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Do the eating behaviors and food preferences of children ages 2 to 18 years resemble those of the mother or father?

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Do the Eating Behaviors and Food Preferences of Children Ages 2 to 18 Years Resemble Those
of the Mother or Father?

A Project Presented to
the Faculty of the Undergraduate
College of Health and Behavioral Studies
James Madison University

in Partial Fulfillment of the Requirements
for the Degree of Bachelor of Science in Dietetics

by Kirsten Brooke Boestfleisch

May 2014

Accepted by the faculty of the Department of Health Sciences, James Madison University, in partial fulfillment of the requirements for the Degree of Bachelor of Science in Dietetics.

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Abstract

The purpose of this research study was to examine whether children ages 2 to 18 years follow the eating behaviors and preferences of one or both parents. All faculty and staff at James Madison University were contacted via email to participate in completing a Food Frequency Questionnaire (FFQ) and food behavior questionnaire for each member of their family living in their household. Of the 3,838 James Madison University Employees who received the bulk email, 9 of them completed questionnaires with their spouses/partners. Using the Pearson product-moment correlation coefficients, children had a positive correlation with their fathers in reported servings of sugar sweetened beverages consumed per week ($r=0.472$, $n=9$, $p= 0.048$), servings of sweets consumed per week ($r=0.756$, $n=9$, $p= 0.000$), and servings of grains consumed per week ($r = 0.663$, $n= 9$, $p= 0.003$). Children had positive correlations with their mothers in reported vegetables consumed per week ($r=0.613$, $n=9$, $p= 0.007$) and servings of protein consumed per week ($r=0.665$, $n=9$, $p= 0.003$). Weekly fat consumption of children and the weekly fat consumption of their mothers and fathers were both positively correlated ($r = 0.774$, $n = 9$, $p = 0.000$; $r = 0.563$, $n = 9$, $p = 0.015$, respectively). In this pilot study, it was revealed that children may pick up eating behaviors and food preferences from both their fathers and their mothers, with the behavioral tendency of mimicking mealtime behaviors from their mothers and snack and dessert time behaviors from their fathers. More research, with a larger and more heterogeneous population group, is necessary to further confirm the findings of this study. More research, with a larger and more heterogeneous populations group, is necessary to further confirm the findings of this study.

Introduction

Parents have many roles when it comes to taking care of their children. They are caretakers, providers, and potentially very big influences on their children's beliefs, attitudes, and behaviors. Eating behaviors and food preferences can either set a child up for a long healthy life or influence the development of obesity and chronic diseases including type 2 diabetes mellitus, heart disease, and certain cancers¹⁴, and knowing after which parent the child models these behaviors and preferences could assist health professionals in the development of more efficacious strategies to combat childhood obesity. It is important to learn how to combat this development of obesity at the earliest stage possible, which may mean that obesity prevention should be focused on parents before they even before their children are born.

Development of eating behaviors and food preferences begin at an extremely early age, as early as the prenatal stage of life, when mothers are in full control of the flavors that their child is experiencing.¹ Research on pre- and postnatal flavor learning was conducted by Mennella and colleagues to examine if flavors from the mother's pre- and postnatal diets were transmitted to infants via amniotic fluid and breast milk.¹ Researchers divided pregnant mothers into three groups; the first drank carrot juice during pregnancy and lactation, the second drank water during pregnancy and carrot juice during lactation, and the third drank only water.¹ Infants were later tested with cereal made with water and cereal made with carrot juice, with all infants given the cereal made with water first and then given the cereal made with carrot juice. Results were based off of the infants' reactions to the flavors.¹ Mennella and colleagues discovered that infants who were previously exposed to carrot flavors via amniotic fluid and through breastfeeding enjoyed the carrot flavored cereal more than the infants not previously exposed to that flavor.¹ Breastfeeding transmits the flavors from the mother's diet to the breast milk and allows

the infants to experience a variety of flavors before being able to eat solid foods.¹ If breastfed infants have a preference for flavors found in breast milk, this could also mean there is a correlation between eating behaviors and food preferences in children and whether their mother decided to breastfeed or formula feed.

