>Pre</td>
</tr>
<tr>
<td>45%</td>
<td>100%</td>
<td>25%</td>
<td>95%</td>
<td>35%</td>
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<td>51%</td>
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<td>25%</td>
<td>100%</td>
<td>30%</td>
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<td>51%</td>
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<td>30%</td>
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<tr>
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*Table 6.2.* This table illustrates the test scores of students in four Family and Consumer Sciences classrooms that took a pre- and post-test to assess for increases in nutrition knowledge. The test was administered by the teacher, and anonymous results were shared with me.

We can see there was evidence of an increase in self-reported nutrition knowledge as a result of taking this class. *Knowledge* is one component of *behavioral capability*. Therefore, an increase in knowledge sets the precedent for other factors, like self-efficacy. Another indicator of increased knowledge was accessible through the evaluations the teacher asked the students to complete at the end of the class semester. Again, this was completed only during the fall semester, and the teacher provided me with anonymous copies of the student responses. The students were asked to remark on “a) one thing they enjoyed b) one thing they’d like to improve on and c) did the class change you and how.” In response to the third item, students reported a
number of changes, outlined in Table 6.3. Although the questions were about the entire semester (September 2014 – December 2014), many of the responses were specific to the nutrition education module, which was just one portion of what they learned throughout their time in the Family and Consumer Sciences classroom. And, the responses also specifically spoke to students’ perceptions of an increase in knowledge. While some responses related to actual behavior change, the majority were associated with increased knowledge via learning. One student wrote “this class has changed me by having my knowledge expand in nutrition and good health.” Beyond knowledge attainment, another student noted how the class actually contributed to behavior change: “the class, I think, changed everyone’s healthy eating and how to be good to the world.”

<table>
<thead>
<tr>
<th>Summary of Response Categories</th>
<th>Number of Responses</th>
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<tr>
<td>Learned how to eat healthy</td>
<td>9</td>
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<tr>
<td>Changed attitude toward food</td>
<td>1</td>
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<tr>
<td>Improved eating habits</td>
<td>5</td>
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<tr>
<td>Learned the importance of good nutrition</td>
<td>4</td>
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<tr>
<td>Increased cooking skills</td>
<td>11</td>
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<tr>
<td>No change</td>
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Table 6.3. Following the Fall 2014 delivery of nutrition education, the teacher gave students an opportunity to evaluate the module. The categories listed reflect student responses to the question “Did the class change you, and how?”

Given the brief responses provided by the students, there was no way to determine whether a student who learned the importance of good nutrition also learned how to eat healthy, or if she or he also changed their attitude toward food to actually improve their eating habits. Nonetheless, 30 students explicitly included reference to nutrition education in their class evaluation and reported some increase in nutrition knowledge, compared to the 10 students who
reported no change either by literally writing “it didn’t” in response to the question of whether the class changed them or leaving the response area blank for this evaluation item. In addition to knowledge, behavioral capability includes the skills to engage in a behavior, which were also influenced by the class, largely in the form of increased nutrition literacy.

**Nutrition Literacy.** According to Zoellner, Connel, Bounds, Crook, and Yadrick (2009), “nutrition literacy may be defined as the degree to which people have the capacity to obtain, process, and understand basic nutrition information” (p. 1). Nutrition literacy includes skills such as the ability to identify food groups, the ability to read and understand nutrition labels, and an understanding of portion sizes, for example. Understanding a nutrition label is essential to nutrition literacy, and is a skill incorporated into the Family and Consumer Sciences classroom.

**Reading a Nutrition Label.** In Family and Consumer Sciences, students learned how to read nutrition labels, which is a necessary part of selecting healthy foods in today’s food culture of highly processed, unhealthful foods. As mentioned in Chapter 1, the health halo effect can cause people to consume unhealthy foods if the marketing of the food item makes the choice appear healthy. For example, people might eat more ice cream if the ice cream is labeled “low-fat.” However, that low-fat ice cream might have more calories than regular ice cream, it may also have aspartame or other unhealthy artificial sweeteners, or a high sugar content in general. A boy in the focus groups may have been referring to this concept, unknowingly, when he said, “The bad things overtake the good because there's way more of the bad in the food than there is good” (FG7, S2). Or, in another focus group discussion (FG2), the following exchange, while brief, showed that the children learned that one positive marker on a nutrition label or food packaging does not inherently mean that the food is a healthy choice:
Me: Based on what you learned with [teacher], do you think that stuff is healthy because it says whole grain?

S3: No.

S2: No.

S4: It's not always healthy.

Elaborating on this phenomenon of health halos, Chandon and Wasink (2007) wrote:

Four studies show that people are more likely to underestimate the caloric content of main dishes and to choose higher-calorie side dishes, drinks, or desserts when fast-food restaurants claim to be healthy (e.g., Subway) compared to when they do not (e.g., McDonald’s). We also find that the effect of these health halos can be eliminated by simply asking people to consider whether the opposite of such health claims may be true. These studies help explain why the success of fast-food restaurants serving lower-calorie foods has not led to the expected reduction in total calorie intake and in obesity rates. (p. 301)

Having an understanding of how to read a food label and what that label means is necessary for avoiding the health halo effect and making healthy food choices. For example, knowing that the first item listed in the ingredient list is the item the food product contains the most of can help someone determine if a food is a healthy choice.

In a discussion, a girl explained how she used this newly acquired label-reading skill in her day-to-day life, stating “now, whenever I eat something, most of the time I look on the back to see what the main ingredient is, if it's good or not” (FG5, S4). In this instance, to validate the student’s understanding of the ingredient list, I followed up on this statement:
Me: And what did you learn from [teacher] about the main ingredient? The first one listed?

S4: The first one is the ingredient that there's the most in there.

Her ability to address my follow up question appears to indicate that she not only learned that checking nutrition labels is important, but that she comprehends the ingredient listing on the label, illustrating nutrition literacy through participation in the class. And, this learning was not isolated to this child. In another group, a girl said, “I remember she [the teacher] told me if you're looking at the ingredients and sugar is one of the first things there, then it's most likely made out of sugar” (FG7, S3). And, learning this information increased behavioral capability for healthy eating, giving students the skills needed for making more healthful decisions. This girl (FG7, S3) also shared with the group:

I learned how to read a nutrition facts label on all the foods, because before I wasn't really sure what I was looking for and I didn't know bad from good. The saturated fat and all that stuff she taught us, I didn't know what they were before and I didn't think they were bad. So I pretty much just ate anything not really paying attention.

Not knowing good from bad takes more than just knowing how to read a nutrition label, but also understanding the meaning of the label. A boy explained:

I always thought that calories were something bad, but then she taught us that it wasn't. It was just the amount of energy inside your food. Then all the other things from protein from meat and then calcium from dairy and all that. (FG7, S2)

And, students seemed to appreciate learning these nutrition literacy skills. A girl referred to this knowledge as something that helped her: “Her class definitely helped because I never really
looked at the nutrition facts. And it was her class that actually taught us how to read the nutrition facts” (FG6, S3).

**Understanding Portion Sizes.** In addition to reading the nutrition label and understanding nutrients, another aspect of nutrition literacy entails knowledge of portion control. In class, children were taught basic information on portion sizes in class. Perhaps they read a nutrition label successfully, and decipher the nutritional content for one serving. The student then has to know what constitutes one serving in order to improve their eating habits. And, if a serving of ice cream is 334 grams, it requires a different skillset to be able to translate the grams into the amount that ought to be consumed. The teacher taught the students the skills for determining portion sizes, using the handout below (Figure 6.2). Students were tasked with going through magazines and cutting out foods and food groups, pasting the shapes into the allotted serving sizes. Through this activity, rather than try to conceive of 334 grams of ice cream, the children learned that a serving of ice cream is equivalent to the size of a golf ball. Again, this activity seemed to resonate with students, and was recalled without a prompt during a focus group. During photo elicitation, when students were shown the image of the overweight child eating at McDonald’s, a girl said, “Aren't you supposed to eat meat that's the size of your palm or something?” (FG6, S3) when referring to the size of the burger being consumed by the boy in the photo. This is indeed an accurate representation of portion sizes for meat; the students were taught in class that a serving of meat should be the size of a deck of cards or the size of their palms.
Connecting Behavioral Capacity with Self-Efficacy. The time the students spent in the cooking lab offered additional opportunities for increasing students’ behavioral capability, providing skills and knowledge. It also provided opportunities for increasing student’s self-efficacy, or perceptions of one’s ability to engage in a behavior. When asked about what was learned in class, a girl said:

The one I think really helped and I'll remember, is when we were in the food lab, it was like a hands-on activity, and we learned about nutrients and cooking healthy dishes, we
also learned about being clean and having a good kitchen and good hygiene and stuff like that. (FG3, S4)

The hands-on activities in the food lab were cited by a number of students as being instances where they acquired new knowledge and learned new skills for healthy eating, increasing behavioral capability for positive nutrition behaviors. Not only did the food lab prove to increase behavioral capability by increasing skills in the kitchen and with food preparation, it also supported self-efficacy through mastery experience—it gave children the opportunity to successfully create healthy foods from scratch with their classmates, and with very little guidance from the teacher other than a printed recipe and her availability for questions. Prior to attending food lab sessions, the students got to practice and observe ingredient measuring with the teacher in their primary classroom, then applied these skills with their peers across the hall in the nutrition lab. The practice in their primary classroom lent itself to social modeling and observational learning, consistent with social cognitive theory, and the application of the skills in the food lab further contribute to self-efficacy through the development of mastery experience.

A girl shared:

About the cooking lab, I remember when we were cooking and we had the instructions. I was cooking before the food lab but not as much - I'd make like small things that were easy to make. And we were reading the ingredients and I was manager, because two people in my group were absent, so it was kind of like a rushed situation because everybody had more people to help. So it wasn't as-- like you have to get everything done. And I read the ingredients wrong, and I added too much, I think it was cinnamon, but it was like, for brown sugar. So I put in a lot of cinnamon. I think it was three or four tablespoons, but it was only supposed to be one. (FG7, S3)
This student’s role as manager relates back to Chapter 4 discussion about the teacher empowering the students. This girl had an opportunity to take the lead with her classmates and supervise the recipe for that class day. The experience in the cooking lab expanded on her previous and limited food preparation experience, broadening her efforts to include foods that aren’t particularly easy to make. Although she used too much of a certain ingredient, misreading the recipe, this mastery experience contributes to self-efficacy for cooking, and also for being able to correct any errors in cooking. She later noted, concluding the story of this experience:

I poured in too much cinnamon, and I looked over and noticed that I was wrong so I kind of had to scoop it out, and replace the grain that I had to scoop out, and put it back in, so I fixed it. (FG7, S3)

This ability to recognize and fix her own mistake was empowering, and contributed to increased self-efficacy through the development of behavioral capability for cooking. That is, her perceived ability to engage in healthy cooking behaviors (self-efficacy) was increased as a result of an increase in skills in and knowledge of the kitchen (behavioral capability).

Part of the food lab experience included preparation of a shopping list for the recipe the teacher provided. For example, if the macaroni and cheese was to be made in class on Tuesday, the students used the recipe for the dish to make a shopping list on Monday, taking into consideration the bulk items already available in the food lab, e.g.: not adding milk to the list if the refrigerator already had milk in it. This shopping list creation was yet another skill, increasing behavioral capability. And, the act of shopping for groceries connected to a lesson the teacher offered on shopping the perimeter of the grocery store. A girl recalled “[The teacher] says they always put the healthy stuff up top [on the shelf] and they put the other stuff –” (FG1, S3). She was interrupted by a girl who agreed, and added, “sugary stuff on the bottom [shelf]”
Having knowledge of the layout of the grocery store is significant. In one group, all four girls went grocery shopping with their parents. In another, all three participants, two boys and one girl, went shopping with their parents. In a smaller dyad, both the girl and boy reported shopping with their parents. In a larger discussion with five students, three participants (two girls and one boy) said that they shopped with their parents, while two of them did not indicate whether they did or did not. Regardless of whether the students shopped with their parents or not, the majority of focus group participants report that their parents bought them the foods they wanted from the store. Therefore, having the knowledge of the grocery store layout helped them shop for foods with their parents, or helped them to educate their parents on shopping skills when they weren’t at the store with them.

**Increased Self-Efficacy**

The focus group discussions not only indicated that the nutrition education in the Family and Consumer Sciences classroom improved behavioral capability for healthy eating, but the students also communicated about the ways in which the education seemingly improved their self-efficacy for health nutrition behaviors. As described in Chapter 2, self-efficacy is one of the more popular components of social cognitive theory. Once again, self-efficacy is one’s perceived ability to enact a behavior. Or, more specifically, Bandura (1997) notes:

> People guide their lives by their beliefs of personal efficacy. *Perceived self-efficacy refers to beliefs in one’s capabilities to organize and execute the courses of action required to produce given attainments.* (p. 3, italics in original)

Based on the definition offered, it is clear to see why self-efficacy has been used extensively in health communication and public health research, exploring adherence to behaviors like chronic disease self-management and self-care, physical activity behaviors, condom use, and, of course,
nutrition behaviors, among others. My study further highlights the relevance of self-efficacy in shaping nutrition behaviors, and analysis of the focus groups indicates that the nutrition education class addressed each of the sources of self-efficacy identified by Bandura (1997).

The sources of self-efficacy are:

- *enactive mastery experience*, or experience successfully performing the behavior;
- *vicarious experience*, or experience modeled by others (this has a greater influence when there is perceived similarity with the model; and television provides modeling);
- *verbal persuasion*, or “persuasory feedback” (Bandura, 1997, p. 102); and
- *physiological and affective states*, or the physical or emotional feelings associated with performing the behavior. (Bandura, 1997)

Not only were all of these sources prevalent in the focus group discussions, one might argue that they would be relevant and obvious components of the class design.

**Enactive Mastery Experience.** Based on the time the students spent in the food lab, the enactive mastery experience discussed in the focus groups seemed to directly relate to physiological and affective states related to healthy eating, in most instances. More specifically, the state most referenced was the experience of the taste of the foods. For example, the student might describe the cooking experience as being successful (mastery experience), then immediately equate the overall cooking experience with the outcome of the *taste* of the food for an evaluation of the whole experience. For example, from FG2:

Me: What do you remember most from the activities and the lessons that you had in class?

S4: The cooking…but the macaroni and cheese was funky because she put pumpkin in it.
S2: We got squash but it actually tasted pretty good.

S4: It tasted pretty good but it just seemed weird.

S3: Well, when I did it, it was actually really fun to cook healthy, I love cooking healthy. Chopping all the vegetables and stuff.

In this exchange, the students recalled lessons and activities from their class experience, and it was noted that cooking in the food lab was a memorable experience. Immediately after the reference to cooking and hands on experience, the taste of the food was mentioned, which prompted additional discussion on taste. Again, it seemed as though the mastery experience was inextricably linked with physiological and affective states as the children consistently talked about the tastes of the foods they prepared in the food lab, rather than restricting their talk to the experience of the cooking processes.

**Taste and Appearance of Food.** Although the nutrition education offered to the children appeared to influence nutrition attitudes and behaviors through improvements in behavioral capability and increases in self-efficacy, there were numerous instances where the taste and appearance of food were discussed. The nature of the conversations seemed to indicate that, despite behavioral capability, self-efficacy, or any other social cognitive theory construct (e.g.: outcome expectations, facilitators, impediments, goals), taste and appearance (and subsequently preference/liking) were essential to whether the child actually engaged in a healthy nutrition behavior. In fact, “look,” including “looking,” “looked,” and “looks,” was used 138 times in the conversations with children. “Taste” was used 80 times by the students in our discussions and “favorite” was used 44 times. “Like” was uttered 990 times, but due to the nature of the transcripts, namely, verbatim transcription, this count is inconsequential considering the general style of talk among seventh and eighth graders. However, in context, it was clear that the
children in this study ate what they liked. For example, one student simply stated, “I don’t really like most vegetables” (FG1, S2). In another group, a girl echoed this, sharing, “I hate vegetables.” In this instance, others in the group tried to explain that salads taste good with cheese and Italian dressing on them, perhaps trying to persuade her that she doesn’t really hate vegetables. She conceded and softened her disdain noting, “I just don't like vegetables” and asked to move on in the conversation away from that particular topic (FG3, S5).

During photo elicitation, a picture of a breakfast sandwich from McDonald’s was displayed on the projector. In one group, I asked the students if they would eat that item and two students immediately replied “no.” One elaborated “really doesn't look good,” to support his response (FG4, S2). The look or appearance of the food mattered. I followed up and asked if the students would rather eat the sandwich advertised, or the breakfast burrito they made in the food lab in class. A boy shared that he would eat the advertised sandwich, contrary to his peers, “because it looks more better and tastier than the breakfast burrito” (FG4, S4). Appearance and taste were referenced, as a classmate tried to persuade him to change his mind: “The breakfast burrito was good dude. That was good” (FG4, S2).

These instances of liking foods versus hating foods were not isolated in any one focus group discussion. And, the communication on food preference was not limited to conversations about the students themselves, but the students also believed liking plays a role in the food selections of their peers. In a discussion about why middle schoolers do not follow the MyPlate guidelines, a student suggested “maybe they just like junk food” (FG1, S1). When talking about their peers and the ritual of birthday celebrations in school, a student shared her observations:

Some kids come in with cupcakes or something like a treat because of someone's birthday, and they [adults, teachers] usually pass it up. I think adults, when they’re
choosing what to eat, I think they think about it more, and they have a more wise
decision. Where kids they’re just like, ‘oh this tastes good. Let me have it.’ So they don't
really think about it.  (FG7, S4)

This student believed that her peers were not thinking about whether a food choice was a
healthy one, but instead simply considering the taste of the food. In a one-on-one interview (I1)
with a student, this sentiment was echoed. The child interviews (n=4) offered data that was
consistent with the data analyzed from the focus group discussions. In this instance, the student
offered a solution for getting kids to eat healthier foods and to avoid junk food:

Me:  Do you think most kids eat like MyPlate?
S1:  No.
Me:  Why do you think it is that they don’t?
S1:  ‘Cause most kids today just eat a whole bunch of junk food. Soda and chips.
Me:  And why do you think they do that?
S1:  ‘Cause it taste good.
Me:  Ok. Alright. What do you think would make it easier for kids your age to eat the
way MyPlate says we should eat?
S1:  Well just make the junk food more expensive and then you’ll buy it less.

For this student, taste is a significant factor in why children eat the way they do, and
perhaps the only way to prevent children from consuming so much “junk food” is to have the
junk food cost more than healthy food. This argument has also been made by researchers and
policymakers. For example, it is the partial basis for policies like “fat taxes” that place a tax on
unhealthy foods and beverages, like soda. And, researchers have substantiated such policies with
findings that support the hypothesis that an increase in junk food costs will decrease
consumption of those foods. For example, a group of researchers found that a 10% increase in the price of soda was linked to a decrease in soda consumption that ranged anywhere from one to 24% (Eyles, Mhurchu, Nghiem, & Blakely, 2012). In another study, researchers supported this notion that increasing the cost of junk food would decrease consumption. They reported:

an increase in the price of soda and pizza is associated with a significant decrease in daily energy intake from these foods. Price increases in soda and pizza were also associated with significant declines in overall daily energy intake, lower weight…

(Duffey et al., 2010, p. 424)

Food economics is largely discussed in the field as a possible vehicle for improving nutrition behaviors. And, justly so considering the fact that money matters, as I will discuss later in this chapter. More immediately, for children, it is not only the taste of food that matters, but appearance is also an importance factor influencing their nutrition behaviors.

A boy claimed, “most people normally just check if it [food] looks good. Like, if that looked like all green and like, nasty, people wouldn't eat it, even if it still tasted the same” (FG4, S4). Despite what the children learned about nutrition through participation in Family and Consumer Sciences, and the ways in which they communicated about improvements in behavioral capability and increases in self-efficacy, the look and taste of food took precedent when making nutrition decisions.

