2011

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Is a Poor Quality Nutrition Environment a Contributor to Obesity Prevalence in School-Age-Children in West Virginia?

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A thesis submitted to Davis College of Agriculture, Natural Resources and Design
at West Virginia University
in partial fulfillment of the requirements for the degree of

Master of Science
in
Animal & Nutritional Sciences

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Morgantown, West Virginia
2011

Keywords: nutrition environment, obesity, children, body mass index, poverty, retail food
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ABSTRACT

Is a Poor Quality Nutrition Environment a Contributor to Obesity Prevalence in School-Age-Children in West Virginia?

Anna M. Chetrick

In recent years there has been considerable interest in describing and explaining increases in the prevalence of overweight and obesity. The quality of the nutrition environment, including the availability and price of healthy foods options, has been suggested as a likely contributor. This project was developed to investigate the relationship between weight status and the nutrition environment in school children in two West Virginia counties. The Nutrition Environment Measures Survey (NEMS) was conducted in Monongalia and Marshall Counties, WV. From NEMS survey data nutrition environment quality scores were calculated for 79 retail food outlets, including grocery, convenience, general, and department stores. Availability, cost, and quality were compared among store type and area-level (Census tract) poverty. Child and parent BMI, eating and physical activity habits, and child, parent and family socio-demographic characteristics were obtained from the 2009-2010 Coronary Artery Detection in Rural Appalachian Communities (CARDIAC) study screening and Parent Survey. There were no differences in availability of healthy food options or overall nutrition environment scores by area-level poverty, but there were significant differences by store type. Logistic regression was used to examine relationships between child BMI and the nutrition environment controlling for known covariates. Children with an overweight or obese parent (OR 3.8, $p < 0.01$) and in families with annual incomes less than \$50,000 (OR 2.6, $p < 0.05$) were more likely to be obese and those with moderate physical activity on a regular basis (OR 0.09, $p < 0.05$) less likely. The results indicate the strength of familial genetic and environmental factors as contributors to child weight status as well as the importance of regular physical activity. The nutrition environment, when defined as the quality of retail food outlets within the Census tract of residence, appears to have little impact on weight status in children.

ACKNOWLEDGMENTS

I would first like to thank my advisor, Dr. Susan Partington for giving me this opportunity and providing me with the tools necessary to complete this task. I would also like to thank my committee members, Dr. Janet Tou and Dr. Melissa Olfert for their useful feedback and continued encouragement. I express great appreciation to Dr. Gianfranco Piras, Dr. Donald Lacombe, and Mark Middleton for their time and efforts in the geocoding process and analysis. I would like to extend a special thank you to Janie Leary and Dr. Lesley Cottrell from CARDIAC for sharing their office space and allowing me to use their equipment. I would like to thank all of the raters, Michelle McGinley, Karina Walker, and Trevor Standiford for their work on the surveys. I truly appreciate all their help. I want to thank all of the interns for their constant support, encouragement, and friendship. I also want to thank Adam Lensmire for always pushing me and motivating me to never give up. And finally, I thank my family for their financial and emotional support during the past two years.

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LIST OF ABBREVIATIONS

BMI	Body Mass Index
SES	Socioeconomic Status
PA	Physical Activity
NHANES	National Health and Nutrition Examination Surveys
USDA	United States Department of Agriculture
OR	Odds Ratio
NEMS	Nutrition Environment Measures Surveys
NEMS-S	Nutrition Environment Measures Surveys-Stores
NEMS-R	Nutrition Environment Measures Surveys-Restaurants
CARDIAC	Coronary Artery Risk Detection in Appalachian Communities
Kcals	Kilocalories

1.0. Introduction

There are numerous factors that may contribute to obesity. Individual-level dietary patterns, physical activity, sedentary behavior, genetics, socio-economic status, cultural heritage, and the nutrition and physical activity environments are among the characteristics that have been examined as causal factors. During recent decades, the prevalence of pediatric overweight and obesity in the United States has increased significantly.¹ Change in the food or nutrition environment has been identified as a likely contributor to this trend. The community nutrition environment is generally defined as the availability and cost of food in one's area of residence or neighborhood. Numerous studies have suggested that community-level availability, affordability, and quality of food may be related to weight status by influencing food choice and consequently food intake.²⁻⁵ High energy density foods (fats and refined carbohydrates) are less costly than those low in energy density (low-fat meat, dairy, fruits and vegetables).⁶ It is important to determine if the nutrition environment is a substantial contributor to weight status so that appropriate programs and policies may be developed and implemented for the prevention and management of obesity in children and adolescents in the United States (US).

2.0. Study Hypothesis and Objectives

Areas of high poverty in Marshall and Monongalia Counties of West Virginia have a lower quality nutrition environment, specifically; lower availability to and higher cost of healthy food options compared to areas of low poverty in these counties. These environmental factors may contribute to a higher prevalence of overweight and obesity in children in areas of high poverty.

In order to test the hypothesis the study objectives were:

1. To determine if healthy food options are more available and less costly in areas of low poverty compared to areas of high poverty.
2. To determine if the quality of the local nutrition environment is significantly associated with the prevalence of overweight and obesity in children controlling for individual- and area-level household income.

3.0. Literature Review

3.1. Prevalence of Overweight among Children and Adolescents in the United States

Obesity continues to be a leading public health concern as prevalence continues to increase in the United States.⁷ Children with a body mass index (BMI) between the 85th and 95th percentiles are considered overweight. Children are obese if their BMI is $\geq 95^{\text{th}}$ percentile.⁸ Children and adolescents who are overweight are more likely to become obese adults and to develop type 2 diabetes, cardiovascular disease, hypertension, hyperlipidemia, asthma, and sleep apnea.⁹

Between 1980 and 2002, overweight prevalence tripled in children and adolescents aged 6 to 19 years in the US.⁷ Data from the National Health and Nutrition Examination Surveys (NHANES) indicated that 17.1% of children and adolescents aged 2 to 19 years were obese (BMI $\geq 95^{\text{th}}$ percentile for age) in 2003-2004.⁷ Tests of trend using logistic regression adjusted for age and race/ethnicity showed a significant increase in prevalence of overweight in children and adolescents aged 2 to 19 over years 1999-2000, 2001-2002, and 2003-2004 ($p = 0.0396$ for males and $p = 0.0463$ for females).⁷

Flegal et al.¹⁰ used dual-energy X-ray absorptiometry in 8,821 children and adolescents aged 8-19 years to measure body fat percentage. They found that most children with high BMI-for-age ($\geq 95^{\text{th}}$ percentile) had high adiposity, and few children with normal BMI-for-age ($< 85^{\text{th}}$ percentile) had high adiposity. The prevalence of high adiposity in intermediate BMI categories varied from 45% to 15% depending on the cutoff. The prevalence of a high BMI was significantly higher in non-Hispanic black girls than in non-Hispanic white girls, but the prevalence of high adiposity was not significantly different between the groups.¹⁰

Singh et al.¹¹ found 16.4% of US children to be obese and 31.6% overweight in 2007. The prevalence of obesity varied substantially across the 50 states, with Mississippi having the highest prevalence (21.9%) and Oregon the lowest prevalence (9.6%). Overweight prevalence among children and adolescents aged 10 to 17 years in West Virginia was 35.5% in 2007 and obesity prevalence was 18.9%. Between 2003 and 2007, obesity prevalence increased by 10% for all US children, 18% for female children and 6% for males. West Virginia children had more than twice the adjusted odds of being obese than children in Oregon. Individual, household, and neighborhood social and built environmental characteristics accounted for 45% and 42% of the state variance in childhood obesity and overweight, respectively.¹¹

3.2. Risk Factors Associated with Overweight and Obesity

Dietary Patterns

Numerous studies have documented increasingly poor dietary behaviors among adolescents, including an excess intake of fat, sugar, snacks, soda, and fast food¹² and a low intake of fruit and vegetables.^{13,14} Other dietary patterns contributing to overweight among children are increased intakes of sugar-sweetened beverages^{15,16} and larger portion sizes.¹⁷ Mean calorie and fat intake have increased consistently over time among both children/adolescents and adults in the United States.^{18,19} Unhealthy food consumption patterns put youths at higher risk for overweight.^{20,21}

Using the USDA's 1994-96 Continuing Survey of Food Intakes by Individuals (CSFII) food consumption data and BMI data from the 1998 CSFII, Lin and Morrison²² found that overweight children and obese adults of both genders consumed significantly less fruit than their healthy-weight counterparts. In addition, at-risk-of-overweight girls also consumed less fruit

than healthy-weight girls.²² It appears that fruit consumption is linked with lower body mass index.

Sedentary Behavior

Sedentary behavior has been reported to promote and escalate overweight in children due to the effects on energy expenditure and energy intake.²³ Sedentary behavior, often measured as screen time, may displace time children spend in physical activities, contribute to increased energy consumption through excessive snacking and eating meals in front of the television, and lower children's metabolic rate.^{24,25}

Singh et al.¹¹ found that children who watched television more than two hours per day had 48% higher odds of obesity and 56% higher odds of overweight than those who watched television less than one hour per day. Children who used a computer for more than two hours per day for purposes other than school work had 28% higher odds of obesity and 25% higher odds of overweight than those who used a computer for purposes other than school work less than one hour per day. Children who did not engage in any vigorous physical activity had at least 32% higher odds of obesity or overweight than those who exercised five or more days per week.¹¹

Parental Weight

Obesogenic families, defined in terms of parents' activity and dietary patterns, can be used predict children's risk of obesity.²⁶ Davison and Birch²⁶ assessed a total of 197 girls and their parents when girls were 5 years old; 192 families were reassessed when girls were 7 years old. Measures of parents' physical activity and dietary intake were obtained and entered into a cluster analysis to assess whether distinct family clusters could be identified. Girls' skinfold thickness and BMI were also assessed and were used to examine the predictive validity of the

clusters. Obesogenic and non-obesogenic family clusters were identified. Mothers and fathers in the obesogenic cluster reported high levels of dietary intake and low levels of physical activity, while mothers and fathers in the non-obesogenic cluster reported low levels of dietary intake and high levels of activity. Girls from families in the obesogenic cluster had significantly higher BMI and skinfold thickness values at age 7 and showed significantly greater increases in BMI and skinfold thickness from ages 5 to 7 years of age than girls from non-obesogenic families.²⁶

In a retrospective cohort study, Whitaker et al.²⁷ concluded that parental obesity more than doubles the risk of adult obesity among both obese and non-obese children less than 10 years of age. The chance of obesity in adulthood ranged from 8 percent for 1- or 2-year-olds without obese parents to 79 percent for 10-to-14-year-olds with at least one obese parent. After adjustment for the child's obesity status, the odds ratios for obesity in adulthood associated with having one obese parent ranged from 2.2 (95 percent confidence interval, 1.1 to 4.3) at 15 to 17 years of age to 3.2 (1.8 to 5.7) at 1 or 2 years of age.²⁷

Genetics also play an important role in determining body weight. In a 1997 review of the existing literature, Maes and colleagues²⁸ found that family studies of parents and offspring and siblings reported (BMI) correlations indicating heritabilities of 20 to 80 percent.²⁸ Heritability of BMI can be considered the proportion of variance in BMI due to inherited genetic factors. This same review found that data from adoption studies comparing adoptees to their adoptive and biological parents indicated that genetic factors accounted for 20-60% of the variation in BMI, and twin studies reported genetic factors to explain 50 to 90% of the variance in BMI. In their own analysis of 14,763 twins and family members, 67% of the variance in BMI was attributed to genetics. In a study of identical twins reared apart, Stunkard et al.²⁹ found environmental factors explained about 30% of the variation in BMI.²⁹

3.3. Socioeconomic Status and Obesity Prevalence

Socio-economic status has been associated with increased obesity prevalence. Mutunga et al.²⁵ used a cross-sectional survey of 2,016 adolescents aged 12 years and 15 years selected from 36 schools in Northern Ireland in a random, stratified sample. BMI was used to measure obesity. Dietary intake was assessed using diet history with an open-ended interview and a photographic atlas to determine portion sizes. SES was determined from self-reported occupational information of the mother. Habitual physical activity, screen time, and cardiorespiratory fitness were measured to determine if there was a direct relationship among any of these behavioral risk factors and overweight. There were significantly higher daily energy intakes in the lower SES group.²⁵

Wang et al.³⁰, in an analysis of NHANES data (1971 to 2002) found inconsistent associations among race/ethnicity, poverty and weight status in children and adolescents aged 2-18 years old. The poverty income ratio from census block group was used as a measure of SES. The poverty income ratio is the household income divided by the poverty threshold. The poverty threshold is updated yearly and published by the Census Bureau. Subjects were separated into two age groups according to the World Health Organization's recommendation: children (2-9 years old) and adolescents (10-18 years old). They found not all low SES groups were at increased risk of overweight. Considerable racial, gender, and age differences existed. In children age 2-9 years old, none of the associations were significant. In adolescents aged 10-18 years old, there was a statistically significant inverse association between poverty ratio and overweight in white boys in NHANES II (1976-1980) and in white girls in NHANES III (1988-1994) $p < 0.05$, $p < 0.01$ respectively, showing that low SES groups were more likely to be overweight. Among black girls in NHANES (1999-2002) those with a high SES were twice as

likely to be overweight than their counterparts with a medium SES. No significant associations were found in other gender-ethnicity groups or other rounds of the survey.³⁰