Another factor influencing taste is genetic predisposition. Humans prefer energy-dense foods because these foods were historically scarce and humans did not always know when their next meal would come.² A review conducted by Birch et. al. studying food preference development concluded that individuals are genetically predisposed to prefer sweet and salty tastes, to reject new foods, and to base food preferences off physiological consequences, which is why humans are drawn to eat energy-dense foods.² In an examination of heritability of food preferences, Breen and colleagues asked mothers of same-sex twins, ages four to five years old, to complete food preference questionnaires.³ Food groups tested were vegetables, fruits, desserts, and protein foods (meat and fish).³ Heritability was determined to be modestly related to dessert preferences, moderately related to vegetable and fruit preferences, and highly correlated with preferences for protein foods.³ They also determined that the results may involve taste receptor differences or even temperamental characteristic differences in the children.³

Parents tend to control what their children eat on a day-to-day basis, especially when children are younger in age and, particularly, in the womb when the mothers are controlling flavors experienced. Although many parents attempt to expose their children to new foods and flavors, research conducted by Birch and Fisher revealed that infants and young children are prone to be neophobic, or have the tendency to dislike anything new to them, and may need to be introduced to foods multiple times to develop a preference for them.⁴ Birch's findings reiterate those findings by conveying that children who are exposed to foods repeatedly have a greater

chance of developing a preference for them.² This may be the reason why many parents constantly reinforce the idea of the child trying foods multiple times before deciding whether or not they like it.

However, there is clearly a fine line between reintroducing food to a child and forcing him/her to consume it. Benton's research on the role of parents in the determination of food preferences discovered that parenting style is a factor in whether children show preference for food or not.⁵ Children prefer foods that are consumed in positive atmospheres, and even prefer foods that parents restrict from them.⁵ However, children's preferences for a food will decrease if their parents force them to eat it.⁵ Benton also hypothesized a relationship between parental role of determination of food preferences to adiposity in their children.⁵ Overall, there was no definitive correlation between the two because there was no way of knowing whether the adiposity of the child or the parental behavior to control the weight gain came first.⁵

Parents are also the main individuals in control of the portion sizes their children consume, and are unaware of the fact that children are actually able to self-regulate their intake if given the opportunity to develop that skill. A study by Johnson and Birch investigated the ability of children to self-regulate their eating by testing three to five year olds on the ability to adjust intake based on the caloric density of the foods they were given.⁶ The children with parents who were more controlling of their food intake displayed lower amounts of self-control, whereas children with parents who demonstrated less control over their intake demonstrated more self-control.⁶ This study determined that the optimal environment would be if parents provided nutritious foods and it was left up to the children to regulate how much was eaten.⁶

Due to the control parents' exhibit over children's intake, it would be expected that there are some similarities in the eating behavior and food preference between children and their

parents. Previous research has examined the relationship between the eating habits of parents and their children, and evidence revealed that parents do have an influence on their children.

However, much of the evidence has been weak due to inconsistent results or has vast variation in regards to who children model food behavior after and to what degree.^{2,8,9,11} Birch sought to identify a resemblance between parent and child food preferences, but the available research and evidence was nonsubstantial and the researcher was unable to develop a conclusion.² However, it was hypothesized that food preference resemblances may increase as children get older due to the increased amount of time they have spent with their parents over their lifetime.²

Most of the research that has been done in this area involves mother-child correlations, and not as much research has been done to evaluate the relationship between fathers' and their children's diets. A study in Australia was conducted by Hall et. al. that studied paternal influences on children's food frequencies, which concluded there were positive associations with intake of fruits, cookies, and potato chips, but that there were also food items with no correlations, such as ice cream, vegetables, and french fries.⁸ Research conducted at the Johns Hopkins Center for Public Health by Beydoun and Wang involved both mother-child and father-child dyads and assessed parent-child associations in overall quality of the diets observed.⁹ The study revealed that, although the parent-child correlations were generally weak to moderate, there were some stronger correlations in certain areas.⁹ More specifically, mother-daughter and mother-child correlations were much stronger than father-child correlations, and it was found that daughters had a higher diet resemblance to their parents than sons did.⁹ Researchers also found that ethnicity played a role in how much children resembled their parents' eating behaviors with certain food items; an example of this would be Hispanics having a stronger parent-child correlation in carbonated beverage consumption.⁹

In a study to evaluate parental influence over children's diets, Wardle did not find consistent results in regard to parent-child correlation of diet. Researchers concluded that the correlation between parent's diet and their children's diet may be declining due to the idea that children may not be consuming the same things as their parents.¹¹ Parental bias also plays a role in a child's development of food preferences. A longitudinal analysis by Skinner et. al. studied children's food preferences with the goal of identifying factors related to preferences.¹⁰ Mothers were surveyed on likes, dislikes, and neophobia of themselves and their children.¹⁰ Researchers concluded that mothers influenced the preferences of their children based on their own likes and dislikes.¹⁰ Most children liked the foods that were also liked by their mothers and also disliked foods that were disliked by their mothers.¹⁰ This hints to the idea that parents are not giving their children the opportunities to try different foods if they do not enjoy the food themselves.