The influence of appearance is consistent with a large body of research on children’s nutrition behaviors, including a 2013 study that included more than 2,600 seventh grade students. In this cross-sectional study, which assessed the factors associated with fruit and vegetable consumption in school, the appearance of the fruit, or “visual appeal,” was found to have a positive association with students’ consumption of the fruit (Gosliner, 2014). While this
particular cross-sectional study did not assess for the influence of taste, there is also a significant amount of research on this topic, such as the work of Neumark-Sztainer et al. (1999) that used focus groups (including discussions with 75 seventh graders) to determine the various influences on the nutrition behaviors of adolescents and found both appearance and taste were discussed most often and were among the most significant influences. In their study of age or gender differences in food preferences among children, Cooke and Wardle (2005) found that taste mattered equally across groups. The authors noted in their discussion:

Across ages and genders, children rate fatty & sugary foods very highly and, with a food industry all too eager to produce foods that appeal to their tastes, it is perhaps not surprising that we are facing an obesity epidemic. A developmental decrease in the number of foods liked may further counteract efforts to establish healthier diets in adolescents. (p. 745)

Interestingly, in my case study, the appearance of foods was not explicitly addressed by the teacher in the classroom. That is, the appearance of foods was not necessarily incorporated into her lesson plans. She did spend time, though, encouraging children to be open to new food tastes. The taste of food is extremely important to children, and those tastes are developed at young ages. While taste and appearance are powerful influences, Drewnowski (1997) contended:

Food preferences and food choices of populations are further linked to attitudinal, social, and—probably most important—economic variables such as income. Nutrition education and intervention strategies aimed at improving population diets ought to consider sensory pleasure response to foods, in addition to a wide range of demographic and sociocultural variables. (p. 237)
The role of attitudinal variables is quite interesting. Students’ “feelings” about foods matter. This is epitomized by a discussion about gluten-free foods: A girl (FG2, S2) explained how she did not like a brownie, and her mother told her that the brownie was gluten-free. We do not know for sure whether the mom told her about the brownie being gluten-free before or after the brownie was tasted. Nonetheless, a boy responded to this:

But if they didn't say they were gluten-free, that's more like-- if they said they were gluten-free, your mind makes them taste funky. If someone just, say, gives you 10 brownies. You eat all 10 over a duration of time, and they said, "The third one you ate, and the fourth one you ate were gluten-free, taste any difference?" And you wouldn't taste anything different. But if you ate one and it said, "This is gluten-free," and then you ate one, you'll taste the difference. (FG2, S4)

Attitude toward a food product, ingredient, or lack of ingredient, impacts perceptions of taste. It is for the precise reason Drewnowski (1997) described, namely the attitudinal, social, and economic factors that influence food choices, that the ecological approach to social cognitive theory in this study helped make sense of the various influences of children’s nutrition behaviors. It also lends itself to validating my classroom observations, as they offered me the opportunity to see how the teacher attempted to address attitude, social factors, and even economics in influencing children’s nutrition behaviors. Addressing these factors can help to undermine what might be a taste for unhealthy options. For example, in the classroom, the teacher attempted to challenge these attitudes with healthy recipes that included unexpected ingredients for the children, like butternut squash in macaroni and cheese. Though, this was not entirely successful: In period four during the fall semester, students were hesitant to try the macaroni and cheese because of the addition of the squash. Not only was the squash a concern for them, there was
confusion about why it was a frozen cube. Yet, in a focus group discussion (FG2), the following exchange occurred in reference to this recipe:

S2: We got squash but it actually tasted pretty good.

S4: It tasted pretty good but it just seemed weird.

Although the boy in this discussion describes his perception of this ingredient as “weird,” both he and a girl in the group thought the dish tasted good, to their surprise. Being able to see this meal preparation and the class reactions to it, as well as talk to the students about their classroom experiences during focus groups, helped to make sense of these various factors that influence food choices, like attitude. As discussed, two of the ways the Family and Consumer Sciences class affected attitude (and behavior) was through promotion of behavioral capability and self-efficacy for healthy eating. These mastery experiences in the cooking lab boosted self-efficacy for healthy eating by allowing the children to have a successful cooking experience, preparing a healthy meal that also tasted good, despite their initial reactions to the ingredients. The students’ self-efficacy was also increased through vicarious experiences in the classroom.

Vicarious Experience. Another source of self-efficacy is vicarious experience, or social modeling. The Family and Consumer Sciences nutrition education offered this contributor to self-efficacy, as well. Chapter 5 discussed the ways in which the classroom was observed as a space where vicarious experiences were shared in the social environment. The students discussed these experiences in the focus group setting, too. In addition to vicarious experiences in the classroom, the students discussed this source of self-efficacy promotion in other life areas. For some students, the classroom reinforced their vicarious experiences outside of the school.

Outcome Expectations. The sociostructural model of social cognitive theory helping to guide analysis of data in this study includes outcome expectations, or the expected outcomes
from performing or not performing a behavior. This construct very much relates to vicarious experiences as the students developed expectations of possible outcomes that may occur based on their decisions to, or not to, engage in certain nutrition behaviors based on the modeling and examples of nutrition behaviors the students saw in their social environments. An example of this is a girl who shared her observations of her father’s diet:

My dad’s got like really bad blood pressure and everything from southern food, as he calls it because he’s from the south. And, literally, when you go down there, he used to go to Denny’s a lot and stuff and they have the chicken and biscuits with the gravy on top, and it’s bad for you. (FG1, S1)

In this instance, the experience of observing her father’s diet led the girl to relate eating unhealthy food with health risks, like “bad” blood pressure. As discussed in Chapter 5, the teacher provided personal stories in the classroom, which included anecdotes about her own father having a stroke and heart attack, and relating these undesirable health outcomes to her father’s diet, which largely consisted of fast food and foods that were high in fat. In the classroom, the students would then share their own stories of family members and their diets and health issues—discussion that occurred in the focus groups as well. The observation of these family members, and the stories told by the teacher about her father, set the stage for the negative outcomes the students came to expect from unhealthy eating.

Vicarious experiences were also presented through the use of media in the classroom, where students watched a number of movies and documentaries throughout the year. Again, these vicarious experiences shaped outcome expectations for certain nutrition behaviors. A boy discussed this:
We watched the video where a kid drank a lot of a whole liter of soda to get energy, but then it affected him because he got less energy from it. Because the pancreas, I think it was, sent some kind of juice to take the sugars out and it took too much out, so it takes time to develop the sugars back to get your energy. (FG7, S2)

In this example, through the observation of a video, the boy learned that the sugar in soda can create a spike in energy levels (increases in insulin levels produced by the pancreas), and the person drinking it can then experience a sugar crash (a drop in glucose levels). Through this vicarious experience, he learned what to expect after consuming soda or other highly sweetened products, learning that these items don’t contribute to prolonged energy but instead create immediate energy boosts followed by unhealthy crashes in energy levels.

**Verbal Persuasion.** It is logical to say that the entire nutrition education segment of the Family and Consumer Sciences class was an attempt at verbal persuasion as the teacher shared information and skills with the children with the goal of improving their nutrition behaviors. Interpersonal communication was an essential part of the nutrition education module. In the interview with the teacher, she noted that her intentions for the nutrition education module were to change nutrition attitudes and behaviors, increase nutrition knowledge, and to provide children with the skills and tools needed for healthy eating. With the education designed to have this impact, every class lesson was an instance of verbal persuasion and an attempt to increase the children’s self-efficacy for engaging in healthy nutrition behaviors.

The students who participated in this class seemed persuaded by the teacher, rather than reject the suggestions of her authority. In his foreword, Gary A. Olson speaks to the complexities of power arrangements and authority in the classroom:
Scholars in literacy studies and in rhetoric and composition have recognized that traditional power arrangements in the classroom are counterproductive and that learning is much more likely to occur when students are active participants in their own education – that is, when a significant portion of the teacher’s ‘authority’ is transferred to the students themselves. (Gale, 1996, p. vii)

As discussed in Chapter 5, the teacher in this classroom, through her lessons and interactions, empowered the students in the class to be teachers themselves. Perhaps through this empowerment, the students did not conceive of the teacher’s verbal persuasion as oppressive, but instead as a caring influence in their lives.

In a focus group discussion, I asked a student if he would buy a particular item off of a McDonald’s menu. Her response: “I wouldn’t want to buy it because, she [the teacher] told us that McDonald’s food is the worst” (FG1, S2). A girl in the group confirmed this sentiment, adding, “It’s all processed and everything” (FG1, S1). In this talk, it seemed as though the verbal persuasion to encourage the children to eat healthy, and discourage them from eating fast food, was enough for this boy to say he would not want to buy an item off a McDonald’s menu. The teacher told the students that the food is processed and unhealthful, and they seemed to hear that message and be influenced by it. Cialdini (1993) posited that there are six psychological principles that can produce compliance, or otherwise be used successfully to influence people. Authority is one of those six (others include: consistency, reciprocation, social proof, liking, and scarcity). Although I can connect these principles to constructs of social cognitive theory, my goal here is to point out that authority can be a tool for persuasion, and is most influential when coupled with trustworthiness. Through a combination of authority – which the teacher shared with the students, empowering them through various activities and lessons – and trustworthiness,
the teacher established herself as a knowledgeable person of influence who was able to increase self-efficacy for healthy eating and promote attitude and behavior changes through verbal persuasion.

Verbal Persuasion from Other Sources. While the nutrition education class affected children’s nutrition attitudes and behaviors through self-efficacy enhancement via verbal persuasion, the students talked about how they encountered verbal persuasion in other areas of their lives, too. The sources of these additional instances of verbal persuasion came from parents, families, and peers. All of which are logical sources of influence, as students spend the majority of their days at school with peers and at home with their parents and families.

In talking about their families, the influence was generally discussed as a positive one, as the parents were looking out for the child’s best interest. For example, a girl shared, “my mom always says if there's MSG in it don't eat it, and I'm like, ‘Why?’ She's like, ‘Cause that's what they used to fatten up the rats’” (FG2, S3). Again, with the persuasive message to avoid MSG comes the warning (outcome expectation formation, from social cognitive theory) that consumption of MSG will lead to weight gain. The influence was not limited to parents, but included siblings, too. A girl reported, “I put salt on McDonald's French fries. My brother will sit there like, ‘You're going to get high blood pressure’” (FG2, S2). When engaging in an unhealthy behavior, the brother communicates the outcome (high blood pressure) of excess sodium consumption in an effort to get his sister to avoid the behavior. Of note, this brother was in the same age group as this focus group participant, he also took Family and Consumer Sciences, and also participated in a separate focus group discussion. That is, it was not an older, more experienced brother, but someone with similar knowledge and experience.

The students talked about their classmates also attempting to persuade them and influence
their nutrition behaviors, too. While verbal persuasion from families appeared to be attempts at shaping outcome expectations, e.g.: informing the child of the possible negative consequences from eating foods, persuasion from peers was simply based on whether the act of eating a food product was healthy or not. So, while a mom might tell her son not to eat something because it could increase his risks of heart disease later in a life, a friend would tell that boy not to eat something because it is not healthy. A girl recalled:

When I was in this class, I was eating—I used to buy stuff in the vending machine when I was really hungry. And either they have the whole grain—those rice bars or whatever they're called - I don't know what they're called. I was eating it, but somebody's like, "No, you can't eat that." I was like, "Why? It says it's whole grain." But it's because they still have a lot of sugars in them and whatever that sticky stuff is. But there's still a lot of unhealthy stuff in it. (FG2, S2)

In this anecdote, the classmate was not using outcome expectations to influence the participant not to eat the food item, but referred to the concept of the health halo and informed the participant that just because the snack says “whole grain” on the label does not mean that it is a healthy option, and that it still has a high sugar content. I believe the student was referring to Kellogg’s® Rice Krispies Treats® made with whole grain, and the “sticky stuff” referenced would be the marshmallows. According to the Alliance for a Healthier Generation (2016) website, “this product meets Smart Snack regulations and can help you meet the criteria for the Healthy Schools Program” (para. 1). However, this item was not in the vending machine the day I took a photo of the contents (Recall Figure 4.1). The classmate that referred to the deceptive marketing of the snack (halo effect) was right: The Kellogg’s® Rice Krispies Treats® made with whole grain designed to meet USDA guidelines for school includes has a second ingredient,
corn syrup; third, fructose; fifth, sugar; sixth, corn syrup solids. Regardless of the “whole grain” label, this is indeed a product the teacher would advise the students to refrain from eating. In fact, in at least three classes she explicitly told the students not to consume corn syrup. While the peer in this example was not speaking to outcome expectations, specifically, the verbal persuasion to encourage the focus group participant not to consume the snack was based on knowledge consistent with the teachings of the Family and Consumer Sciences teacher. This was seemingly effective, as the participant appeared to recognize that the product still had “a lot of unhealthy stuff in it,” despite the whole grain label.

The stories of classmates trying to persuade their peers to eat healthier, or at least not eat unhealthy foods, were relatively prominent. In one discussion, a girl said how she eats “Oreos, Doritos, and chocolate chip cookies” and another girl in the group immediately responded “everyone yelled at you this morning” (FG3, S2), and the conversation went into discussion about how the food brought into the classroom should be healthy, and this student clearly wasn’t making a healthy nutrition decision. “Everyone yelled” at her evolved into conversation about how her classmates told her what she was eating was unhealthy and not allowed in the classroom. As I noted previously, as with most of the instances of verbal persuasion from peers, the classmates simply told her the food was unhealthy and yelled at her. They did not present possible outcomes from eating the food (presenting outcome expectations like families seem to do).

**Physiological and Affective States.** The final sources of self-efficacy, also influenced by participation in the nutrition education class, are physiological and affective states, or the way engaging, or not engaging, in a behavior makes people feel, physically and emotionally. The class elicited this in the students and, once again, there was a large reliance on outcome
expectations. When physiological and affective states were referenced, it was often in the context of how children would hypothetically feel (physically or emotionally) if they engaged in a certain nutrition behavior—shaping outcome expectations and connecting those expectations with feelings. For example, recalling the soda/sugar crash example: If you drink sugar sweetened beverages, you will get an increase in energy, then crash. This offers an outcome expectation related to particular physiological and affective states based on performing a behavior. In addition to these possible, future physiological or affective states related to outcome expectations, the children discussed how their physiological and affective states were actually impacted by their current or past nutrition behaviors.

The discussion of physiological and affective states related to existing nutrition behaviors (versus hypothetical physical or emotional feelings that could arise as outcomes of engaging in a nutrition behavior) was largely led by student athletes. As discussed in Chapter 5, athletes seemed to get extra attention in the school, as far as supporting proper diet goes, as they received nutrition information in class, in addition to support from coaches and presumably their families in order to eat well for performance. While I did not go into detail with athletes about the role of their families as additional influences, research indicates that “Most athletes are likely to look to their parents for nutrition information and guidance, but also rely on coaches and trainers” (Cotugna, Vickery, & McBee, 2005, p. 326). For these athletes, there was a heightened sensitivity to be mindful of their physical state because they relied on feeling good, physically, to perform well in their sport. In talking about increasing fruit and vegetable intake as a result of taking Family and Consumer Sciences, a boy who belonged to the wrestling, soccer, baseball, and basketball teams, said:
It's just that, that food [fruits and vegetables] is actually good for you there in sports, and that's what influenced me to start eating that. After that I've started eating it, I've been noticing I've been able to, I guess move better or something like that. I don't get as tired as much anymore. So, ever since I've been eating healthier foods like that. I've been fine.

(FG4, S2)

He talked about how improving his diet impacted him, physically. As a result of experiencing an improved *physiological state*, he developed increased self-efficacy for incorporating more fruits and vegetables into his diet to continue experiencing those positive physical outcomes.

In some instances, given the developmental stage of the students, they seemed to be referring to physiological and affective states without having the command over language to truly describe their feelings in detail. For example, a girl in a group discussion talked about the lessons where the teacher revealed the workings of the meat industry to the students. Not only did the teacher talk about this, but she showed a video that includes details about Big Food, including factory farms, in class. The girl said, “She told us about it, and I’m just like ‘hey, this is not cool’” (FG1, S2). While “this is not cool” was not explicitly a reflection of any particular emotional state, the girl seemed to be saying that learning about the source of meat products she consumes, and possible negative health effects from meat (e.g. hormones used at factory farms), did not make her feel good (negative affective state) and decreased her desire to consume meat (she later talked about her interest in becoming vegetarian). This affective state could be a sympathetic one, not wishing harm on animals and the beginning of a cruelty-free approach to food. Or, it could be more intrinsic, and relate to her own emotions and feelings about consuming harmful products, like hormones, when consuming meat. She does not go into detail, but her statement is still an indication that the class had an impact on this source of self-efficacy.
Even to go from “this is not cool” to “I’ve considered becoming a vegetarian” shows a developing sense of self-efficacy for taking control of and changing eating habits. Similarly, another girl said, in regards what she learned about meat (she referred to it as “the animal thing”):

I have honestly cut down a lot a lot than what I used to be eating. I mean, like, videos and reading about like the animal thing. Like, I don’t really eat like, like I’ll eat like chicken and turkey, like, but I won’t–and like a hamburger once in a while–but I really don’t like it anymore. I just, I don’t know. I don’t really eat any other meat besides those two anymore. (FG1, S3)

Again, the connection between what was learned and impact on emotional state is not explicit, but it was implicit in the conversation. As previously discussed, taste and appearance play a large role in children’s food consumption, and children eat food they enjoy. This enjoyment is an emotional or affective state. Learning about the potential hazards of some foods impacted this enjoyment. The girl considering vegetarianism said, “I’ve never looked at it the same, when I’m biting into a hot dog, it’s just not enjoyable anymore” (FG1, S2). Through the education received in the classroom, physical and emotional states related to nutrition behaviors were influenced, even if children lacked the vocabulary for articulating it. Ultimately, the nutrition education received in the classroom changed the way a lot of the students who participated in the class think about food.

While the nutrition education received influenced the majority of students’ attitudes, behavior change was not always a guaranteed result–even when there were clear increases in behavioral capability, improved self-efficacy, and positive attitude toward healthy eating. In the focus groups, the students identified a number of barriers, or impediments, to improving their
nutrition behaviors. In addition to allegiance to certain tastes and appearances, a number of factors, mostly socioeconomic, were discussed as deterrents to healthy eating, too.

**Barriers to Healthy Eating, Despite Behavioral Capacity, Self-Efficacy, and Cognitions**

The social ecological approach to this study suggested that there were numerous layers of influence that impacted children’s nutrition attitudes and behaviors. And, the conversations of students who participated in focus groups supported this. Despite the improvements in behavioral capability, self-efficacy, and healthy eating-related cognitions experienced as a result of their participation in nutrition education in Family and Consumer Sciences, students, often without probing, discussed a number of factors that prevented them and their peers from eating in the ways they knew they should. While taste, appearance, and preference were discussed previously (intrapersonal factors), students also shed light on larger environmental factors that served as barriers to healthy eating. They discussed the influences of their physical environments outside of the school, e.g.: their neighborhoods, and of macro-level factors, e.g.: economic systems, and the ways in which they served as impediments to healthy eating. It is not surprising that these impediments could undermine the positive influences of nutrition education: Viswanath and Bond (2007) posited that the “effects of communication are mediated by the impact of social determinants on health outcomes” (p. S21). Among the various mediators between communication and health outcomes discussed by Viswanath and Bond are place and socioeconomic status, both of which were identified by the students as impediments to healthy eating.

**The Role of Place.** A recurring phrase in population health at the moment is “your zip code may be more important than your genetic code.” While I do not know the origination of this hypothesis, I most recently heard it uttered by Dr. Anthony Iton (2016) at Population Health
Summit 2016 in San Diego. Essentially, attention is being paid to the social determinants of health, largely introduced by the World Health Organization (2003, 2008) and popularized by Viswanath and later by Healthy People 2020, and the ways in which place matters. Healthy People 2020 defined social determinants of health as “conditions in the environments in which people are born, live, learn, work, play, worship, and age that affect a wide range of health, functioning, and quality-of-life outcomes and risks” (HHS, 2016, para. 4). More specifically, Healthy People 2020 established five key determinants of health (Figure 6.4): a) health and health care, b) social and community context, c) education, d) economic stability, and e) neighborhood and built environment (HHS, 2016).