Vieweg et al.³¹ investigated the association between overweight and SES in 29,824 public school children from 2002 to 2004. BMI was computed for students in kindergarten, third, seventh, and tenth grades. The percentage of the student population eligible for the free and reduced National School Lunch Program was used as a proxy for SES in elementary and middle school students. This program provides free or low-cost lunches to students based on the student's family size and income. Children from families with incomes at or below 130% of the poverty level are eligible for free meals. Those with incomes between 130% and 185% of the poverty level are eligible for reduced-price meals. The percentage of public school students eligible for free or reduced price lunches in a particular school was strongly related to child poverty among students of that school. To assess SES of high school students, the percentage of the school-age population living in poverty based on the per capita income data from the 2000 Census was used. Gender, race, and SES were important factors considered in this study and thought to contribute to the overweight prevalence. Boys were more likely than girls to be overweight. Hispanics had the highest prevalence of overweight followed by blacks while students classified as white were least likely to be overweight.³¹

Using data from the 1996 Healthy Survey for England, Wardle et al.³² examined socioeconomic predictors of obesity in men and women to compare odds ratios for obesity by education, occupation, and two economic markers after control for age, marital status, and ethnicity. In a multivariate logistic regression analysis, the authors found that obesity risk was greater among men and women with fewer years of education (OR = 1.77 and 1.81, respectively) and poorer economic circumstances (OR = 1.37 for both) and among women, but not men, of

lower occupational status ($p < 0.01$). Higher educational attainment and higher SES were associated with a lower risk of obesity in both men and women, whereas higher occupational status was associated with a lower risk only for women.³² These findings indicate that SES is an important determinant of weight status in both children and adults.

3.4. Retail Food Accessibility, Availability and Cost

It has been suggested that the influence of the nutrition environment on food intake involves two pathways: access to and cost of foods for home preparation from supermarkets and grocery stores, and access to and cost of ready-made food for home and out-of-home consumption (e.g. takeaways, restaurants). Accessibility to supermarkets is poorer in low-income neighborhoods, with fewer supermarkets and more small independent grocery stores available to local residents.²

Rural vs. Urban Areas

Food deserts, areas with low access to healthy foods, have become a major topic of interest among public health advocates as well as a dynamic and fast-growing field of research. Controlling for population density, rural areas have fewer food retailers of any type compared to urban areas, and only 14 percent the number of chain supermarkets.³³ A nationwide analysis found that there are 418 rural “food desert” counties where all residents live 10 miles or more from the nearest supermarket or supercenter, 20 percent of all rural counties.³⁴

Socioeconomic Status

A key determinant of weight status may be food cost. Low-cost foods tend to be energy dense and nutrient poor.⁶ The low cost of energy-dense foods along with easy access to such foods may explain high obesity prevalence among low SES communities.³⁵ Research has shown

that low-income neighborhoods attract more fast-food outlets³⁶ and convenience stores as opposed to full-service supermarkets and grocery stores.^{37,38} Spence et al.³ found that a lower ratio of fast-food restaurants and convenience stores to grocery stores and produce vendors near people's homes was associated with decreased odds of being obese.

Low-income zip codes have 25 percent fewer chain supermarkets and 1.3 as many convenience stores compared to middle-income zip codes.³³ Low-income neighborhoods have half as many supermarkets as the wealthiest neighborhoods and four times as many smaller grocery stores, according to an assessment of 685 urban and rural census tracts in three states.³⁹

Other studies gather much more detailed data, conducting in-store surveys to assess the availability, variety, quality, and price of particular healthy items. Among these studies^{2,37,40}, it was found that food stores in lower-income neighborhoods are less likely to stock healthy foods, offer lower quality items, and have higher prices compared to stores in higher-income communities.

3.5. Proximity to Supermarket and Fruit and Vegetable Intake

Supermarkets tend to offer the greatest variety of low-fat healthy options at the lowest cost.² In contrast, convenience stores often sell duly prepared, high-calorie foods and little fresh produce, at higher prices.⁴¹ Studies suggests that neighborhood residents with better access to supermarkets and other retail stores that provide access to healthful food products tend to have healthier food intakes.⁴²⁻⁴⁴ Proximity to a supermarket has been associated with higher fruit and vegetable intake and better diet quality among low-income households.⁴³ Despite some inconsistencies, several studies^{5,45} have shown that better access to a supermarket is associated

with reduced risk of obesity, whereas greater access to convenience stores is associated with increased risk for obesity.^{5,45}

Five studies analyzed access to nearby supermarkets or large grocery stores that sell a wide variety of healthy foods in relation to consumption of fruits and vegetables, specific healthy foods (such as low-fat milk or high-fiber bread), or a healthy diet (measured by an index of diet quality). Almost all of these studies controlled for individual characteristics such as race and income and still found a relationship between access and healthy eating. Four of the studies found associations between supermarket access and healthy eating among adults^{4,43,44,46} and one had mixed results.⁴⁷

Only one study examined access to food stores and eating behaviors of adolescent boys aged 10 to 14 and did not find a relationship between supermarket access and fruit and vegetable consumptions but did find that proximity of convenience stores was associated with reduced fruit and vegetable intake.⁴⁸

3.6. Summary

Prevalence of childhood obesity is extremely high in West Virginia. Although the etiology of obesity is complex and multifactorial, socioeconomic status may contribute to weight status by influencing food choice. Increased local availability of low-cost healthy food options or a high quality neighborhood nutrition environment may be associated with healthier diets, and thus healthier weight outcomes in children.

4.0. Materials and Methods

4.1. Enumeration of Stores

The Institutional Review Board (IRB) committee at West Virginia University approved the protocol for this study. The survey area was defined as Marshall and Monongalia Counties combined, of West Virginia. Areas of poverty were defined by poverty quartiles using Census tract data. Poverty data from the American Community Survey 2005-2009 was obtained from the American Fact Finder.⁴⁹ Poverty quartiles were computed based on population for whom poverty status is determined at or below 100% of the poverty threshold by Census tract. Areas of lowest poverty had between 0% and 8.1% of the population living below the poverty threshold. The next lowest poverty quartile included 8.1% to 18.76% of the population living below the poverty threshold. The third quartile consisted of 18.76% to 26.61% of those living below the poverty threshold. Areas of highest poverty had between 26.61% and 100% of the population living below the poverty threshold.

A list of all retail food outlets, convenience stores, and department stores in the state of West Virginia defined as SIC codes beginning with 53, 54, and 58 was purchased from InfoUSA⁵⁰, a marketing list sales firm. The data included company name, location address, Standard Industrial Classification (SIC) codes, square footage, number of employees, and additional information. The SIC codes provide a description of the type of store (e.g., grocery, convenience, department). There were 83 grocery and convenience stores and 61 department/general stores located in Monongalia and Marshall Counties. Department/general stores were included in the enumeration to capture retailers in this category that also sell food, such as Target and Dollar General. Further elimination of department stores without retail food sales, such as furniture and clothing stores resulted in a list of 97 stores, 37 grocery, 46

convenience, and 14 department stores. The list of grocery stores included stores also known as supermarkets.

4.2. Assessment of Food Availability, Price, and Quality

The Nutrition Environment Measures Survey (NEMS) measures the nutrition environment in defined geographic areas using data collected by trained raters. The NEMS-Store (NEMS-S) audits the availability, price, and quality of specific healthy and regular options in stores.² The surveys consist of 11 indicator food categories: milk, fruit, vegetables, ground beef, hot dogs, frozen dinners, baked goods, beverages (soda/juice), bread, baked chips, and cereal.

Store identification numbers were assigned following the NEMS 8-digit system as follows:

1. First two digits represent the defined area, where 01=Monongalia County and 05=Marshall County.
2. Third digit represents the type of food outlet, where 1=store and 2=restaurant.
3. Fifth and sixth digits represent the type of store, where 01=grocery, 02=convenience and 03=other.
4. Last three digits represent the individual ID number.

Raters were recruited from undergraduate classes in Animal and Nutritional Sciences at West Virginia University to complete the surveys. All raters were trained using the NEMS online training. Pencils, clipboards, and letters to store managers were provided to the raters. It was the raters' responsibility for locating all stores. Surveys were turned in and checked for completeness. Surveys regarded as incomplete were re-surveyed. Raters were asked to take notes of store name changes, errors in addresses, stores declined being surveyed, and stores that

were out of business. This provided a list of stores to remove from the analysis (Table 1). A total of 79 stores remained for analysis (Table 2). Cardiff Teleform® document scanning application was used to scan and verify completed NEMS-S surveys. Responses were stored in a Microsoft® Excel database for analysis.

4.3. Reliability Testing

Reliability of the surveys was tested using inter-rater and test-retest methods. Inter-rater reliability was tested by sending two raters to the same store at the same time on the same day to see if they received the same results. Test-retest reliability was tested by sending the same rater to the same store one week apart to see if the same results were achieved. The latter method assumes that store measures do not change within a week. Both methods were tested on 10% of the total stores surveyed. There was a 95.6% agreement between the raters using the inter-rater reliability testing and a 91.2% agreement using the test-retest method.

4.4. Comparison Items

Comparison items are shown in Table 3. Using the data collected from the NEMS-S, an availability comparison was conducted between the healthy and regular food options. The availability indicator was assessed based on a yes/no rating. A cost comparison was also conducted between healthy and regular food options. Cost was assessed based on the posted non-sale prices for healthier versus regular options for comparable products. Specific prices for each measure are listed in Table 4.

4.5. Nutrition Environment Quality Scores

A composite nutrition environment quality score was calculated for each store using three dimensions (availability, quality, and price) as developed by Glanz et al.² Availability scores assigned two points per indicator for the availability of healthier options, and an extra point for more varieties (e.g., two extra points for three or more varieties of lean meat). Price scores assigned two points for a lower priced healthier option and -1 point for a higher priced healthier option, and up to three points were assigned for having more produce of acceptable quality. The total score could range from -9 to 54.

4.6. BMI Percentiles and Measurement Scores

In looking at the nutrition environment, it is important to also look at BMI in the study area and how the two might be related. The Coronary Artery Risk Detection in Appalachian Communities (CARDIAC) study records and examines cardiovascular disease (CVD) risk factors in West Virginia school children.⁵¹ Among the data collected annually are height and weight. In the 2009-2010 school year, this data was collected on 398, 329, and 203 kindergarten, second, and fifth graders, respectively, in Monongalia County and 185, 170, and 125 kindergarten, second, and fifth graders, respectively, in Marshall County. Height, weight, and age were used to compute BMI percentiles for each participant. There were 1,410 total students screened which represented 42.7% of the student population. Table 12 displays the demographic characteristics and weight status of CARDIAC participants screened during the 2009-2010 school year in Monongalia and Marshall Counties.

Parent surveys were sent to the homes of all the children screened inquiring about dietary habits, physical activity patterns, and parental height and weight among other health related

factors. Of the 1,410 surveys sent, 235 were returned and considered complete which provided a completion rate of 16.7% (Table 13). These completed parent surveys represent 7.1% of the total population of kindergarten, second and fifth grade students in those counties.

A mean NEMS score was computed for each Census tract. This score represents the quality of the nutrition environment for each subject. The mean score at the tract level was attached to the case-level data.

4.7. Statistical Analysis

Availability of healthy items and cost comparisons between healthy and regular items were measured by store type and by area-level poverty quartile. Results are expressed as frequencies for availability and mean price $\pm$ standard deviation for cost comparison.

Basic frequencies of availability were run for all variables in the dataset for measure1-measure11 by store type and by poverty quartile for the survey area. Dichotomous availability measures where 1=yes and 0=no were used for all measures. These values are shown in Tables 6 and 7. Significance for differences in availability of individual food items in Tables 6 and 7 was tested using Pearson's chi-square test. Fisher's exact test was used to further determine where the differences were among the store types and poverty quartiles with differences considered significant at $p < 0.05$.

Mean prices of healthier options and regular options were computed for all comparison items (Table 3) by store type and by poverty quartile. These values are shown in Tables 8 and 9. Differences in price of healthier options by store type and by poverty quartile in Tables 8 and 9 were tested using a two-sample t-test with equal variances with differences considered significant at $p < 0.05$.

