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A Formative Evaluation for a Food Choices Intervention in a Mississippi Delta Community: A Focus Group of Rural African American Adolescents

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The University of Southern Mississippi

A FORMATIVE EVALUATION FOR A FOOD CHOICES INTERVENTION
IN A MISSISSIPPI DELTA COMMUNITY: A FOCUS GROUP OF RURAL
AFRICAN AMERICAN ADOLESCENTS

by

Jovan Chantrell Eugene Williams

A Thesis
Submitted to the Graduate School
of The University of Southern Mississippi
in Partial Fulfillment of the Requirements
for the Degree of Master of Science

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August 2011

ABSTRACT

A FORMATIVE EVALUATION FOR A FOOD CHOICES INTERVENTION IN A MISSISSIPPI DELTA COMMUNITY: A FOCUS GROUP OF RURAL AFRICAN AMERICAN ADOLESCENTS

by Jovan Chantrell Eugene Williams

August 2011

A needs assessment should be conducted to plan effective interventions. This study used a qualitative research approach to examine the eating patterns, food purchasing and preparation skills and practices, barriers and facilitators of dietary change, social and contextual influences on food choices, and preferences for communication and presentation channels and styles of low-income rural African American adolescents. Seven focus groups were conducted with a total of 33 participants, 21 girls and 12 boys, aged 13-18. Adolescents were grouped by age and gender. A moderator, who was trained in focus group methodology, conducted the session using a focus group discussion guide including four sections. Focus group sessions were audio-recorded, and an assistant took written notes. Data was analyzed using content analysis methods. Snacking was a major eating pattern among participants. Most participants stated they ate three or more meals away from home with most being at school. Most participants indicated there were more advantages to eating outside the home than disadvantages. In this study taste was a major barrier to eating healthy food. Most of the adolescents prefer learning through hands-on activities.

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CHAPTER I

INTRODUCTION

According to national nutrition surveillance data the diet quality of adolescents is in need of major improvements. Data shows that adolescents' dietary intake is characterized by high levels of energy intake while energy expenditure is characterized by high levels of sedentary activity and low levels of physical activity (Troiano, Briefel, Carroll, & Bialostosky, 2000). The Healthy Eating Index (HEI) developed by the USDA is a measure of people's diet quality. According to the HEI, 94% of adolescents age 13-18 have poor quality diets. In addition, as children get older there is a decline in diet quality (Lino, Gerrior, Basiotis, & Anand, 1999). Dietary data from NHANES 1988-1994 indicates 33.5% of energy from fat and 12.2% of energy from saturated fat among children and adolescents in the United States, which is above the dietary recommendations (Troiano et al., 2000). Therefore, improvement is needed in the diet quality of children and adolescents, which will enable them to meet the dietary recommendations for this age group.

Nicklas, Demory-Luce, Yang, Baranowski, Zakeri, and Berenson (2004) found that children's food consumption patterns changed from 1973-1994. They evaluated the dietary intakes of 10-year-old children participating in The Bogalusa Heart Study and found a significant decrease in the percentage of children consuming vegetables. Furthermore, results from the Bogalusa Heart Study indicated significant associations between eating patterns and overweight status. Bogalusa Heart Study researchers found the total gram amount of low-quality foods consumed was positively associated with

obesity. Thus, diet quality can be highly correlated with obesity status (Nicklas, Yang, Baranowski, Zakeri & Berenson, 2003).

The literature indicates there are many factors, which can influence the dietary intake of adolescents. Social, environmental, individual, and behavioral are just a few of the broad range of factors that play a role in food choices. As noted in the literature, taste, food preferences, convenience, availability, family and peer support and preparation skills are common issues that affect food choices (Cullen, Baranowski, Rittenberry, & Olvera, 2000; Fitzgerald, Heary, Kelly & Nixon, 2009; Kubik, Lytle, & Fulkerson, 2005; Molaison, Connell, Stuff, Yadrick, & Bogle, 2005; Neumark-Sztainer, Story, Perry, & Casey, 1999). Molaison and colleagues (2005) conducted a study with low-income African American adolescents to identify psychosocial factors that may influence fruit and vegetable consumption. Similar to previous research, they found that availability, taste, and family influenced fruit and vegetable consumption. Knowing what factors influence food choices will help health professionals to design better interventions.

The Lower Mississippi Delta Region

The Lower Mississippi Delta (LMD) region in Louisiana, Arkansas, and Mississippi is a predominantly rural area and is characterized by low socioeconomic status. In addition, fewer individuals in this region obtain a high school degree compared to the nation. The percentage of persons below poverty level is also higher in comparison to the nation (U.S. Census Bureau, 2000).

The Lower Mississippi Delta Nutrition Intervention Research Initiative (Delta NIRI) was created to evaluate the nutritional and health status of residents in the

Mississippi Delta and to design and evaluate nutrition interventions to address problems. Delta NIRI conducted the Foods of Our Delta Survey (FOODS) 2000, which compared the self-reported health and dietary intakes of residents in the Mississippi Delta to the Continuing Survey of Food Intake of Individuals (CSFII) 1994-1996, 1998. Data from FOODS 2000 indicated that Delta children age 3-18 years have higher rates of obesity compared to the children studied in the CSFII. The prevalence of obesity in the CSFII was 16.2 % where as it was 27.9% in FOODS 2000 (The Lower Mississippi Delta Nutrition Intervention Research Consortium, 2004). The high prevalence of obesity and the poor diet quality of the Delta residents' point to the need for an intervention in this population.

Purpose of the Study

The purpose of this research study was to examine eating patterns, food purchasing and preparation skills and practices, barriers and facilitators of dietary change, social and contextual influences of food choices, and preferences for communication and presentation channels and styles of adolescents living in a rural Mississippi Delta community. The researcher investigated eating behaviors and healthy food choices among African American adolescents from low-income households in a rural Mississippi Delta community. This research served as the first step in a three-phase research process to gather information essential for the development of an intervention and nutrition education materials to address food purchasing and food preparation skills and practices of the target audience. The other two phases would be a quantitative survey, and pretesting of intervention elements and materials.

Research Objectives

1. To understand perceptions and practices associated with food purchasing, eating style and meal preparation.
2. To understand the target audience's attitudes and behaviors associated with eating healthy at home and in the community.
3. To determine preferred methods of learning about healthy food choices.

Assumption

1. The researcher assumed that the participants would respond freely and honestly during the focus group session.

Limitation

1. This study used a qualitative research design with a convenience sample of African American adolescents in the 7-12th grades attending junior high and high school in a rural Mississippi Delta community, limiting the ability to generalize findings.

Significance of Study

The needs assessment is the first and one of the most important steps in designing interventions. The needs assessment helps to identify the problem and population, which guides the type of intervention needed. Hoelscher, Evans, Parcel, and Kelder (2002) suggest a needs assessment can be conducted through a "literature review, review of data collected previously, or baseline data collected specifically for the proposed project" (p. S57). These researchers also suggest that the data collected for the intervention can be quantitative or qualitative such as focus groups. The focus group methodology is process

that allows participants to share their experiences and opinions which enables researchers to gain an in-depth view of a certain topic (Morgan, 1998).

The researcher hopes that the information garnered from this formative research process will be used to develop an intervention and nutrition education materials focused on healthy food acquisition and preparation behaviors for African American adolescents in a rural community. In addition, the information from this research project can be used to increase the body of knowledge related to factors influencing food choices among African American adolescents.

Definition of Terms

Formative research: Uses social science methods to assess the beliefs, perceptions, and behaviors of a specific cultural group, which is used to inform intervention development (Vastine, Gittelsohn, Ethelbah, Anliker, & Caballero, 2005; Young et al., 2006).

Content analysis: A research technique that involves comparing, contrasting, and categorizing a body of textual data to make valid inferences (Weber, 1990).

CHAPTER II

REVIEW OF LITERATURE

Overweight and obesity in children and adolescents is a serious public health problem within the United States and internationally. This public health problem is causing great increases in mortality and morbidity and substantially greater increases in the nation's healthcare expenditures (Wang & Dietz, 2002). Body mass index (BMI, kg/m^2) is a convenient measure to determine overweight and obesity in children and adolescents. The Centers for Disease Control and Prevention (CDC) established specific cut-off points of BMI measures to define childhood overweight and obesity. They developed percentile cut-off points based on the 2000 CDC Growth charts for the United States. Overweight in children and adolescents of the same age and sex is defined as a BMI at or above the 85th percentile and lower than the 95th percentile. Obesity is defined as a BMI greater than or equal to the 95th percentile (United States Department of Health and Human Services, 2007).

The trends in overweight and obesity among children and adolescents show that it has reached epidemic proportions. From the 1960s to the 1980s overweight in children and adolescents remained relatively stable. However, dramatic increases were noted in the last 20 years. According to the National Health and Nutrition Examination Survey (NHANES) 2003-2004, the prevalence of overweight and obesity in children and adolescents has not leveled off or decreased since 1994. The 2003-2004 NHANES survey indicated that child obesity had increased to 17% in children ages 2 to 19 years (Ogden et al., 2006).

There are various health risks related to obesity in children and adolescents. Due to the increases in prevalence of childhood obesity it is important to understand the health risks associated with this disease such as hypertension, diabetes, and hyperlipidemia. A study of 5,102 children revealed that 4.5% had persistent elevated blood pressure and that hypertension rates increased as BMI percentile increased (Sorof, Lai, Turner, Poffenbarger, & Portman, 2004). In a study about the presence of diabetes risk factors among approximately 1,740 predominantly minority eighth grade students researchers found a high prevalence of impaired fasting glucose of greater than or equal to 100 milligrams per deciliter, BMI at or above the 85th percentile, and an elevated fasting insulin levels (Baronowski et al., 2006). Similarly, among participants in the Bogalusa Heart Study, Freedman, Dietz, Srivivasan, and Berenson (1999) reported that more than 20% of overweight 5 to 10 year old children had two or more cardiovascular risk factors.