**Figure 6.3. Social Determinants of Health**

*Figure 6.3. This image is taken from the Healthy People 2020 Social Determinants of Health webpage and depicts the five key areas that shape health outcomes. Source: https://www.healthypeople.gov/2020/topics-objectives/topic/social-determinants-of-health*
In discussing the barriers and impediments to healthy eating, children in the focus groups called upon these social determinants. Given the setting of my study, education was clearly discussed, but students also and specifically referred to neighborhood and built environment. Neighborhood includes access to healthy foods, and is part of the physical environment in the social ecological model guiding this study. While my study explored, in detail, the school as a physical environment, the larger physical environment the students navigated included their communities, like what grocery stores are available and what fast food outlets are present in those communities.

One girl talked about living in a neighboring town that only has one general store (FG1, S2). It is a 15 minute, or nine mile, drive into the town the school is located in for her family to actually go grocery shopping. While small items can be picked up from the general store—which does indeed have some healthy options—it is not a substitute for a full grocery. Essentials like eggs and milk can be purchased, but produce will vary based on the season. The store is arguably more of a deli, as a general store, than a full grocery store. Another student lived just three miles, or seven minutes, outside of town but shared that her mom doesn’t like driving, which limits trips to grocery stores (FG1, S3). In the town she resides in, there are no stores, only a diner and a bar/restaurant. Even those living in the small town expressed concern about access to healthy foods. A boy said, “it's hard getting fresh fruits during the winter time, or like corn and stuff, like fresh vegetables” (FG2, S4) in response to a girl’s comment that “it's hard to find fresh fruit, honestly” (FG2, S3). Table 6.4 names the stores available in town. Whether the student lives in town, on the outskirts, or in a neighboring town, these are the food options most accessible for most students at the middle school in this case study.
<table>
<thead>
<tr>
<th>Available Food Sources</th>
<th>Prepared Food/Big Food*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food Shopping</td>
<td></td>
</tr>
<tr>
<td>Walmart</td>
<td>McDonald’s</td>
</tr>
<tr>
<td>Price Chopper</td>
<td>Burger King</td>
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<tr>
<td>Country Store</td>
<td>Pizza Hut</td>
</tr>
<tr>
<td>Natural Food Store</td>
<td>Dunkin’ Donuts</td>
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<tr>
<td></td>
<td>Subway</td>
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<tr>
<td></td>
<td>Pizza Shops (x 4)</td>
</tr>
</tbody>
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Table 6.4. This is a list of food options available within 3 miles of the middle school located in town. *List excludes local, independent restaurants and includes stop-and-go options.

The town itself has limited options compared to other areas across the country (though, more options than rural and impoverished areas across the country), and the students perceived it has lacking options for healthy, fresh foods. This lack of accessibility serves as an impediment for engaging in healthy eating habits and adhering to the lessons learned in Family and Consumer Sciences. Instead, the accessibility of fast food facilitated consumption of unhealthy foods, even despite students knowing it is not what they should be eating. A girl spoke to the ubiquitous nature of fast food restaurants, and the convenient locations of them, stating, “I usually don't think really about what I'm eating, because I have practice all the time, and the only thing that's really right next to my gym is McDonald's, so I go there a lot” (FG3, S5). To access the grocery stores means parents or families have to drive through additional red lights and sit in traffic, as compared to the quick nature of the convenient drive through. In addition, the stores in town that may have the freshest foods, the country store and the natural food store, are higher in cost in comparison to Walmart and Price Chopper. For example, a dozen eggs at the country or health food store might cost $4.99, whereas a dozen eggs from Walmart might cost $1.84. The cost of healthy foods was another impediment to healthy eating discussed by students.
The High Costs of Eating Well. Another social determinant of health is economic stability, which includes food security. Not only is it ideal for people to have access to healthy foods, it is important that people are able to afford them. In the discussions with students, they identified the costs of foods as a barrier for applying what they learned in Family and Consumer Sciences. Even with the behavioral capability, self-efficacy, positive goals, and teacher as a positive facilitator for healthy eating, the cost of foods was perceived as too large an issue to escape. Students either discussed the cost of food in relation to their own families, or as a possible factor that prevents their peers from engaging in healthy nutrition behaviors. An exchange in one focus group (FG1) discussed the issue of cost:

S3: Honestly, junk food, if you go to the store and you look and let’s say, “welp, I have $30 for tonight’s meal and tomorrow’s breakfast,” and, obviously, if you’re buying a thing of strawberries, that’s like $4-5. And, then, like apples are like $3 a pound or whatever, and then like –

S1: Everything’s so expensive now.

S4: Yeah.

S3: Especially if you’re on a budget, and you’re like, “well, you know, then we have to get this,” and you know, you like that so you’re like, “okay.” Meat is so expensive. That’s why we don’t buy it. It’s literally like $4.85 a pound.

What was significant about the students’ perceptions of the high cost of food was that they knew what the prices were because most of them grocery shopped with their parents. As in the exchange above, this girl knew the cost of strawberries, apples by the pound, and ground beef. She knew this from spending time in the grocery store with her family, which is consistent with most of the students who participated in the study. Another student matter-of-factly stated,
“healthier foods cost more money” (FG6, S4), while one made the suggestion “If we could lower the prices [of healthy foods], then it'd be easier for parents, especially in small towns” (FG6, S5). These children had experience navigating the grocery stores and recognized the high cost of healthy food as an impediment to healthy eating. Recalling Chapter 5, this relates to the teacher’s efforts of empowering the students to be teachers, relaying the information from class back to their parents and teaching their parents about things like shopping the perimeter of the store. And, some complained about the time they spend waiting for their parents in the grocery stores: “I hate standing and waiting for them” (FG3, S5). Why this girl “hated” waiting was unclear, but other students did indeed talk about the time it takes to shop for healthy foods as a barrier, regardless of the positive influence of the Family and Consumer Sciences class.

**Time as an Additional Resource.** While money is a resource that serves as a barrier to healthy eating (or the cost of healthy foods is a barrier), time is an additional, valuable resource described by children in the focus groups. Lack of time was noted as something that prevented the children from eating well, creating a barrier or impediment to healthy eating. In one discussion, a student connected the issue of food costs with time:

> They might have some of the food groups and you can't always go to the store every time you need something. So it's kind of just like you eat what you have, or parents…Some parents are busy or parents are absent, so you don't really have the resources, like money issues sometimes. (FG7, S3)

In another discussion, a girl echoed this sentiment. She doesn’t think all children have the education on how to eat well, but explained:

> To be honest, even if kids knew about this–I especially don’t have the time, really. My mom doesn’t have the time. We don’t have the time in our day to figure out, “well, we
need a fruit, a grain, a vegetable, a protein, and a dairy.” We don’t really have time to worry about that. (FG1, S3)

For this student, her involvement, as well as her mother’s involvement, in extracurricular activities limited the time available for food planning and preparation at home. It was not uncommon for them to leave the school, go home to quickly eat, then return to the school for an event. She said, “we’re home for like ten minutes, then have to come back for a meeting or something…we’re very busy.” Perceptions of a busy schedule as an obstacle to healthy eating was mentioned by others, too. In one group, a girl explained that her family cooked healthy meals when they could, but added “we have no time during the week.” Not only do shopping for and cooking healthy foods take time, they also take energy. It takes more time and energy to make the breakfast burrito the students learned to make in the food lab than it takes to go through to drive-thru at the McDonald’s located less than one mile away from the school. From FG4:

S4: It takes more work to make the breakfast burrito than go through the drive-thru and get one.

Me: So do you think that might be a reason people eat the way they eat because of--

S2: They're lazy. Laziness. Maybe the food makes them lazy.

Time and energy are mentioned by a girl in another group. She was an athlete and talked about practice and games ending at a time that’s unreasonably late for her parents to take the time to cook dinner, so the family would opt for fast food:

Sometimes, track team, it gets over like 4:00, so it's easy. Your parents can still come home and cook you something. But basketball, when basketball games were over, it was already dark, and your parents don't really want to go home and cook anything, so they
might stop at fast food restaurants. So I think it's definitely a little difficult to find something healthy to eat. (FG7, S3)

Across the focus groups, these barriers of limited resources, namely time and money, were discussed as impediments that prevented both these children and their peers from eating the way they learned they should. Although the nutrition education influenced their beliefs and attitudes, behavior change was not always guaranteed because of these barriers and impediments. One girl, to the point, said, “Everything takes time and money. People need to learn that” (FG6, S4). However, the groups acknowledged that families are looking for fast and cheap options, and this largely encouraged fast food consumption. Fast food consumption is not only made convenient by the accessibility and location of the fast food restaurants in town, the consumption of these foods is promoted heavily by food marketing efforts.

Discussion: Communication as Key to Influencing Children’s Nutrition Attitudes and Behaviors

This chapter detailed my analysis on how nutrition education influenced children’s nutrition attitudes and behaviors. The data from both focus groups and child interviews revealed communication was truly essential to this process. Children’s (self-reported) nutrition attitudes and behaviors were influenced by participation in the Family and Consumer Sciences nutrition module. Communication served as the mechanism through which students reported improvements in behavioral capability, increases in self-efficacy, and ultimately took action and changed their behaviors. In some instances, that communication was interpersonal, from teacher to student. In others, it was mediated, via messages received from documentaries on nutrition. Either way, communication was key in influencing behavior change. The discussions with the students pointed to the fact that changing their behaviors required not only self-efficacy, but also
behavioral capability. For example, attaining nutrition literacy skills, like how to read a nutrition label, contributed to the development of behavioral capability. With new skills and knowledge, children were then able to concretize behavior change, supporting the notion that skills and knowledge are essential to behavior change, and perhaps a precedent to self-efficacy in the social cognitive model.

Even with the best intentions, children were not guaranteed to change their behaviors. They discussed the social determinants of health as factors that served as barriers to healthy eating. These social determinants are the cause of countless health disparities in American society, obesity being one of them. Viswanath (2016) said that there are mechanisms that cause social determinants to lead to unequal health outcomes, and communication plays a vital role here—it can mediate or moderate conditions. The communication of information (education) can help people to overcome perceived barriers if they have the behavioral capability and self-efficacy for doing so. For example, the students expressed concern about access and availability of fresh produce. In the classroom, the teacher shared with students that creating gardens is a way to increase access to produce at a low-cost. But, creating a garden requires a certain set of knowledge and skills. Forms of communication—interpersonal, mediated, etc.—can provide people with information that can increase self-efficacy for doing something like planting a garden by giving them the knowledge and skills (behavioral capability) for doing so. A challenge for the field, though, is that communication inequalities exist on a macro-level (marketing industry) and micro-level (a local public school). “Communication inequality is defined as the differences among social groups in their ability to generate, disseminate, and use information at the macro level, and to access, process, and act on information at the individual level” (Viswanath, 2006, p. 222, emphasis in original). In 2012 alone, McDonald’s spent $972
million on food marketing (Yale Rudd Center for Food Policy & Obesity, 2013). The budget for
the entire school district from my case study is roughly $40 million ([School District], 2016). An
inequality clearly exists. The food marketers have an abundance of capital available for
communicating their messages promoting unhealthy foods, whereas the school has extremely
limited capital, in terms of financial, human, and time, to effectively compete with the influence
of marketers. This inequality is even further disparate when looking at the ability of individuals
in the community to influence via communication.

It is for this reason, namely, communication inequality, that media literacy became so
salient in my study. The following chapter addresses Research Question 3, focusing on my
inquiry into whether nutrition education equipped students with skills and techniques for
interpreting food marketing messages.
Chapter Seven:

Findings and Interpretation, Part Four–Children’s Skills for Interpreting Food Marketing Messages - “My little brother, before he even knew how to read, he knew McDonald’s”

The third and final research question explored in this study sought to understand whether there was evidence that students who participated in the nutrition education in Family and Consumer Sciences applied concepts from the class in their interpretation of food marketing messages. There was evidence that the students who participated in the class articulated media literacy concepts that aided in their interpretation of food marketing message. There were cases where the media literacy concepts were learned in the classroom, and others where the class reinforced media literacy skills the children were already aware of. While some students acknowledged that the awareness developed in the Family and Consumer Sciences class, others discussed having the knowledge and insight prior to participation in the class. Nonetheless, in the largely mediated world these children live in, including ubiquitous messages for fast food and other food marketing efforts, they appeared to be able to recognize which marketing messages were promoting healthful foods and behaviors versus unhealthful.

I address Research Question 3 through the analysis of children’s focus group comments, including those intentionally elicited to address media (e.g.: protocol questions specific to ads that were shown) as well as the students’ organic discussion about the role of media and marketing in influencing their food choices. Overall, students did not believe the media were inherently a negative source of nutrition information, though they felt the majority of food marketing messages in the media were for unhealthful products. They had command over basic media literacy concepts, and were able to identify various marketing tactics employed by Big Food in an attempt to sell them products.
Food Marketing Offered both Positive and Negative Messaging

Before exploring the student’s interpretation of food marketing messages, I would like to point out that food marketing, particularly marketing of fast foods, was discussed a number of times by the students in focus groups without any prompts, prior to the intentional discussion on media I hoped to have with the students. In some instances, students referred to marketing as a facilitator for healthy eating, whereas, other times, it was referred to as a deterrent.

The Role of Food Marketing in Promoting Healthy Eating. The instances where food marketing was identified as a positive contributor to healthy dietary changes were limited, but they were indeed discussed by students. When discussed, the conversation related to the very limited instances where whole foods are promoted on television. For example, a girl spoke about her father and said, “he used to make me watch Popeye and say, ‘oh, you can turn out like Popeye if you eat spinach’” (FG1, S1). She said this was motivation for her to eat spinach in order to be healthy and strong. In another group, students also recognized Green Giant as a positive nutrition influence, recalling advertisements they have seen for Green Giant frozen and canned green beans, marketing vegetables. Interestingly, in this discussion, a girl (FG1, S4) attempted to hum the tune from the Green Giant commercials, but instead hummed the jingle of Red Robbin® Gourmet Burgers and Brews advertisements. Although she recalled the advertisement for the food group, and believed it to be a positive influence, the Red Robbin jingle was what stayed with her post-commercial viewing – perhaps she had seen more Red Robbin commercials than Green Giant, consistent with the discussion in Chapter 1 about fast food and processed foods dominating food marketing messages on television.

When students reported the media as a positive source of food marketing messages, they did not refer to specific healthy brands being advertised, with the exceptions of Green Giant...
green beans and Wonderful® Halos™ mandarins. Other than these two examples, the students often referred to stores, like the local grocery stores, Price Chopper and Walmart, having paid advertisements that highlighted sales in the produce or meat departments in their discussion of positive food marketing messages. Also, given the suburban location of the school district, there are local farms that have seasonal advertisements on television, e.g.: for apple picking, that are aired on television and were cited in some instances. These promotional segments are what the students considered to be positive food messages, e.g.: advertisements that included reference to at least one of the five food groups. Though, these are not *food marketing messages*, per se. Instead, these local grocery stores advertisements are promos, showcasing sales offered in the store that could range from food items to household cleaners. Rather than manufacturers selling a particular brand and acquiring a consumer base for their *product* (food marketing), these were examples of promotional sales advertisements to encourage people to shop for any number of products, and any number of brands, at a specific grocery store. The latter is not a commercial for any particular food product or solely designed to advertise a single food, but to showcase all of the sales available at the store. There are distinctions between these types of marketing efforts.

A girl expressed her understanding of these distinctions, unprompted, in a discussion, noting:

[W]ell, I divide them [commercials] into sections - advertisements for business, food businesses, and then there's like TV shows, products, and then there'd be the healthy section. So, the healthy section, they'll have a bunch of commercials to get you on a diet.

(FG3, S4)
In her categorization, the “healthy section” of television advertisements, with commercials to “get you on a diet,” refers to promos and infomercials. This is confirmed when she later discussed her parents doing Beach Body P90X workouts, purchased as a result of viewing a commercial in the “healthy section” of the TV advertising landscape. While her delineations were a bit unclear at times, and she lacked the vocabulary for referring to the various types of advertising slots in a well-defined way, her talk still pointed to media literacy skills, indicating her awareness of different types of messages that are designed to elicit different responses from consumers. Through her breakdown of these types of advertisements, she was able to identify the ways in which she thought television had the capacity for promoting healthy eating and other healthy behaviors.

This girl (FG3, S4) also said, “there are MyPlate commercials.” If this was indeed correct, this would be another source of positive influence available on television, serving as a public service announcement (PSA) for healthy eating. As I mentioned in my introduction, youth ages 13 to 17 may be exposed to 6,098 food ads but only 47 PSAs promoting a balanced diet and healthful nutrition behaviors (Gantz et al., 2007). MyPlate commercials would help to contribute to the few positive nutrition messages available on television. However, the USDA’s MyPlate website features videos and notes that the videos are available on YouTube and TeacherTube, but there is no indication that these videos air as PSAs on television. With that, it was unclear to me where this student saw a MyPlate commercial; this could have been exposure via YouTube rather than television. Evidence suggests that healthful messages like MyPlate commercials would improve children’s eating habits, if the children were exposed to them at a young age. Advertisements for healthful foods can generate positive attitudes and beliefs for those foods among children (Dixon, Scully, Wakefield, White, & Crawford, 2007). Exposure to
positive nutrition messaging at a young age is a way in which food marketing can, and the children describe that it has, serve as a healthful source of nutrition information and influence positive nutrition behaviors.

*The Power of Habit.* The girl who shared the story of her father referring to Popeye’s strength as a way to encourage her to eat spinach said, “I used to eat spinach because I was little,” and that she still consumed a lot of spinach. This student eating spinach when she was younger, as a response to her father’s influence and reference to Popeye, relates to another concept that came up in three of the discussions: the power of habit. The students expressed that nutrition education needs to be delivered to children at a young age, otherwise, children start to develop habits that are hard to break as they get older – including seventh and eighth grade as the timeframe in which it is difficult to change the habits from childhood. These opinions are actually supported by research that says our tastes and openness to liking new foods decrease as we get older (Cooke & Wardle, 2005). Introducing foods to children in kindergarten through fifth grade is ideal because, even at that young age, they are developing habits that will inform their eating behaviors in middle school, high school, and later in life. Also, “young children may be more susceptible to advertising claims than adolescents due to their less developed cognitive processing capacities” (Brown & Bobkowski, 2011, p. 104). Speaking to the early formation of habits, which may very well be influenced by media, a student said, “maybe when they were little, like ages one through six, they've been not eating that way for many years. And they just give up now” (FG4, S4). Another, in response to the photo of the obese child at McDonald’s says, “Don't get in the habit of eating unhealthy” (FG5, S4).

These discussions about early interventions were spot on: the CDC collaborated with the FDA on the Infant Feeding Practices Study II (IFPS II) from 2005-2007. A six-year follow up
lead to significant findings, for example “the obesity prevalence at 6 years among children who consumed sugar-sweetened beverages (SSBs) during infancy was twice as high as that among non-SSB consumers (17.0% vs 8.6%) (Pan, Li, Park, Galuska, Sherry, & Freedman, 2014, p. S29). Another six-year follow up concluded “infrequent intake of fruits and vegetables during late infancy is associated with infrequent intake of these foods at 6 years of age” (Grimm, Kim, Yaroch, & Scanlon, 2014, p. S63). In another focus group, a girl connected habits established at an early age with food marketing messages. She noted:

And a lot of times, they'll advertise-- kids watch a lot of TV, we can just conclude that obviously. So, little kids do, like the kids who are growing up and just starting sports and stuff like that, and on TV they'll have a favorite cartoon character, and all those other kinds of foods are going to influence them to eat the unhealthy food. (FG3, S4)

In this case, the child is talking about the negative influences food marketing can have, particularly on young children and through the use of familiar characters. This conversation of media being a negative food influence was by far the loudest, and the students seemed skilled and adept in discussing the rationale for this negative influence through interpretation of ads and marketing tactics.