Mean scores of the nutrition environment for each dimension (e.g., availability, price, quality) were calculated by store type and by poverty quartile for each county. Results are expressed as means $\pm$ standard deviation of the mean. Differences in NEMS score by store type and by poverty quartile were tested using a one-way ANOVA. Post-hoc multiple comparison tests were performed using Scheffe's test among the store types and among the poverty quartiles with differences considered significant at $p < 0.05$. All statistical analyses were completed using Stata Statistical Software: Release 11.⁵²

A mean NEMS score was computed for each census tract by summing the individual store scores and dividing by the number of stores. The mean NEMS score for each census tract was entered into a multivariate analysis as an independent variable with other factors known to influence child BMI included as additional independent variables. These were, age of the child, family income, age, gender and BMI of parent respondent, parent and child dietary and physical activity indicators from the CARDIAC questionnaire, and neighborhood quality as represented by median household income for each tract. The outcome variable was BMI percentile.

The possibility of spatial autocorrelation, either in the form of a spatially lagged dependent variable or in the form of a spatial error process were tested using several Lagrange Multiplier tests that have been developed by Anselin et. al.⁵³ Using a variety of spatial weight matrices (i.e. a matrix that relates observations in space to each other) we found no evidence of spatial autocorrelation and a standard logistic regression model was constructed. Outcome or dependent variable was dichotomous: coded 1 to indicate BMI at the 95th percentile or greater (obese) and 0 to indicate BMI less than the 95th percentile (not obese).

5.0. Results

5.1. Population Characteristics

The median household income of Marshall County is \$34,330 compared to \$51,425 nationwide.⁴⁹ There are 14.0% of families and 17.6% of individuals living below the poverty level compared to 9.9% and 13.5% nationwide, respectively.⁴⁹ The total population for the county is 33,205.⁴⁹ Monongalia County has a median household income of \$37,544.⁴⁹ Of the 87,864 people living in Monongalia County, 9.7% of families and 21.4% of individuals are living below the poverty level.⁴⁹ Because of the similarities between these two counties, they were combined together as one survey area. According to the Bureau of the Census, both counties are considered to be in metropolitan areas with a population fewer than 250,000.⁵⁴ During the 2009-2010 school year, there were a total of 988 kindergarten, second and fifth graders in Marshall County and 2,307 in Monongalia County. Of the total students in the aforementioned grade levels in both counties combined, 89.4% were white and 47.0% were considered low SES.⁵⁵

5.2. Sample Characteristics

From the CARDIAC screening data, 491 participants, or 34.8%, of the children were overweight and 244, or 17.3%, were obese (Table 12). The sample for the CARIDAC Parent Survey included 235 kindergarten, second, and fifth grade students in both counties combined. In the sample, 86.4% were white and 30.2% were considered low SES. Table 14 describes the student population with complete parent surveys compared to the total student population of the counties by grade as reported by the West Virginia Department of Education.⁵⁵ There were significant differences at $p < 0.05$ between the survey sample and the total student population in

distribution by grade and SES, but not by race or gender. This indicates the sample does not accurately represent the student population in these counties with respect to SES or grade distribution.

5.3. Availability of Healthier Options

There were significant differences in the availability of healthier options between grocery and convenience stores and between grocery and other stores ($p < 0.05$) for the following measures: fruit, vegetables, lean ground beef, low-fat hot dogs, reduced calorie frozen dinners, low-fat baked goods, and 100% whole grain bread (Table 6). There were also significant differences between convenience and other stores ($p < 0.05$) in the availability of low-fat baked goods, diet soda and low-fat chips. Availability of diet soda was significantly different between grocery stores and convenience stores. The results shown in Table 7 indicate that there was a significant difference in availability of low sugar cereal between poverty quartiles 2 and 3 and between quartiles 3 and 4.

5.4. Cost Comparison of Healthier vs. Regular Options

There was a significant difference in price between healthy and regular options for lean ground beef (\$0.75) in grocery stores, reduced calorie frozen dinners in all three types of stores (\$0.91, \$0.81, \$1.97, for grocery, convenience, and other stores, respectively) and 100% whole grain bread in grocery and convenience stores (\$0.58 and \$0.61, respectively). Difference in price between healthy and regular options was also significant for lean ground beef in poverty quartiles 1, 3, and 4 (\$0.90, \$0.83, and \$0.71, respectively), reduced calorie frozen dinners in quartiles 1 and 4 (\$0.92 and \$1.06, respectively), and 100% whole grain bread in quartiles 1, 2,

and 3 (\$0.69, \$0.70, and \$0.47, respectively). The healthier options of ground beef and bread were more expensive while the healthier reduced calorie frozen dinners were cheaper than their regular counterparts. There were no significant differences in price among store type or among poverty quartiles.

5.5. NEMS-S Scores

Composite mean NEMS scores and standard deviations by store type are shown in Table 10. Composite mean NEMS scores and standard deviations by poverty quartile for the two counties are displayed in Table 11. Using the NEMS scoring system as a means of measuring differences, there were significant differences ($p < 0.05$) in availability, price, quality, and total points among store types. However, there were no significant differences in availability, price, quality, or total points among poverty quartiles.

5.6. Association of Nutrition Environment with Obesity Prevalence

The results of the logistic regression analysis used to calculate odds ratios for the prevalence of obesity associated with physical activity, parental weight, family income, and other known covariates are included in Table 15. Controlling for parent age and gender, child age and gender, area-level nutrition score and median household income, and reported frequency of fruit and/or vegetable and fast food intake, it was found that a child reported to get 30 minutes of moderate physical activity (PA) at least 6 days per week was 9% less likely to be obese than a child reported to get 30 minutes of moderate PA less than 6 days per week. A child with an overweight parent was 3.8 times more likely to be obese than a child with a normal weight

parent. A child in a family with income less than \$50,000 per year was almost 3 times as likely to be obese as a child in a family with income \$50,000 or more.

6.0. Discussion

In this sample, outlet-level nutrition quality varied by store type, but the nutrition environment within a Census tract did not vary significantly by tract-level poverty. Additionally, the quality of the nutrition environment in the Census tract of residence was not significantly associated with the prevalence of obesity in children in the survey area. Because convenience stores and general and department stores have lower availability of healthy foods compared to grocery stores, people who shop more frequently at these stores may be at higher risk of obesity. It is highly likely that where a person shops for food is a more substantial contributor to obesity than the quality of the community nutrition environment in the immediate area of residence defined by Census tract boundaries. Census boundaries are designed to measure areas for administrative purposes. They are not necessarily representative of neighborhood or community boundaries and likely do not delineate shopping areas for individuals. Since the availability of healthy food options in the immediate nutrition environment was not significantly associated with weight status, family food purchases were likely made beyond the boundaries of the Census tract. Other unmeasured factors that influence personal choice and behavior likely contribute. Walkability, determined by the availability of sidewalks and pedestrian crossings has been identified as an important area-level contributor to obesity. Access to bike paths, fast-food restaurants, playgrounds, and gym facilities in an area may also affect weight status.

According to the screening data from CARDIAC, 34.8% of children were overweight and 17.3% were obese. The obesity prevalence is consistent with national statistics⁷ and the overweight prevalence with state data as reported by Singh et al.¹¹ In this study children who had an overweight/obese parent were much more likely to be obese. It is reasonable to conclude that parental behavior and the home nutrition environment contribute to obesity in addition to

inheritable biological traits. The home nutrition environment is thought to be particularly important for young children because they are dependent on parents to purchase food. The availability of food in the home has a significant impact on intake in young children.^{56,57} Lack of regular physical activity was significantly associated with an increased likelihood of obesity. This finding is consistent with other studies indicating the importance of physical activity in maintenance of appropriate weight status in children.⁵⁸⁻⁶⁰

Children in families with an annual income less than \$50,000 were more likely to be obese. The association between weight status in children and SES has been inconsistent particularly among racial/ethnic and age groups.³⁰ West Virginia has the second lowest median household income in the US after Mississippi.⁴⁹ The median household income is \$34,330 in Marshall County and \$37,544 in Monongalia County compared to \$51,425 nationwide with very few racial differences (98.1% white in Marshall County and 92.0% white in Monongalia County), but a high prevalence of obesity.⁴⁹ Additionally, the sample was limited to children ages 5- to 10-years old. Since these data are not confounded by race/ethnicity and a large variation in age, the association of childhood obesity with family SES is more clear. Energy dense foods are cheaper than foods with low energy density.⁶¹ Due to limited resources, low income families purchase foods that are high in energy density because they are less expensive. As a result, children in low-income families consume diets that are higher in energy density compared to children from more affluent families leading to excess weight gain and obesity.⁶²

7.0. Limitations

There were some limitations in this study that need to be addressed. The sample of stores surveyed was very small. A larger number would result in less variation and more accurate measures. It is possible that important variables and measures were missed due to limitations inherent in a secondary analysis of an established database. We did not include any data on shopping behavior and as a result, the stores surveyed may not be representative of the stores where people shop.

8.0. Summary and Conclusion

In Monongalia and Marshall Counties, the quality of the nutrition environment does not differ by area-level poverty. Healthy food options are not more available in areas of high poverty compared to areas of low poverty and the cost does not vary by area-level poverty. The quality of the nutrition environment in the two counties studied is not significantly associated with the prevalence of childhood obesity after controlling for individual- and area-level household income.

9.0. References

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Tables

Table 1. Stores Removed from Analysis

Store ID	Reason
01-1-02-010	Could not locate
01-1-02-040	Declined being surveyed
01-1-02-020	Previously surveyed under 01-1-02-009
01-1-02-027	Address did not exist
01-1-02-031	Previously surveyed under 01-1-02-022
01-1-02-025	Offered none of the measures (vending machine)
01-1-01-020	Keg store
01-1-01-022	Out of business
01-1-01-024	Out of business
01-1-01-027	Specialty store (Asian foods only)
01-1-01-026	Could not locate
01-1-03-011	Offered none of the measures
01-1-03-005	Declined being surveying
05-1-01-012	Bakery
05-1-01-009	Offered none of the measures (Poker store)
05-1-02-008	Could not locate
05-1-02-009	Could not locate
05-1-01-010	Could not locate

Table 2. Number and Type of Stores Surveyed by County

County	Store Type			Total
	Grocery	Convenience	Others	
Marshall	8	9	3	20
Monongalia	21	29	9	59
Total	29	38	12	79

Table 3. Comparison Items

Measure	Regular Food	Healthier Option
Measure 1	Whole milk	Skim milk
Measure 4	Standard ground beef, 80% lean, 20% fat	Lean ground beef, 90% lean, 10% fat
Measure 5	Oscar Mayer Wieners (turkey/pork/chicken), 12 g fat	Oscar Mayer 98% Fat Free Wieners (turkey/beef), 0.5 g fat
Measure 6	Stouffer's Lasagna, ≥ 10 g fat/serving	Lean Cuisine Lasagna, ≤ 9 g fat/serving
	Stouffer's Roasted Turkey Breast, ≥ 10 g fat/serving	Lean Cuisine Roasted Turkey Breast, ≤ 9 g fat/serving
	Stouffer's Meatloaf, ≥ 10 g fat/serving	Lean Cuisine Meatloaf, ≤ 9 g fat/serving
Measure 7	Regular muffin, ≥ 4 g fat/serving or 400 Kcal/serving	Bagel, ≤ 3 g fat/serving
Measure 8	Coke	Diet Coke
	Juice drink	100% juice
Measure 9	White bread, made with refined flour	Whole grain bread, 100% whole wheat bread and whole grain bread
Measure 10	Lays Potato Chips Classic	Baked Lays Potato Chips, ≤ 3 g fat/1 oz. serving
Measure 11	Cheerios Flavored cereal, ≥ 7 g sugar/serving	Cheerios Plain cereal, < 7 g sugar/serving

Table 4. Price Measurements

Measure	Price Measurement
Measure 1: Milk	price of half gallons
Measure 2: Fruit	new per unit or per lb price variables (whichever is more common for the specific fruit)
Measure 3: Vegetables	new per unit or per lb price variables (whichever is more common for the specific vegetable)
Measure 4: Ground Beef	price/lb
Measure 5: Hot Dogs	price/package
Measure 6: Frozen Dinners	price/package
Measure 7: Baked Goods	price/piece
Measure 8: Beverage	price/ounce
Measure 9: Bread	price/loaf
Measure 10: Baked Chips	price/oz
Measure 11: Cereal	price/box

Table 5. Number of Stores by Poverty Quartile

Poverty Quartiles	Frequency	Percent	Cumulative
1	18	22.8	22.8
2	21	26.6	49.4
3	17	21.5	70.9
4	23	29.1	100.0
Total	79	100.0	