Obesity and Comorbidities among African Americans

Recent studies indicate that child obesity is a greater problem among African Americans and other ethnic minorities. Ogden et al. (2006) analyzed data from the 2003-2004 National Health and Nutrition Examination Survey and reported that 35% of African American children and adolescents had BMIs at or above the 85th percentile but lower than the 95th percentile compared to 34% of all American children. Furthermore, 20% of African American children and adolescents were reported to have a BMI greater than or equal to the 95th percentile compared to 16% of their Caucasian counterparts. Eichner et al. (2008) studied overweight and obesity status of 1,895 students enrolled in one school district in Oklahoma. The sample included 60% Native American, 28% Caucasian, and 5.5% African American. Weight status was determined by measuring

heights and weights and calculating the BMI. The researchers found that 51.7% of African American children in an Oklahoma school district were at risk for overweight and obesity compared to 37.6% of white children. The African American children in the district had the highest percentage of overweight at 28%. In a study conducted in four Chicago public schools, Wang, Liang, Tussing, Braunschweig, Caballero, and Flay (2007) assessed obesity and related risk factors among low socioeconomic minority students. The study consisted of 498 African American adolescents in grades 5 through 7. The results revealed that 39.8% of boys and girls had a BMI greater than or equal to the 85th percentile.

Currently, Mississippi ranks as the most obese state in the nation as reported by the Trust for America's Health (TFAH) and Robert Wood Johnson Foundation (RWJF) (2008). These foundations released the "F as in Fat: How Obesity Policies Are Failing in America" 2008 report which follows trends in obesity-related rates and policies. The report used data from the Behavioral Risk Factor Surveillance System (BRFSS) 2005-2007. This report indicated that between 2005, obesity rates continued to rise in Mississippi. In addition to the high rates of obesity, Mississippi has the highest percentage of hypertension and comes in second for type 2 diabetes (TFAH and RWJF, 2008). Mississippi's 2007 Youth Risk Behavior Survey was conducted in 38 public high schools in Mississippi with 1,614 students. Results indicated that 18 % of Mississippi's students were overweight compared to 13% nationally (Mississippi State Department of Health, 2007).

Kolbo and colleagues (2006) conducted the Child and Youth Prevalence of Overweight Survey (CAYPOS) to measure the prevalence of overweight (BMI percentile

at or greater than 95th) and at risk for becoming overweight (between 85th and 95th percentile) in 1,658 elementary and middle school children in Mississippi. School staff measured heights and weights of the children. The results indicated that 24% of students in grades 1-8 were overweight and 14.7% were at risk for becoming overweight. Prevalence also increased throughout grades 1 through 5, decreased in grade 6, and increased again through grade 8. The percentage of overweight was greater among African American students (26.2 %) than Caucasian students (21.9%).

Research conducted on children in the Lower Mississippi Delta (LMD) of Mississippi, Arkansas, Louisiana in 2000 found that 27.9% of Delta children were overweight (BMI < 95th percentile) compared to 16.2% nationally. Among Delta children 26.9% of African Americans and 27.6 % of Caucasians were obese (The Lower Mississippi Delta Nutrition Intervention Research Consortium, 2004). In order to develop appropriate interventions to address the high rates of obesity in African American children, it is important to understand adolescent eating behaviors and their relationship to obesity.

Children's Eating Patterns and Obesity

Several studies were conducted on the eating patterns and obesity among children who participated in the Bogalusa Heart Study. The Bogalusa Heart Study is a long-term epidemiologic study, which investigates the history of heart disease in African American and Euro American children. In a study conducted by Nicklas, Yang, Baranowski, Zakeri, and Berenson (2003), 24-hour recalls from 1,562 10-year-olds were collected to determine the relationship between eating patterns and obesity in children. Logistic regression analysis was used to determine if there was an association between eating

patterns and overweight status. Weight status was determined using the CDC reference standards for BMI for children. Results revealed that the total amount of food consumed from snacks and low-quality foods was positively associated with overweight status. In a similar study using data from the Bogalusa Heart Study, Nicklas, Demory-Luce et al. (2004) found that children's dietary patterns significantly changed from 1973 to 1994. The results of this study indicated a significant decrease in the percentage of children consuming vegetables ($p < .01$) and a significant increase in the mean consumption of sweetened beverages ($p < .01$) from 1973 to 1994. The meal patterns of 1,584 fifth graders in the Bogalusa Heart Study were surveyed in another study. Nicklas, Morales, et al. (2004) used 24 hour recalls collected in seven cross-sectional surveys for the years 1973-1974, 1976-1977, 1978-1979, 1981-1982, 1984-1986, 1987-1988, and 1993-1994 to determine trends in eating behaviors over two decades. The results showed a significant decrease in the percentage of children consuming school lunch from 90% (1973-1974) to 78% (1993-1994). Dinner eaten inside the home significantly decreased whereas dinner eaten outside the home increased from 5% to 19% from 1973-1974 to 1993-1994.

McNaughton, Ball, Mishra, and Crawford (2008) investigated the dietary patterns of adolescents and their association with sociodemographic and behavioral characteristics, nutrient intakes, and health outcomes. They analyzed data from 764 participant's ages 12-18 collected in the 1995 Australian National Nutrition Survey. The results show there was no relationship between dietary patterns and BMI or waist circumference. In addition, in a study of Chicago African American youth, researchers found eating behavior was not a significant predictor of overweight (Wang et al., 2007).

Adolescent Knowledge, Attitudes, and Beliefs about Nutrition

Kicklighter and Broussard (2001) studied the food choices and future health status beliefs of 24 African American adolescents ages 14-19 in Atlanta, GA by using focus groups. Major themes were identified from the set of focus group responses. “Eating daily from the different food groups, fast foods are less healthy, and fruits and vegetables are healthy foods” were some of the major themes noted when participants were asked about eating healthy and less healthy (p. 78). Adolescents noted that parents had the most influence on the participants’ eating habits. Time constraints were the number one reported barrier to eating healthy. Participants indicated sickness as the main motivator to change their eating habits. The participants also felt that African American eating habits were different from other ethnic groups because African Americans ate fewer vegetables than other groups. In response to the questions about their future health status, the 14 to 15-year-olds indicated they were “confident that they would not develop diseases that affect their family” and 16-19 year olds believed they would “either adopt or reject eating habits of parents based on parents’ current health status” (p. 79).

Since it is important to begin nutrition education early, Lytle, Seifer, Greenstein, and McGovern (2000) conducted a study to determine when children’s eating habits change. Their study sample consisted of 291 Minnesota schoolchildren who were followed for five years. The racial make-up of the sample was 92.8% Caucasian, 0.3% African American, 1.4% Hispanic, and 5.5 % other. They reported that as students made the transition from elementary to junior high and middle school, the consumption of soft drinks increased, while the consumption of fruit and vegetables decreased. This study

suggested that nutrition interventions should be implemented early in a child's education to assure healthier food choices as they develop into adulthood.

O'Dougherty, Story and Lytle (2006) conducted a study with low-income parents including 32 African American, 15 Latino, and five Caucasian parents in Minneapolis/St. Paul, MN to gain information on the food choices of their adolescent children through a quantitative survey and a focus group. The children of these parents were ages 11 to 15 years. A focus group guide included questions about kinds of food children requested, dinner making decisions, and main issues facing the adolescent. The quantitative survey asked parents to rank their views on questions regarding the influence of their child on food purchases, their child's likes and dislikes, and demographic information. The results from the quantitative survey indicated that their friends did not influence most children, but they were influenced by food commercials. Parents also agreed that their children's preferences influenced what groceries they bought. The results from the focus groups indicated that most of the children requested junk food more often than meals and the parents did not deny their requests. Although some parents showed concern about their children becoming overweight, several parents stated their children were "stocky" or "they would outgrow [stockiness] as they get older" (p.1849).

In the formative phase of another study, the Health-Kids study, focus groups with 55 African American adolescents, parents who were low-income, and school food service staff were conducted to gather information for the development of a school-based obesity intervention. Themes were derived from the focus group analysis and indicated that food advertisements influenced adolescents' eating behaviors. Other barriers to student participation in healthy eating and physical activity included children's preferences, lack

of availability of healthy foods, snacking, and lack of organized physical activity (Wang, et al., 2006).

Molaison et al. (2005) conducted focus groups with 42 non-rural, low-income African American adolescents in southern Mississippi to determine factors that influenced their food choices. Questions were based on constructs of the Social Cognitive Theory. The themes identified indicated that taste was a major barrier related to consuming more fruits and vegetables. Most participants indicated that they could eat fruits and vegetables. Conversely, some participants also said that there was a lack of availability of fruits and vegetables in their homes. Once the factors associated with food choices are determined, researchers can use this information to plan intervention for specific populations.

Nutrition Education Interventions for Adolescents

Knowing what factors influence food choices will help health professionals to design interventions. Researchers found favorable results with the goal of increasing fruit, vegetable, and juice intake in fourth and fifth grade students with the Gimme 5 program (Baronowski et al., 2000). They concluded that despite small changes in consumption by the children, such nutrition education programs could create a positive change in the fruit, vegetable, and juice consumption of children.

The Pathways study was a school-based obesity prevention intervention specifically geared towards American Indian schoolchildren (Caballero et al., 2003). It was a randomized controlled trial that evaluated the effectiveness of a multi-component, school-based program to reduce or prevent excess weight gain in elementary school

children. The intervention took place in 41 schools in seven American Indian communities for three years. The subjects were 1,074 third to fifth graders.