The Role of Food Marketing in Promoting Unhealthy Eating. Largely, students in the focus groups agreed that most of the food marketing message they received was for “junk food.” While there may be isolated instances of vegetable promotion, by-and-large, the marketing messages are for unhealthy foods. When asked what foods they saw advertised on television, in general, the majority of students responded with fast food. A sample of responses to the question are included here:

- “McDonald's, Burger King, Dunkin' Donuts” (FG5, S3)
• “Taco Bell” (FG1, S3)
• “Fast food” (FG1, S2)
• “The quarter pounder” (FG1, S1)
• “McDonald’s. Burger King. Pizza Hut.” (FG1, S4)
• “Taco Bell is always on there” (FG1, S3)
• “You see for the fast food places a lot more than for the other healthier foods” (FG5, S3)
• “A lot of McDonald's, Burger King advertisements. A lot of fast food advertisements” (FG6, S5)
• “It's like Pizza Hut with the pizza on the crust, cheese inside the crust. It's not very healthy” (FG6, S6)
• “I usually see stuff like the Olive Garden, and Applebee's, Dave and Busters, all of that” (FG7, S2)

The students largely agreed that food marketing messages promote unhealthy eating. And, they recognized the ways in which these foods pose a challenge for people, including themselves and their families, who may be trying to eat well. While they recognized the relatively explicit ways in which food marketing methods can challenge beliefs and attitudes that favor healthy eating, such as the low costs of fast food, they also expressed an understanding of the persuasive tactics used in food marketing messages, such as celebrity.

Displays of Media Literacy Skills and Ability to Interpret Food Marketing Messages

Media literacy programs taught in educational settings convey the following information to students: a) messages are constructed, b) messages are representations of the world, c) messages have economic and political purposes and contexts, and d) individuals create meaning
in media messages through interpretation (Hobbs, n.d.). Developing media literacy skills is an increasingly popular component of middle school education. The executive director of the National Middle School Association emphasized the importance of these skills, noting:

today's middle school students are bombarded with messages, both good and bad. Now more than ever, they need the tools to help them make sense of all the information they are seeing and hearing. (Swaim, 2002, para. 2)

And, media literacy is a crucial skill for supporting healthy eating behaviors. As presented in Chapter 1, “those individuals who are more media literate are more likely to choose healthy food options and avoid unhealthy ones” (Godbold Kean et al. 2012, p. 211). Although the Family and Consumer Sciences class was designed to influence children to make healthy food choices and avoid unhealthy ones, it did not explicitly teach media literacy. The superintendent of the district believed that media literacy, and media literacy skills specific to the interpretation of meaning in food marketing messages and nutrition messages, is very important. She explained:

[media literacy] is part of our curriculum in several venues, certainly in our business classes. It's part of our health instruction, it's part of our ELA [English Language Arts] work on developing and interpreting bias. Not only for nutrition, but in terms of other substances that are physically harmful: cigarettes, smoking, drugs, alcohol use; or consumer awareness. Ads and safety issues and buying online. Interpreting what the ad is really selling you.

Media literacy is not an explicit part of Family and Consumer Sciences, however. The Family and Consumer Sciences teacher believed that helping the students to understand marketing is very important, and recognized that it came up a lot in the classroom, on impromptu occasions,
as compared to being part of the curriculum. She commented in a way that rings familiar with the superintendent’s comment, noting:

I think they [the students] are getting it in a bunch of different classes within their time [in the District]. I think health in eighth grade really addresses it, especially with tobacco ads and alcohol; and where they're positioned in stores. Students, I think, don't see themselves sometimes as the consumer, and I think that they start to get that self-awareness in this age bracket – seventh, eighth, definitely ninth [grade].

Despite a lack of intentional and explicit inclusion of media literacy education in the Family and Consumer Sciences curriculum, students expressed a command of media literacy skills in the focus groups. Most often, they articulated their knowledge of media literacy in regards to their understanding of the economic purposes of food marketing messages as well as through a distrust of media messages.

**Economic Purposes of Food Marketing Messages.** In the focus group discussions, the majority of students recognized the economic purposes of food marketing messages. For example, they understood the use of celebrity in advertisements as a means to sell a product. I showed a McDonald’s advertisement that featured Venus and Serena Williams during most of the discussions. In conversations about the commercial, the children recognized that food marketers use celebrities all of the time. A boy said, “they do that all the time, they have LeBron James in it” (FG3, S2). Another student shared that the advertisers are sending the message “celebrity people are eating there then why shouldn't we?” (FG4, S4) as a way to persuade people or “draw people in,” as this student noted. One girl even noted that the marketers were using “attractive women to influence men.” And, they recognized that not only are the advertisers using celebrity to draw in customers to sell their product, but the celebrities
themselves are “just doing it for the money” (FG4, S2; and similarly by FG6, S5: “just all about the money;” FG7, S4: “just in it for the money”). The children weren’t mistaken in thinking that the celebrities necessarily eat the foods they’re selling. In the case of celebrity athletes, a student said, “according to what they do for a living, they can't afford to eat at McDonald's. Not afford like in money” (FG6, S2)–meaning that their careers couldn’t afford them eating unhealthy McDonald’s food. They discussed a version of the halo effect, that by having healthy celebrities sell unhealthy foods, audiences would think the advertised foods were healthy:

There not actually saying our food is healthy, but they're having people who are known for being healthy advertise their food. So they're pretty much saying their food is healthy. But they're not literally coming out and saying our food is healthy, because they could be sued for that. (FG6, S4)

**Third-Person Effect.** The third-person effect in communication proposes that people can think the media has a greater influence on other people than it has on them. In other words

A person exposed to a persuasive communication in the mass media sees this as having a greater effect on others than on himself or herself. Each individual reasons: “I will not be influenced, but they (the third persons) may well be persuaded. (Davison, 1983, p. 1)

In addition to understanding the economic rationale for advertisements, and food marketing messages that include celebrities, the students communicated their concern that their peers and that younger children would be influenced by these marketing messages and not understand the economic rationale behind them. Yet, they did not believe they were persuaded by these advertising strategies, consistent with the third-person effect. A boy said that baseball player Mike Trout is in a commercial for Subway: “He does Subway commercials. He doesn't make me want to go out and buy it” (FG6, S5). He reported that he was not persuaded. On the other hand,
students thought other people would be persuaded by these celebrities. “Because famous people went to it, so they'll go to it too,” a girl noted (FG3, S2). A girl articulately stated, “It's about what you eat, just not celebrities” (FG4, S2), and the group proceeded to discuss how they would ignore an advertisement with celebrities, but thought it would influence other people.

The students also expressed concern that young children were being influenced by the use of celebrity. A girl said the use of these advertising strategies is hazardous, “especially for young kids, because young kids tend to have favorite celebrities and everything” (FG6, S4). The students pointed out this concern not only with fast food advertisements, but marketing for unhealthy foods in general. A girl mentioned Kraft Macaroni and Cheese as an example. She expressed concern:

Kraft Mac & Cheese - They got SpongeBob on the box, they got Monsters, Inc. on the box, they got minions on the box. They got all these movies, and all the kids are like oh, Kraft Mac & Cheese, because they have the little [characters] on it. (FG3, S3)

And, this opinion about the use of celebrity was shared by a student in another group:

I think that's kind of not really healthy for children, because some children look up to them to see, like, "Oh, I want to be like that one girl," and they're saying, "Oh, they're saying to go to this, so, I will go to this.” (FG7, S3)

Another girl seemed genuinely concerned about food marketing’s influence on young children. She voiced this:

I think there's some countries that have outlawed certain unhealthy commercials while kid's programs are on. And I think America should do that, because you're influencing kids to be unhealthy. And I think that's just wrong because they're kids. And they don't know any better. (FG6, S4)
Later, a student says how the Disney Channel does not have advertisements on it, and there are occasional promotions for healthy eating and exercise. A girl commented on this, saying:

But Disney owns everything on that channel. They're so rich that they don't really need other people to advertise things on their channel. So, other channels like Nickelodeon they have to have other advertisements because they're not that rich. But Disney, that stemmed from a guy who was like a downright billionaire, and so he doesn't have to have a McDonald's commercial come on every five seconds. (FG6, S4)

The students recognized the economic purposes of food marketing messages, and disagreed with it. One girl noted, “A lot of big businesses don't really care about us, they just care about becoming more and more rich” (FG6, S4). Perhaps, for this reason, another theme communicated was a distrust of the messaging that’s targeted at them.

**Distrust of Food Marketing Messages.** This is the area of media literacy expressed by the students that seemed to be most influenced by their participation in the Family and Consumer Sciences class, though, again, I have no way to imply causation with certainty due to the nature of my study. But, the students talked about not trusting advertisers, and feeling deceived by food marketing messages. This deception rings so true that one student even mentioned how he mutes the television during commercials, and another student said she closes her eyes during commercial breaks. The majority of students described a complete lack of desire to be exposed to the advertisements. Some students communicated their knowledge of tactics like subliminal messages, which furthered their distrust and perceptions that advertisers weren’t credible sources of information. A girl explained:

But I think that also stems from the subliminal messaging that–because theaters used to play in the middle of a movie, you're hungry, buy some popcorn; and then it was
outlawed. And so it would make people do that because it was so random that—they're just so open to any suggestion because it was so weird. And I think that commercials kind of stem from that. But I only watch one TV show and it's once a week. So I don't really see that many commercials.  (FG6, S4)

Moments later, another girl in the same group added to this: “I think of food commercials, I think they're trying to get it in your mind. That's the option. And then when you have these cravings, then your mind goes to those commercials. I think that's what motivates people.” This intentional manipulation of consumers (one group even mentioned that the colors are brighter on commercials, the volume gets louder during commercials, and reds are commonly used colors) seemed to lead the students to think commercials are “honestly just annoying” (FG6, S5), to quote one student, and for them to communicate a distrust of advertisers.

Interestingly, much of the distrust of food marketing messages connected back to the idea of the importance of taste and appearance of food in determining children’s nutrition behaviors. A complaint the students discussed, and one that led to lack of trust of the food marketers, was that food marketed via media does not look like food in real life. In one group, a smaller dyad (FG5), two students discussed this:

S3: Sometimes the food does not look like it-- like you buy it and it does not look like it was in the commercial.

S4: That's true. Yeah, like McDonald's, the picture, will be like the burger is fake, and then when you get it, it's so small.

Later in the conversation, the girl returns to this topic “Some stuff is false advertisement. Like the McDonald's saying—Just like [boy] was saying, how it looks good on the commercial, but when you get there, it doesn't look the same” (FG5, S4). This conversation of deception of the
food items marketed permeated most of the focus group discussions, with the students expressing distrust in food marketing messages because the advertisers displayed delicious-looking foods that actually left much to the imagination when they actually purchased them. This was discussed with food products, and even beverages: a student expressed concern that a beverage on television, a McDonald’s Frappe, was displayed with lots of caramel on top, but barely had any caramel when she purchased it one day (FG1, S2). In rare instances, students related these appearance inconsistencies with the fact that advertisers aren’t using real food in the commercials. A girl, regarding a billboard for a breakfast sandwich, said, “that egg is not real” (FG1, S1); and another student agreed, “that’s just a piece of cardboard, painted” (FG1, S4). In another group, a girl said all of the food marketers are “tricking you, they’re just persuading you” (FG3, S4).

The distrust of the messaging stemmed not only from the inconsistencies in the appearance of the food, but the lack of information provided about the food in marketing messages. A girl noted:

And like most fast food restaurants have billboards saying, try this, try this, but the billboards don’t actually tell you what, how much calories are in it. In fine print, little small print, says, “bad for you.” Half the time I see that on billboards. (FG1, S4)

In another discussion, a girl expressed this concern about lack of nutrition information: “But they don't tell you what's in the meat. They don't tell you what's in the secret ingredient” (FG3, S4). This is where the time spent in the classroom on learning to read the nutrition label and being educated about ingredient lists may be influencing their perceptions of media and improving media literacy. The students increased their behavioral capability with these new skills, and took notice when nutrition information was missing from marketing messages. They were primed to
look for nutrition information when choosing what to eat through their participation in the class. However, without a pre-test or pre-intervention focus group with these students or a control group, I have no way of knowing whether they would have sought out nutrition information in food marketing messages before their participation in Family and Consumer Sciences. Since the children talked about nutrition literacy skills, e.g.: reading a nutrition label, as new skills acquired through the class, and skills that influenced their day-to-day lives, I deduce that this behavioral capability contributed to their concerns about marketing efforts lacking nutrition information.

Despite their distrust, the students acknowledged why some fast food advertisements would be persuasive, particularly considering the socioeconomic impediments to healthy eating previously discussed. The third-person effect did not particularly apply here, but students did say that it was logical for people, including them and their peers, to eat at fast food restaurants when time and money were concerns. After being exposed to countless commercials that highlighted a dollar menu, for example, people could be influenced to purchase the fast, quick meal. The cost of the foods also contributed to distrust, though – feeling as though they were being manipulated to visit a fast food restaurant simply for the deal. A boy mentioned how the dollar menu might persuade him to go to McDonald’s, for example, but he never ends up leaving the chain with something that actually costs a dollar. Once in the door, he would be persuaded by something (expectation of taste? appearance?) to buy something that costs more than one dollar (FG5, S3). One girl said that the dollar menus at fast food restaurants “change everything”: “That changes everything, because there's a lot of people that can't really afford some of the stuff, but they can still afford it with a dollar” (FG3, S2). It was shared that the advertisers are telling only one side of the story when selling dollar menu foods. A girl agreed
with the issue of cheap food, and said, “They're just like ‘oh, it's only a dollar.’ But one dollar, that can buy you a heart attack. Think about that” (FG3, S4).

**Discussion: Media Literacy as a Tool for Interpreting Food Marketing Messages**

While the school cannot compete directly with fast food advertisers, the school can equip students with the skills for critically interpreting these marketing messages and making sound nutrition decisions accordingly. The children in both focus groups and interviews illustrated some command of these skills, though it was not explicitly clear what media literacy techniques were learned in the classroom. On the other hand, many of these media literacy skills were indirectly related to class participation. Although it was not obvious that the students’ awareness of the economic purposes of marketing developed through their time in Family and Consumer Sciences, there were indicators that their distrust of marketers and concerns of credibility were indeed informed by their time in the classroom. The students remarked that advertisements seemed misleading when they failed to discuss nutrition facts and ingredients, and they talked about how they learned to read the nutrition facts label and understand the meaning of the ingredient list in their class. I deduced that these skills made them critical of advertisements that failed to present information they had been primed by their teacher to look for when making food choices.

Lastly, a theme from this chapter was the seventh and eighth graders concern that young children were making unhealthy food choices and were being negatively influenced by food marketing messages. This was interesting: As discussed in Chapter 4, the elementary school in this district included far more promotions for healthy eating than the middle school, which had one poster in a public space. It could be that the students’ perceived younger kids as being susceptible to negative nutrition influences because of the amount of attention giving to
promotion of healthy foods in the elementary school compared to the middle school. That is, perhaps the lack of signage in the middle school made the students think they were safe and out of the age-range of influence since they were no longer surrounded by the healthful communication messages of the elementary school.
Chapter Eight:
Summary, Discussion, and Recommendations—The Role of In-School Environmental Communication on Children’s Nutrition Attitudes and Behaviors

This study was designed to provide an understanding of the role of communication in nutrition education in an upstate New York middle school. My research was guided by three questions: In what ways does the school, as both a physical and social environment, serve as a facilitator for shaping children’s nutrition attitudes or behaviors? How does nutrition education influence children’s nutrition attitudes or behaviors? And, finally, is there evidence that children who participate in nutrition education acquire skills for interpreting food marketing messages?

In light of the growing obesity epidemic in this country, an issue that disproportionately impacts children, I sought out the answers to these questions with the intention of uncovering the roles schools can play in combating obesity, considering the school as a site for both direct and indirect health communication. More specifically, I intended to research the role of in-school communication as a mechanism for changing children’s nutrition attitudes and behaviors.

Adopting a Broad Approach to Communication

I conceive of communication as “verbal, nonverbal, and environmental” (Sue, 2010). The communication I explored took place within and across multiple ecological levels: intrapersonal, social, and physical. In this sense, the communication studied here was broadened to structural communication. I considered communication as structural because, in addition to the interpersonal and individual level communication, my study revealed the importance of the meaning-making and sense-making by both key informants and students of the “institutionalized practices and policies of government” related to school food (Freeman, 2007). Freeman (2007) wrote about oppression through poor nutrition in relation to fast food. She posited the nature of
food oppression is structural because it is not the result of an individual act. Similarly, I conceived of communication in my study as embodying a structural element. If we look at this from an intervention perspective, which, in essence, the nutrition education in the middle school was indeed an intervention, we can consider the communication in the school as being environmental-structural: “Structural interventions target legal- and policy-based impediments to behavioral change, while environmental interventions enhance the physical and social environment to encourage and support sustained behavioral risk reduction” (Sweat, 2006, p. 124). Consistent with this, I considered structural communication as communication originating in the macro-level, filtering and manifesting in the ecological levels I presented in my conceptual framework. And, I identified environmental communication as those acts that existed in the physical and social environments of the school. Within these environments there was also verbal and nonverbal interpersonal communication. Adopting this broad approach to communication in my study opened up my line of inquiry, facilitating the investigation of communicative acts that are generally outside of the realm of the traditional definition of communication. For example, I not only analyzed interpersonal communication in the classroom, but attention was paid to environmental communication like the availability of competitive foods on campus.

**Use of an Underutilized Methodology: The Benefits of Participant Observation**

This investigation of the school, as both a physical and social environment, was made possible through the use of participant observation as a qualitative methodology. Many nutrition education efforts fail to meet the recommended hours for creating actual attitude (15 hours) or behavior changes (40-50 hours) in youth (Watts et al., 2012). With schools being called upon to help fight the obesity epidemic through the delivery of nutrition interventions (e.g.: Healthy People 2020), it was necessary to investigate what students actually learned about nutrition. We
know the hours spent on nutrition education across the country fail to meet the suggested hours for attitude or behavior changes, so what are children learning about the subject, how are they learning it, and what sense do they make of it? Participant observation was essential for uncovering this data. Yet, observation of nutrition education is largely underutilized in communication research. For example, a systematic review of qualitative studies exploring children’s fruit and vegetable consumption conducted by Krølner et al. (2011) found only two studies published between 1973 and 2009 that used participant observation as a form of data collection. One of those two did not include ongoing immersion in the classroom like my research, and instead included one visit per school at five schools (Khunti et al., 2007). The other included observation of the classroom, though the article does not specify the number of visits to the school (Libman, 2007). In my study, I engaged in participant observation for 33 days, or 18% of the instructional days of the 2014-2015 school year. It is important to point out the class I observed, Family and Consumer Sciences, was not a nutrition class. It was an interdisciplinary classroom focused on family and work life skills, with nutrition serving as just one learning module of the class. I observed all designated nutrition education lessons. This field research allowed me to serve as a data collection tool, seeing, feeling, hearing, smelling, and tasting all of the same experiences as the students in the classroom. Participant observation exposed me to elements of the school environment, including children’s behaviors, interactions among students and between students and the teacher, signage, food options, etc., that I could not capture through a survey, or through a sole reliance on interview and focus group data. The value of this novel approach to my research questions is supported by Kolasza and Bass (1974):

A review of the professional and general literature may provide some general information about the food behavior of the target population. However, identification of food
sources, typical foods, food terminology, methods of preparation, and storage as well as the meanings of food [emphasis added] in a particular culture [i.e.: among children] become important steps in the development of instruments for collecting and interpreting data about food behavior and for teaching. (p. 89)

In other words, “To effectively plan a food and nutrition education program or study, the professional needs to observe and participate [emphasis added] in the culture of the people” (Kolasa & Bass, 1974, p. 89). I indicated at the outset of this dissertation that it would behoove researchers to observe and try to know what takes place in nutrition education in order to contextualize alternate data collection strategies like questionnaires or interviews. As described by Boyle (1994), “participant observation sets the stage for other techniques, such as interviews…and other data collection procedures…participant observation provides the baseline of meaning and the contextual data…” (p. 163)

My field notes indicated that the teacher would refer to the class as a family in the cooking lab, for example. This was outside of the realm of my study, but suggesting that the class is a family rather than isolated individuals can possibly support feelings of mutual respect and caring, shifting the way students perceived of both their peers and the teacher in the classroom. This shift may have been responsible for the children’s self-reports of nutrition-related behavior and attitude changes. In fact, Dr. Aletta (2009) claimed that respect, accountability, and eating meals together are just some elements of a functional family. There is an entire body of research on family psychology that explores “affective, cognitive, behavioral and dynamic factors” pertaining to the idea of family from both interpersonal and systems perspectives (American Psychological Association, 2016, para. 3). Observing these interactions
in the food lab, nonetheless, allowed me to gain an understanding of the mechanisms of influence in the classroom, like this analogy of the class being a family.