Obesogenic conditions may arise from the combination of parents not introducing their children to new and healthy foods, not giving them the opportunity to develop their own self-regulation of intake, and the high prevalence of energy-dense foods. Now that energy-dense foods are readily available, this predisposition to prefer energy-dense food could be contributing to obesogenic conditions.² Research focused on whether genetics and environment was related to development of eating behaviors revealed environments can potentially be obesogenic for susceptible individuals; however, the sample demographic would need to be expanded and diversified to draw any meaningful conclusions.⁴ In the study by Breen, et. al., preference for vegetables was lower for children who came from obese families, indicating that those foods may not be given to them as often as other foods.³ This finding would incline one to think that the parents may not be giving their children vegetables because they do not find vegetables to be enjoyable.

The family environment has the potential for having a significant effect on children and their future likelihood for developing obesity. A review by Kral and Rauh evaluated the eating behaviors in the context of their family environment in relation to obesity.⁷ They recognized that parental obesity increases the risk for children becoming obese later in life, with related influences attributed to genetics, environment, or a combination of the two.⁷ The researchers' conclusion was that it is imperative to determine which children have an increased likelihood of becoming obese in their lifetime and to determine what time period in life is best for dietary intervention.⁷ They believe family resemblances could provide information necessary to improve the prevention and clinical involvement of childhood obesity.⁷

An understanding of parental roles in children's food behaviors and preferences is important for health professionals to pinpoint more effective preventative counseling methods focused on children and their parents. It may assist in educating parents on proper food introductions. Both parents were asked to complete questionnaires together in hopes that it would be a more accurate representation of the family member's diets, instead of relying on just one parent like the some of the previously mentioned studies did. The purpose of this research study was to examine whether children ages 2 to 18 years old follow the eating behaviors and preferences of their parents and, if they do, whether they follow the patterns of their mother or their father.

Methods

Study Design

Participants were recruited through bulk emails that were distributed to all faculty and staff at James Madison University (JMU) in Harrisonburg, Virginia. The email provided information about the study, time requirements and instructions, as well as defined risks. Individuals interested in participating were instructed to respond via email to the lead researcher. All interested individuals were emailed an informed consent (Appendix A) with instructions to complete and send the form back through interagency mail to the lead researcher's advisor or scan and email the document to the principal investigator. Upon receiving the informed consent, the principal investigator sent the parent and child questionnaires to the participant through email. Instructions requested that the parent who is a faculty or staff member complete the child questionnaire(s) with his/her spouse or partner.

Questionnaires

The participant questionnaire inquired about gender, age, ethnicity, height, and weight. Body Mass Index (BMI) for each child was calculated using the Center for Disease Control's (CDC) growth chart calculator (based on height, weight, and birthday). The questionnaire asked for the child's age, as opposed to birthdate, therefore January first and the appropriate year were used to produce the age of each child for the CDC growth chart calculator.¹⁵ Doing this was necessary because the CDC growth chart calculator required a specific birthdate and date of measurement, which was logged as the date data was entered. BMI of each parent was calculated by dividing weight in kilograms by height in meters squared. The questionnaires also included a 31-item Food Frequency Questionnaire (FFQ) and 12 questions addressing food preparation methods and eating behaviors (adapted from Kaiser Permanente¹²; Appendix B). The child

questionnaire was worded for the parents to answer the questions. For example, instead of asking if butter or cooking oils were used while cooking, it asked if the individual in charge of cooking for the child used butter or cooking oils. FFQ questions involving servings per week and serving sizes were grouped together and categorized as: protein, fruit, vegetables, grains, dairy, added fats, sweets, sugar sweetened beverages, fast food, and alcohol. If parents gave a range of numbers for an answer, the median of those numbers was used. For example, if the response was “1-2” then the number 1.5 was used.

Data Analysis

Statistical analyses were executed using IBM SPSS 21.0. Pearson product-moment correlation coefficients were computed to assess the relationship between the amounts of reported consumption of the previously mentioned food groups between mothers, fathers, and children. Descriptives and frequencies gathered in data analysis were evaluated for food behavior, cooking methods, and grouping means and standard deviations. This study was approved by the Institutional Review Board at James Madison University, and was assigned the IRB No. 14-0299. All data was kept confidential by giving each child participant an individual subject number. The data were kept on a password-protected computer and were analyzed by the principal investigator and faculty advisor. All data were destroyed after the completion of the study. After the participants anonymously submitted the survey, there was an option to enter an email address for a chance to win a raffle drawing for a \$25 gift card.