The multicomponent intervention consisted of classroom curriculum, food service, physical activity, and family involvement. The classroom curriculum promoted healthy eating and increased physical activity. Nutrient guidelines were provided to food service personnel to introduce them to alternative ways to plan, purchase, and prepare low fat foods and increase the use of fruits and vegetables. Physical activity sessions were conducted to increase energy expenditure. The family component aimed to introduce the idea of social support, to extend the healthy lessons taught at school into the home and to keep the families informed and involved in the programs. There were family fun nights, workshops, and events held at school such as cooking demonstrations (Caballero et al., 2003).

Measurements were taken at baseline at the end of second grade and at the end of fifth grade. Percent body fat increased by approximately seven percent in both the intervention and control group. In addition, the percentage of children with a BMI greater than the 85th percentile increased in both groups. The energy levels and fat intake of the intervention group were significantly lower than those of the control group. Physical activity levels and knowledge increased significantly. However, the goal to reduce the rate of body fat gain was not accomplished (Caballero et al., 2003).

Wellness, Academics, & You was another school-based intervention aimed to reduce the number of children categorized as overweight (Spiegel & Foulk, 2006). The sample consisted of 1,013 fourth and fifth graders who were enrolled in the program in four states, Delaware, Florida, Kansas, and North Carolina from January to March 2003.

Teachers at the selected schools attended a workshop, which taught them how to integrate the program into the curriculum. The intervention included seven modules, which addressed physical activity, nutrition, fitness, wellness, goal setting, critical thinking, social interactions, and family interactions. The students were instructed to complete journals and participate in class discussions regarding their attitudes and beliefs toward health. Measures taken were height, weight, and BMI. Students also completed a survey regarding questions about eating habits, physical activity, weight, self-image and other behaviors and attitudes. Baseline measurements were collected during the fall of 2003. Post data was collected in May and June at the conclusion of the intervention (Spiegel & Foulk, 2006).

The results indicated there were significant positive shifts ($p= 0.01$) in BMI with a 2% reduction in those categorized as overweight. In addition, increased consumption of fruits and vegetables and increased physical activity levels among the intervention group were noted. A reduction in the rates of at risk for overweight and overweight students was noted in the intervention group also. Therefore the goal to reduce the number of children categorized as overweight was achieved (Spiegel & Foulk, 2006).

Energy Up was a school-based weight management program, which focused on self-esteem building, addictive food avoidance, and exercise (Chehab, Pfeffer, Vargas, Chen, & Irigoyen, 2007). It was created by a celebrity lifestyle and fitness coach. The research subjects were 46 girls in a New York parochial high school. This program aimed to combat obesity by increasing knowledge, positive self-views, avoidance of “trigger-foods,” and regular exercise. In addition the program advocated avoiding stigmatizing language such as “obesity.” The measurements taken were height, weight,

and BMI. Outcome measures were changes in weight and BMI for students attending two or more sessions. The results indicated that 28% of the girls were obese, 49% were overweight, and 23% were normal weight at baseline. The obese girls lost an average 12.9 pounds whereas the overweight girls lost an average of 1.92 pounds. Surprisingly, the normal weight girls gained an average of 2.9 pounds.

Another school-based study for adolescents was conducted to determine if this intervention would successfully influence body composition and aerobic fitness. The study was designed to include 18 secondary schools in the Netherlands. Ten of the schools were randomized into the intervention group and eight in the control group. The sample consisted of 978 students ages 12-13 years. The outcome measures were waist to hip circumference ratio, skinfolds, BMI classification, and aerobic fitness (Singh, Paw, Brug, & Mechelen, 2007).

The intervention consisted of 11 sessions. The sessions were implemented in the biology and physical education classes by teachers. Sessions lasted for one year. The sessions intended to increase awareness and behavioral change concerning energy intake and output. In addition, increased physical education classes were encouraged. The control schools maintained their regular curriculum (Singh et al., 2007).

The results indicated there were no significant effects on BMI in the intervention group. Additionally, in regards to BMI no between group differences were noted. In girls in the intervention schools, there was a significantly favorable effect on the sum of skinfolds. Average triceps skinfold decreased in the intervention group and the control group. The waist to hip ratio differed significantly from baseline to completion for the

intervention group. This suggests the program was successful in influencing body composition, but there were no significant changes in aerobic fitness (Singh et al., 2007). Squire's Quest was a curriculum only intervention developed from the success of the Gimme 5 classroom curriculum. It was a ten session multimedia game geared to increasing asking behavior, food preparation, produce shopping, fast food selection, problem solving, goal setting, self-regulation, and self-reward skills among fourth grade students. Baseline fruit and vegetable consumption was gathered and all intervention sessions included a goal to eat a fruit or vegetable at a specific meal or place. The results of the intervention revealed that those students who had higher baseline fruit and vegetable consumption achieved more recipe preparation goals and higher post intervention fruit and vegetable consumption (Cullen, Watson, Zakeri, Baranowski, & Baranowski, 2007).

Formative Research

Research on the effectiveness of interventions can help inform future intervention planning as can formative research. Formative research is conducted to gain an understanding of the target population by assessing their beliefs, perceptions, and behaviors. Formative research is recognized as a critical step in intervention development, necessary for tailoring an intervention to the local context and culture (Vastine et al., 2005; Young et al., 2006). Vastine and colleagues (2005) conducted a study using a formative research model to develop a culturally appropriate nutrition intervention for American Indian tribes. This method enabled the researchers to develop the Apache Healthy Stores Program. Strolla, Gans and Riscica (2006) used formative research to determine and explain the factors that influence food-related choices and

behaviors of low-income Hispanics and non-Hispanic participants. From this they were able to develop important themes that could be used in intervention development.

One way to conduct formative research is by utilizing focus groups. Focus groups are a type of qualitative research method that uses guided group interviews. Focus groups normally consist of six to eight participants usually of related backgrounds. There is a moderator, who is usually a well-trained professional who works from a predetermined set of discussion topics (Morgan, 1998).

Formative research is a popular strategy to use when developing nutrition interventions. Several studies have gained information on the food choices of adolescents through the use of focus groups. A study by Dannelly, Kicklighter, Hopkins, and Rivers (2005) was conducted with 18 students and staff members participating in the Atlanta Job Corps Center. This study used focus groups to obtain information on the students' and staff perceptions related to food choices, nutrition knowledge, nutrition attitudes, motivators to healthy eating, barriers to healthy eating and nutrition education program planning. Participants indicated they did not eat a healthy diet, but realized the importance of it. They expressed that barriers to healthy eating were due to consumption of junk food instead of meals in the cafeteria and taste preferences. In regards to nutrition education program planning the students stated they preferred groups and activities with a leader who could relate to their weight problem.

Neumark-Sztainer and colleagues (1999) conducted a similar study on food choices with 141 seventh and tenth grade students from two large urban schools in St. Paul, Minnesota. The racial make-up was as follows: 40% Caucasian, 25% Asian American, 21% African American, 7% multiracial, 6% Hispanic, and 1% Native

American. The participants were asked to complete a 24-hour recall and to record why they chose the food they ate. The questions asked during the focus groups mainly assessed the adolescents' perceptions of factors influencing their food choices. Hunger and food cravings, appeal of food, time considerations, and convenience were three main reasons why the adolescents ate what they ate. They also said the unavailability of salads or milk made it difficult to eat according to the Dietary Guidelines. They suggested one way to make it easier to eat more healthful foods was to make healthy foods the only option, make them more accessible and convenient, and to make eating healthy "look cool."

Cullen and colleagues (2000) studied the effects of social and environmental influences on children's fruit, juice, and vegetable consumption. Focus group discussions were conducted with parents and their children in grades 4-6 enrolled in a local parochial school district in Houston, Texas. Results of this study indicated that accessibility, availability, parental influence, and peer influence had effects on the food choices of children. Similar results were found in a study conducted by Kubik and colleagues (2005). They used focus groups to gain an understanding of the factors that can influence dietary and physical activity practices of 70 students in urban and suburban schools in St. Paul, Minnesota.

The previously mentioned studies demonstrate that using focus groups with adolescents can provide valuable information needed to plan interventions. As the rates of childhood overweight continue to increase so do adulthood overweight and the complications associated with this illness. Research suggests that the diet quality of adolescents is not improving. The lack of consumption of fruits and vegetables is also of

great concern. Adolescence is a crucial time period in which healthy eating habits can be developed.

Various interventions have been developed geared towards improving eating practices of children and adolescents, but there is a lack of interventions for low-income rural southern African American adolescents. The need to understand the various factors that influence the food choices of this population can be fulfilled through the use of focus groups. These focus groups can provide the information needed to develop successful interventions for African American adolescents in the Lower Mississippi Delta.

CHAPTER III

METHODOLOGY

Research Design

The purpose of this research study was to examine eating patterns, food purchasing and preparation skills and practices, barriers and facilitators of dietary change, social and contextual influences of food choices, and preferences for communication and presentation channels and styles of adolescents living in a rural Mississippi Delta community. This qualitative study utilized focus group methodology. It was the first phase of a three-phase research project to develop a food choices intervention for African American adolescents living in a rural Mississippi Delta county.

Sample

The target audience for this research project was youth in grades seven through ten from a rural Mississippi Delta community participating in a community based participatory research collaboration with the USDA Agricultural Research Service, the University of Southern Mississippi, and Alcorn State University. The collaboration referred to as the Hollandale Nutrition Intervention Research Initiative (HNIRI) is a part of a larger community based participatory research project called the Delta Nutrition Intervention Research Initiative (Delta NIRI). The goal of Delta NIRI is to develop sustainable community-based nutrition interventions to help residents of the Lower Mississippi Delta in Louisiana, Arkansas, and Mississippi better their nutrition and overall health. The Hollandale community is characterized by low socioeconomic status with the median household income being \$20,135. In addition of the population who are

25 years or older, 42% do not have a high school degree. The percentage of families below poverty level is 28.4% (U.S. Census Bureau, 2000).