In addition to the time in the food lab, I observed the students increasing their capacity for nutrition literacy by learning to read the food labels of real food items available in the community. This is particularly important for influencing nutrition behaviors, as noted by Contento (1981): “Nutrition education for children should, therefore, include information and experiences from the real world which will help children distinguish between which foods and snacks to eat and which ones to avoid” (p. S90). A full understanding of the classroom experiences was afforded through the use of participant observation, allowing me to research strategies like these that literature suggests are essential for meaningful nutrition education.

In Chapter 4, it was discussed how my field notes indicated that empowerment was part of the classroom dynamic and serving to shape attitudes and behaviors. Again, there is an entire body of research on this construct that is outside the realm of this study, but it is worth noting that empowerment has been defined in the literature as something that is enabling, and “enabling implies motivating through enhancing personal efficacy” (Conger & Kanungo, 1988, p. 473). In this sense, empowerment can be an element of the multiple factors for influencing self-efficacy (i.e.: to empower through verbal persuasion, through mastery experience) and it is a construct that might not have been illuminated had I not been present in the classroom. One study reported that empowerment leads to increased health literacy, and increased health literacy contributes to increased self-efficacy (Lee, Shin, Wang, Lin, Lee, & Wang, 2016). This idea of empowerment was important to understanding how and why children may have self-reported positive changes in nutrition-related attitudes and behaviors; and it was something that was not explicitly discussed in focus groups. Instead, it was only in the field notes that this construct appeared in
data. Without participant observation, I would not have had an understanding of these classroom interactions or activities, how the teacher managed them, or the students’ real-time responses to them—all of which created the landscape for attitude and behavior change. A survey can ask students if they learned to read a nutrition label in class, understood such activity, use the skill in day-to-day life, or any number of related questions. However, participant observation brought the value of understanding how this happened, allowing for the interpretation of students’ engagement in these activities.

Despite the underutilization of participant observation, it was clearly a valuable tool for researching this topic area, particularly from a communication-centered approach: Participant observation has utility “when self-report data (asking people what they do is likely to be different from actual behavior (what people actually do)” (Cohen & Crabtree, 2006, para. 8). To ask children what they learned or what they eat would rely solely on that self-report. Similarly, to ask the teacher in this case what she taught about nutrition and how she taught it would rely solely on that self-report. Both responses could be subject to social desirability bias (and, perhaps were subject to this bias in the focus groups and interviews). The participation observation allowed me to learn what children learned, watch and record what children ate in the classroom, and observe what and how the teacher taught about nutrition from a communication-centered perspective. Incorporating field notes into my study was innovative in the context of an investigation of this nature, it allowed for data triangulation, and it illuminated new concepts beyond the explicit social cognitive theory constructs guiding this work.

To answer my research questions, not only did I employ participant observation as a qualitative methodology, I took a multi-method approach that included focus groups conducted with children. This allowed the students to relay their views of the school environment, sharing
their perceptions of the school as an impediment or facilitator of healthy eating with me. As noted by Contento (1981), “Piaget and his colleagues emphasize the importance of studying the learners themselves if one wants to find out how learners learn” (p. S90). Focus groups allowed for the direct conversation with children, supplementing the observation of the learning activities in the classroom and the larger school environment. Focus groups are not novel in this area, as a number of researchers have engaged this methodology for evaluating nutrition education or investigating children’s nutrition behaviors or fruit and vegetable consumption. A review of 31 qualitative studies on adolescent fruit and vegetable intake showed that 28 of the studies (90%) engaged in at least one focus group activity to investigate this topic. It is suggested that focus group moderators have a background knowledge of the topics being explored in focus group in order to contextualize discussion (Krueger & Casey, 2009). Participant observation in this case led to significant background knowledge, helping to position focus group comments in a larger context and gain perspective on the discussion.

Engaging both focus groups and participant observation was an underutilized approach that I further enhanced with interviews with the class teacher and the district superintendent in order to round out the data collection. These interviews offered insight into the larger goals and expectations for nutrition education in the school, and provided a sense of the macro-level environment (e.g.: policies) that influenced the education and communication I observed in the school. The interviews helped address a gap in the literature identified by Kubik, Lytle, and Story (2005): “Little is known about how parents and teachers regard the nutrition environment of schools and the role schools should play in fostering healthy eating among children” (p. 233). And, my study illustrated that stakeholders can regard the school nutrition environment differently. The superintendent expressed general satisfaction with the school nutrition
environment, whereas the Family and Consumer Sciences teacher was generally dissatisfied with school lunch and vending options for the students. To my knowledge, this is the first study to integrate field notes from ongoing participant observation, focus group data, and key informant interviews in an investigation of school-based environmental influences on children’s nutrition attitudes and behaviors, and to incorporate research of media literacy skills developed from participation in teacher-developed nutrition education.

**An Ecological Framework of the Levels of Influence on Children’s Nutrition Behaviors**

Theoretically, I infused the social cognitive theory model with an ecological approach, allowing for the development of a conceptual framework that ensured social cognitive theory constructs like facilitators and impediments were considered from an ecological, rather than interpersonal, perspective. The ecological approach to social cognitive theory provided a framework for identifying and analyzing the various influences of children’s nutrition behaviors. Based on this ecological model, I discussed a) the school as a physical environment, b) the school as a social environment, and c) the influence of the school (with focus on the classroom, in particular) on children’s nutrition attitudes and behaviors. Rather than simply report on these items and provide a description, I set out to understand how these environments and influences functioned, and therefore how they shaped children’s nutrition beliefs, attitudes, and behaviors from a health communication perspective.

Based on my analysis of the data collected through observations, focus groups, and interviews, I developed a conceptual framework. This framework was an ecological model that provided a schematic for the exploration of the ways in which school as a physical and social environment shaped personal or individual factors on the student level. The physical environment included artifacts in the school like nutrition signage, vending machine content, and
school lunch offerings. The social environment consisted of those interactions the students had with teachers, their peers, and food marketing. In this research, I argued that food marketing was a static aspect of the physical environment, but it was also implicated in the social environment. My conceptual framework illustrated how the school physical and social environments influenced individual level or personal factors of the students, like attitudes, knowledge, and behaviors.

An ecological framework of the multiple influences that affected children’s nutrition behaviors in this case study is presented in Figure 8.1. As a case study, this model includes influences that may not be present in the lives of children nationwide. For example, not all children are exposed to nutrition education programs in their schools. Therefore, after organizing and analyzing the study data, I developed the ecological framework, Levels of Nutrition Influence Among Children, to depict the influences in this particular case.
Figure 8.1. Levels of Nutrition Influence Among Children

In each of the levels of influence depicted in the model, constructs from social cognitive theory (i.e.: behavioral capability, self-efficacy, outcome expectations, goals, perceived
facilitators, impediments) and self-efficacy formation (i.e.: enactive mastery experience, vicarious experience, verbal persuasion, and physiological and affective states) were revealed through data analysis. For example, on the macro-level, school funding functioned as an arguable impediment to healthy eating, as vending content was seen as unhealthy yet vending machines offer additional income for the school. My study did not thoroughly investigate macro-level factors, yet this was gleaned from data analysis. More explicitly, in the physical environment, lack of availability of healthy foods was a perceived impediment to healthy eating. On the social level, vicarious experiences in the classroom were perceived facilitators of healthy eating. And, on an individual level, increased behavioral capability (knowledge and skills) through participation in the larger school environment, largely the social environment, contributed to increased self-efficacy for healthful eating. In this research, I argued that behavioral capability, or the knowledge and skills for performing a behavior, was a prerequisite of self-efficacy, or one’s perceived ability to perform a behavior.

Isolating communication across the levels of influence, my study indicated the value of structural communication (macro-level; policies), environmental communication (social and physical levels; artifacts), and interpersonal communication (individual level; verbal and nonverbal communication), in shaping children’s nutrition-related attitudes and behaviors.
This research crosswalks lines of research grounded in health communication, public health, education, and media effects. In recent years especially, with the steady climb of obesity rates, there has been research into a) the role of schools in combating obesity, b) evidence-based practices that are effective at changing children’s nutrition attitudes and behaviors, and c) the influence of food marketing on obesity, among other areas of study. The study offers additional insight to the growing body of literature on media’s influence on children’s nutrition behaviors, and the role of schools in equipping children with knowledge and skills for improving eating habits. My research expands existing scholarship by focusing on a) the role of in-school communication in changing nutrition attitudes and behaviors, b) a teacher-developed lesson plan rather than codified evidence-based practice, and c) the potential for nutrition education to
simultaneously increase media literacy and influence critical interpretation of food marketing messages. This work provided an interdisciplinary, communication-centered approach to a significant public health concern.

**Major Findings**

The findings of my study indicated that the children were in vulnerable positions as they navigated multiple communicative environments in their daily lives, seeking to make sense of messages received about nutrition while simultaneously trying to make healthy eating decisions. They were faced with unique obstacles, like attending a school that collaborated with McDonald’s for an annual fundraiser (McTeacher’s Night) while also participating in a class that discouraged consumption of McDonald’s. In addition, their tastes and preferences, which research says stemmed from childhood eating habits (e.g.: Pan, Li, Park, Galuska, Sherry, & Freedman, 2014), sometimes prevented them from eating the foods they knew they should. While the knowledge, and thus behavioral capability, was there, healthy nutrition decisions can just be too difficult for this age group to make on their own.

The findings of my study that addressed each of my research questions can be found in Chapters 4, 5, 6, and 7, where I presented data analysis that indicated: a) the school physical environment was largely an impediment to the development of healthful nutrition attitudes and behaviors (RQ1a, Chapter 4); b) the school social environment largely helped to facilitate healthful nutrition behaviors (RQ1b, Chapter 5); c) nutrition education did indeed affect children’s self-reported nutrition attitudes and behaviors, largely through improvements in behavioral capability and self-efficacy that were generated through communication (RQ2, Chapter 6); and d) there was evidence that students who participated in nutrition education applied concepts from the class in their interpretation of food marketing messages (RQ3, Chapter
In addition, each of those chapters includes a discussion of the key findings related to each research question. Here, I present what I concluded were the major findings of this study, or those that hold more universal implications for practice and research. These major findings were:

- Both behavioral capacity and self-efficacy are linked to nutrition-related behavior change in children, contrary to research that posited self-efficacy was more influential than knowledge (Hall et al., 2015a).

- Environmental communication strategies, including messaging in social and physical environments, can serve to increase the effectiveness of classroom nutrition interventions, consistent with the conclusions drawn by previous researchers, e.g. Bauer, Yang, and Austin (2004); Kubik, Lytle, Hannan, Perry, and Story (2003); and Neumark-Sztainer et al. (2003).

- The delivery of media literacy skills is consistent with the healthful intentions of nutrition education interventions, and it is not inconsistent to teach these skills in the context of nutrition behaviors. The data in my study supported research that claimed increased media literacy may improve eating habits (Godbold Kean et al., 2012).

- The classroom provides opportunities for teachers to undermine communication inequalities (Viswanath, 2016) that exist between school districts and Big Food; and for teachers to serve as influential sources of nutrition education, contrary to research that concluded teachers were not perceived by students as being a helpful source of nutrition information that leads to nutrition-related behavior changes (Shepherd et al., 2006).

- Overall, this study emphasized the value of a communication-centered approach to school-based nutrition education, identifying mechanisms for behavior change that may
be overlooked through approaches that are purely based in nutrition, public health, education, or policy, for example. An interdisciplinary approach to the topic, grounded in communication theory, illuminated various acts of communication, i.e.: structural, environmental, and interpersonal, and was congruent with the use of an ecological investigation on the topic.

**Behavioral Capability and Self-Efficacy Are Linked to Behavior Change.** For many students in my study, the education received in the Family and Consumer Sciences classroom not only equipped students with increased knowledge and skills for healthy eating, but it also provided them with mechanisms for increasing self-efficacy for healthy eating. While some children reported significant changes, or the desire for such changes, to their diets, others developed the self-efficacy and, subsequently, adopted behaviors for making subtle improvements to their diets. For example, some students reported increasing fruit and vegetable intake or the desire to adopt a vegetarian diet, whereas others reported less drastic dietary changes like making substitutions when they ate. For the latter, these students would still eat foods they knew to be unhealthy (e.g.: candy), but they would make substitutions and seek balance in their meals when they could (e.g.: replace chips with an apple). These were changes the students may not have considered prior to taking the Family and Consumer Sciences class. The students acquired the behavioral capability and self-efficacy for these improved eating behaviors through the various forms of communication they received in the classroom, such as the disclosures offered by the teacher in the classroom and the documentaries the teacher showed the students.

It is important to highlight that these attitude and behavior changes were *self-reported* by the children. I cannot argue definitively that there was a clear relationship between students’
participation in Family and Consumer Sciences and students’ nutrition-related behaviors as a result of this self-reporting. While the students’ claims of dietary changes and intentions may be completely accurate and true, there is also the reality that the students’ reports may have been products of inherent challenges related to studying the self-reports of youth. My study included seventh and eighth grade students as subjects, where this risk may be even greater as youth “often feel self-conscious and alienated…are searching for adult identity and acceptance… are vulnerable to naive opinions…refer to peers as sources for standards and models of behavior” (California Department of Education, 1989). Even without consideration of the ages of the subjects in my study, reporting food behaviors risks being impacted by social desirability. Hebert, Clemow, Pbert, Ockene, and Ockene (1995) discovered “self-report of dietary intake could be biased by social desirability or social approval” with consideration of “the social and psychological value ascribed to diet” (abstract). Many researchers are cognizant of these biases when reporting on adolescent food intake, e.g.: Birnbaum, Lytle, Story, Perry, & Murray, 2002; Bruening, Eisenberg, MacLehose, Nanney, Story, & Neumark-Sztainer, 2012; Hanson, Neumark-Sztainer, Eisenberg, Story, & Wall, 2005. The need to be aware of the challenges of dietary self-reports is substantiated by research on social desirability scales. For example, “social desirability affects nutrition reporting in such a way that a high scorer on the social desirability scale would tend to underreport food intake” (Hebert et al. as cited in Heitmann, 1996, p. 222).

**Environmental Communication Strategies Can Improve the Effectiveness of Nutrition Education.** When students received communication that was not supportive of the healthy nutrition behaviors they learned about in Family and Consumer Sciences, they reported that it was largely through a) the physical environment of the school and b) food marketing
messages both inside and outside of school. In regards to the physical environment of the school, this finding partially supports the work of Henderson (2004) that reported, “teachers said that increasing nutrition education in the classroom would not impact students’ eating patterns unless the information taught in the classroom was reflected throughout the entire school environment” (p. 71). In my case study, children’s eating patterns were impacted even though the larger school environment did not consistently send the same nutrition messages as the Family and Consumer Sciences class. There was not a lack of impact just because the messages from the classroom were not echoed in the halls of the schools. The majority of students perceived the school’s physical environment as a source of unhealthy communication about nutrition, or otherwise a neutral source. It seems students’ nutrition attitudes and the school could further influence behaviors if the larger school environment since students drew attention to these contradictions, e.g.: if signage, cafeteria foods, reinforced the education received in the Family and Consumer Sciences classroom. However, since this was not the case, I cannot conclude that with certainty, but the influence of consistent environmental communication in schools supported by and encouraged by existing studies.

Using focus groups, Bauer, Yang, and Austin (2004) studied in-school influences on seventh and eighth graders’ nutrition and physical activity behaviors, and their results highlighted the significance of ecological levels of influence. They found the school environment served as a barrier to healthful behaviors, despite the education received by children in the classroom. The researchers noted, “our findings indicate that students, faculty, and staff are keenly aware of the importance of the school environment and barriers within the environment that undermine health-promoting initiatives” (Bauer, Yang, & Austin, 2004, p. 44). Through their research, recommendations were made for improving the school environment (e.g..:}

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decreasing the availability of unhealthy and nonnutritious snacks and beverages available in school) in order to offer consistent environmental communication and facilitate positive nutrition-related behavior changes among students. Similarly, Kubik et al. (2003) employed a cross-sectional design to study the influence of the school environment on seventh graders’ nutrition behaviors. Among their findings was that vending machine availability in schools was correlated with a decrease in fruit intake by students. The researchers noted their study was:

One of the first to examine and demonstrate a negative and adverse association between physical factors in the school food environment—such as à la carte programs, snack vending machines, and fried potatoes’ being served to students at school lunch—and young adolescents’ consumption of fruits, vegetables, and dietary fat. (Kubik, et al., 2003, p. 1172)

Through the ecological perspective I used in my study, I proposed that not only can consistent physical environmental communication, e.g. the food environment and signage, improve children’s nutrition attitudes and behaviors, but communication that is consistent across ecological levels of influence can further modify children’s nutrition-related behaviors. In my research, despite the physical environment, communication in the social environment—and in the Family and Consumer Sciences classroom, specifically—sledded to self-reported behavior changes among students. The literature suggests that this influence would indeed be greater if the school physical environment did not undermine classroom nutrition education.

**Teaching Media Literacy Skills as a Valuable Component of Nutrition Education.**

The influence of food marketing and media, which crosswalks the space between physical and social environments was seen as largely negative, with documentaries (media, not marketing) as positive sources of communication. On the other hand, the food marketing children were
exposed to through television and other mediums were largely perceived as a negative influence. But, with media literacy skills, the majority of children in my study self-reported the ability to navigate this landscape and being less influenced by celebrity, the alluring appearances of foods in marketing messages, or low-cost menus. For the latter, many students spoke about how the low-cost menu items were not necessarily an influence on their desired purchasing habits, but they suggested an understanding of the financial burden on their parents. They understood the appeal of “junk food” when parents had a limited budget for feeding their families. Most of the discussions on the costs of food related to the expensive foods in grocery stores and how that was a barrier to eating well, rather than the allure of low-cost foods advertised in food marketing.

The self-reports of the students indicated that they would rather make their own meals, knowing what ingredients were in them, than buy an item for one dollar. They discussed the marketers using “fake” food to sell fast food products, enhancing the appearance of the foods advertised; and they even commented on the cost of the food not outweighing the lack of nutrition and unhealthful contents in the food. The displays of media literacy skills coupled with the self-reports of improved eating is consistent with the claims Godbold Kean et al. (2012) who found higher levels of media literacy were associated with more healthful eating.

The students displayed a general distrust of the media and expressed concern that younger, elementary school-aged children would fall victim to manipulating marketing practices. Contrary to the students’ concerns, literature suggests that gender is more of a moderating factor than age, with male children being more likely to succumb to food marketers’ influence than female children (Chernin, 2008). Their concerns about younger children were still valid, though: “Prior to age 7 or 8 years, children tend to view advertising as fun, entertaining, and unbiased,” and they develop an understanding of food marketers’ intentions after ages 7 or 8 (Story &
French, 2004, p. 3). Even after age 8, it has been reported that, “Although 8–11-year-olds (cued processors) have a good deal of knowledge about advertising, their ability to retrieve and use this knowledge is still developing” (John, 1999). The concern students shared about the influence of food marketing on young children relates to the idea of the power of the media compared with the influence of schools: Food marketers have abundant funding streams to sell products, while schools have limited funding to educate children on those products. These macro-level influences of funding and funding sources were beyond the scope of this study, though they clearly impacted and permeated the more local layers of the ecological model.