Table 6. Availability of Healthier Options by Store Type

Type of Food & Availability	a	b	c	*Significance
	Grocery Stores (n=29)	Convenience Stores (n=38)	Other Stores (n=12)	
Skim/low-fat milk				
Available	25	33	9	
Not Available	4	5	3	
Any fruit				
Available	23	6	1	ab, ac
Not Available	6	32	11	
Any vegetables				
Available	21	5	1	ab, ac
Not Available	8	33	11	
Lean ground beef				
Available	14	0	1	ab, ac
Not Available	15	38	11	
Low-fat hot dogs				
Available	14	0	1	ab, ac
Not Available	15	38	11	
Reduced calorie frozen dinners				
Available	17	10	1	ab, ac
Not Available	12	28	11	
Low-fat baked goods				
Available	20	0	3	ab, ac, bc
Not Available	9	38	9	
Diet Soda				
Available	25	38	9	ab, bc
Not Available	4	0	3	
100% fruit juice				
Available	24	36	11	
Not Available	5	2	1	
100% whole grain bread				
Available	23	14	1	ab, ac
Not Available	6	24	11	
Baked/low-fat chips				
Available	18	31	4	bc

Not Available	11	7	8
Low sugar cereal			
Available	26	27	11
Not Available	3	11	1

*Significant differences among groups where $p < 0.05$

Fisher's exact

Table 7. Availability of Healthier Options by Percent Poverty Threshold

Type of Food & Availability	a	b	c	d	*Significance
	Below 25 th Percentile (n=18)	Between 25 th and 50 th Percentiles (n=21)	Between 50 th and 75 th Percentiles (n=17)	Above 75 th Percentile (n=23)	
Skim/low-fat milk					
Available	16	16	16	19	
Not Available	2	5	1	4	
Any fruit					
Available	10	6	6	8	
Not Available	8	15	11	15	
Any vegetables					
Available	8	6	5	8	
Not Available	10	15	12	15	
Lean ground beef					
Available	6	3	2	4	
Not Available	12	18	15	19	
Low-fat hot dogs					
Available	5	3	4	3	
Not Available	13	18	13	20	
Reduced calorie frozen dinners					
Available	8	6	6	8	
Not Available	10	15	11	15	
Low-fat baked goods					
Available	7	6	5	5	
Not Available	11	15	12	18	
Diet Soda					
Available	16	19	16	21	
Not Available	2	2	1	2	
100% fruit juice					
Available	16	18	17	20	
Not Available	2	3	0	3	
100% whole grain bread					
Available	10	10	8	10	
Not Available	8	11	9	13	
Baked/low-fat chips					

Available	12	13	9	19	
Not Available	6	8	8	4	
Low sugar cereal					
Available	16	14	17	17	bc, cd
Not Available	2	7	0	6	

*Significant differences among groups where $p < 0.05$

Fisher's exact

Table 8. Cost Comparison of Healthier vs. Regular Options by Store Type

Food Item	a	b	c	*Significance
	Grocery Stores (n=29)	Convenience Stores (n=38)	Other Stores (n=12)	
Milk				
Skim/Low-Fat	2.62 ± 1.62	2.73 ± 0.91	2.83 ± 0.29	
Whole	2.56 ± 1.32	2.80 ± 0.97	2.90 ± 0.24	
Ground Beef				
Lean	3.59 ± 0.41		4.15 ± 0	a
Standard	2.84 ± 0.39		2.83 ± 0.04	
Hot Dogs				
Fat Free	3.91 ± 1.21			
Regular	3.25 ± 0.81	3.01 ± 1.69	3.99 ± 0.69	
Frozen Dinners				
Reduced Calorie	2.29 ± 0.90	3.03 ± 0.81	1.98 ± 1.39	abc
Regular	3.20 ± 1.60	3.84 ± 0.66	3.95 ± 0	
Baked Goods				
Low-fat Bagel	2.20 ± 1.14		4.88	
Muffin	2.49 ± 1.44	1.32 ± 0.30	2.22 ± 1.72	
Soda				
Diet Coke	4.64 ± 1.04	1.51 ± 0.22	3.06 ± 0.83	
Coke	4.65 ± 1.04	1.51 ± 0.22	3.06 ± 0.83	
Juice				
100% Fruit Juice	2.82 ± 0.37	1.68 ± 0.15	3.00 ± 1.17	
Juice Drink	2.16 ± 0.68	1.74 ± 0.43	2.40 ± 1.08	
Bread				
100% Whole Grain	2.59 ± 1.17	2.72 ± 0.10	4.48	ab
White	2.01 ± 0.54	2.11 ± 0.41	1.78 ± 0.55	
Chips				
Baked Lays	3.28 ± 0.97	1.18 ± 0.70	3.12 ± 2.52	
Lays Classic	2.89 ± 0.95	1.15 ± 0.68	3.50 ± 1.02	
Cereal				
Cheerios Plain	3.46 ± 1.49	4.09 ± 1.84	2.98 ± 1.08	
Cheerios Flavored	3.37 ± 1.02	4.02 ± 2.00	3.09 ± 1.41	

*Significance at p<0.05

Table 9. Cost Comparison of Healthier vs. Regular Options by Percent Poverty Threshold

Food Item	a	b	c	d	*Significance
	Below 25 th Percentile (n=18)	Between 25 th and 50 th Percentiles (n=21)	Between 50 th and 75 th Percentiles (n=17)	Above 75 th Percentile (n=23)	
Milk					
Skim/Low-Fat	2.70 ± 1.49	2.93 ± 1.30	2.58 ± 0.50	2.60 ± 1.18	
Whole	2.42 ± 0.49	3.02 ± 1.40	2.59 ± 0.48	2.77 ± 1.35	
Ground Beef					
Lean	3.63 ± 0.32	3.76 ± 0.83	3.68 ± 0.13	3.51 ± 0.37	acd
Standard	2.73 ± 0.49	2.96 ± 0.23	2.85 ± 0.31	2.80 ± 0.38	
Hot Dogs					
Fat Free	4.09 ± 1.14	4.49 ± 0.51	2.83 ± 1.75	4.13 ± 1.09	
Regular	3.31 ± 1.19	3.32 ± 1.33	3.83 ± 1.03	2.47 ± 1.21	
Frozen Dinners					
Reduced Calorie	2.06 ± 0.61	2.61 ± 1.21	3.07 ± 1.34	2.21 ± 0.56	ad
Regular	2.98 ± 0.70	3.54 ± 0.69	4.24 ± 2.02	3.27 ± 1.14	
Baked Goods					
Low-Fat Bagel	2.62 ± 1.36	1.67 ± 1.44	2.10 ± 0.78	2.86 ± 1.31	
Muffin	2.21 ± 1.66	1.64 ± 0.79	1.79 ± 1.19	1.95 ± 1.22	
Soda					
Diet Coke	3.29 ± 1.62	2.84 ± 1.59	2.92 ± 1.64	2.25 ± 1.37	
Coke	1.57 ± 0.08	1.56 ± 0.10	1.49 ± 0.24	1.47 ± 0.30	
Juice					
100% Fruit Juice	1.72 ± 0.08	1.63 ± 0.18	1.68 ± 0.18	1.69 ± 0.15	
Juice Drink	1.69 ± 0.14	1.63 ± 0.19	1.67 ± 0.18	1.84 ± 0.61	
Bread					
100% Whole Grain	2.84 ± 0.76	2.62 ± 0.40	2.39 ± 0.33	2.83 ± 1.68	abc
White	2.15 ± 0.54	1.92 ± 0.48	1.92 ± 0.51	2.09 ± 0.43	
Chips					
Baked Lays	2.99 ± 1.61	1.91 ± 1.44	2.01 ± 1.41	1.47 ± 0.99	
Lays Classic	2.61 ± 1.49	2.22 ± 1.42	2.33 ± 1.12	1.41 ± 0.81	
Cereal					
Cheerios Plain	3.44 ± 1.56	3.79 ± 1.40	3.16 ± 1.34	4.21 ± 2.03	
Cheerios Flavored	3.59 ± 1.81	3.49 ± 1.55	3.39 ± 1.54	4.04 ± 1.69	

*Significance at p<0.05

Table 10. NEMS Composite Mean Scores for Healthy Nutrition Environments in Stores

	a	b	c	*Significance
	Grocery Stores (n=29)	Convenience Stores (n=38)	Other Stores (n=12)	
Availability	17.9 ± 9.4	8.2 ± 3.0	7.3 ± 5.4	ab, ac
Price	2.3 ± 2.2	3.5 ± 1.7	2.5 ± 1.4	ab
Quality	4.5 ± 2.3	0.6 ± 1.6	0.5 ± 1.7	ab, ac
Total†	24.7 ± 11.9	12.3 ± 4.7	10.3 ± 8.1	ab, ac

†Maximum possible score is 54

*Significant differences among groups where $p < 0.05$

One-way ANOVA Scheffe's test. Response variable=scores (avail, price, quality, total). Factor variable=store type.

Table 11. NEMS Composite Mean Scores for Stores by Census Tract Poverty Level

	a	b	c	d	*Significance
	Q1 (n=18)	Q2 (n=21)	Q3 (n=17)	Q4 (n=23)	
Availability	20.2 ± 12.5	14.8 ± 10.6	16.1 ± 9.3	15.7 ± 9.5	
Price	3.2 ± 2.0	2.7 ± 1.7	2.9 ± 2.1	2.9 ± 2.0	
Quality	3.0 ± 2.9	1.7 ± 2.8	1.9 ± 2.7	1.7 ± 2.4	
Total†	20.2 ± 12.5	14.8 ± 10.6	16.1 ± 9.3	15.7 ± 9.5	

†Maximum possible score is 54 points

One-way ANOVA Scheffe's test. Response variable=scores (avail, price, quality, total). Factor variable=poverty quartile.

Table 12. Demographic Characteristics and Weight Status CARDIAC Participants 2009-2010

	County		
	Monongalia	Marshall	Monongalia + Marshall
Sample size (n)	930	480	1,410
Gender			
Female	464	236	700
Male	466	244	710
Grade			
Kindergarten	397	185	583
Second	329	170	499
Fifth	203	125	328
BMI percentile	66.6 $\pm$ 27.6	65.5 $\pm$ 28.3	66.2 $\pm$ 27.8
Prevalence of BMI-for-age categories (%)			
$\geq 85^{\text{th}}$ percentile	326	165	491
$\geq 95^{\text{th}}$ percentile	155	89	244
$\geq 99^{\text{th}}$ percentile	48	21	69

Table 13. Parent Survey Response CARDIAC Questionnaire

Parent Survey Response	
Total Students Screened	1410
Percent Screened	42.7
Parent Survey Returned	299
Survey Response Percent	21.2
Survey Complete	235
Percent Survey Complete	16.7
Percent Total Population	7.1

Table 14. Demographic Characteristics of Children with Parent Survey compared to all Students by Grade and County

County (WV Department of Education Enrollment Data)							Sample (CARDIAC Parent Survey Completed)					
County	Number of Students	Grade	Percent of Total by Grade	Percent White by Grade	Percent Low SES by Grade	Percent Male by Grade	Number of Students Sample	Grade	Percent of Total by Grade	Percent White by Grade	Percent Low SES by Grade	Percent Male by Grade
Marshall	334	Kindergarten	10.1	96.7	52.2	55.7	24	Kindergarten	10.2	62.5	79.2	66.7
Marshall	292	2	8.8	95.2	49.6	49.0	25	2	10.6	96.0	41.3	40.0
Marshall	372	5	11.3	85.8	51.1	41.1	6	5	2.6	83.3	50.0	33.3
Monongalia	820	Kindergarten	24.8	86.7	48.3	51.7	100	Kindergarten	42.6	82.0	27.9	57.0
Monongalia	734	2	22.2	89.4	48.0	50.1	59	2	25.1	91.5	20.4	52.5
Monongalia	753	5	22.8	88.7	47.6	47.9	21	5	8.9	90.5	20.0	38.1
Total	3305		100.0	89.4	47.0	49.5	235		100.0	86.4	30.2	52.8

Within row by column between County and Sample, bold indicates differences significant at $p < 0.05$ (Chi Square test)

Table 15. Odds Ratios for Risk of Obesity from Logistic Regression Analysis n = 235

	Odds Ratio	Std. Err.	95% CI
BMI $\geq$ 95 %tile			
Respondent gender (parent)	0.60	0.66	0.07, 5.23
Child gender	0.95	0.41	0.41, 2.23
Moderate PA 6-7 days/week	0.08*	0.09	0.01, 0.69
Servings FV/day	0.86	0.12	0.65, 1.13
Fast Food per week	0.76	0.22	0.43, 1.33
Parent BMI $\geq$25	3.77**	1.80	1.48, 9.62
Child age	1.01	0.01	0.99, 1.03
Mean NEMS Score (census tract)	1.03	0.04	0.95, 1.12
Family Income less than \$50K	2.60*	1.21	1.04, 6.48
Median household income (tract)	1.00	0.00	1.00, 1.00
Parent age	1.04	0.04	0.97, 1.11

Note. CI = confidence interval.