Participants were recruited in the school setting through information sessions conducted by research staff. Verbal permission was obtained from the school board and the principals of the middle school and high school to conduct the study. Interested students were given consent forms to take home to their parents. The participants were a convenience sample of 33 seventh through tenth grade African American males and females attending the public middle school and high school in the community. This study was approved by the Human Subjects Protection Review Committee at The University of Southern Mississippi (Appendix A). Only students who had written parental consent (Appendix B) were allowed to participate in the focus group session. Initial child assent was obtained during the information sessions at the middle school and high school. When students were asked to participate in the study they were advised of their rights as research participants and signed an assent form (Appendix C) agreeing to participate. At the end of each focus group session, students received a \$10 dollar gift card as an incentive for their participation.

Instrument

Semi-structured, open-ended focus group questions were developed based on a comprehensive literature review of food preparation descriptive and intervention literature. In addition, health behavior constructs common to one or more health behavior theories with application to eating behavior were used to frame the focus group questions (James, 2004; Noar & Zimmerman, 2005). In particular, reciprocal determinism, environment, and self-efficacy from Social Cognitive Theory, barriers and

benefits from the Health Belief Model along with elements of cultural context (physical and social) derived from the PEN-3 model were used to frame the focus group questions (Baranowski, Perry, & Parcel, 1997; James, 2004; Strecher & Rosenstock, 1997).

The focus group discussion guide consisted of three major sections with 14 total questions. Research staff drafted the questions and presented them to an expert panel of behavioral nutrition researchers who were familiar with the focus group methodology and to the community for review. The focus group discussion guide was modified based upon recommendations and suggestions of the review panel and pilot tested on two groups of adolescents, one male (n= 5) and one female (n=5), from a Mississippi community other than the target community. After pilot testing, additional questions about food costs were added to the focus group discussion guide. The final instrument contained 16 questions divided into four sections: eating style, meal preparation; eating healthy at home and in the community; food purchasing; and intervention planning. All questions were open-ended and were worded to avoid bias and to encourage discussion within the group. Standard probes were added, based upon the pilot test results, throughout the focus group discussion guide to encourage feedback (Appendix D).

Procedures

Morgan (1998) guidelines were used to plan the methodology for conducting the focus groups. A researcher trained in focus group methodology moderated each focus group session and a research assistant served as recorder. Seven focus group sessions were conducted at two schools in the target community (one middle school and one high school). The focus groups were conducted at each school during a specified one-hour class period. Each focus group was a single sex group and included three to seven

participants. All focus group discussions were audio-recorded to facilitate data analysis and to capture valuable information that may have been missed in the assistant's notes. Following each focus group session, the moderator and recorder reviewed the session and made notes about key ideas expressed, actual words used, and non-verbal responses.

Analysis of Data

The researcher transcribed all audiotapes verbatim. Focus group data were then analyzed using content analysis methods (Weber, 1990). This methodology was used to identify themes that emerged from the focus group discussions, the debriefing sessions, and the recorder's notes taken during each focus group session. The researcher and a research professor with the Delta NIRI independently reviewed and coded responses for each category of questions from the focus group discussions. Responses that appeared to describe similar behaviors were grouped together within a broad theme. These broad themes were then broken down into specific themes within each broad theme and a tally was taken of the number of times the response was mentioned in all the groups. Themes, subthemes, and specific themes were then compared between the two reviewers and reconciled when differences were noted. In the final step of data analysis, the researcher summarized the themes and prepared a narrative of the findings for each question.

CHAPTER IV

RESULTS

Focus Group Findings

We conducted seven single sex focus groups comprised as follows: Girls 1, five females aged 13-15; Girls 2, four females aged 13-15; Girls 3, five females aged 15-17; Girls 4, seven females aged 15-17; Boys 1, four males aged 13-15; Boys 2, five boys aged 15-17; Boys 3, three boys aged 16-18. Thus, there were 33 participants in total, 21 girls and 12 boys. All participants were African American.

The focus group questions addressed the following broad areas: eating patterns, food purchasing and preparation skills and practices, barriers and facilitators of dietary change, social and contextual influences on food choices, communication and presentation channels, styles and preferences. These broad areas were identified as general themes within the focus groups. Under these broad areas the researchers identified subthemes based on the specific questions asked in the focus groups. Several more specific themes were identified from the participants' responses based on a consensus between the researchers performing the coding. Focus group questions are located in Appendix D. No trends were noted for themes associated with exclusively boys or girls groups so the data from all groups were aggregated and reported together for both sexes.

Eating Patterns

Findings under the first theme area, eating patterns, are presented in Table 1. There were several subthemes that were identified within the general theme of eating patterns. The first subtheme was meal frequency. Four specific themes of meal

frequency were identified. Many students indicated that they snacked all day. Eating fewer than three meals a day with or without snacks was the next specific theme mentioned. Some of the responses given were “I eat two” or “I eat one meal then I’ll take a snack probably.” Conversely, some participants indicated they ate greater than or equal to three meals a day with or without snacks.

For the subtheme perceptions of a “meal” and typical foods that make up a meal, there were many responses from the participants, which are noted in Table 1. A “meal” was ideally made up of three or more food groups according to the participants. The most common food groups mentioned to comprise a meal were meat, bread, and vegetables. Chicken and string beans were typical foods mentioned from these food groups by most participants.

The frequency of meals eaten away from home was also a subtheme that described the participants’ eating patterns. The frequency described most often was less than or equal to three times per week, which was mentioned 16 times in all groups. Participants also noted sources of meals away from home. The specific source of meals away from home noted most commonly in all focus groups was school, which was mentioned in all groups. Several of the high school students spoke negatively of the school lunch. Some of the comments were “it’s nasty,” “it ain’t healthy” and “ they give us old food.” Other sources of meals outside the home were fast food restaurant and another relative’s home. School lunch and breakfast was the most frequently mentioned response under the subtheme meals eaten away from home.

An additional subtheme noted in the general theme eating patterns was advantages of eating out. The most mentioned advantage to eating out was that the

respondent could get preferred foods. It was mentioned fourteen times in all groups.

Some examples of responses given were: “good food,” “it be tasting good,” and “you probably don’t want to eat what your mama cook. So, go somewhere else and eat.”

Convenience was mentioned 11 times as an advantage of eating out. When participants were asked about the disadvantages of eating out few responses were given. Unhealthy food was a specific theme mentioned eight times across all groups. A participant indicated, “Eating what’s not healthy” is a disadvantage to eating out. Other responses were unsafe food and not what type of food was preferred. Participants commenting about food safety outside the home stated “they might drop the patty on the floor” and “might catch a disease” when referring to the disadvantages of eating out.

Table 1

Eating Patterns

General theme	Subtheme in general theme	Specific theme	Times mentioned in all groups	
Eating Patterns	Meal Frequency	Snacking/grazing	16	
		<3 meals with or without snacks	14	
		≥3 meals with or without snacks	9	
	Perceptions of “Meal” and Typical foods that are part of a meal	Typical foods that are part of a meal	Ideally contains ≥3 food groups	39
			Contains vegetables	18
			Contains Chicken	17
			Contains starch (rice/potatoes)	9
			Cornbread	7
			Spaghetti with meat sauce and another meat	6

Table 1 (continued).

General theme	Subtheme in general theme	Specific theme	Times mentioned in all groups
Eating Patterns	Perceptions of a “Meal” and	Includes dessert/sweet item	4
	Typical foods that are part of a meal	Neckbone	4
		“Home-cooked food”	4
	Frequency of meals away from home	≤3 times per week	16
		>3 times per week	14
		Number unspecified (“a lot” or “occasionally”	8
	Sources of meals away from home	School	20
		Fast food restaurant	7
Other relative’s home		7	

Table 1 (continued).

General theme	Subtheme in general theme	Specific theme	Times mentioned in all groups
Eating Patterns	Sources of meals away from home	Casual restaurant	6
		Church	2
		Friend's home	1
	What meals eaten away from home	School	15
		Snack	14
		Dinner/Supper	12
		Lunch	2
	Advantages of eating out	Can get preferred foods	14
		Convenience	11
		Socialization	3
Disadvantages of eating out	Unhealthy food	8	

Table 1 (continued).

General theme	Subtheme in general theme	Specific theme	Times mentioned in all groups
Eating Patterns	Disadvantages of eating out	Not what food is preferred	5
		Unsafe food	5
		Cost	2

Food Purchasing Practices

Data on food purchasing practices are reported in Table 2. Five subthemes were noted. The first subtheme was primary purchaser for the household. Participants mentioned their mother 19 times as the primary purchaser for the household. The next subtheme was where food was purchased. Most participants mentioned purchasing food from the supermarket located in another town.

For the subtheme, influences on food purchases, the most frequent response was preferences or what foods will not go to waste, for example, “it’s basically what she (mom) think we going to eat. It’s something that won’t just sit in the refrigerator and in the freezer and just spoil.” Mothers were also mentioned as an influence on food purchases. For example, one participant stated, “my momma” while another stated “person that buys the food; the mother.” Interestingly, chronic illness, special diet or health were mentioned as influences on purchases with the third greatest frequency of responses in this theme. A specific response given by one participant was “my mother have high blood pressure so she can’t eat”. Another participant stated, “my daddy got sugar [diabetes].” Convenience and time constraints were another influence on food purchases. When asked if food costs influenced food purchases most participants mentioned it had no effect. However, other participants also mentioned that if food was too costly it was not bought.