**Strategies for Overcoming Communication Inequalities.** The budget for the entire school district in this case is a mere 4% of the marketing budget of McDonald’s—not to mention the other prevalent fast food advertisers mentioned by the students, like Burger King, Taco Bell, Pizza Hut, and Dunkin’ Donuts. The students in the focus groups were immensely aware of the frequency and prominence of these ads, and concerned that younger children would be influenced by them. And, with a fraction of the budget, the school does not have the financial means to match the efforts of these marketers. The teacher mentioned in our interview how she would love to incorporate more farm-to-table in the school, set up a community garden in the town, establish a relationship with a local Community Supported Agriculture (CSA) for produce for school meals, or organize a family night where local chefs would demo healthy food preparation using local products for attendees. With additional resources and community buy-in, these are just some of the activities the teacher mentioned wanting to offer students, families, and the larger community to expand nutrition education and increase efforts promoting healthy eating. The teacher’s desires for improving nutrition education in the middle school are in alignment with existing and successful nutrition interventions: The areas across the nation that
are having the greatest success in fighting childhood obesity are not relying solely on schools, or even on families, to send the message about healthy eating. Instead, they are mobilizing entire communities and developing programs that facilitate access and availability of healthy foods, removing impediments (Robert Wood Johnson Foundation, 2012a). In an analysis of literature on this topic, Roseman, Riddell, and Haynes (2011) found “interventions with links to the larger community can enhance school nutrition interventions” (p. 3). Effective interventions are also improving behavioral skills (i.e.: behavioral capability) to support healthy eating (Hoelscher et al., 2002). Taking communication inequalities into consideration, it behooves communities, including various ecological levels of schools, to project a consistent message as a way to try to challenge the very loud messages from food marketers. Braiding resources, using an ecological approach, is an effective way to increase capital and mobilize in a shared interest, decreasing communication inequality. Alone, a school, a farmers’ market, a state, a foundation, etc. only has so many resources compared to Big Food. Together, though, the combined capital (human, financial, social, etc.) can help to deliver a unified message on healthy eating and nutrition to fight the obesity epidemic.

Although the teacher lacked access to additional resources to offer more interactive and innovative nutrition programs to the students, she did indeed impact the students’ nutrition behaviors. Through effective pedagogy and communication practices, like building personal connections and disclosure, the teacher in this case was able to provide tools to the students to help them resist food marketing messages for unhealthy products and make healthful food choices. The communication inequalities between an international fast food chain and a small school district—or a single teacher in an entire school, for that matter—are clear and obvious. Again, in 2012 alone, McDonald’s spent $972 million on food marketing (Yale Rudd Center for
Food Policy & Obesity, 2013). On the other hand, the budget for the entire school district from my case study is roughly $40 million ([School District], 2016). These are not only financial disparities, but communication inequalities on institutional and macro-levels, as pointed out by Viswanath (2016). The capital available to expose children to nutrition messages is a mediating and moderating condition, of which Big Food has a greater means of influence and capacity compared to the school. This creates health communication disparities that take the form of gaps in, and lack of, nutrition knowledge held by children. Nonetheless, the teacher was able to use communication to her advantage and serve as a positive nutrition influence for the students that took her class, and provided them with tools for interpreting food marketing messages, lessening the communication inequalities. The teacher’s influence on her students contradicts existing research that claimed teachers have low status as sources of nutrition information (Shepherd et al., 2006).

The Importance of a Communication-Centered Approach to the Investigation of the Influence of In-School Nutrition Education. My attention was drawn to macro-level influences outside and beyond the school environment, like economic policies and legislation pertaining to school nutrition, that filtered into the physical and social environments of the school, influencing communication and interactions. My study essentially posits that each level of the ecological model is communicating with individuals. In other words, the influence of each level on children’s nutrition-related attitudes and behaviors is filtered through, or otherwise manifests through, communication. Communication is a mechanism and social process for influencing nutrition attitudes and behaviors, and one that is present at each ecological layer. If we consider the social determinants of health, which are linked and related to the various layers of the ecological model, it is clear that communication plays a crucial role. For example, a social
determinant of health is *education*. Not only is education a social determinant of health, it has been said that “Education is the single most important modifiable social determinant of health” (Iton as quoted in McGill, 2016, para. 3). Education occupies macro, physical, and social levels of the ecological model, as my study described. Federal, state, and local education policies are part of the macro-level environment. These policies determine how education can actually manifest in schools. The Family and Consumer Sciences Class I studied, for example, has to follow guidelines provided by the New York State Education Department (NYSED) core curriculum (2005), which outlines expected skills and proficiencies for the class. In doing so, education then impacts individual or intrapersonal level factors. Based on education policies, schools offer particular courses, and those courses teach certain areas to children. In this case, NYSED requires that Family and Consumer Sciences promotes “optimal nutrition and wellness across the life span” (2011, para. 2). To achieve this, the classroom teacher was then responsible for developing lesson plans that promoted optimal nutrition for the students, and communicating those lessons. This included signage in her classroom (like MyPlate posters that occupy the physical environment by are influenced by macro-level policies determined by the USDA), and the content she talked with students about (the policies then permeate the social environment). As my study showed, the conversations and knowledge gained in the classroom did influence children’s nutrition behaviors, illustrating how education occupied macro, physical, and social levels while also influencing the individual level of the ecological model.

The National Communication Association (NCA) noted, “communication focuses on how people use messages to generate meanings within and across various contexts” (2016, para 1.). In my case study, food options and signage (physical environment) signified a lack of caring about students’ well-being, despite the superintendent and teacher articulating their care. The
students generated *meanings* from what they perceived as *messages* within and across various ecological contexts of the school. Although signs and food are tangible items in the physical environment, the students perceived them as forms of communication and as signs that indicated the school did not care about their nutrition behaviors. The interpersonal communication from members of the institution may be stifled by the other forms of communication present in the school physical environment. The various forms of communication within the ecological model are important, even if they do not explicitly appear to be forms of communication in the traditional senses of verbal and nonverbal communication.

As posited at the outset of this dissertation, food is a form of communication, or a “system of communication” as Barthes (2008, p. 30) stated. In this sense, food functions symbolically, and its availability and quality lends itself to interpretation as people make meanings of food. For example, students felt as though the school lunch quality signified that the school did not care about them. The students created meaning from the availability of foods on the school campus, regardless of whether that was the intention of the district’s administration. Food availability was still a communicative act for the students, and sent a message about the school’s concern about their health and wellness. This outlines a clear connection between the social determinants of health and the power of communication. The social determinants of health, outlined by *Healthy People 2020* are: a) health and health care, b) social and community context, c) education, d) economic stability, and e) neighborhood and built environment (HHS, 2016). The availability of food in the school was a form of communication, and a social determinant. The ways in which people talked about nutrition in the school was a form of communication, and a social determinant. The policies that regulated the school nutrition programs were forms of communication, and social determinants.
As mentioned in Chapter 4, “one cannot not communicate.” Through an exploration of the various ecological influences of nutrition behavior among children, the role of communication and the perceptions of that communication were vital. The school district superintendent felt as though the district was supporting healthy nutrition across grade levels, for example. However, due to the foods available in the vending machine, the quality of lunches, and even the lack of signage promoting proper nutrition in the middle school, the students felt the school was not supporting healthy nutrition. In fact, they felt the lack of nutritious foods and explicit adherence to what they learned about MyPlate was a sign that the school did not care about their health. So, while an ecological framework is an excellent tool for providing sensitizing constructs and a frame for viewing nutrition influences, it is important to look at the sense making and message interpretation processes of the target audience (students, in this case) of those artifacts in the environmental levels (like signs in the school; communication in the classroom) to evaluate the effectiveness of various influences. In other words, it is not enough to say that physical and social environments influence nutrition behaviors, but it is crucial to look at how they influence individuals and the meaning individuals apply to the messages from those environments. It is also important for the messages being conveyed from the different ecological levels to be consistent, as students pointed out in my study and as supported by research, e.g. Bauer, Yang, and Austin (2004) who similarly emphasized the need for the physical environment to support the health-promoting messages received in nutrition education classrooms and not undermine these classroom efforts; and Kubik et al. (2003), who found associations between the school physical environment, like vending machines, and unhealthy eating behaviors. For an intervention to be effective, similar messages should be sent to the individual level from the macro, physical, and social levels. Without this consistency, my study showed that the messages
can be confusing or even counterproductive. Learning about MyPlate and healthy snacks in the classroom but stepping outside of the class and having the ability to purchase unhealthy snacks from a vending machine was problematic for many students in my study.

**Theoretical Implications**

This study contributes to and supports the selected theoretical frameworks in a number of ways. This study supported the use of social cognitive theory in analysis of the influences on children’s nutrition behaviors, and encourages the use of behavioral capability as a separate construct in research and evaluation using this theory. It also supported the application of the ecological model for studying nutrition behaviors, and emphasizes the role of communication in this model.

**Social Cognitive Theory’s Application to Nutrition Behaviors.** Each of the structural paths of influence from Bandura’s (2004) social cognitive theory appeared in the data. Self-efficacy, outcome expectations, facilitators, impediments, and goals were discussed by children in the focus groups, as well as their infusion in the class lessons. Students discussed their perceived abilities to change their diets (self-efficacy), the fears and concerns they had related to unhealthy eating (outcome expectations), the role of the class teacher in changing their nutrition attitudes (facilitators), the lack of availability of healthy foods in the school (impediments), and their desires to eat well (goals). Each of the social cognitive theory constructs outlined in Chapter 2 that were adapted as sensitizing constructs for this study were revealed in the data analysis process. These various influences led to healthful changes in nutrition behaviors for the majority of students who participated in my study. In addition to these constructs, the data revealed that knowledge and skills were crucial to whether nutrition-related behavior change occurred or if the students developed the intention of changing their nutrition behaviors. The
various levels of influence detailed in my study helped addressed a gap in the literature, as identified by Kelder, Hoelscher, and Perry (2015), who claimed:

While barriers and opportunities in the physical and policy environments have been incorporated into several studies using SCT [social cognitive theory] as a framework, the effects and interactions among environmental, behavioral, and cognitive factors have not always been explicitly analyzed or explored. (p. 177)

My study explored the effects and interactions of various factors related to nutrition behaviors through a communication-centered approach, explicitly investigating environmental, behavioral, and cognitive levels through an ecological lens. Incorporating communication theory and constructs into social cognitive theory was an innovative and novel approach to this area. My study supported the use of social cognitive theory in evaluating nutrition education in schools, which reinforces the applicability of interventions and evaluations of school-based nutrition education using this theory. In fact, social cognitive theory is the most widely used theoretical framework for nutrition education design and evaluation (Hoelscher et al., 2002; Neumark-Sztainer et al., 2003; Sharma, 2011). My study revealed that social cognitive theory’s constructs are indeed relevant for researching school-based nutrition-related behavior changes among children, helping to build the evidence-base for effective interventions. My research emphasized the importance of the school environment, elements beyond the classroom education, in influencing nutrition-related behavior changes. This environmental component is consistent with social cognitive theory. This work also supported the value of a comprehensive approach to social cognitive theory that includes evaluation of the interactions across environmental influences, investigating not only children’s behavior, but the myriad of mediating factors that facilitate or impede that behavior on an environmental level. It also highlighted the value of
extrapolating behavioral capability, also known as behavioral capacity, as a unique and specific construct that contributes to behavior change, which I will discuss in more detail in my suggestions for future research.

Bandura’s (2004) structural paths of influence does not explicitly include behavioral capability as a construct. My study supported my hypothesis that behavioral capability, or the knowledge and skill to perform a behavior, is an essential factor when determining whether behavior will change. Some students stated this in their own language during my study, noting that their peers would probably improve their behaviors if they had the knowledge and skills for how to do so. The students who did not express changing their behavior as a result of the class largely indicated that the class did not provide them with enough practical, tangible information for improving their diets—they felt they lacked the knowledge and skills. Therefore, even with high self-efficacy, if the knowledge and skills are not present, behavior change is less likely to occur.

**Infusing Social Cognitive Theory with an Ecological Perspective.** Not only did this case provide evidence for the value of social cognitive theory in research pertaining to children’s nutrition behaviors, it illustrated the benefit of an *ecological approach to social cognitive theory.* This approach was essential to my study, as social cognitive theory’s prediction of the mechanisms that influence behavior change would not have sufficed for making sense of the data in the study. This approach also helped address gaps in the literature: In 2002, Story, Neumark-Sztainer, and French suggested that future research should investigate the eating behaviors of youth through an ecological lens, considering ecological levels like individual (e.g.: knowledge, self-efficacy), social (e.g. family and peer networks), physical (e.g.: schools, vending machines), and macrosystem (e.g.: mass media, policies). While my assignments of entities did not
necessarily correspond with the ecological levels presented by Story, Neumark-Sztainer, and French (2002) (for example, I considered schools both social and physical environments; media as social, physical, and macro), the ecological approach to social cognitive theory did allow for the examination of these various influences. A content analysis of school-based nutrition interventions for children and youth in kindergarten through 12th grade found healthful changes to school environments can increase the effectiveness of classroom interventions (Roseman, Riddell, & Haynes, 2011). As such, other research has been conducted studying one or more ecological levels in the context of eating behaviors among children.

Kubik et al. (2003) conducted a quantitative study on school physical environments, namely vending machines, school lunch, school stores, and à la carte options. The authors found the physical environment level of the ecological model was associated with children’s (seventh graders) eating behaviors, and the availability of nonnutritious food items in the physical environment was correlated with decreased consumption of fruits and vegetables. Birnbaum et al. (2002), on the other hand, investigated both the physical and social environment influences on seventh grade students, using a survey guided by the theory of planned behavior, among other instruments. Investigating a codified intervention that was often offered in Family and Consumer Sciences among the schools studied, TEENS. The investigation included 1) a control group, 2) students who were exposed to a school environment intervention, 3) students participated in a curriculum (guided by social cognitive theory) and were exposed to a school environment intervention, and 4) students recruited as peer leaders who participated in a curriculum and were exposed to a school environment intervention. The school environment intervention (physical environment) consisted largely of signage for fruits and vegetables and improved school lunch options. The researchers discovered that students exposed to a school
environment intervention actually decreased their fruit and vegetable intake—the researchers referred to this as “surprising and disturbing” (p. 439). This finding does not support my emphasis on the need for the school physical environment to reflect positive nutrition messages, but it may support the notion that the school physical environment can serve to reiterate and emphasize social environmental communication regarding healthy eating: students who participated in the curriculum (what I would consider part of the social environment; involving interactions in the classroom) and were exposed to the physical environment intervention showed trends, though not statistically significant, toward improved eating behaviors (Birnbaum et al., 2002).

Neumark-Sztainer et al. (2003) also used quantitative methodologies in a study grounded in social cognitive theory to investigate socio-environmental influences, like social support for healthy eating and family eating habits, associated with middle and high school students fruit and vegetable intake. The authors discovered that social cognitive theory’s concept of reciprocal determinism was supported, with food availability interacting with children’s food preferences. On the other hand, social cognitive theory’s self-efficacy was not a statistically significant predictor of fruit and vegetable intake. Researching both physical and social environmental levels of the school, my research suggested that the role of reciprocal determinism was limited as the students’ interactions with the school physical environment did not shape that environment. That is, their complaints about the school lunch options did not influence, prima facie, the school lunch offerings. Yet, data analysis indicated that self-efficacy was indeed an influential factor for mitigating nutrition-related behavior change.

My ecological approach to social cognitive theory was supported by the suggestion of Prodaniuk, Plotnikoff, Spence, and Wilson (2004), who claimed social cognitive theory is
similar to ecological approaches as a result of its inclusion of environmental factors that influence behavior change, but it is not necessarily an ecological approach in and of itself. The authors wrote, “A defining feature of ecological models is a direct relationship between the environment and behaviour without cognitive mediation… SCT [social cognitive theory] further presumes that people are active shapers of their environments rather than merely passive reactors” (Prodaniuk et al., 2004, para. 7). My study pointed out this complexity of individual influence over environment with attention drawn to the concept of reciprocal determinism. Reciprocal determinism is the idea that there is a bidirectional relationship between behavior and environment. On one hand, reciprocal determinism was not explicit. For example, although children disliked the food in the school, this did not seem to have an impact on the school’s food offerings. Reciprocal determinism was not as prominent across ecological levels (e.g.: influence from the individual to the physical environment) as it was within ecological levels (e.g.: influence of food marketing on the classroom and children’s influence on parents). On the other hand, data analysis indicated reciprocal determinism was present in regards to salient factors shaping ecological levels–particularly in the social environment–, namely the ongoing interactions and influences of a) food marketing and classroom content and b) children and their parents. With regards to the first area, conversations about food marketing and media often permeated the classroom, and the teacher modified her lesson plans on an ad hoc basis to engage in discussions with students about things like marketing strategies for Gatorade. The children then took those discussions and applied them to their interpretation of food marketing efforts, and developed a distrust of advertisers. The second area where reciprocal determinism was clear from the analysis of data collected was between children and their parents. The students would learn information about nutrition in class, bring it home to their parents and share the new
knowledge in an attempt to shape household eating habits. The parents would then purchase new foods for the home, and the children’s nutrition behaviors would change. Or, the children would relay nutrition information gleaned from their parents in class, the teacher would correct or support the nutrition claim, and the children would continue or change an attitude or behavior accordingly. This emphasizes the relevance of social cognitive theory’s reciprocal determinism, particularly with children who are arguably under greater influences (whether by parents or media) than adults, as well as the complexity of this, since the students were not active shapers of the school physical environment. Nonetheless, these symbiotic relationships also illustrate the value of an ecological approach to social cognitive theory. Cohen, Scribner, and Farley (2000) wrote:

Given that environment influences individual behavior and individuals influence their environments, the application of modern behavioral theory to practice requires the decision of whether to directly target individuals, their environments, or both to achieve the most effective outcomes. (p. 146)

In my study, an ecological approach to social cognitive theory allowed for the discovery that targeting both individuals, e.g.: children via nutrition education, and their environments, e.g. availability of foods in schools, would be most effective at changing nutrition attitudes and behaviors. When children felt they were being targeted, but their environment did not echo the nutrition messages received in the classroom, it served as a deterrent to behavior change. For social cognitive theory, an approach that includes structural, or sociostructural, factors that contribute to behavior change can be an effective framework for nutrition interventions. Individual-level interventions (like education) can be enhanced through ecological approaches to behavior change.
Practical Implications

While reports and studies are now suggesting that childhood obesity is decreasing in some cities and states across the country, these reductions are largely in young, pre-school age children. For other children and youth, rates of obesity are still increasing (Park, 2016). According to the Robert Wood Johnson Foundation (2012a), the cities and states that are seeing declines in childhood obesity are “taking comprehensive action to address the childhood obesity epidemic” (p. 1). Not only are they taking comprehensive action, they are taking a social ecological approach to the issue. They are supporting farm-to-table in schools (which the teacher in my study indicated as a desire of hers, but not something the district currently implements), they are designing programs to help low-income families buy healthy produce (cost and availability of fresh produce was identified by children in my study as a barrier to healthy eating), and they are setting their own nutrition standards for school vending snacks (although the school in my case adhered to federal standards, the majority of children still perceived of the vending as unhealthy) (Robert Wood Johnson Foundation, 2012a). It is not only meaningful for the school environment to reflect what children learn in school about nutrition education, but also for the larger community to communicate these messages, too.