*p<0.05, **p<0.01

Appendix A: Letter to Store Managers

Davis College of Agriculture, Natural Resources, and Design

Dear Manager:

There is increasing interest in improving the community health through the promotion of healthy eating. Our group at West Virginia University is collecting data to measure the food sources that people in neighborhoods have available to them, especially restaurants and grocery/convenience stores. We are visiting restaurants in the area to look at certain things such as menus and restaurant signs, and stores to look at available foods and pricing.

We are **not** visiting your store or restaurant for inspection purposes, nor are they connected with your competitors. We follow strict rules to protect any information collected. We will assign an identification (ID) number to your restaurant or store, and only the research staff will see your individual store or restaurant information.

Your participation is voluntary, and you may inform us at any time if you do not wish to participate. If you have questions or concerns, please contact me at 304-293-1938. Thank you for allowing us to spend a few minutes in your restaurant or store to record this information.

Sincerely,

A handwritten signature in black ink that reads 'Susan Partington'.

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Morgantown, WV 26506

Equal Opportunity/Affirmative Action Institution

Nutrition Environment Measures Survey (NEMS)
Measure #1: MILK

Rater ID: Store ID:

Date:

Month Day Year ☐ Grocery Store ☐ Convenience Store ☐ Other

Marking Instructions

Please use a pencil or blue or black ink Correct Incorrect

A. Reference Brand

1. Store brand (preferred) ☐ yes ☐ no

2. Alternate Brand Name

Comments:

B. **Availability** **Comments:**

1. a. Is low-fat (skim or 1%) available? ☐ Yes ☐ No

 b. If not, is 2% available? ☐ Yes ☐ No ☐ NA

Type	Pint	Quart	Half gallon	Gallon
a. Skim				
b. 1%				
c. Whole				

C. Pricing: All items should be same brand **Comments:**

1. Whole milk, quart \$.

2. Whole milk, half-gal. \$.

3. Skim or 1% milk, quart \$.

(Lowest available)

4. Skim or 1% milk half-gal. \$.

(Lowest available)

Alternate Items:

5. 2%, quart \$. ☐ N/A

6. 2%, half gal. \$. ☐ N/A

Nutrition Environment Measures Survey (NEMS)

Measure #2: FRUIT

Rater ID: Store ID: Date: / /
Month Day Year☐ Grocery Store☐ Convenience Store☐ Other**Availability and Price**

Produce Item		Available		Price	#	Unit pc lb	Quality		Comments	
		Yes	No				A	UA		
1. Bananas		☐	☐	\$ <input type="text"/> . <input type="text"/>	<input type="text"/>	☐	☐	☐	☐	<input type="text"/>
2. Apples	☐ Red delicious	☐	☐	\$ <input type="text"/> . <input type="text"/>	<input type="text"/>	☐	☐	☐	☐	<input type="text"/>
	☐ _____									
3. Oranges	☐ Navel	☐	☐	\$ <input type="text"/> . <input type="text"/>	<input type="text"/>	☐	☐	☐	☐	<input type="text"/>
	☐ _____									
4. Grapes	☐ Red Seedless	☐	☐	\$ <input type="text"/> . <input type="text"/>	<input type="text"/>	☐	☐	☐	☐	<input type="text"/>
	☐ _____									
5. Cantaloupe		☐	☐	\$ <input type="text"/> . <input type="text"/>	<input type="text"/>	☐	☐	☐	☐	<input type="text"/>
6. Peaches		☐	☐	\$ <input type="text"/> . <input type="text"/>	<input type="text"/>	☐	☐	☐	☐	<input type="text"/>
7. Strawberries		☐	☐	\$ <input type="text"/> . <input type="text"/>	<input type="text"/>	☐	☐	☐	☐	<input type="text"/>
8. Honeydew Melon		☐	☐	\$ <input type="text"/> . <input type="text"/>	<input type="text"/>	☐	☐	☐	☐	<input type="text"/>
9. Watermelon	☐ Seedless	☐	☐	\$ <input type="text"/> . <input type="text"/>	<input type="text"/>	☐	☐	☐	☐	<input type="text"/>
	☐ _____									
10. Pears	☐ Anjou	☐	☐	\$ <input type="text"/> . <input type="text"/>	<input type="text"/>	☐	☐	☐	☐	<input type="text"/>
	☐ _____									

11. Total Types: (count # of yes responses)

Nutrition Environment Measures Survey (NEMS)**Measure #3: VEGETABLES**Rater ID: Store ID: Date:

Month Day Year

☐ Grocery Store ☐ Convenience Store ☐ Other**Availability and Price**

Produce Item		Available		Price	Unit # pc lb	Quality		Comments
		Yes	No			A	UA	
1. Carrots	☐ 1 lb bag ☐ _____	☐ ☐	☐ ☐	\$ <input type="text"/> . <input type="text"/> <input type="text"/> <input type="text"/>	☐ ☐	☐ ☐	☐ ☐	_____
2. Tomatoes	☐ Loose ☐ _____	☐ ☐	☐ ☐	\$ <input type="text"/> . <input type="text"/> <input type="text"/> <input type="text"/>	☐ ☐	☐ ☐	☐ ☐	_____
3. Sweet Peppers	☐ Green bell ☐ _____	☐ ☐	☐ ☐	\$ <input type="text"/> . <input type="text"/> <input type="text"/> <input type="text"/>	☐ ☐	☐ ☐	☐ ☐	_____
4. Broccoli	☐ Bunch ☐ _____	☐ ☐	☐ ☐	\$ <input type="text"/> . <input type="text"/> <input type="text"/> <input type="text"/>	☐ ☐	☐ ☐	☐ ☐	_____
5. Lettuce	☐ Green leaf ☐ _____	☐ ☐	☐ ☐	\$ <input type="text"/> . <input type="text"/> <input type="text"/> <input type="text"/>	☐ ☐	☐ ☐	☐ ☐	_____
6. Corn		☐ ☐	☐ ☐	\$ <input type="text"/> . <input type="text"/> <input type="text"/> <input type="text"/>	☐ ☐	☐ ☐	☐ ☐	_____
7. Celery		☐ ☐	☐ ☐	\$ <input type="text"/> . <input type="text"/> <input type="text"/> <input type="text"/>	☐ ☐	☐ ☐	☐ ☐	_____
8. Cucumbers	☐ Regular ☐ _____	☐ ☐	☐ ☐	\$ <input type="text"/> . <input type="text"/> <input type="text"/> <input type="text"/>	☐ ☐	☐ ☐	☐ ☐	_____
9. Cabbage	☐ Head ☐ _____	☐ ☐	☐ ☐	\$ <input type="text"/> . <input type="text"/> <input type="text"/> <input type="text"/>	☐ ☐	☐ ☐	☐ ☐	_____
10. Cauliflower		☐ ☐	☐ ☐	\$ <input type="text"/> . <input type="text"/> <input type="text"/> <input type="text"/>	☐ ☐	☐ ☐	☐ ☐	_____

11. Total Types: (count # of yes responses)

Nutrition Environment Measures Survey (NEMS)
Measure #4: GROUND BEEF

Rater ID: Store ID: Date: / /
Month Day Year☐ Grocery Store ☐ Convenience Store ☐ Other**Availability and Price**

Item	Available			Price/lb.	Comments
	Yes	No	N/A		

Healthier Option:

1. Lean ground beef, **90% lean,** ☐ Yes ☐ No ☐ N/A \$. _____
10% fat (Ground Sirloin) _____

Alternate Items:

Yes No N/A

2. Lean ground beef (<10% fat) ☐ Yes ☐ No ☐ N/A \$. _____
 % fat _____

3. Ground Turkey ($\leq$ 10% fat) ☐ Yes ☐ No ☐ N/A \$. _____
 % fat _____

4. # of varieties of lean ground beef ($\leq$ 10% fat) ☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6+

Regular option:

5. Standard ground beef, **80% lean,** ☐ Yes ☐ No ☐ N/A \$. _____
20% fat _____

Alternate Item:

Yes No N/A

6. Standard alternate ground beef, if
above is not available ☐ Yes ☐ No ☐ N/A \$. _____
 % fat _____

Nutrition Environment Measures Survey (NEMS)
Measure #5: HOT DOG

Store ID:

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☐ Grocery Store ☐ Convenience Store ☐ Other

Availability and Price

Item	Available	Price/pkg.	Comments
	Yes No N/A		

Healthier Option:

1. Oscar Mayer 98% Fat-free Wieners (turkey/beef) 0g fat **O O** \$. _____

Alternate Items: (≤ 9 g Fat)

g fat kcal/svg

Regular option:

\$

--

 .

--

Alternate Items: ($\geq 10\text{g}$ fat)

\$

--

 .

--

g fat kcal/svg

Nutrition Environment Measures Survey (NEMS)

Measure #6: FROZEN DINNERS

Rater ID: Store ID: Date:

Month Day Year

☐ Grocery Store ☐ Convenience Store ☐ Other**A. Reference Brand**1. Stouffer's brand (preferred) ☐ Yes ☐ No

2. Alternate brand (with reduced-fat dinners

available) Brand Name: Comments: **B. Availability**1. Are reduced-fat frozen dinners
available? (≤ 9 g fat/8-11 oz.)**Shelf Space:** (measure only if reduced-fat frozen dinners are available)

2. Reduced-fat dinners/regular dinners: Proportion

☐ $\leq 10\%$ ☐ 11-33% ☐ 34-50% ☐ 51%+**C. Pricing** (All items must be same brand)

Reduced-Fat Dinner	Price/Pkg	Regular Dinner	Price/Pkg	Comments
1. Lean Cuisine Lasagna	\$ <input type="text"/> . <input type="text"/> .	Stouffer's Lasagna	\$ <input type="text"/> . <input type="text"/> .	
<input type="text"/> oz <input type="text"/> K cal. <input type="text"/> g fat		<input type="text"/> oz <input type="text"/> K cal. <input type="text"/> g fat		
2. Lean Cuisine Roasted Turkey Breast	\$ <input type="text"/> . <input type="text"/> .	Stouffer's Roasted Turkey Breast	\$ <input type="text"/> . <input type="text"/> .	
<input type="text"/> oz <input type="text"/> K cal. <input type="text"/> g fat		<input type="text"/> oz <input type="text"/> K cal. <input type="text"/> g fat		
3. Lean Cuisine Meatloaf	\$ <input type="text"/> . <input type="text"/> .	Stouffer's Meatloaf	\$ <input type="text"/> . <input type="text"/> .	
<input type="text"/> oz <input type="text"/> K cal. <input type="text"/> g		<input type="text"/> oz <input type="text"/> K cal. <input type="text"/> g fat		
Reduced-Fat Alternate (≤ 9 g fat)	Price/Pkg	Regular Alternate (≥ 10 g fat)	Price/Pkg	Comments
4. Other <input type="text"/>	\$ <input type="text"/> . <input type="text"/> .	Other <input type="text"/>	\$ <input type="text"/> . <input type="text"/> .	
<input type="text"/> oz <input type="text"/> K cal. <input type="text"/> g fat		<input type="text"/> oz <input type="text"/> K cal. <input type="text"/> g fat		
5. Other <input type="text"/>	\$ <input type="text"/> . <input type="text"/> .	Other <input type="text"/>	\$ <input type="text"/> . <input type="text"/> .	
<input type="text"/> oz <input type="text"/> K cal. <input type="text"/> g fat		<input type="text"/> oz <input type="text"/> K cal. <input type="text"/> g fat		
6. Other <input type="text"/>	\$ <input type="text"/> . <input type="text"/> .	Other <input type="text"/>	\$ <input type="text"/> . <input type="text"/> .	
<input type="text"/> oz <input type="text"/> K cal. <input type="text"/> g fat		<input type="text"/> oz <input type="text"/> K cal. <input type="text"/> g fat		

Measure Complete ☐

Nutrition Environment Measures Survey (NEMS)

Measure #7: BAKED GOODS

Rater ID:

Store ID:

Date:
Month Day Year

☐ Grocery Store ☐ Convenience Store ☐ Other

Availability & Price

Low-fat baked goods ≤ 3 g fat/serving

Item	Available Yes No	Amt. per package	g fat/ per item	kcal/ per item	Price	Comments
------	---------------------	---------------------	--------------------	-------------------	-------	----------

Healthier option:

1. Bagel

Single ☐ ☐ \$

	Yes	No	N/A				
Package	☐	☐	☐	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Alternate Items:	Yes	No	N/A				
2. English muffin	☐	☐	☐	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
3. a. Low-fat muffin	☐	☐	☐	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>							
b. # varieties of low fat muffins	☐	☐	☐	☐	☐	☐	☐

Regular option (>3g fat/serving or 400 Kcal/serving):

4. Regular muffin ☐ ☐ \$

Alternate Items	Yes	No	N/A				
5. Regular Danish	☐	☐	☐	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
6. Other	☐	☐	☐	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Nutrition Environment Measures Survey (NEMS)
Measure #8-CS-BEVERAGE