Table 2

Food Purchasing Practices

General theme	Subtheme in general theme	Specific theme	Times mentioned in all groups
Food Purchasing Practices	Primary purchaser for household	Mom	19
		Dad/Stepdad	4
		Other relative	3
	Where food is purchased	Supermarket in another town	15
		Local grocery store	9
		Other grocery store outside community	3
	Influences on food purchases	Individual preferences and foods that will not go to waste	30
		Mom	12

Table 2 (continued).

General theme	Subtheme in general theme	Specific theme	Times mentioned in all groups
Food Purchasing Practices	Influences on food purchases	Chronic illness/diet/health	8
		Convenience/time	7
		Dad/Stepdad	5
		Cost	2
	Food costs influences on purchases	No effect	11
		Don't buy food if too costly	5

Preparation Skills and Practices

Data on participants' preparation skills and practices is presented in Table 3. The most frequent response to the question of who cooks was mom, which was mentioned 13 times across the groups. The participant himself or herself was the next most frequent response, which was mentioned 12 times across the groups. The most frequently mentioned preparation method was frying with 18 responses across the groups compared to baking which was mentioned nine times across groups. Some examples of responses given to the preparation methods question were "fry it then you smother it in some gravy" or "mostly she would fry her food."

Table 3

Preparation Skills/Practices

General theme	Subtheme in general theme	Specific theme	Times mentioned in all groups
Preparation Skills/Practices	Who Cooks	Mother	13
		Participant	12
		Other relative	5
	Preparation Methods	Frying	18
		Baking	9

Barriers and Facilitators to Dietary Change

Barriers and facilitators to dietary change are presented in Table 4. Most participants mentioned dislike of “healthy” food or uninterested in eating healthy as a barrier to dietary change. This was mentioned 20 times across the focus groups. Another frequently mentioned barrier was not being aware of the connection between food and health. This was mentioned in the context of others not knowing there was a connection between food and health, not the participants themselves. For example, one participant stated, “not aware at all” in regards to others knowledge of a diet-health connection. Participants also expressed that the health consequences of a poor diet were not personally relevant such as “see they [young people] know it’s bad, but it ain’t affecting them.” In contrast to health consequences not being personally relevant, the most frequently mentioned facilitator to dietary change was better health, energy, and performance. The reference to health being a facilitator to dietary change appeared to be based on participant’s observations of family members changing their diet based on chronic illness such as “cause when my uncle had a heart attack it’s like the whole family started eating healthy.” Better performance was given as a facilitator to dietary change in the context of sports. One male participant stated “playing basketball and football” would be a reason to eat healthy. Less obesity and the possibility of a long life were each mentioned only two times across all the groups.

Table 4

Barriers and Facilitators to Dietary Change

General Theme	Subtheme in general theme	Specific theme	Times mentioned in all groups
Barriers to Dietary Change	Barriers	Dislike “healthy” food/uninterested	20
		Not aware of food/health connection	12
		Dislike/no time/ don’t know how to cook	10
		Health consequences of poor diet not personally relevant	6
		“Junk” food available in home	4
		Cost is too high	3

Table 4 (continued).

General theme	Subtheme in general theme	Specific theme	Times mentioned in all groups
Facilitators to Dietary Change	Facilitators	Better health/energy/performance	24
		Understanding health benefits	7
		If encouraged by influential adults	7
		If playing sports (boys only)	7
		Eating home cooked is less costly than eating out	3
		Less obesity	2
		Possibility of long life	2
		Having an illness	2
		If healthy food tastes good	2

Contextual Influences on Food Choices

The theme contextual influences on food choices were broken down into two subthemes, environmental and social influences. Convenience, time, and availability of food were the most frequently mentioned environmental influences on food choices with these being mentioned 13 times across the groups. For example a couple of participants stated “whatever’s cooked” and “whatever we got” in response to this question. The next most frequently mentioned environmental or cultural influence was mainly a personal variable of taste or preference being mentioned 10 times. Despite the fact that participants had earlier stated that chronic disease or special diets for a disease condition influence food purchases, health and cost were the least frequently mentioned environmental influences on food choices.

Laziness/apathy was noted most frequently as a social influence on food choices. For example, one participant stated, “they just don’t care.” Another participant stated, “they just eat whatever’s on the table.” Participants also identified positive role models such as “my momma she tell us that all that fried stuff ain’t good for us and she going to stop cooking it for us” as an influence on food choices.

Table 5

Contextual Influences on Food Choices

General theme	Subtheme in general theme	Specific theme	Times mentioned in all groups
Contextual Influences on Food Choices	Environmental	Convenience/time/availability of food	13
		Taste of food/preference	10
		Hunger	5
		Not Health	4
		Other	4
		Health	2
		Cost	2
	Social	Laziness/apathy	12
		Positive role models	9

Table 5 (continued).

General theme	Subtheme in general theme	Specific theme	Times mentioned in all groups
Contextual Influences on Food	Social	Mother	5
Choices		Education on health and food	4
		Reliance on others to cook	3

Communication/Presentation Channels, Styles, Preferences

To get a better understanding of how to design a program for the community, researchers asked questions about communication /presentation channel, styles, and preferences (Table 6). Most participants mentioned the school or playground as a location for the program. The most frequently mentioned communication channel was social events and activities such as an eating contest and sports competitions. The preferred communication style mentioned the most by participants was active learning or involvement. Some of the responses related to preferred active learning were “games,” “hands-on,” and “show and tell.” Other preferences mentioned were one-hour programs two times a week. Activities that were suggested by the participants included “have them play basketball and stuff,” “exercise room,” and “eating contest.”

Table 6

Communication/Presentation Channels, Styles, Preferences

General theme	Subtheme in general theme	Specific theme	Times mentioned in all groups
Communication/Presentation Channels, Styles, Preferences	Location	School/Playground	15
		Large open space (park/parking lot)	9
		Somewhere that travel would be required	5
	Channels	Social events/activities	13
		Advertisements	6
		Rap music	4
	Styles	Active learning or involvement	32
		Videos	7

Table 6 (continued).

General theme	Subtheme in general theme	Specific theme	Times mentioned in all groups
Communication/Presentation Channels, Styles, Preferences	Styles	Short “talks” on health/nutrition	5
	Preferences	Activities-preferred communication channel	32
		Frequency of program- 2 times/week	10
		Length of time- 1 hour	7

CHAPTER V

DISCUSSION AND CONCLUSIONS

The purpose of this research study was to examine eating patterns, food purchasing and preparation skills and practices, barriers and facilitators of dietary change, and social and contextual influences on food choices, and communication and presentation channels, styles, and preferences of adolescents living in a rural Mississippi Delta community. It also served as the first phase of a three-phase research project to develop a food choice intervention for African American adolescents living in a rural Mississippi Delta county. The objectives of this study were to understand the perceptions and practices associated with food purchasing, eating style, and meal preparation; to understand the target audience's attitudes and behaviors associated with eating healthy at home and in the community; and to determine preferred methods of learning about healthy food choices.

This study used a focus group research design. Formative research can be used to tailor an intervention for a specific culture or region (Gittelsohn et al., 2006). Data were collected using open-ended questions, which allowed participants to respond freely based on each question. The use of focus groups is a popular qualitative research strategy used in developing nutrition interventions (Vastine et al., 2005).

Focus group participants were asked a series of questions to ascertain their eating styles and practices. When participants were asked about their meal frequency the response most frequently given was "snacking all day." Previous research indicates snacking may be related to overweight status among children. Nicklas et al. (2003) found that the total amount of food consumed from snacks was positively associated with

overweight status among ten-year-old children. According to data from the “What We Eat in America” report in 2005-2006, the percentage of adolescents snacking increased to 83% up from 61% in 1977-1978. This report also indicated that as the snacking frequency of adolescents increased so did the total caloric intake (United States Department of Agriculture, 2010). Snacking was mentioned in all the groups, but not one participant mentioned healthy snacks. Based on the statements participants made, snacking is a major pattern among the participants. Some participants also indicated they ate three meals a day, which included breakfast, lunch, and dinner in addition to snacks. Two participants stated, “I eat a lot of junk food,” but they did not mention eating a meal. Participants indicated a meal would contain three or more food groups. For example, some participants stated a meal was “a meat, vegetable, and bread.” One male participant actually stated “snack time” when referring to a meal.

The question about meals eaten away from home further explains the dietary behaviors of the participants. Most participants in this sample indicated they ate three or more meals away from home. Most of the meals eaten outside the home were eaten at school. Previous research suggests that school interventions can affect behavioral change among adolescents. In an outcome evaluation of the Gimme 5 study, changes in student consumption of fruit, juice, and vegetables were obtained at lunch at school but not obtained any other time (Baranowski et al., 2000). Although many participants ate school lunch, several high school participants expressed negative comments about the school lunch such as “it’s nasty,” “it ain’t healthy,” and “they give us old food.” Children in a study conducted by Dammann and colleagues (2010) also said school lunch was “burnt and nasty” (p. 393). In a study about parent’s perceptions of food choices,

parents criticized the school lunch referring to it as “unappealing prepackaged meals that were cold or soggy” (O’Dougherty et al., 2006, p. 1848). The African American parents in O’Dougherty’s (2006) study also expressed that the meals served in the cafeteria when they were young were “appetizing meals cooked on site” (p. 1848). In the present study, high school girls also said, “Our cafeteria food it probably used to be healthy, but they just don’t care what they feed us no more.” In this study, it appeared that the connection to the healthfulness of the school food was based on if it was sanitary not the nutritional content. This is similar to the comments from the focus group such as “it don’t look sanitized” and “that woman told us they gave us three-day-old macaroni.”