During this research, attention was drawn to the emphasis on healthy eating in the elementary school as compared to the middle school. The signage, programs, and other forms of communication in the elementary school were more aggressively promoting and educating about healthy eating compared to those in the middle school. And, students noticed this disparity. It behooves school districts to implement nutrition interventions at an early age, indeed, but also to continue those efforts and reinforce the early childhood education. One study found that depicting vegetables as superheroes as signage in elementary schools increased student use of the
school salad bar (Hanks, Just, & Brumberg, 2016). While veggie superheroes may not be persuasive for youth in middle school, these findings support the idea that schools can use creative marketing strategies to influence consumption of healthful foods: “modifications to a child’s external environment can influence food choice” (Hanks, Just, & Brumberg, 2016, p. 2). In fact, back in 1996, the CDC provided recommendations for school’s seeking to promote healthy eating. They suggested that schools “implement nutrition education from preschool through secondary school [emphasis added] as part of a sequential, comprehensive school health education curriculum designed to help students adopt healthy eating behaviors” (para. 37).

Twenty years later, my study supports this recommendation.

Schools ought to engage in assertive nutrition education, and support their nutrition education efforts with physical and social environmental communication strategies, beyond elementary school and into both middle and high schools. Strategic messaging about healthful eating in middle and high schools is valuable because the food landscape changes from what children are exposed to in elementary school. “Compared with the food environment in elementary schools, students in middle and high schools are faced with a huge array of high-fat and high-sugar food choices and given little, if any, guidance about these choices” (Story, Neumark-Sztainer, & French, 2002, p. S45). For example, students in the middle and high schools of the district I studied had access to vending machines, elementary students did not. Yet, the elementary school had an abundance of signage on healthy eating while the middle school did not supply this level of communication about healthful food choices. In my case, students were cognizant of the lack of posters and signage communicating to them about healthy eating, compared with the abundance of messaging available in the elementary school. Keeping messages strong and consistent can help to reinforce positive nutrition behaviors and maintain a
message of healthful eating from K-12. One study of parents (n=350) and teachers (n=490) from 16 Minnesota middle schools found that 82% of parents 69% of teachers felt schools did not pay enough attention to student nutrition; and only 20% and 12%, respectively, thought it was acceptable for students to be able to purchase competitive foods like candy and soda in school (Kubik, et al., 2015). While I did not study parents, nor did I interview multiple teachers in the school, the findings of my study from the students’ perspectives support the idea that little attention is paid to nutrition across the school environments, and vending content is inconsistent with messages about healthful nutrition. Again, this supports the need for a comprehensive and consistent approach to nutrition education across both social and physical environments in schools.

From a policy perspective, the concerns of both the students and teacher in regards to the school vending machine speaks to the complications and contradictions that can arise when schools offer both competitive foods and nutrition education on campus. If healthier items are available in schools, literature indicates that children will eat healthier. For example, a March 2016 study examined school district food policies and soda consumption among high school students: The authors found that “among districts with a policy that high schools offer healthful alternative beverages when other beverages are available, the odds of a student consuming regular soda one or more times per day were 25% lower than in districts without this requirement” (Miller, Sliwa, Brener, Park, & Merlo, In Press, p. 4). Schools may be able to decrease consumption of foods high in salt, sugar, and fat by prohibiting the sale of these items on campus, or offering healthy alternatives for students to choose from. As I noted in Chapter 1, states are required by federal law to develop wellness policies for schools. And, no state has enacted wellness policies that meet the recommendations of the Institute of Medicine’s Nutrition
Standards for Foods in Schools—the gold standard for regulating competitive foods in schools (CDC, 2012b). Meeting these recommendations, or otherwise improving on existing policies, not only has the potential to improve children’s eating habits, it can help to create a school nutrition environment that offers consistent messages to children. The contradictory nature of school food options and nutrition lesson plans was not unique to my study. Bauer, Yang, and Austin (2004) reported, “When developing programs and policies to improve the health of students, environmental influences that undermine efforts to improve student health behaviors must be addressed” (p. 34). Policies (macro-level) that encourage the school physical and social levels to be in alignment have the propensity to improve children’s nutrition-related intrapersonal factors (e.g.: cognitions, attitudes, behaviors).

Specific to media literacy, it is not incongruent to teach media literacy skills in the context of nutrition education. It has been reported that “Most [states] incorporate media literacy in major subject areas such as English or social studies and some in health, but adoption has been sporadic and inconsistent at best” (Brown, 2006). The findings of my study indicate that teaching media literacy skills, or skills for “reading” the media, fit well within the context of nutrition education. Food marketers engage practices like using celebrities to endorse nonnutritious foods and sell products; and reliance on health halos, or the emphasis of one quality of a food item that makes the item then seem like a healthy choice, i.e.: promoting a food as low-fat, among others. These strategies are influential in the consumption of non-nutritious foods (Bragg, Miller, Elizee, Dighe, & Elbel, 2016; Chandon & Wansink, 2012). As I observed in the classroom, students justified consumption of Gatorade because athletes drink it, for example. The perception of celebrity consumption of foods and beverages influenced some of the children in my study (in my field notes) yet students often
denied celebrities as a source of influence (in focus groups). Food endorsements are largely for unhealthy foods and most of the celebrities featured in these marketing efforts have been nominated for Teen Choice Awards (Bragg et al., 2016), illustrating their salience and influence among youth.

Learning to decode these food marketing messages could be an essential part of nutrition education curricula, whether the lessons be evidence-based or teacher-developed. Television advertisements directed at children and youth decreased between 2014 and 2015, a decline of 8% and 14% respectively (Frazier & Harris, 2016). Yet, cumulatively, “Compared to 2007—the year that the CFBAI [Children's Food and Beverage Advertising Initiative] self-regulatory program was implemented—children saw 3% fewer ads and adolescents saw an equal number of ads” (Frazier & Harris, 2016, p. 1). Despite the 2015 decrease in ads targeting youth (ages 12-17), mere exposure theory (Zajonc, 1968) posits that repeated exposure to these kid-friendly food marketing messages over time would still create favorable attitudes toward the products. And, the decreases in television advertisements may be a result of the fact that children are watching less television, with teens (14-17) showing a 4% drop in television viewing in 2014 from 2011 (The Nielsen Company, 2015). Children and youth are now consuming media content across multiple platforms, not solely on television. In addition to consumption on devices like phones and tablets, they are exposed to advertisements on sites like Facebook. Teaching media literacy in the context of nutrition education can be increasingly valuable for this population, particularly as media transitions from less of a static aspect of the physical environment to an interactive component of the social environment.
Limitations

While I believe my research shed some light on and contributed to understanding the value and significance of school-based nutrition education programs, as well as facilitated understanding of the ways in which nutrition education programs interact with food marketing messages to shape behaviors, there are limitations. One limitation is the exploration of a single school district. As a case study, this is not generalizable to other schools, nor is it necessarily representative of other schools in upstate New York. And, this study was conducted in a relatively small and homogenous area compared to other areas of the State and country, further highlighting its lack of generalizability or representation. At the same time, though, use of a single school district was fitting for the case study design of my study; and future work could compare this case to another and assess for similarities and differences in order to further knowledge on this topic.

Taking a purely qualitative approach in this study was another limitation. Some of the areas of investigation were fairly elusive. Pinpointing whether Family and Consumer Sciences contributed to media literacy skills, for example, was a challenge. My discussion of that led to the deduction that students were mindful of lack of nutrition information presented in food marketing messages, and they expressed how the Family and Consumer Sciences class established the precedence for looking for and understanding nutrition information, therefore the class contributed to media literacy. This is not necessarily causation, nor is it inherently correlation. Based on the qualitative approach, a clear and definitive answer to Research Question 3 was lacking. Research Question 3, in particular, may have been better approached as a quantitative question, and one that tested children’s media literacy skills before and after the nutrition education. As a matter of fact, this was actually the intent of my study, and a media
literacy questionnaire was developed and reviewed by both my dissertation committee and IRB. However, due to difficulties in attaining consent forms from parents in an adequate timeframe for the delivery of the pre-test, this data collection methodology was ultimately removed from the study as consent forms were still outstanding well into the delivery of the nutrition education. The questionnaires would have been warranted moot after the start of the intervention. As a result, reliance on solely qualitative data to develop an understanding of whether the class equipped students with critical interpretation skills for analyzing food marketing messages is a limitation of my work. However, the design to address Research Question 3 was the best choice under the circumstances, rather than to abandon the question altogether after the quantitative portion of this study was rendered unsuccessful. Although the quantitative element of this study was not actualized, the qualitative design developed to address Research Question 3 was indeed a success: It allowed me to glean how students actually utilized the knowledge they had to decode media messaging and offered indications that some of these skills were either developed in or were strengthened in class. Nonetheless, this relates to my suggestion for future research, pairing experimental designs with qualitative inquiry for a full understanding of the mechanisms explored in my study.

Related to the limitations of a purely qualitative approach was the use of focus groups. While focus groups can offer an abundance of information, they can also create a dynamic where participants to feel pressured to say something that does not reflect their actual feelings, or prevent them from saying something out of fear or intimidation in from the group (Rubin & Babbie, 2008). All focus groups are at risk of reflecting “social desirability influences, pressures to conform to groupthink, or the persuasive effects of a dominant group member” (Stewart, Shamdasani, & Rook, 2007, p. 116). These group dynamics can be challenging to navigate,
perhaps even more so with children who are sensitive to evaluations by their peers. My focus
groups were as small as two-person dyads to as large as a group of seven. Regardless of size,
dominant voices emerged. And, many instances of agreement with peers took place – whether
this was true agreement or placating is unknown. Zeinstra, Koelen, Kok, and de Graaf (2007)
note that “focus groups are especially valuable for obtaining data from children” (p.3). While
the focus groups were indeed valuable, the intricacies also proved to be a limitation of my study.
In addition, the focus groups required access to students outside of their regular school day. Due
to the increasingly demanding schedules of both children and their parents, there were few
opportunities for connecting for focus groups other than 2:20pm – 3:05pm on days the late bus
operated. My original focus group protocol was designed to be a 60-minute discussion, and I
modified it to adjust to 40-45 minutes, which meant the photo elicitation and food marketing
discussion was often rushed, or even omitted. And, even then, children would not show up
because they got detention, had a sports practice come up, or simply forgot and proceeded to
their regular 2:20pm bus like normal. This led to the less than ideal dyad discussion, and smaller
than anticipated groups. The focus groups required that children extend their already long days
to sit and have additional conversations with me. I think this limited the data I was able to
acquire in my study by limiting my sample size. Also, I did not conduct focus groups with a
control group, or a group of students who had not participated in Family and Consumer Sciences,
therefore, I was not able to account for temporal bias or other biases. Simultaneously, though,
the focus group approach allowed for rich and dynamic discussion with the students. As noted at
the outset of this dissertation, focus groups have been used in a number of studies exploring
children’s nutrition behaviors, and the methodology certainly proved valuable for my study.
Taking into account focus group settings to maximize time for discussion and increase the number of participants would be beneficial in future research.

The availability of students for this study was quite limited. Due to extracurricular commitments, children staying after school for detention or sports, children having mandatory tutoring after school, and general lack of interest, I was left with a relatively small sample size (n=28). A larger sample size may have allowed me to more explicitly make connections to the class content and additional nutrition behaviors or media literacy skills. Nonetheless, after visiting and observing the school for the entire 2014-2015 school year; self-funding incentives for students; and connecting with students, parents, and teachers, I did indeed acquire an acceptable number of participants. As noted previously, the number of participants in my study was not inconsistent with recruitment in other qualitative studies exploring nutrition behaviors. In the future, larger incentives to increase motivation to participate may be effective for this population. For example, some students who did not participate in my study noted that they would have if they could get entered into a raffle for an iPad or other expensive product; or if all participants received the $25 Visa gift card that I raffled off to 10 random students.

**Suggestions for Future Research**

Based on the findings of this study, future research is suggested in furthering the investigation of the roles and influences of both behavioral capability and self-efficacy in shaping children’s nutrition behaviors. While I posit that behavioral capability is a necessary component of self-efficacy, which is consistent with the work of Safdie et al. (2014), who claimed “behavioral capacity is a pre-requisite for self-efficacy and self-confidence” (p. 2), other studies have found that self-efficacy can be just as powerful a determinant of healthy nutrition behaviors without the corresponding knowledge and skills. For example, a study seeking to
develop and validate a survey for elementary nutrition education using social cognitive theory suggested that “self-efficacy may be more relevant than knowledge [i.e., behavioral capability] in terms of influencing children’s eating behaviors” (Hall et al., 2015a, p. 9). Distinguishing the differences between these two constructs and the value of each in promoting positive behavior change can help to shape the delivery of nutrition education in our nation’s schools. Social cognitive theory is the most widely used theoretical framework for nutrition education design and evaluation (Hoelscher et al., 2002; Sharma, 2011). While social cognitive theory’s most popular construct is self-efficacy (McAlister, Perry, & Parcel, 2008), it was worth researching whether behavioral capability is indeed a prerequisite to self-efficacy, or to otherwise develop a deeper understanding of the relationship between the two concepts. Nutrition interventions designed to increase perceived ability for engaging in healthy nutrition behaviors (self-efficacy) may be more effective if they start with offering knowledge about why healthy nutrition behaviors matter, increasing education and addressing health and nutrition literacy; and offer skills for how to improve nutrition behaviors. With this comprehensive framework, self-efficacy and social cognitive theory-based interventions may be more effective. To continue addressing the obesity epidemic, it is paramount to have an understanding of the effective strategies and mechanisms for behavior change.

I mentioned a number of times throughout this dissertation that most studies on this topic are quantitative, quasi-experimental approaches. On the other hand, my study is one of the few that I am aware of that incorporates the qualitative practice of observation into investigations of this topic. Suggested future research entails mixed method designs that incorporate both quantitative and qualitative, namely observation, approaches to this topic. The participant observation in this case was invaluable—it helped position the focus groups and interviews in a
larger environmental context, and assisted me in connecting students’ talk back to the classroom. However, it had its limitations, as I outlined. For example, I was unable to determine neither causality nor correlation of class enrollment and media literacy. A multi-method approach could help to solidify or otherwise further extrapolate on whether or not certain nutrition beliefs, attitudes, or behaviors changed as the result of class participation and how these changes were prompted. That is, are there indicators of increases in nutrition knowledge (quantitative) and what were the mechanisms through which that nutrition education was delivered (qualitative), for example. While the participant observation offered somewhat of an objective look (I believe we all bring biases to the table as research instruments) at the school, I was limited in my ability to accurately determine whether communication from and in the school was responsible for certain changes in nutrition attitudes or behaviors, or in critical media interpretation skills. Supplementing qualitative methods with quantitative designs could help reconcile this. In addition, a mixed method design that engages participant observation can help determine the gaps between what was taught in a nutrition education class, and how it was taught, and what students report learning. Understanding the gaps may assist with determining classroom communication best-practices for teaching nutrition education for behavior change.

Considering the influence of this nutrition education, I would suggest future studies that compare the impact of teacher-developed nutrition education lessons plans with codified curricula or evidence-based toolkits. For health communication scholars, as well as those intrigued by applied communication and communication education, exploration of the types of communication (and lesson content) in the classroom when teachers make their own lesson plans as compared to those who follow a curriculum would be valuable. Considering that most nutrition curricula are indeed developed by teachers and not delivered with the guidance of
evidence-based educational frameworks, I would encourage the field to compare the two to determine if one approach is more effective than the other. As described in this case, the teacher engaged in a number of communicative practices that increased her reliability, credibility, authority, and liking with students – like personal connections, disclosure, and empowerment practices. Comparing the efficacy of the communicative strategies of teacher-developed lesson plans and codified interventions if worthy of future study. Such studies may be able to provide recommendations of the most effective communicative or pedagogy practices across the two teaching strategies.

Lastly, for health communication scholars, and those who investigate mass communication and media literacy, further exploration of how students’ food behaviors are affected by food marketing and media after the child takes a nutrition education class is worthy of investigation. There are many studies that look at media’s influence on children’s nutrition attitudes and behaviors, such as those summarized by the literature review on television viewing and children’s consumption patterns by Coon and Tucker (2001). We know that children request from parents what they see advertised on television, for example, e.g.: Mehta et al., 2010. Comparing the influence of food marketing on students who received nutrition education in school and those who have not is an area worthy of the attention of health communication and mass communication scholars. Can media influence be mediated by nutrition education? While my study explored whether nutrition education equips students with media literacy skills, future studies could explore the intersections of nutrition education, food marketing, and children’s nutrition behaviors.
**Conclusion**

While working to address childhood obesity, the nation has called upon the school system to educate and inform children, transforming unhealthy eating habits into healthful ones. This study highlighted the constellation of factors that function within the school environment, on macro, physical, social, and individual levels. Focusing on the school as a vehicle for health promotion, then, requires a comprehensive approach that ensures consistent nutrition-related communication across all of these ecological levels. In fact, best practices indicate that focusing solely on the obesity prevention efforts of schools is often not enough: as a social problem, childhood obesity is best addressed across multiple systems. Family, communities, schools, and media can all play a role. This is supported by a recent CDC release that noted, “There is not one simple solution to address the high levels of obesity in the US. It will take a societal effort. Community leaders, employers, government agencies, and many others can create places that make it easier for adults and families to move more and eat better” (CDC, 2016, para. 6).

Further emphasizing the societal and thus ecological nature of childhood obesity, I quoted Albert Bandura (2004) in the introduction of this work: “A comprehensive approach to health promotion also requires changing the practices of social systems that have widespread effects on human health” (p. 143). Bandura indicated that *social systems* must be adapted in the promotion of healthy behaviors, not any one system. Although this research did indeed focus on one system, the school system, the findings illustrated the ways in which nutrition interventions should be ecological, providing consistent communication to children and youth that does not undermine the health promoting goals of school-based nutrition education. And, despite the calls to action by initiatives like *Healthy People 2020*, further developing interventions to address childhood obesity is increasingly salient: A recent study reported that nearly one-third of
children and youth ages 10 to 17 are still overweight or obese (State of Obesity, 2016).

Although obesity rates are decreasing for some age groups (2- to 5-year olds) and remaining steady for others (6- to 11-year olds), recent research indicated that rates of obesity are actually increasing for those children and youth between the ages of 12 and 19 (State of Obesity, 2016). Many middle school students, like those who participated in this case study, have climbing rates of obesity that schools, along with partners, may be able to address with consistent and ecological communication strategies.

This work offers implications for multiple systems and stakeholders, as well as for school-based nutrition intervention planning, development, implementation, and even evaluation. In this case study, children expressed great concerns about the school’s physical environment, yet their voices did not seem to be enough to transform that environment. Braiding resources, including the human capital offered by children, teachers, and parents, may help to establish more efficient and effective communicative practices for addressing childhood obesity in schools.
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Footnotes

1 The National Center for Education Statistics (NCES) Fast Response Survey System has not reported on Nutrition Education in Public Elementary and Secondary Schools since July 29, 1996 (NCES # 96852). I contacted NCES regarding any additional data that might be available by request on July 16, 2016; and was advised on July 28, 2016 that there are no updates to this survey that the Center is aware of.

2 This core curriculum is not synonymous with a nutrition education curriculum. The core curriculum for Home and Careers Skills ensures the class teaches skills and content that are aligned with New York State Learning Standards.

3 In a couple of instances, due to lack of time and the need for students to leave the discussion for the late bus or sports practice, the discussion was cut short and I did not have the opportunity to show the advertisement. The scheduling challenges are further discussed in Chapter 8 as a limitation of my study.