Rater ID: Store ID: Date: / /
Month Day Year☐ Grocery Store☐ Convenience Store☐ Other**Availability & Price**

Healthier option:	Available	Price	Comments
	Yes No		
1. Diet Coke	12 oz. ☐ ☐	\$ <input type="text"/> <input type="text"/>	_____
	20 oz. ☐ ☐	\$ <input type="text"/> <input type="text"/>	_____
2. Alternate brand of diet soda	Yes No N/A		
<input type="text"/>	12 oz. ☐ ☐ ☐	\$ <input type="text"/> <input type="text"/>	_____
<input type="text"/>	20 oz. ☐ ☐ ☐	\$ <input type="text"/> <input type="text"/>	_____
Regular option:	Yes No		
3. Coke	12 oz. ☐ ☐	\$ <input type="text"/> <input type="text"/>	_____
	20 oz. ☐ ☐	\$ <input type="text"/> <input type="text"/>	_____
4. Alternate brand of sugared soda	Yes No N/A		
<input type="text"/>	12 oz. ☐ ☐ ☐	\$ <input type="text"/> <input type="text"/>	_____
<input type="text"/>	20 oz. ☐ ☐ ☐	\$ <input type="text"/> <input type="text"/>	_____
Healthier option:	Yes No		
5. 100% juice, 15.2 oz.	☐ ☐	\$ <input type="text"/> <input type="text"/>	_____
☐ Minute Maid ☐ Tropicana ☐ Other	☐ ☐		
Alternate Items:	Yes No N/A		
6. 100% juice, 14 oz.	☐ ☐ ☐	\$ <input type="text"/> <input type="text"/>	_____
☐ Minute Maid ☐ Tropicana ☐ Other	☐ ☐ ☐		
7. 100% juice, _____ oz.	☐ ☐ ☐	\$ <input type="text"/> <input type="text"/>	_____
☐ Minute Maid ☐ Tropicana ☐ Other	☐ ☐ ☐		
Regular option:	Yes No		
8. Juice Drink, 15.2 oz	☐ ☐	\$ <input type="text"/> <input type="text"/>	_____
☐ Minute Maid ☐ Tropicana ☐ Other	☐ ☐		
Alternate Items:	Yes No N/A		
9. Juice Drink, 14 oz.	☐ ☐ ☐	\$ <input type="text"/> <input type="text"/>	_____
☐ Minute Maid ☐ Tropicana ☐ Other	☐ ☐ ☐		
10. Juice Drink, _____ oz.	☐ ☐ ☐	\$ <input type="text"/> <input type="text"/>	_____
☐ Minute Maid ☐ Tropicana ☐ Other	☐ ☐ ☐		

Measure Complete ☐

Nutrition Environment Measures Survey (NEMS)
Measure #8-GS:BEVERAGE

Rater ID: Store ID: Date:
Month Day Year☐ Grocery Store☐ Convenience Store☐ Other**Availability & Price**

	Available size	Available			Price	Comments
		Yes	No	N/A		
Healthier option:						
1. Diet Coke	12 pack 12 oz.	☐	☐		\$ <input type="text"/> <input type="text"/>	_____
	6 pack 12 oz.	☐	☐	☐	\$ <input type="text"/> <input type="text"/>	_____
2. Alternate brand of diet soda		Yes	No	N/A	\$ <input type="text"/> <input type="text"/>	_____
<input type="text"/>	12 pack 12 oz.	☐	☐	☐	\$ <input type="text"/> <input type="text"/>	_____
<input type="text"/>	6 pack 12 oz.	☐	☐	☐	\$ <input type="text"/> <input type="text"/>	_____

Regular option:

3. Coke	12 pack 12 oz.	Yes	No		\$ <input type="text"/> <input type="text"/>	_____
	6 pack 12 oz.	Yes	No	N/A	\$ <input type="text"/> <input type="text"/>	_____
4. Alternate brand of sugared soda		Yes	No	N/A		
<input type="text"/>	12 pack 12 oz.	☐	☐	☐	\$ <input type="text"/> <input type="text"/>	_____
<input type="text"/>	6 pack 12 oz.	☐	☐	☐	\$ <input type="text"/> <input type="text"/>	_____

Healthier option:

5. Minute Maid 100% juice, (64 oz., half gallon)	Yes	No		\$ <input type="text"/> <input type="text"/>	_____
	☐	☐			

Alternate Items:

6. Tropicana 100% juice, (64 oz, half gallon)	Yes	No	N/A		\$ <input type="text"/> <input type="text"/>	_____
7. Other: <input type="text"/>	☐	☐	☐		\$ <input type="text"/> <input type="text"/>	_____

Regular option:

8. Minute Maid juice drink, (64 oz, half gallon)	Yes	No		\$ <input type="text"/> <input type="text"/>	_____
	☐	☐			

Alternate Items:

9. Tropicana juice drink, (64 oz, half gallon)	Yes	No	N/A		\$ <input type="text"/> <input type="text"/>	_____
10. Other: <input type="text"/>	☐	☐	☐		\$ <input type="text"/> <input type="text"/>	_____

Measure Complete ☐

Nutrition Environment Measures Survey (NEMS)

Measure #9: BREAD

Rater ID:

Store ID:

Date: / /
Month Day Year

☐ Grocery Store

☐ Convenience Store

☐ Other

Availability & Price

Item	Available Yes No N/A	Loaf size (ounces)	Price/loaf	Comments
------	-------------------------	-----------------------	------------	----------

Healthier Option: Whole grain bread (100% whole wheat bread and whole grain bread)

1. Nature's Own 100% Whole Wheat Bread ☐ ☐ \$. _____

Alternate Items:

2. Sara Lee Classic 100% Whole Wheat Bread ☐ ☐ ☐ \$. _____

3. Other: Yes No N/A ☐ ☐ ☐ \$. _____

4. # of varieties of 100% whole wheat bread and whole grain (all brands) ☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6+

Regular Option: White bread (bread made with refined flour)

5. Nature's Own Butter Bread ☐ ☐ \$. _____

Alternate Items:

6. Sara Lee Classic White Bread ☐ ☐ ☐ \$. _____

7. Other: ☐ ☐ ☐ \$. _____

Measure Complete ☐

Nutrition Environment Measures Survey (NEMS)
Measure #10: BAKED CHIPS

Rater ID: Store ID: Date: / /
Month Day Year☐ Grocery Store☐ Convenience Store☐ Other**Availability & Price**Low-fat chips $\leq$ 3g fat per 1 oz. serving

Item	Size (ounces)	Available	Price	Comments				
Healthier Option :		Yes No						
1. Baked Lays Potato Chips	<input type="text"/> oz.	☐ ☐	\$ <input type="text"/> . <input type="text"/>	_____				
Alternate Item:		Yes No N/A						
2.	<input type="text"/>	☐ ☐ ☐	\$ <input type="text"/> . <input type="text"/>	_____				
	<input type="text"/> oz.							
3. # of varieties of low-fat chips (any brand)		☐ 0	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6+

Regular Option (select most comparable size to healthier option available):

	Size	Yes No	Price	
4. Lays Potato Chips Classic	<input type="text"/> oz.	☐ ☐	\$ <input type="text"/> . <input type="text"/>	_____
Alternate Item:		Yes No N/A		
5.	<input type="text"/>	☐ ☐ ☐	\$ <input type="text"/> . <input type="text"/>	_____
	<input type="text"/> oz.			

Measure Complete ☐

Nutrition Environment Measures Survey (NEMS)

Measure #11: CEREAL

Rater ID:

Store ID:

Date: / /
Month Day Year

☐ Grocery Store

☐ Convenience Store

☐ Other

Availability & Price

Healthier cereals < 7 g sugar per serving

Item	Available			Size (ounces)	Price	Comments
	Yes	No	N/A			

Healthier Option:

1. Cheerios (Plain) ☐ Yes ☐ No ☐ N/A \$. _____

Alternate Item:

2. Other _____ ☐ Yes ☐ No ☐ N/A \$. _____

3. # of varieties of healthier cereals ☐ 0 ☐ 1 ☐ 2 ☐ 3+

Regular Options (≥ 7 g of sugar per serving):

4. Cheerios (Flavored) _____ ☐ Yes ☐ No ☐ N/A \$. _____

Alternate Item:

5. Other _____ ☐ Yes ☐ No ☐ N/A \$. _____

Appendix C: IRB Certificate of Completion

CITI Collaborative Institutional Training Initiative

Human Research Curriculum Completion Report

Printed on 10/13/2010

Learner: Anna Chetrick (username: achetric)

Institution: West Virginia University

Contact Information Department: Animal & Nutritional Sciences

Email: achetric@mix.wvu.edu

Biomedical Research Investigators:

Stage 1. Basic Course Passed on 04/09/10 (Ref # 4300655)

Required Modules	Date Completed	
Belmont Report and CITI Course Introduction	04/08/10	2/3 (67%)
History and Ethical Principles	04/08/10	7/7 (100%)
Basic Institutional Review Board (IRB) Regulations and Review Process-	04/08/10	4/5 (80%)
Informed Consent	04/08/10	4/4 (100%)
Records-Based Research	04/08/10	1/2 (50%)
Research With Protected Populations - Vulnerable Subjects: An Overview	04/08/10	2/4 (50%)
Vulnerable Subjects - Research Involving Minors	04/09/10	3/3 (100%)
Group Harms: Research With Culturally or Medically Vulnerable Groups	04/09/10	3/3 (100%)
FDA-Regulated Research	04/09/10	4/5 (80%)
Research and HIPAA Privacy Protections	04/09/10	2/2 (100%)
Conflicts of Interest in Research Involving Human Subjects	04/09/10	2/2 (100%)
West Virginia University	04/09/10	no quiz

For this Completion Report to be valid, the learner listed above must be affiliated with a CITI participating institution. Falsified information and unauthorized use of the CITI course site is unethical, and may be considered scientific misconduct by your institution.

Paul Braunschweiger Ph.D.
Professor, University of Miami
Director Office of Research Education
CITI Course Coordinator

Appendix D: NEMS Certificate of Training Completion

Appendix E: Parent Survey

10053

Parent Pre-Assessment
Environmental Determinants of Physical Activity in Children & Teens
-Please fill in entire answer circle-

/ /

ID: _____

1. Who is the main person completing this form:

- ☐ Mother ☐ Father ☐ Other _____

2. How would you describe the area where you live?

- ☐ Rural ☐ Town / Suburb ☐ City / Urban

3. Do you plan to speak with your child's pediatrician about your child's CARDIAC screening?

- ☐ Already discussed my child's CARDIAC screening with my child's pediatrician
☐ Plan to discuss with my child's pediatrician and I have scheduled an appointment to do so
☐ Plan to discuss with my child's pediatrician but I have not scheduled an appointment to do so
☐ Do not plan to discuss my child's CARDIAC screening with my child's pediatrician

4. Does your child have any medical conditions or disabilities that limit his or her physical activity?

- ☐ No ☐ Yes, please list conditions: _____

5a. How do you describe your child's weight?

- ☐ Very underweight ☐ Slightly underweight ☐ About the right weight ☐ Slightly overweight ☐ Very overweight

5b. Please indicate how concerned you are about your child's weight?

- ☐ Very concerned ☐ A little concerned ☐ Not concerned

6. Please rate your child's physical activity level using a scale of 0 to 7.

- ☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7
No activity Very active

7. Compared to other children of the same age and sex, how would you describe your child's physical activity level?

- ☐ Much less than others
☐ Somewhat less than others
☐ About the same
☐ Somewhat more than others
☐ Much more than others

8a. On how many of the past 7 days did your child exercise or participate in physical activities for at least 20 minutes that made him or her sweat and breathe hard, such as basketball, soccer, running, swimming, laps, fast bicycling, fast dancing, or similar aerobic activities?

- ☐ 0 days ☐ 1 day ☐ 2 days ☐ 3 days ☐ 4 days ☐ 5 days ☐ 6 days ☐ 7 days

8b. On how many of the past 7 days did your child participate in physical activity for at least 30 minutes that did NOT make him or her sweat or breathe hard, such as fast walking, slow bicycling, skating, pushing a lawn mower, or mopping floors?

- ☐ 0 days ☐ 1 day ☐ 2 days ☐ 3 days ☐ 4 days ☐ 5 days ☐ 6 days ☐ 7 days

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IN THIS SECTION, WE WILL ASK ABOUT YOUR ACTIVITY PREFERENCES AND YOUR CHILD'S ACTIVITY PREFERENCES.