Furthermore, participants expressed more advantages of eating outside the home than disadvantages. Nicklas, Demory-Luce and colleagues (2004) found that the percentage of children eating dinner outside the home significantly increased from 5% to 19% over a 21-year period. In the present study, the ability to get preferred foods was the most frequently mentioned advantage to eating outside the home. Specific comments about getting preferred foods were “good food,” “...better than the food at your own house,” and “food be smelling good.” In the present study, convenience was the second most mentioned advantage to eating out. The most frequently mentioned disadvantage to eating outside the home was eating unhealthy food. Other comments participants made were: “sometimes you get sick from eating it,” “paying for it” and “it may not be what you want sometimes.”

In this study, the mother was the primary food purchaser and had the most influence on food purchases. Preferences or “what each family member normally eats or likes” was also mentioned as a major influence on food purchases. Interestingly, most

participants stated that cost did not have an effect on what was bought. One participant stated, “nope cause they try to get all you can out that food stamp card.” Another participant said, “when the food stamp comes it don’t matter. You just buy it.” Most of the focus groups agreed that cost does not matter, but if the money runs out then the family bought cheaper foods. Wiig and Smith (2008) found that low-income women in Twin Cities, Minnesota used several strategies to stretch their food stamps such as looking at the price of foods, searching for in-store specials, and searching for stores with better deals. Future interventions may want to include information about budgeting the money that is spent on food. If parents are able to learn how to budget their food dollars then maybe they will not resort to buying cheaper items that could potentially be unhealthy. The participants did recognize health as an important influence on food purchases within their families. However, it did not seem to be relevant to them personally because they did not make food choices based on health.

Previous research indicates parental influence as a factor affecting healthy food choices among adolescents (Cullen et al., 2000; Kicklighter & Broussard, 2001; Kubik et al., 2005; Neumark-Stztainer et al., 1999). In the present research, the mother was the primary food purchaser, most influential on food purchases and was also the person who usually did most of the cooking. This suggests that the mother should be targeted in future interventions in this community.

In regards to the questions about preparation skills, frying foods was the most common preparation method. Several participants also mentioned healthier preparation methods such as baking or broiling. Participants were able to connect health problems to

healthier preparation methods. One participant stated that “my mama bake a lot of stuff because she’s a diabetic.”

Participants were asked a series of questions related to what prevented or encouraged them to eat healthy in their community. Participants reported a number of barriers to dietary change. In general, they reported a dislike of “healthy” food meaning they did not like the taste of the food they considered healthy. One participant said, “it be nasty.” Another participant stated, “...fast food restaurants people like better...they like all that fried stuff.” Other comments were “like burger places and all that, where the food smell good” and “it’s [healthy food] not tasty.” Cullen et al. (2000) and James (2004) also found the perceived poor taste of healthy foods to be a major barrier to eating a healthful diet. Since taste was a major barrier to healthy eating, participants may benefit from an intervention that involves preparing and taste testing foods that are healthier in their preparation methods and that includes lower fat options of the foods they normally eat. In contrast, participants also had several opinions about the benefits of eating healthy. Overall, participants recognized better health, energy, and performance as a benefit to eating healthy. Health was mentioned in six out of the seven focus groups. Participants made statements such as “your health can umm...you won’t have blood pressure or nothing like that,” “so your health won’t be messed up,” “to have a healthy life,” and “they would be healthy.” Future interventions should address increasing adolescents’ knowledge of the health benefits of certain foods and why eating these foods can reduce the risk of developing chronic diseases such and hypertension and diabetes.

There were two types of contextual influences on food choices, environmental and social. Convenience, time, and availability of food were the most mentioned

environmental influence on food choices. Neumark- Sztainer and colleagues (1999) also found convenience to be one of the most important factors influencing adolescent food choices. In the present study, the most frequently mentioned social influence on food choices was laziness and/or apathy. Participants stated family and friends did not care about what they ate.

Since most participants preferred the school as the location for the intervention, researchers should consider this environment for a nutrition intervention. Interventions conducted in the school setting have created small positive changes in eating behaviors and the physical activity levels of adolescents (Neumark-Sztainer, Story, Hannan, & Rex, 2003; Spiegel & Foulk, 2006). However, there is a lack of long-term studies with large sample sizes in ethnically diverse populations, which warrants the need for further investigation among rural low-income African American adolescents. Most participants thought that the greatest motivation to participate in an intervention would be if it involved hands-on activities. The preferred communication channel most frequently mentioned was social events or activities such as races, basketball games, eating contest, and sack races.

Conclusions and Recommendations

The information gained in this study can help researchers when planning future interventions. Findings from this research indicate that participants eat out several times a week therefore suggestions for choosing healthier options when eating out may be an important topic in future interventions. Since snacking was a major eating pattern among participants, ways to include healthier snacks in one's diet should be a component of future interventions. Although participants did mention healthier preparation methods

such as baking and broiling, future interventions targeted towards mothers should focus on various healthy preparation methods such as baking, broiling, stir-frying, and steaming. Parents, teachers, and school lunch workers can help adolescents maintain healthy eating behaviors by providing encouragement and opportunities for adolescents to learn and practice healthy food preparation. They can also serve as role models and make learning fun and interactive through activities such as school gardens or cooking classes offered at the school.

One limitation of this research is that qualitative research is self-reported information so it is uncertain if participants responded honestly. In addition, the adolescents in this group were a small subset of a specific target population therefore the results cannot be generalized to all African American adolescents.

The information gained from this study provides researchers with a better understanding of the perceptions, attitudes, behaviors and external factors regarding eating style, food purchasing, meal planning, meal preparation, and healthy food choices of rural African American adolescents. Since there was a lack of research among this population, this research can help plan effective interventions tailored to this population.

APPENDIX A

HUMAN SUBJECTS PROTECTION REVIEW COMMITTEE APPROVAL FORM



The University of
Southern Mississippi

Institutional Review Board

118 College Drive #5147
Hattiesburg, MS 39406-0001
Tel: 601.266.6820
Fax: 601.266.5509

**HUMAN SUBJECTS PROTECTION REVIEW COMMITTEE
NOTICE OF COMMITTEE ACTION**

The project has been reviewed by The University of Southern Mississippi Human Subjects Protection Review Committee in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services (45 CFR Part 46), and university guidelines to ensure adherence to the following criteria:

- The risks to subjects are minimized.
- The risks to subjects are reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered regarding risks to subjects must be reported immediately, but not later than 10 days following the event. This should be reported to the IRB Office via the "Adverse Effect Report Form".
- If approved, the maximum period of approval is limited to twelve months.
Projects that exceed this period must submit an application for renewal or continuation.

PROTOCOL NUMBER: 27010403

PROJECT TITLE: **A Needs Assessment of Food-Related Choices in Hollandale, MS**

PROPOSED PROJECT DATES: 01/01/07 to 10/31/07

PROJECT TYPE: **New Project**

PRINCIPAL INVESTIGATORS: **Amanda Williams**

COLLEGE/DIVISION: **College of Health**

DEPARTMENT: **Nutrition and Food Systems**

FUNDING AGENCY: **Delta Nutrition Intervention Research Initiative, ARS, USDA**

HSPRC COMMITTEE ACTION: **Expedited Review Approval**

PERIOD OF APPROVAL: 01/16/07 to 01/15/08



Lawrence A. Hosman, Ph.D.
HSPRC Chair

1-16-07
Date

APPENDIX B

CONSENT FORM

**The University of Southern Mississippi
Research Study on Food Choices
Parental Consent for Child to Participate**

Dear Parent:

The Hollandale Nutrition Intervention Research Initiative is conducting a research project to help us plan our next community program in Hollandale, which will address food choices. We will be conducting focus groups with adults and with middle and high school students to get their ideas about eating and shopping for food in your community.

Your child has expressed an interest in participating in a focus group discussion. The discussion will consist of a moderator from the Hollandale NIRI program reading a series of questions to a group of 6-10 students who are in the same grade level as your child. The discussion will last about one hour and will take place during a class period at school. The discussion will be audiotaped and one of our staff will also take notes, so that nothing is missed. The tapes will be transcribed into written form, but no names will be recorded on the transcripts. All responses will be kept completely confidential. Tapes will be stored in a locked filing cabinet at the University of Southern Mississippi until analysis is complete. They will then be stored permanently in our regional Delta NIRI office in Little Rock, AR.

Overall themes will be gathered from the responses and reported to the Hollandale NIRI committee. No names will be included, and no information will be shared about which individuals or groups reported each response. The themes will then be used to create programs on food, nutrition and physical activity that complement what Hollandale community members see as important in their community.

Joining this study is completely voluntary. Your child must have your consent to participate. Your child has the right to withdraw at any time, and he or she can refuse to answer any question that is asked. There are no known risks to your child for being a part of this study. No one will be singled out or identified as a result of this study.

This project has been reviewed by the Human Subjects Protection Review Committee, which ensures that research projects involving human subjects follow federal regulations. Any questions or concerns about rights as a research subject should be directed to the chair of the Institutional Review Board, The University of Southern Mississippi, 118 College Drive #5147, Hattiesburg, MS 39406, (601) 266-6820. If you have any specific questions about this study, you may call Kathy Yadrick at (601) 266-4779 or the Hollandale NIRI office at (662) 827-0505.

I have read the above statement and have been able to ask questions and express my concerns, which have been satisfactorily answered. I also understand the purpose of the study as well as the potential benefits.

By signing this form, I give permission for my child to participate in this research project.

Child's Name: _____ Child's Age _____ (PRINT)

Child's Grade in School: ___7th ___8th ___9th ___10th Child's Sex ___Male ___Female

Parent/Guardian Name _____ PRINT

Signature of parent/guardian signifying consent

Date

APPENDIX C

ASSENT FORM

**Research Study on Food Choices Program for Hollandale Community
Oral Presentation and
Child Assent to Participate**

We are conducting a research study to plan our next community program in Hollandale, on healthy food choices. We plan to talk with small groups of seventh and eighth graders and ninth and tenth graders about what they eat and how they make food choices. We will use the information they give us and the information we learn from adults to plan programs about healthy food choices for adults and youth from the Hollandale community.