4 It is my understanding that MyPlate videos are available via social media but not as advertisements on television. I tweeted the USDA @MyPlate about whether advertisements or PSAs for MyPlate exist on television, but did not receive a response.
APPENDIX A: FOCUS GROUP PROTOCOL

Student Focus Group Protocol

An Investigation of the Efficacy of School-Based Nutrition Education Programs in Increasing Students’ Attitudes and Perceived Behavioral Control:

Combating Unhealthful Media Messages

Objectives:

☐ To discover the impact of the Home and Careers nutrition education module and the value of the techniques learned in class for students.
☐ To obtain students’ reactions to mass media advertisements for fast food and determine if they apply concepts from the Home and Careers class in their interpretation of those advertisements.
☐ To obtain information from seventh and eighth graders about their larger, institutional food environment.


| A. Introduction *5 Min.* | Hi, I’m Crystal. I am from [Town], and went to this same middle school when I was your age. Right now, I am at the University at Albany where I am an adjunct professor, and also working on my dissertation. What we talk about today will be part of the research I am completing for my dissertation, which is a project I need to complete in order to get my Ph.D. I would like to thank you for being here. I really appreciate your willingness to share your thoughts with me. The information you give will be used to evaluate your recent nutrition education module in Home and Careers. Also, each of you will be entered into a raffle for one of ten $25 Visa gift cards as a “thank you” for your time and participation. The raffle will take place after I conclude all of the group discussions, and you will be notified in person if you win a drawing. Distribute raffle tickets and record ticket numbers. Everything we talk about will be confidential. This means that I will use general ideas from our conversations in a report but there will not be any |
| If there is any discomfort with recording, do not tape the session. | |
| * Throughout the session continue to stress the point that we want to know their opinions about how they feel about food choices, not |

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what their parents or
teachers think.

names used and no one at your school will know
specifically who said what. You can let me know what
you really think. I also ask you to respect this
confidentiality to assure that everything that is said in
this room stays in this room. So, while I will keep your
responses confidential, you should realize there are
other students present, and these other students may or
may not share information outside of the focus group,
including information that you may feel is sensitive or
private. While I ask everyone to keep this information
confidential and not repeat anything said here today,
it’s also important for each of you to consider that
someone may share something, and to try not to share
information too sensitive or private.

I sent a letter home to your parents/guardians
describing this group. In that letter I explained that I
would tape record the conversation and take
notes. This helps me remember what you said. Is it OK with
all of you that I tape record our conversation? The
notes and the tapes will be kept private in my office.

Today, I would like to ask you about your Home and
Careers class, the Middle School in general, as well as
talk about some pictures, print ads, and a television
advertisement. I expect we will be here for about 60
minutes. Before we get started, are there any
questions?

<table>
<thead>
<tr>
<th>Agreements</th>
<th>Now I would like to go over a few agreements to guide our conversation.</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Please talk <strong>one at a time</strong> and <strong>speak up</strong> as much as much as possible. This will make it easier for us to hear each other.</td>
<td></td>
</tr>
<tr>
<td>• Please <strong>respect</strong> one another’s opinions. There will be a range of opinions and experiences on any of the topics, and we do not expect everyone to agree with another. We do, however, ask that everybody show respect when others are talking. <strong>What are some ways we can show respect to others?</strong></td>
<td></td>
</tr>
<tr>
<td>• <strong>Today’s discussion is confidential.</strong> This means that anything that is said in this room stays in this room. <strong>Please don’t share other people’s comments outside of this room.</strong> While I will keep your responses confidential, you should realize there are other students present, and these other students</td>
<td></td>
</tr>
</tbody>
</table>
may or may not share information outside of the focus group, including information that you may feel is sensitive or private. I can’t guarantee the confidentiality provided by others in this room, but ask that you all please keep this conversation in the room.

- Because we only have 60 minutes, we may have to shorten the discussion and move on to another question.
- Feel free to respond to each other about these topics, not just answer my questions. This will help us have a good discussion about each topic.
- Are there any other agreements we should include to help guide our discussion today?
- Are there any questions about today’s discussion before we get started?
- If any questions come up for you during the discussion please feel free to ask for clarification.

<table>
<thead>
<tr>
<th>B. Icebreaker <em>5 Min.</em></th>
<th>Let’s begin. We’ve placed name cards on the table in front of you to help us remember each other’s names. Let’s find out some more about each other by going around the table and introducing ourselves.</th>
</tr>
</thead>
<tbody>
<tr>
<td>The group facilitators should go first. Have fun with this! Try to make it conversational</td>
<td>• Please give your first name and, just for fun, tell us what your favorite food to eat is from the cafeteria. I will start... When I was in middle school, my favorite food from the cafeteria was ...</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C. Food Choices <em>10 Min.</em></th>
<th>Let’s start by getting to know each other a bit more, and talking about the foods we’ve eaten most recently.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Probe for:</td>
<td>• Tell me about what you ate and the reason(s) you chose to eat those foods.</td>
</tr>
<tr>
<td></td>
<td>Write factors on clip chart.</td>
</tr>
<tr>
<td>Topic</td>
<td>Content</td>
</tr>
<tr>
<td>-------</td>
<td>---------</td>
</tr>
<tr>
<td>D. Nutrition Education</td>
<td>Let’s talk more about the nutrition education module you completed in the Home and Careers class with [Teacher].</td>
</tr>
<tr>
<td>E. Television Representations</td>
<td>One place people might learn about healthy eating outside of school is television. We’re going to talk a little about healthy eating guidelines, and then see how those guidelines compare to what’s on TV.</td>
</tr>
<tr>
<td>Common factors like: access, cost, parent’s preference, taste</td>
<td>Let’s talk about these different reasons everyone just named. How often is XXX a concern for you when you decide what to eat?</td>
</tr>
<tr>
<td>What is cool for kids to eat?</td>
<td>Is one reason mentioned for influencing your food choices particularly strong? Does this change from one time to another? In what situations do the reasons you eat certain items sometimes change?</td>
</tr>
<tr>
<td>Indicators of mass media influence</td>
<td>Does the nutrition part of the Home and Careers class influence your food choices <em>(if not named as a factor)</em>? Does [Teacher], personally, impact your food choices?</td>
</tr>
<tr>
<td>Indicators of [Teacher’s] influence</td>
<td>What about the overall school environment, such as the healthy lunches, after-school cooking program, and other nutrition-oriented aspects of the middle school?</td>
</tr>
<tr>
<td>Indicators of larger school environment influence</td>
<td>Social ecological model constructs</td>
</tr>
</tbody>
</table>
| Social ecological model constructs | ```
- What did you learn in class about healthy eating?
- What do you remember most from the activities or lessons in the class?
- Did anything you learn change the way you think about food or your attitude about food? What about any changes to your actual eating habits?
- What else would you have liked to learn about healthy eating this year?
```

What about the middle school as a whole:
- Where else did you learn about healthy eating while in school, outside of [Teacher’s] class?

---

*15 Min.*

Let’s talk more about the nutrition education module you completed in the Home and Careers class with [Teacher].

**Probe for theory of planned behavior constructs and social ecological model constructs.**

**Probe for whether the larger nutrition environment at the school is a source of knowledge and attitude-shaping.**

**Thinking about your Home and Careers class and the nutrition module you finished:**

- What did you learn in class about healthy eating?
- What do you remember most from the activities or lessons in the class?
- Did anything you learn change the way you think about food or your attitude about food? What about any changes to your actual eating habits?
- What else would you have liked to learn about healthy eating this year?

What about the middle school as a whole:
- Where else did you learn about healthy eating while in school, outside of [Teacher’s] class?
| Be sure to probe for specifics things that point to theory of planned behavior and SEM constructs; evidence of food ads being out of alignment with healthy eating; fast food on TV; specific knowledge from FCS that helps interpret ads | On flip chart, draw MyPlate. Here is an image the US government created. The government says this is an ideal diet to follow and outlines the ways we should eat.
- Do you think most kids eat like this? Why or why not?
- What makes it hard to eat like this? What makes it easier?

*Transition from general MyPlate to TV.*
- When you watch TV, what kinds of foods do you see advertised? Or, what kinds of foods do you see your favorite characters eating most on TV programs you watch?
- When you watch TV, what area of MyPlate seems to be advertised or shown in programs most?
- Is there another food group not represented on MyPlate that you think TV most heavily promotes? What is that? Do you think that’s healthy, or no? Why?
- Does what you learned from [Teacher] help you determine if foods advertised on TV are healthy? If so, how? If no, what information are you missing to make a clear choice as to whether or not the foods are healthy?

| F. Photo Elicitiation *
15 Min.* | Now, I’d like to ask you a few questions about some images that relate to eating.

**Probe for positive and negative reactions to the healthfulness of the meal; evidence of knowledge of healthy eating and positive nutrition attitudes; evidence of FCS making an impact.**

| Pass around photo/display on overhead projector. Here is a fast food meal someone might eat. |

- How does this seem to compare to the drawing I made of MyPlate – the way the US government says we should eat?
- How does this seem to compare to what you learned from Ms[Teacher]?

**Pass around photo/display on overhead projector.** Now, here is an example of how an advertiser might promote their fast food.
- What do you think about this advertisement?
evidence that FCS offered tools to interpret ad.

Probe for evidence of FCS impact, organizational environment impact, other sources of nutrition knowledge they would share with this child.

- Advertisers want to convince us to buy their product. How does this advertisement try to do that? What are the selling qualities of their food that they use?
- Is there anything you learned in [Teacher’s] class that would make you want to buy or not want to buy this product? If so, what?

Pass around photo/display on overhead projector.
Take a look at this child.
- Does he appear to be healthy?
- What have you learned in your Home and Careers class that you might want to share with this child?
- Think about [School] Middle School: what is the content of your vending machines? What is sold at the school stores? What are your lunches like? What snacks are available during after school activities? Has this environment provided by the school offered you something you would want to share with this child?

Show fast food advertisement on laptop/overhead projector. Either LeBron James for McDonalds or Venus and Serena Williams for Burger King.
- What’s happening here?
- What are the advertisers doing to make you want to buy this product?
- Does this ad make you want to buy this product or go to this restaurant? Why or why not?
- Has [Teacher] taught you anything that helps you make a decision about whether or not to eat at this restaurant, despite what the advertisement shows? If so, how? If no, what information are you missing to make a clear choice as to whether or not this would be a healthy restaurant to eat at?

G. Final Questions

Finally, I want to get your opinion on how to stay healthy, and how to eat healthy food.

Be sure to probe for specifics such as price, selection, quality,

- What advice do you have to help young people eat better foods?
- Do you think the TV is a good, bad, or neutral source of nutrition information?
| freshness, taste, food culture – of what is acceptable or cool | • Do you think kids all around the country should take a class like [Teacher’s] to learn about nutrition, or no?  
• What does your school do to promote healthy eating?  
• In what ways have students been involved in promoting healthy eating here at school? |
|---|---|
| H. Wrap Up | *Our time is just about up, and I would like to give you the chance to say or ask anything else you feel is important. What else would you like to add?*  

>You have been great talking about the things that happen here at school. Thank you so much.*
APPENDIX B: TEACHER INTERVIEW PROTOCOL

An Investigation of the Efficacy of School-Based Nutrition Education Programs in Increasing Students’ Attitudes and Perceived Behavioral Control: Combating Unhealthful Media Messages

Teacher Interview Protocol

Objectives:
☐ To obtain information about the goals and intentions of nutrition education module.
☐ To obtain information about changes in students’ nutrition behaviors as a result of participating in the nutrition education module.

Key questions, adapted from the Mississippi Department of Education (2013).

Today’s Date: ___/___/_____
Scheduled Start Time: __________
Interview Start Time: ____:____
Interview End Time: ____:____

Interviewee name: _______________ phone: _______________
Interview location: ___________________
Section 1: Nutrition Module Implementation

1) Please give a brief description of the nutrition education module in your Home and Careers class.

   a) Did you develop this module on your own? If so, do you recall what sources you may have used to gather information on what should be taught?

   b) What have been the main successes of this module?

   c) What have been the main challenges?
2) On a scale of 1 to 5, how would you rate the success of your most recent nutrition education module? Would you say it was poor, fair, good, or excellent? And, why?

<table>
<thead>
<tr>
<th>Poor</th>
<th>Fair</th>
<th>Good</th>
<th>Excellent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

3) What are your intentions for this module?

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>Not Sure</th>
<th>No Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Change students’ attitudes?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>b. Change students’ behaviors?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>c. Increase students’ knowledge?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>d. Provide students with skills and tools for healthy eating?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

a) Are there any other intentions for this module?

b) How would you prioritize your intentions and goals, with 1 being the least important and 5 being most important?

Section 2: Teacher, Parent, and Student Reactions

Now I would like to ask you some questions about parents’ and students’ reactions to the program.

4) Are parents familiar with the nutrition education module in Home and Careers? If so, are they supportive? What feedback, if any, do you receive?
5) On a scale from 1 to 5, 1 being not at all interested and 5 being very interested, how receptive are students to the nutrition education module?

Not at all interested

Very interested

Don't Know

1 2 3 4 5

6) As a result of completing the nutrition education module, would you say students become less interested in nutrition/wellness, more interested in nutrition/wellness, or that their interest in nutrition/wellness did not change? [NOTE TO INTERVIEWER: If it feels comfortable, can ask interviewee what contributed to his/her rating.]

Less interested

More interested

Interest did not change

Don’t know

1 2 3 4

7) Have you observed changes in students’ nutrition behaviors, such as eating healthier snacks in the cafeteria during lunchtime or getting healthier snacks from vending machines, after they complete this module?

8) In your opinion, has the nutrition education module affected the following factors for students who have completed it? For each area I read, please indicate if the program increased it, decreased it or if there was no change. If you are not sure please indicate not sure.

How do you think the program affected.....

a. Students’ familiarity with a variety of fruit and vegetables?

b. Students’ consumption of fruit and vegetables?
How do you think the program affected….

c. Students’ consumption of fast food?  
   - Increased [ ]  
   - Decreased [ ]  
   - No Change [ ]  
   - Not Sure [ ]

d. Student visits to the nurse?  
   - Increased [ ]  
   - Decreased [ ]  
   - No Change [ ]  
   - Not Sure [ ]

e. Student time spent watching television?  
   - Increased [ ]  
   - Decreased [ ]  
   - No Change [ ]  
   - Not Sure [ ]

f. Students’ BMIs?  
   - Increased [ ]  
   - Decreased [ ]  
   - No Change [ ]  
   - Not Sure [ ]

g. Students’ academic achievement?  
   - Increased [ ]  
   - Decreased [ ]  
   - No Change [ ]  
   - Not Sure [ ]

h. In what other ways has the module impacted students? *Probe for TPB constructs.*

Section 3: Related Nutrition Topics

Lastly, I would like to ask about some related nutrition topics, and get your final thoughts about the program.

9) In the context of the overall school environment, how important do you think it is for schools to promote fruit and vegetables to students? Would you say it is very unimportant, somewhat unimportant, neither unimportant nor important, somewhat important, or very important?

   - Very unimportant [ ]  
   - Somewhat unimportant [ ]  
   - Neither [ ]  
   - Somewhat important [ ]  
   - Very important [ ]

10) In the context of the overall school environment, how important do you think it is for schools to promote media literacy to students? Do you think schools should be teaching students how to interpret and analyze media messages, particularly those related to nutrition and eating? Would you say it is very unimportant, somewhat unimportant, neither unimportant nor important, somewhat important, or very important?

   - Very unimportant [ ]  
   - Somewhat unimportant [ ]  
   - Neither [ ]  
   - Somewhat important [ ]  
   - Very important [ ]
11) What are your plans for this nutrition education module for next year?

12) Do you think having this module embedded in a larger institutional context that promotes healthy eating makes it more effective? Why or why not?

13) That is the last of the questions I have for you. Do you have any comments or questions you would like to add?

Thank you very much for your time today.
APPENDIX C: SUPERINTENDENT INTERVIEW PROTOCOL

An Investigation of the Efficacy of School-Based Nutrition Education Programs in Increasing Students’ Attitudes and Perceived Behavioral Control: Combating Unhealthful Media Messages

Superintendent Interview Protocol

Objectives:
☐ To obtain information about the larger institutional culture and context the Home and Careers class is embedded in.
☐ To obtain information about the goals and intentions of the nutrition-oriented culture in the larger school district.
☐ To obtain information about changes in students’ health as a result of the nutrition-oriented culture in the district.

Key questions, adapted from the Mississippi Department of Education (2013).

Today’s Date: ___/___/_____
Scheduled Start Time: __________
Interview Start Time: ____:____
Interview End Time: ____:____

Interviewee name: _______________ phone: _______________
Interview location: ____________________
Section 1: Program Implementation

13) Please give a brief description of the district-wide nutrition education components at your school this year. What elements were implemented?

a) What role did you play in these activities and interventions?

b) What have been the main successes of the district-wide nutrition efforts?

c) What were the main challenges?

i) How did the District address these challenges?
14) On a scale of 1 to 5, 1 being very unsupportive and 5 being very supportive, how supportive do you feel your district-wide staff have been in helping to change the school nutrition environment?

<table>
<thead>
<tr>
<th>Very unsupportive</th>
<th>Somewhat unsupportive</th>
<th>Neither</th>
<th>Somewhat supportive</th>
<th>Very supportive</th>
</tr>
</thead>
<tbody>
<tr>
<td>1□</td>
<td>2□</td>
<td>3□</td>
<td>4□</td>
<td>5□</td>
</tr>
</tbody>
</table>

15) Overall, how would you rate the implementation of nutrition-focused and wellness activities and programs in the District? Would you say it was poor, fair, good, or excellent?

<table>
<thead>
<tr>
<th>Poor</th>
<th>Fair</th>
<th>Good</th>
<th>Excellent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1□</td>
<td>2□</td>
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<td>4□</td>
</tr>
</tbody>
</table>

**Section 2: Teacher, Parent, and Student Reactions**

Now I would like to ask you some questions about teachers’, parents’ and students’ reactions to the program.

16) What do teachers say about the changes to the nutrition environment and additional nutrition-focused activities?

17) Do parents notice the changes? What do they say?
18) On a scale from 1 to 5, 1 being not at all interested and 5 being very interested, how receptive were students to the changes in the nutrition-environment when they first started?

<table>
<thead>
<tr>
<th>Not at all interested</th>
<th>Very interested</th>
<th>Don’t Know</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

19) Has the students’ interest in the new activities, classes, and change in food environment changed since these things were first implemented? Would you say they became less interested in nutrition/wellness, more interested in nutrition/wellness, or that their interest in nutrition/wellness did not change? [NOTE TO INTERVIEWER: If it feels comfortable, can ask interviewee what contributed to his/her rating.]

<table>
<thead>
<tr>
<th>Less interested</th>
<th>More interested</th>
<th>Interest did not change</th>
<th>Don’t know</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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</table>

20) In your opinion, have the changes to the nutrition environment affected the following factors for students? For each area I read, please indicate if the program increased it, decreased it or if there was no change. If you are not sure please indicate not sure.

**How do you think the program affected…..**

- a. Students’ familiarity with a variety of fruit and vegetables?  
  
- b. Students’ consumption of fruit and vegetables?  
  
- c. Students’ consumption of fast food?  
  
- d. Student visits to the nurse?  
  
- e. Students’ BMIs?  
  
- e. Students’ academic achievement?  

<table>
<thead>
<tr>
<th>Increased</th>
<th>Decreased</th>
<th>No Change</th>
<th>Not Sure</th>
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<td>1</td>
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</tr>
</tbody>
</table>

f. In what other ways have the changes impacted students?
21) Do you have any comments on the middle school Home and Careers class in particular, and specifically, the nutrition education module [Teacher] implements?

Section 3: Related Nutrition Topics

Lastly, I would like to ask about some related nutrition topics, and get your final thoughts about the program.

22) In the context of the overall school environment, how important do you think it is for schools to promote fruit and vegetables to students? Would you say it is very unimportant, somewhat unimportant, neither unimportant nor important, somewhat important, or very important?

<table>
<thead>
<tr>
<th>Very unimportant</th>
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<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

23) In the context of the overall school environment, how important do you think it is for schools to promote media literacy to students? Do you think schools should be teaching students how to interpret and analyze media messages, particularly those related to nutrition and eating? Would you say it is very unimportant, somewhat unimportant, neither unimportant nor important, somewhat important, or very important?

<table>
<thead>
<tr>
<th>Very unimportant</th>
<th>Somewhat unimportant</th>
<th>Neither</th>
<th>Somewhat important</th>
<th>Very important</th>
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<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

12) What changes in nutrition policy is your school working on right now?

a) What factors have contributed most to these changes? (Probes: directives from the District and/or State; existing success; student requests)
13) What are the plans for the program next year?

14) That is the last of the questions I have for you. Do you have any comments or questions you would like to add?

Thank you very much for your time today.