9. For each pair, please indicate the one activity YOU prefer to do:

☐ Swimming	OR	☐ Reading
☐ Swimming	OR	☐ Arts & crafts, scrapbooking
☐ Swimming	OR	☐ Screen time (computer, TV, non-active video games)
☐ Riding a bike / Using exercise equipment	OR	☐ Reading
☐ Riding a bike / Using exercise equipment	OR	☐ Arts & crafts, scrapbooking
☐ Riding a bike / Using exercise equipment	OR	☐ Screen time (computer, TV, non-active video games)
☐ Walking / Jogging	OR	☐ Reading
☐ Walking / Jogging	OR	☐ Arts & crafts, scrapbooking
☐ Walking / Jogging	OR	☐ Screen time (computer, TV, non-active video games)

10. For each pair, please indicate the one activity YOUR CHILD prefers to do:

☐ Swimming	OR	☐ Reading
☐ Swimming	OR	☐ Arts & crafts, scrapbooking
☐ Swimming	OR	☐ Screen time (computer, TV, non-active video games)
☐ Sports (ball, cheerleading, dance, martial arts)	OR	☐ Reading
☐ Sports (ball, cheerleading, dance, martial arts)	OR	☐ Arts & crafts, scrapbooking
☐ Sports (ball, cheerleading, dance, martial arts)	OR	☐ Screen time (computer, TV, non-active video games)
☐ Walking / Jogging / Jump rope	OR	☐ Reading
☐ Walking / Jogging / Jump rope	OR	☐ Arts & crafts, scrapbooking
☐ Walking / Jogging / Jump rope	OR	☐ Screen time (computer, TV, non-active video games)

11. How much does your child enjoy physical activity?

- ☐ Strongly dislikes
 ☐ Dislikes
 ☐ Somewhat dislikes
 ☐ Somewhat likes
 ☐ Likes
 ☐ Strongly likes

12. On average, how many hours per day does your child have screen time (watch TV, use computer, play video games):

Weekdays (Monday-Friday) Weekend (Saturday & Sunday)

☐ Less than 1	☐
☐ Between 1 and 2	☐
☐ Between 2 and 3	☐
☐ Between 3 and 4	☐
☐ Between 4 and 5	☐
☐ More than 5	☐

One answer here:

One answer here:

13. Directions: Make a vertical line at the point where you make the decisions, in your home.

EXAMPLE: Who makes the decisions about what your child wears.

Decision based completely
by parents

Decision based completely
by child

1. Decisions about what your child eats while at home.

For office use

	.	
--	---	--

Completely by parent

Completely by child

2. Decisions about what your child eats while away from home.

	.	
--	---	--

Completely by parent

Completely by child

3. Decisions about the type of physical activities your child engages in while at home.

	.	
--	---	--

Completely by parent

Completely by child

4. Decisions about the type of physical activities your child engages in while away from home.

	.	
--	---	--

Completely by parent

Completely by child

5. Decisions about how much activity your child has while at home.

	.	
--	---	--

Completely by parent

Completely by child

6. Decisions about how much activity your child has while away from home.

	.	
--	---	--

Completely by parent

Completely by child

7. Decisions about what foods are bought for meals at home.

	.	
--	---	--

Completely by parent

Completely by child

8. Decisions to eat out.

	.	
--	---	--

Completely by parent

Completely by child

9. Decisions about food purchased at the grocery store.

	.	
--	---	--

Completely by parent

Completely by child

10053

IN THIS SECTION, WE WILL ASK ABOUT YOUR FAMILY.**14. Please indicate HOW OFTEN:**

Never Rarely Sometimes Often Always

A. You express affection by hugging, kissing, & holding your child	☐	☐	☐	☐	☐
B. You hug or hold your child for no particular reason	☐	☐	☐	☐	☐
C. You tell your child how happy he/she makes you	☐	☐	☐	☐	☐
D. You have warm, close times together with your child	☐	☐	☐	☐	☐
E. You enjoy doing things with your child	☐	☐	☐	☐	☐
F. You feel close to your child both when he/she is happy & when he/she is upset	☐	☐	☐	☐	☐
G. You make sure your child follows an instruction or make a request to do something	☐	☐	☐	☐	☐
H. You are angry when you punish your child	☐	☐	☐	☐	☐
I. You feel you are having problems managing your child in general	☐	☐	☐	☐	☐
J. You punish your child for continuing to do something after being told to stop	☐	☐	☐	☐	☐
K. Your child gets away with things that you feel should have been punished	☐	☐	☐	☐	☐
L. Your child is able to get out of punishment when he/she really sets his/her mind to it	☐	☐	☐	☐	☐
M. Your child ignores the punishment when you discipline him/her	☐	☐	☐	☐	☐
N. You express praise when talking with your child about his/her behavior	☐	☐	☐	☐	☐
O. You express disapproval when talking with your child about his/her behavior	☐	☐	☐	☐	☐

15. Please indicate HOW OFTEN you do the following in front of your child:

Never Rarely Sometimes Often Always

A. Being physically active	☐	☐	☐	☐	☐
B. Doing house/yard work	☐	☐	☐	☐	☐
C. Using physical activity as relaxation	☐	☐	☐	☐	☐
D. Being too tired to be physically active	☐	☐	☐	☐	☐
E. Eating healthy snacks	☐	☐	☐	☐	☐
F. Eating meals at the table	☐	☐	☐	☐	☐
G. Taking second helpings	☐	☐	☐	☐	☐
H. Eating unhealthy snacks	☐	☐	☐	☐	☐
I. Talking positively about sports or physical activity	☐	☐	☐	☐	☐
J. Eating while watching TV/reading	☐	☐	☐	☐	☐
K. Eating when you are in a bad mood/angry	☐	☐	☐	☐	☐
L. Eating late at night	☐	☐	☐	☐	☐
M. Drinking sugar-sweetened drinks (soda, kool-aid, sweet tea)	☐	☐	☐	☐	☐

16. As a parent, I feel...

	Disagree Very Strongly	Disagree	Neutral	Agree	Agree Very Strongly
A. Successful about my efforts to help my child stay physically active	☐	☐	☐	☐	☐
B. Successful about my efforts to help my child eat healthy	☐	☐	☐	☐	☐
C. I make a significant difference in my child's health	☐	☐	☐	☐	☐
D. I do not know how to help my child stay physically active	☐	☐	☐	☐	☐
E. I do not know how to help my child eat healthy	☐	☐	☐	☐	☐
F. I can do a lot to make sure my child gets at least an hour of exercise per day	☐	☐	☐	☐	☐
G. I can do a lot to make sure my child eats fruits and vegetables every day	☐	☐	☐	☐	☐
H. It costs too much money to help my child be physically active	☐	☐	☐	☐	☐
I. The financial cost keeps me from enrolling my child in sports teams or organized physical activity (gymnastics, martial arts)	☐	☐	☐	☐	☐
J. I have a hard time transporting (driving) my child to events or places to be physically active	☐	☐	☐	☐	☐
K. I live too far away from most events or places where my child could be physically active	☐	☐	☐	☐	☐
L. When I was a child, I was very physically active	☐	☐	☐	☐	☐
M. When I was a child, it was important to my parents that I was physically active	☐	☐	☐	☐	☐

17. I feel it is a parent's responsibility to:

	Disagree Very Strongly	Disagree	Neutral	Agree	Agree Very Strongly
A. Enroll their child in sports or other organized activities that allows him/her to be physically active	☐	☐	☐	☐	☐
B. Make sure their child is physically active at least 90 minutes every day	☐	☐	☐	☐	☐
C. Send their child outside to play on a regular basis	☐	☐	☐	☐	☐
D. Transport their child to physical activities on a regular basis	☐	☐	☐	☐	☐
E. Encourage their child to be physically active	☐	☐	☐	☐	☐
F. Require their child to do chores that involve physical activity	☐	☐	☐	☐	☐
G. Make sure their child has access to equipment/toys that encourage physical activity	☐	☐	☐	☐	☐
H. Make all decisions about what their child eats	☐	☐	☐	☐	☐
I. Keep track of how much their child eats	☐	☐	☐	☐	☐
J. Make sure their child eats fruits/vegetables every day	☐	☐	☐	☐	☐
K. Allow their child to eat what he/she wants	☐	☐	☐	☐	☐

18. How important is it to YOU that your child is good at sports and physical activities?

☐ Not important at all
 ☐ Not very important
 ☐ Neutral
 ☐ Somewhat important
 ☐ Very important

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19. How much do YOU enjoy participating in sports and physical activity?

☐ Strongly dislikes ☐ Dislikes ☐ Somewhat dislikes ☐ Somewhat likes ☐ Likes ☐ Strongly likes

20. Please indicate HOW OFTEN you:	Never/ Almost Never	Monthly	Weekly	Almost Daily	Daily
A. Encourage your child to be physically active	☐	☐	☐	☐	☐
B. Transport your child to a place to be physically active	☐	☐	☐	☐	☐
C. Send your child outside to play	☐	☐	☐	☐	☐
D. Give your child physical activity options	☐	☐	☐	☐	☐
E. Praise your child for being physically active	☐	☐	☐	☐	☐
F. Use physical activity as a reward	☐	☐	☐	☐	☐
G. Use physical activity as a punishment	☐	☐	☐	☐	☐
H. Take part in physical activity with your child	☐	☐	☐	☐	☐
I. Use food as a reward	☐	☐	☐	☐	☐
J. Use food as a punishment	☐	☐	☐	☐	☐
K. Prepare meals with your child	☐	☐	☐	☐	☐
L. Plan meals with your child	☐	☐	☐	☐	☐
M. Offer healthy snacks	☐	☐	☐	☐	☐
N. Eat a meal with your child	☐	☐	☐	☐	☐
O. Schedule meal times	☐	☐	☐	☐	☐
P. Allow your child free access to snacks	☐	☐	☐	☐	☐
Q. Store fruits/vegetables in a place that is easily seen	☐	☐	☐	☐	☐
R. Store fruits/vegetables in a place that is known but not seen	☐	☐	☐	☐	☐
S. Watch your child play sports or be physically active	☐	☐	☐	☐	☐

21. On average, how often does your child do these activities?

	Never	Rarely	Monthly	Weekly	Daily	A few times a day	Many times a day
Walking	☐	☐	☐	☐	☐	☐	☐
Running	☐	☐	☐	☐	☐	☐	☐
Skipping	☐	☐	☐	☐	☐	☐	☐
Jumping	☐	☐	☐	☐	☐	☐	☐
Dancing	☐	☐	☐	☐	☐	☐	☐
Climbing	☐	☐	☐	☐	☐	☐	☐
Swimming	☐	☐	☐	☐	☐	☐	☐
Exercising	☐	☐	☐	☐	☐	☐	☐

THE FOLLOWING QUESTIONS WILL BE ABOUT YOUR FAMILY'S NUTRITION.

22. How often does your family eat fruits and/or vegetables:	Never	Rarely	Sometimes	Often	Always
A. At snack time	☐	☐	☐	☐	☐
B. At breakfast	☐	☐	☐	☐	☐
C. At lunch	☐	☐	☐	☐	☐
D. At dinner/supper	☐	☐	☐	☐	☐

23. How many total servings of fruits and vegetables do you think **YOU** should eat every day for good health?

23b. How many total servings of fruits and vegetables do you think **YOUR CHILD** should eat every day for good health?

24. Does your family grow fruits and/or vegetables at home?

☐ Never ☐ We have in the past but not anymore ☐ Most years ☐ Every year

25. Do you find it difficult to locate fresh fruits and/or vegetables in your community?

☐ Yes ☐ No

26. How many servings of fruits and/or vegetables do **YOU** eat every day?

27. How many servings of fruits and/or vegetables does **YOUR CHILD** eat every day?

28. Does your child participate in the free or reduced lunch program?

☐ No ☐ Yes

29. How often do you and your child eat dark green vegetables (Example: spinach, arugula, romaine, mustard greens, collard greens, broccoli, green beans, asparagus, brussel sprouts, celery, green peppers, snap peas)?

Child

Parent

☐ Less than once a week

☐

☐ Once a week

☐

☐ 2-3 times a week

☐

☐ 4-6 times a week

☐

☐ Once a day

☐

☐ 2-3 times a day

☐

☐ 4-5 times a day

☐

☐ 6 or more times a day

☐

One answer here:

One answer here:

30. How often do you and your child eat red/purple vegetables

(Example: red peppers, beets, eggplant, tomatoes- including tomato juices and sauces)?

Child

Parent

☐ Less than once a week

☐

☐ Once a week

☐

☐ 2-3 times a week

☐

☐ 4-6 times a week

☐

☐ Once a day

☐

☐ 2-3 times a day

☐

☐ 4-5 times a day

☐

☐ 6 or more times a day

☐

One answer here:

One answer here:

10053

31. How often do you and your child eat starchy vegetables (Example: corn, peas, pinto beans, kidney beans, potatoes- including mashed, baked, fried)?

	<u>Child</u>	<u>Parent</u>
<div style="border: 1px solid black; padding: 5px; display: inline-block;">One answer here:</div>	☐ Less than once a week	☐
	☐ Once a week	☐
	☐ 2-3 times a week	☐
	☐ 4-6 times a week	☐
	☐ Once a day	☐
	☐ 2-3 times a day	☐
	☐ 4-5 times a day	☐
	☐ 6 or more times a day	☐
<div style="border: 1px solid black; padding: 5px; display: inline-block;">One answer here:</div>		

32. How often do you and your child eat other vegetables

(Example: artichokes, cabbage, cauliflower, cucumbers, mushrooms, onions, turnips, zucchini)?