We are inviting you to participate in one of the discussion groups. If you agree to participate and your parent or guardian gives you permission, you will be part of a group of 6-10 students that will have a group discussion about food choices, led by a moderator. The discussion will last about 1 hour, and will take place during one of your class periods or after school.

The group leader will ask you questions and you will have a chance to answer. We will tape record the group discussion, but no one will know who is speaking on the tape.

You can decide if you want to participate in the group discussion. If you decide you don't want to, you will not be penalized in any way. If you decide to participate, you are free to answer any questions you would like to answer, and you may choose to not answer any questions that you don't want to answer.

Do you have any questions now about the discussion groups?

I have had the chance to ask questions. _____ Subject's initials

___ YES, I want to participate in the group discussion.

___ NO, I do not want to participate in the group discussion.

Student's Name (*please print*)

Student's Age

Student's Sex ___ Male

___ Female

Student's Grade ___ 7th ___ 8th ___ 9th ___ 10th

Student's Signature

Date

INVESTIGATOR: "I acknowledge that I have discussed the above study with this participant and answered all of his/her questions. He/she has voluntarily agreed/declined to participate."

Name (PRINT) of investigator obtaining consent

Signature of investigator obtaining consent

Date

APPENDIX D

FOCUS GROUP DISCUSSION GUIDE

Focus Group Questions for Formative Evaluation
Discussion Guide

Good evening and thanks for coming to our discussion. My name is _____, and this is my assistant _____. We work with the Hollandale Delta Nutrition Intervention Research Initiative (Hollandale Delta NIRI), and we are trying to learn more about what people in Hollandale think of food choices in your community. We want to use this information to develop a program that will improve the health and quality of life of the community members in Hollandale, as well as provide information to them in a way that they will enjoy.

While I ask you just a few questions, _____ will be taking notes. You'll notice that we're also tape recording our session, and that's simply because we want to be sure and get all of your comments down on paper. Everything you say here is confidential, and your names will not be included on the written record of our session. I do ask that everyone speak one at a time so that I can get every single thing that you say. Please feel free to answer each question as honestly as you can, and remember that there is no wrong answer to any of the following questions. We simply want to hear all of your thoughts, positive or negative, so that we can do adequate planning for the next program in Hollandale.

Opener: Why don't we go around the table and introduce ourselves. Tell us your name and one word that best describes the taste of your favorite food...

Eating Style, Meal Preparation

Okay, let's begin with a few questions about your eating style and how the meals that you eat are fixed...

1. On an ordinary day, how would you describe your eating habits?

(Probe only if necessary: Would you say that you eat "on the run," eat 2-3 big meals and a few snacks in between, snack most of the day, eat 2-3 big meals only, or something else?)

2. How do you decide what you are going to eat or drink at any given time in the day?

(Probe only if necessary: healthy option, what you've eaten since childhood, what's available, what you can afford, what tastes the best, your mood, hunger, passing a certain food place, schedule, etc.)

3. When you hear the word 'meal,' what do you think of?

(Probe: In your mind, how would you describe a meal? What foods are part of a meal?)

4. Now, I want to ask you a series of questions about a regular meal that is fixed on any weekday in your home. This is not a special day--just a regular day. If you normally eat at another family member's house, you can describe the meal fixed there.

a. On a regular day, what would a typical meal at your house consist of?
(Probe: What types of food and how many different things are fixed?)

b. Who usually fixes the meal?

c. How is it fixed?

(Probe only if necessary: Microwaved, fried, boiled, baked, broiled, grilled, or not heated at all?)

d. Who all eats this meal when it is fixed?

(Probe: Family members, friends, only the adults, etc)

e. Where is the meal eaten? (anywhere in the house, at the table, in front of tv, outside, etc.?)

Eating Healthy at Home and in the Community (Use plate as visual)

Now, let's talk a little bit about eating healthy at home and in your community...

5. Using this plate as a visual, describe a **healthy** home-cooked meal.

(Probe if necessary: What would it look like? What foods would it include? Would it be mainly cold foods or warm foods?)

a. What prevents you, or people in Hollandale, from fixing healthy home-cooked meals?

b. What benefits do you, or people in Hollandale, get from fixing healthy home-cooked meals?

6. What encourages you to eat healthy in Hollandale?

(Probe: illness, specific people, agencies, organizations, professionals (e.g. doctor), businesses, classes, availability)

7. What discourages you from eating healthy in Hollandale?

(**Probe:** taste of healthy foods, time, access or availability of healthy foods, cost of foods, wants of other friends or family members, etc.)

Food Purchasing

Transition: Now I want to ask you a few questions about food purchasing that takes place in your home.

8. Who usually buys the food for your home?

9. Where do you or your family member usually buy it?

a. How do you or your family member choose what to buy or get at the store?

(**Probes:** Influence of People, family members; other factors, e.g. cost, availability, taste, quality, nutritional value or preventive health value, foods that fill you up, foods that are cheap and fill you up, convenience.)

b. Who would you say has the greatest influence over what food is bought for your home?

c. How does the cost of food affect what foods are bought for your home?

10. How many times per week do you or any of your family members eat food prepared outside of your home?

a. Where do you or your family member get the food eaten from outside of the home?

(**Probe:** Another family members' house, restaurant, cafeteria, convenience store, someone else's house, school, church?)

b. What meals do you or your family members eat from these other places? Is this usually for breakfast, snack, lunch or supper?

11. What are the advantages of eating outside the home?

12. What are the disadvantages of eating outside the home?

Intervention Planning - Making Healthy Food Choices

Transition: Now, I want to ask you some questions about how we in HNIRI can encourage you and the people in your community to make healthy decisions about what they eat...

13. Think for just a minute about all of the family and friends that you have here in Hollandale. How aware do you think they are that what they eat affects their health?

(Probe only if necessary: Do you think they know that their food choices can lead to high blood pressure, diabetes, heart disease, stroke and even cancer?)

14. What, if anything, would motivate your friends and family to make changes in what they eat in order to be healthier?

15. Hollandale NIRI is thinking about developing a program for Hollandale that encourages healthy eating. We are trying to find a way to make the greatest impact on the health of the residents in this community.

a. Who do you think we should target for a program that emphasizes healthy food choices/eating in Hollandale?

(Probe only if necessary: adults/youth; specific age groups or lifecycle groups; people already organized through church/agency/program

b. Who do you think would be the most willing to participate in a program that focuses on healthy food choices/eating in Hollandale?

(Probe only if necessary: church groups, adults, children, etc.)

c. What would be the greatest motivation for people to come? Or, what would provide the greatest incentive for people to attend?

Wrap Up

16. Okay, I want to wrap up with just a few final questions that will provide Hollandale NIRI with some great information to get them started with designing this program for Hollandale.

I want you to pretend for a moment that you are a staff member of Hollandale NIRI, and you are responsible for designing a program to address healthy eating in Hollandale. If you were going to offer this program to the people that you just mentioned _____ **(the people they suggested in questions 16a and 16b)** in Hollandale, ...?

a. Who would you get to lead or present it?

- b. Where would it be offered?
- c. How often would it be offered? How long would sessions last?
- e. What would the theme be for the people you mentioned--
_____?
- f. What ideas do you have about any activities or education methods that should be used?
- g. How would it be publicized so that the target group would know that it is designed for them?

**Handout: Please list 5 foods that you eat very often--every day or several times

REFERENCES

- Baronowski, T., Cooper, D. M., Harrell, J., Hirst, K., Linder, B., Kaufman, F. R.,...
 Reniscow, K. (2006). Presence of diabetes risk factors in a large U.S. eight-grade cohort. *Diabetes Care*, 29, 212-217.
- Baronowski, T., Davis, M., Resnicow, K., Baranowski, J., Doyle, C., Lin, L. S.,... Wang, D. T. (2000). Gimme 5 fruit, juice, and vegetables for fun and health: Outcome evaluation. *Health Education & Behavior*, 27, 96-111.
- Baranowski, T., Perry, C. L., & Parcel, G. S. (1997). How individuals, environments, and health behavior interact. In K. Glanz, F. M. Lewis & B. K. Rimer (Eds.), *Health behavior and health education: Theory, research and practice* (2nd ed.) (pp.153-178). San Francisco, CA: Jossey-Bass.
- Cabellero, B., Clay, T., Davis, S. M., Ethealbah, B., Rock, B., Lohman, T., et al. (2003). Pathways: A school-based, randomized controlled trial for the prevention of obesity in American Indian schoolchildren. *American Journal of Clinical Nutrition*, 78, 1030-1038.
- Chehab, L. G., Pfeffer, B., Vargas, I., Chen, S., & Irigoyen, M. (2007). Energy up: A novel approach to the weight management of inner-city teens. *Journal of Adolescent Health*, 40, 474-476.
- Cullen, K. W., Baranowski, T., Rittenberry, L., & Olvera, N. (2000). Social-environmental influences on children's diets: Results from focus groups with African-, Euro-, and Mexican-American children and their parents. *Health Education Research*, 15, 581-590.
- Cullen, K. W., Watson, K. B., Zakeri, I., Baranowski, T., & Baronowski, J. H. (2007).

Achieving fruit, juice, and vegetable recipe preparation goals influences consumption by 4th grade students. *International Journal of Behavioral Nutrition and Physical Activity*, 4. Retrieved from <http://www.ijbnpa.org/content/4/1/28>

Dammann, K. & Smith, C. (2010). Food-related attitudes and behaviors at home, school, and restaurants: Perspectives from racially diverse, urban, low-income 9 to 13 year old children in Minnesota. *Journal of Nutrition Education and Behavior*, 42, 389-397.

Dannelly, J. M., Kicklighter, J. R., Hopkins, B. L., & Rivers, B. A. (2005).

Recommendations for nutrition interventions with overweight African-American adolescents and young adults at the Atlanta job corps center. *Journal of Health Care for the Poor and Underserved*, 16, 111-126.

Eichner, J. E., Moore, W. E., Perveen, G., Kobza, C. E., Abbott, K. E. & Stephens, A. L. (2008). Overweight and obesity in an ethnically diverse rural school district: The healthy kids project. *Obesity*, 16, 501-504.

Fitzgerald, A., Heary, C., Kelly, & Nixon, E. (2009). Factors influencing the food consumption of children and adolescents: A qualitative investigation. *Proceedings of the Nutrition Society*, 67, E226.

Freedman, D. S., Dietz, W. H., Srinivasan, S. R., & Berenson, G. S. (1999). The relationship of overweight to cardiovascular risk factors among children and adolescents: The Bogalusa heart study. *Pediatrics*, 103, 1175-1182.

Gittelsohn, J., Steckler, A., Johnson, C. C., Pratt, C., Grieser, M., Pickrel, J.,...Staten, L. K. (2006). Formative research in school and community-based health programs

- and studies: “State of the art” and the tagg approach. *Health Education & Behavior*, 33, 25-39.
- Hoelscher, D., Evans, A., Parcel, G., & Kelder, S. (2002). Designing effective nutrition interventions for adolescents. *Journal of the American Dietetic Association*, 102, S52-S63.
- James, D. C. S. (2004). Factors influencing food choices, dietary intake, and nutrition-related attitudes among African Americans: Application of a culturally sensitive model. *Ethnicity & Health*, 9, 349-367.
- Kicklighter, J. R., & Broussard, M. D. (2001). African-American adolescents’ food choices and perception of future health status. *The Journal of Child Nutrition & Management*, 25(2), 76-81.
- Kolbo, J. R., Penman, A. D., Meyer, M. K., Speed, N. M., Molaison, E. F., & Zhang, L. (2006). Prevalence of overweight among elementary and middle school students in Mississippi compared with prevalence data from the Youth Risk Behavior Surveillance System. *Preventing Chronic Disease*, 3(3). Retrieved from www.cdc.gov/pcd/issues/2006/jul/05_0150.htm
- Kubik, M. Y., Lytle, L., & Fulkerson, J. A. (2005). Fruits, vegetables, and football: Findings from focus groups with alternative high school students regarding eating and physical activity. *Journal of Adolescent Health*, 36, 494-500.
- Lino, M., Gerrior, S., Basiotis, P., & Anand, R. (1999). Report card on the diet quality of children. *Family Economics and Nutrition Review*, 12(3-4), 78-79.
- Lower Mississippi Delta Nutrition Intervention Research Consortium. (2004). Self-

reported health of residents of the Mississippi delta. *Journal of Health Care for the Poor and Underserved*, 15, 645-662.

Lytle, L. A., Seifer, S., Greestein, J., & McGovern, P. (2000). How do children's eating patterns and food choices change over time? Results from a cohort study.

American Journal of Health Promotion, 14, 222-228.

Mississippi State Department of Health. (2007). *Mississippi's 2007 Youth Risk Behavior Survey Report*. Retrieved from

http://msdh.ms.gov/msdhsite/_static/resources/3120.pdf

McNaughton, S. A., Ball, K., Mishra, G. D., & Crawford, D. A. (2008). Dietary patterns of adolescents and risk of obesity and hypertension. *The Journal of Nutrition*,

138, 364-370.

Molaison, E. F., Connell, C. L., Stuff, J. E., Yadrick, M. K., & Bogle, M. (2005).

Influences on fruit and vegetable consumption by low-income Black American adolescents. *Journal of Nutrition Education and Behavior*, 37(5), 246-251.

Morgan, D. L. (1998). *The focus group guidebook*. Thousand Oaks, CA: Sage.

Neumark-Sztainer, D., Story, M., Hannan, P. J., & Rex, J. (2003). New moves: A school-based obesity prevention program for adolescent girls. *Preventive Medicine*, 37,

41-51.

Neumark-Sztainer, D., Story, M., Perry, C., & Casey, M. A. (1999). Factors influencing food choices of adolescents: Findings from focus-group discussions with

adolescents. *Journal of the American Dietetic Association*, 99, 929-934, 937.

Nicklas, T. A., Morales, M., Linares, A., Yang, S., Baranowski, T., De Moor, C., Berenson,

- G. (2004). Children's meal patterns have changed over a 21-year period: The Bogalusa heart study. *Journal of the American Dietetic Association, 104*, 753-761.
- Nicklas, T. A., Demory-Luce, D., Yang, S., Baranowski, T., Zakeri, I., & Berenson, G. (2004). Children's food consumption patterns have changed over two decades (1973-1994): The Bogalusa heart study. *Journal of the American Dietetic Association, 104*, 1127-1140.
- Nicklas, T. A., Yang, S., Baranowski, T., Zakeri, I., & Berenson, G. (2003). Eating patterns and obesity in children. *American Journal of Preventive Medicine, 25*(1), 9-16.
- Noar, S. M. & Zimmerman, R. S. (2005). Health behavior theory and cumulative knowledge regarding health behaviors: Are we moving in the right direction? *Health Education Research, 20*, 275-290.
- O'Dougherty, M., Story, M. & Lytle, L. (2006). Food choices of young African-American and Latino adolescents: Where do parents fit in? *Journal of the American Dietetic Association, 106*, 1846-1850.
- Ogden, C. L., Carroll, M. D., Curtin, L. R., McDowell, M. A., Tabak, C. J., & Flegal, K. M. (2006). Prevalence of overweight and obesity in the United States, 1999-2004. *Journal of the American Medical Association, 295*, 1549-1555.
- Schwartz, M. B. & Puhl, R. (2003). Childhood obesity: A societal problem to solve. *Obesity Reviews, 4*, 57-71.
- Singh, A. S., Paw, M. J., Brug, J., & Mechelen, W. (2007). Short-term effects of school-

- based weight gain prevention among adolescents. *Archives of Pediatric and Adolescent Medicine*, 161, 565-571.
- Spiegel, S. & Foulk, D. (2006). Reducing overweight through a multidisciplinary school-based intervention. *Obesity*, 14, 88-96.
- Sorof, J. M., Lai, D., Turner, J., Poffenbarger, T., & Portman, R. J. (2004). Overweight, ethnicity, and the prevalence of hypertension in school-aged children. *Pediatrics*, 113, 475-482.
- Strecher, V. J., & Rosenstock, I. M. (1997). The health belief model. In K. Glanz, F. M. Lewis & B. K. Rimer (Eds.), *Health behavior and health education: Theory, research and practice* (2nd ed.) (pp. 41-59). San Francisco, CA: Jossey-Bass.
- Strolla, L., Gans, K. M., & Riscia, P.M. (2006). Using qualitative and quantitative formative research to develop tailored nutrition intervention material for a diverse low-income audience. *Health Education Research*, 21(4), 465-476.
- Troiano, R. P., Briefel, R. R., Carroll, M. D., & Bialostosky, K. (2000). Energy and fat intakes of children and adolescent in the United States: Data from the National Health and Nutrition Examination Surveys. *The American Journal of Clinical Nutrition*, 72, 1343S-1353S.
- Trust for America's Health & Robert Wood Johnson Foundation. (2008). F as in fat: How obesity threatens America's future. Retrieved from <http://healthyamericans.org/reports/obesity2008/print.php?StateID=MS>
- United States Department of Agriculture. (2010). "What we eat in America, NHANES 2005-2006." *Snacking patterns of U.S. adolescents*. Retrieved from http://ars.usda.gov/SP2UserFiles/Place/12355000/pdf/DBrief/snacking_0506.pdf.

- United States Department of Health and Human Services, Centers for Disease Control and Prevention. (2007). *Defining childhood overweight*. Retrieved from <http://www.cdc.gov/obesity/childhood/defining.html>
- U. S. Census Bureau. (2000). *Profile of selected economic characteristics*. Retrieved from http://factfinder.census.gov/servlet/QTTTable?_bm=y&-geo_id=16000US2832900&-qr_na
- Vastine, A., Gittelsohn, J., Ethelbah, B., Anliker, J., & Caballero, B. (2005). Formative research and stakeholder participation in intervention development. *American Journal of Health Behavior, 29*, 57-69.
- Wang, G. & Dietz, W. H. (2002). Economic burden of obesity in youths aged 6 to 17 years: 1979-1999. *Pediatrics, 109*, e81.
- Wang, Y., Liang, H., Tussing, L., Braunschweig, C., Caballero, B., & Flay, B. (2007). Obesity and related risk factors among low socio-economic status minority students in Chicago. *Public Health Nutrition, 10*, 927-938.
- Wang, Y., Tussing, L., Odoms-Young, A., Braunschweig, C., Flay, B., Hedeker, D., & Hellison, D. (2006). Obesity prevention in low socioeconomic status urban African-American adolescents: Study design and preliminary findings of the Health-Kids study. *European Journal of Clinical Nutrition, 60*, 92-103.
- Wiig K., & Smith, C. (2008). The art of grocery shopping on a food stamp budget: Factors influencing the food choices of low-income women as they try to make ends meet. *Public Health Nutrition, 12*, 1726-1734.
- Weber, R. P. (1990). *Basic content analysis* (2nd ed.). Newbury Park, CA: Sage.
- Young, D.R., Johnson, C.C., Steckler, A., Gittelsohn, J., Saunders, R.P., Saksvig,

B.I.,...McKenzie, T. L. (2006). Using formative research to develop intervention programs to increase physical activity in adolescent girls. *Health Education Behavior, 33*, 97-111.