	<u>Child</u>	<u>Parent</u>
<div style="border: 1px solid black; padding: 5px; display: inline-block;">One answer here:</div>	☐ Less than once a week	☐
	☐ Once a week	☐
	☐ 2-3 times a week	☐
	☐ 4-6 times a week	☐
	☐ Once a day	☐
	☐ 2-3 times a day	☐
	☐ 4-5 times a day	☐
	☐ 6 or more times a day	☐
<div style="border: 1px solid black; padding: 5px; display: inline-block;">One answer here:</div>		

33. How often do you and your child drink fruit juice (Example: orange, apple, grape, frozen, canned- not sodas, or other drinks)?

	<u>Child</u>	<u>Parent</u>
<div style="border: 1px solid black; padding: 5px; display: inline-block;">One answer here:</div>	☐ Less than once a week	☐
	☐ Once a week	☐
	☐ 2-3 times a week	☐
	☐ 4-6 times a week	☐
	☐ Once a day	☐
	☐ 2-3 times a day	☐
	☐ 4-5 times a day	☐
	☐ 6 or more times a day	☐
<div style="border: 1px solid black; padding: 5px; display: inline-block;">One answer here:</div>		

34. How often do you and your child eat orange/yellow vegetables

(Example: carrots, sweet potatoes, acorn or butternut squash)?

	<u>Child</u>	<u>Parent</u>
<div style="border: 1px solid black; padding: 5px; display: inline-block;">One answer here:</div>	☐ Less than once a week	☐
	☐ Once a week	☐
	☐ 2-3 times a week	☐
	☐ 4-6 times a week	☐
	☐ Once a day	☐
	☐ 2-3 times a day	☐
	☐ 4-5 times a day	☐
	☐ 6 or more times a day	☐
<div style="border: 1px solid black; padding: 5px; display: inline-block;">One answer here:</div>

10053

35. How often do you and your child eat fruit (Example: fresh, frozen, canned- not counting juice)?

	<u>Child</u>	<u>Parent</u>
One answer here:	☐ Less than once a week	☐
	☐ Once a week	☐
	☐ 2-3 times a week	☐
	☐ 4-6 times a week	☐
	☐ Once a day	☐
	☐ 2-3 times a day	☐
	☐ 4-5 times a day	☐
	☐ 6 or more times a day	☐

One answer here:

36. When you and your child eat fruits/vegetables, how often is it from a local source or from a home garden?

	<u>Child</u>	<u>Parent</u>
One answer here:	☐ Less than once a week	☐
	☐ Once a week	☐
	☐ 2-3 times a week	☐
	☐ 4-6 times a week	☐
	☐ Once a day	☐
	☐ 2-3 times a day	☐
	☐ 4-5 times a day	☐
	☐ 6 or more times a day	☐

One answer here:

37. How often do you and your child eat out at restaurants or fast food places?

	<u>Child</u>	<u>Parent</u>
One answer here:	☐ Less than once a week	☐
	☐ Once a week	☐
	☐ 2-3 times a week	☐
	☐ 4-6 times a week	☐
	☐ Once a day	☐
	☐ 2-3 times a day	☐
	☐ 4-5 times a day	☐
	☐ 6 or more times a day	☐

One answer here:

THE FOLLOWING QUESTIONS WILL BE ABOUT SMOKING.

38a. Have you smoked at least 100 cigarettes (5 packs) in your entire life?

☐ No ☐ Yes

38b. During the past 30 days, on how many days did you smoke cigarettes?

☐ 0 days ☐ 1 or 2 days ☐ 3 to 5 days ☐ 6 to 9 days ☐ 10 to 19 days ☐ 20 to 29 days ☐ Every day

39. During the past 30 days, on the days that you smoked, how many cigarettes did you smoke per day?

☐ I did not smoke cigarettes during the past 30 days

☐ Less than 1 cigarette per day

☐ 1 cigarette per day

☐ 2 to 5 cigarettes per day

☐ 6 to 10 cigarettes per day

☐ 11 to 20 cigarettes per day

☐ More than 20 cigarettes per day

10053

40. If you smoke, please mark all of the places where you have smoked in the last 30 days:

- ☐ Inside my home
☐ On my property but outside my home
☐ In my car
☐ At work
☐ Other: _____

**THE FOLLOWING QUESTIONS WILL BE ABOUT
YOU AND YOUR PHYSICAL ACTIVITY.**

41. What is your: Age: Height: Weight:
feet inches pounds

42. How would you describe your weight?

- ☐ Very underweight ☐ Slightly underweight ☐ About the right weight ☐ Slightly overweight ☐ Very overweight

43. Please indicate how concerned you are about your weight?

- ☐ Very concerned ☐ A little concerned ☐ Not concerned

44. Does your job require you to be physically active? ☐ Yes ☐ No

45. On how many of the past 7 days did YOU exercise or participate in physical activities for at least 20 minutes that made you sweat and breathe hard, such as basketball, soccer, running, swimming, laps, fast bicycling, fast dancing, or similar aerobic activities?

- ☐ 0 days ☐ 1 day ☐ 2 days ☐ 3 days ☐ 4 days ☐ 5 days ☐ 6 days ☐ 7 days

46. On how many of the past 7 days did YOU participate in physical activity for at least 30 minutes that did NOT make you sweat or breathe hard, such as fast walking, slow bicycling, skating, pushing a lawn mower, or mopping floors?

- ☐ 0 days ☐ 1 day ☐ 2 days ☐ 3 days ☐ 4 days ☐ 5 days ☐ 6 days ☐ 7 days

47. Please rate your OWN physical activity level using a scale of 0 to 7.

- ☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7
No activity Very active

48. What is your approximate yearly household income?

- ☐ Less than \$10,000 ☐ \$35,000 to \$49,999
☐ \$10,000 to \$14,999 ☐ \$50,000 to \$74,999
☐ \$15,000 to \$24,999 ☐ \$75,000 to \$99,999
☐ \$25,000 to \$34,999 ☐ \$100,000 or more

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49. How many adults 19 and over live in your household:
(including yourself)

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50. What are the ages of children (18 and under) in your household:

		Age		Age				
1st child:	☐ Male ☐ Female	<table border="1"><tr><td></td><td></td></tr></table>			5th child:	<table border="1"><tr><td></td><td></td></tr></table>		
2nd child:	☐ Male ☐ Female	<table border="1"><tr><td></td><td></td></tr></table>			6th child:	<table border="1"><tr><td></td><td></td></tr></table>		
3rd child:	☐ Male ☐ Female	<table border="1"><tr><td></td><td></td></tr></table>			7th child:	<table border="1"><tr><td></td><td></td></tr></table>		
4th child:	☐ Male ☐ Female	<table border="1"><tr><td></td><td></td></tr></table>			8th child:	<table border="1"><tr><td></td><td></td></tr></table>		

THE FOLLOWING QUESTIONS ARE ABOUT YOUR CHILD'S ORGANIZED PHYSICAL ACTIVITIES.

Has your child ever participated in organized sports? ☐ Yes ☐ No

If yes, please complete the next section. If no, please go to the next page.

For each organized activity your child participates in, please indicate the number of years of participation, the average number of months out of the year your child was actively participation, and the average number of hours per week your child spent practicing or competing. If your child has never participated in the activity, please leave the box blank.

Years of participation	Months per year active	Hours per week practicing or competing	Years of participation	Months per year active	Hours per week practicing or competing						
Dance <table border="1"><tr><td></td></tr></table>		<table border="1"><tr><td></td></tr></table>		<table border="1"><tr><td></td></tr></table>		Cheerleading <table border="1"><tr><td></td></tr></table>		<table border="1"><tr><td></td></tr></table>		<table border="1"><tr><td></td></tr></table>	
Football <table border="1"><tr><td></td></tr></table>		<table border="1"><tr><td></td></tr></table>		<table border="1"><tr><td></td></tr></table>		Cross Country / Track <table border="1"><tr><td></td></tr></table>		<table border="1"><tr><td></td></tr></table>		<table border="1"><tr><td></td></tr></table>	
Golf <table border="1"><tr><td></td></tr></table>		<table border="1"><tr><td></td></tr></table>		<table border="1"><tr><td></td></tr></table>		Basketball <table border="1"><tr><td></td></tr></table>		<table border="1"><tr><td></td></tr></table>		<table border="1"><tr><td></td></tr></table>	
Lacrosse <table border="1"><tr><td></td></tr></table>		<table border="1"><tr><td></td></tr></table>		<table border="1"><tr><td></td></tr></table>		Gymnastics <table border="1"><tr><td></td></tr></table>		<table border="1"><tr><td></td></tr></table>		<table border="1"><tr><td></td></tr></table>	
Soccer <table border="1"><tr><td></td></tr></table>		<table border="1"><tr><td></td></tr></table>		<table border="1"><tr><td></td></tr></table>		Ice / Field Hockey <table border="1"><tr><td></td></tr></table>		<table border="1"><tr><td></td></tr></table>		<table border="1"><tr><td></td></tr></table>	
Swimming <table border="1"><tr><td></td></tr></table>		<table border="1"><tr><td></td></tr></table>		<table border="1"><tr><td></td></tr></table>		T-ball / Softball / Baseball <table border="1"><tr><td></td></tr></table>		<table border="1"><tr><td></td></tr></table>		<table border="1"><tr><td></td></tr></table>	
Tennis <table border="1"><tr><td></td></tr></table>		<table border="1"><tr><td></td></tr></table>		<table border="1"><tr><td></td></tr></table>		Martial Arts (Karate, TaeKwonDo, Judo, etc.) <table border="1"><tr><td></td></tr></table>		<table border="1"><tr><td></td></tr></table>		<table border="1"><tr><td></td></tr></table>	
Volleyball <table border="1"><tr><td></td></tr></table>		<table border="1"><tr><td></td></tr></table>		<table border="1"><tr><td></td></tr></table>		Other, please specify: <table border="1"><tr><td></td></tr></table>		<table border="1"><tr><td></td></tr></table>		<table border="1"><tr><td></td></tr></table>	
Wrestling <table border="1"><tr><td></td></tr></table>		<table border="1"><tr><td></td></tr></table>		<table border="1"><tr><td></td></tr></table>

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THE FOLLOWING QUESTIONS WILL BE ABOUT YOU FEEL ABOUT YOURSELF.

These statements allow people to describe themselves. There are no right or wrong answers since people differ a lot. First, decide which one of the statements in each pair best describes you. Then decide if this statement is "sort of true" or really true" about YOU.

- 1) ☐ Some people feel extremely proud of who they are and what they can do physically.
☐ Others are sometimes not quite proud of who they are physically.
The statement I choose above is: ☐ Really true for me ☐ Sort of true for me

- 2) ☐ Some people are sometimes not so happy with the way they are or what they can do physically.
☐ Others always feel happy about the kind of person they are physically.
The statement I choose above is: ☐ Really true for me ☐ Sort of true for me

- 3) ☐ When it comes to the physical side of themselves some people do not feel very confident.
☐ Others seem to have a real sense of confidence in the physical side of themselves.
The statement I choose above is: ☐ Really true for me ☐ Sort of true for me

- 4) ☐ Some people always have a real positive feeling about the physical side of themselves.
☐ Others sometimes do not feel positive about the physical side of themselves.
The statement I choose above is: ☐ Really true for me ☐ Sort of true for me

- 5) ☐ Some people wish that they could have more respect for their physical selves.
☐ Others always have great respect for their physical selves.
The statement I choose above is: ☐ Really true for me ☐ Sort of true for me

- 6) ☐ Some people feel extremely satisfied with the kind of person they are physically.
☐ Others sometimes feel a little dissatisfied with their physical selves.
The statement I choose above is: ☐ Really true for me ☐ Sort of true for me

Please indicate how strongly you agree or disagree with the following statements:

	Strongly Disagree	Disagree	Agree	Strongly Agree
A. I feel that I am a person of worth, at least on an equal plane with others.	☐	☐	☐	☐
B. I feel that I have a number of good qualities.	☐	☐	☐	☐
C. All in all, I am inclined to feel that I am a failure.	☐	☐	☐	☐
D. I am able to do things as well as most other people.	☐	☐	☐	☐
E. I feel I do not have much to be proud of.	☐	☐	☐	☐
F. I take a positive attitude toward myself.	☐	☐	☐	☐
G. On the whole, I am satisfied with myself.	☐	☐	☐	☐
H. I wish I could have more respect for myself.	☐	☐	☐	☐
I. I certainly feel useless at times.	☐	☐	☐	☐
J. At times I think I am no good at all.	☐	☐	☐	☐