Results

Of the 3,838 James Madison University employees who received the bulk email, nine faculty members (0.02%) completed the questionnaires with their spouses or partners. Demographic data was assessed for the nine participating families (Tables 1 and 2). There were a total of 18 children in the study, with the amount of children per family ranging between one and four. Ten girls and eight boys were included in the study, and all of them, except for one with no response for height and weight, were calculated to be in a healthy BMI range based on the CDC growth charts.¹⁵ The ages of the children ranged between 2 and 17 years. Of the 18 parents included in the study, nine were women and nine were men. The mean BMI for the parents was 27.39 ± 5.20 , with participants from the normal weight, overweight, and obesity class I categories represented. The mean age for the parents was 38.94 ± 6.28 years.

Means and standard deviations of the questionnaire responses were calculated and analyzed for associations between the diets of children and their parents using the Pearson's *r* value. Questions asking the average weekly serving sizes of specific foods were categorized into the following categories: protein, fruit, vegetables, grains, dairy, added fats, sweets, sweetened drinks, fast food, and alcohol. Mean and standard deviations of each average weekly serving size category were calculated for children, mothers, and fathers (Table 3).

A cursory look at the descriptive data indicates that children and their mothers had similar values for protein (children = 13.19 ± 8.00 ; mothers = 13.14 ± 5.56) and vegetables (children = 7.72 ± 5.30 ; mothers = 8.83 ± 6.08), with fathers consuming more protein (21.78 ± 3.47) and fewer vegetables (5.28 ± 3.03). Whereas children and their fathers had similar values for fruits (children = 11.28 ± 4.42 ; fathers = 10.28 ± 5.98), grains (children = 19.81 ± 8.74 ; fathers

= 23.17 ± 16.06), and dairy (children = 13.39 ± 8.40 ; fathers = 10.28 ± 4.42), with mothers consuming less fruit (7.78 ± 5.52), grains (9.78 ± 2.39) and dairy (7.44 ± 5.81).

Pearson product-moment correlation coefficients were computed to assess the relationship between the amounts of reported consumption of grouped food groups. Positive correlations were found between fathers and their children in the amounts of sweets, sweetened beverages, vegetables, protein, and fat consumptions per week. There was also a positive correlation between the weekly sweets consumption of children and their mothers and fathers, $r = 0.655$, $n = 9$, $p = 0.003$ and $r = 0.756$, $n = 9$, $p = 0.000$, respectively. A scatter plot summarizes these results (Figure 1). However, data indicates that there may be a stronger correlation between the amount of sweets a child consumes per week and the amount of sweets their father consumes per week. Results also indicated weekly sweetened beverage consumption of children had a positive correlation with that of their fathers, $r = 0.472$, $n = 9$, $p = 0.048$. A scatter plot summarizes these results (Figure 2). A moderate to strong, positive correlation was also established in the relationship between the children's consumption of vegetables per week and the consumption of vegetables per week of the mothers, $r = 0.613$, $n = 9$, $p = 0.007$. A scatter plot summarizes these results (Figure 3). A strong, positive correlation was also found for protein consumption of children and their mothers, $r = 0.665$, $n = 9$, $p = 0.003$ (Figure 4). The grain consumption of children and their fathers was calculated to have a moderate to strong, positive correlation, $r = 0.663$, $n = 9$, $p = 0.003$. A scatter plot summarizes these results (Figure 5). Both the weekly fat consumption of children and the weekly fat consumption of their mothers and fathers were considered to be positively correlated, $r = 0.774$, $n = 9$, $p = 0.000$ and $r = 0.563$, $n = 9$, $p = 0.015$, respectively. While no analyses were performed to determine significant differences among the correlational data, there appeared to be a stronger correlation in the fat

consumption of the children and their mothers than there was with children and their fathers. A scatter plot summarizes these results (Figure 6).

The last 12 items of the questionnaires were focused on the use of fats during the cooking process and average fast food consumption. Means and standard deviations were calculated for each response for the children, mothers and fathers (Table 4). There seemed to be general similarities between the use of butter versus margarine, the use of salad dressings, and the amount of times that fast food had been eaten in the week prior to completing the questionnaire. Mothers (33.3%) and children (27.7%) tended to use butter, whereas fathers tended to use margarine (44.4%). Children (55.5%) and their fathers (22.2%) reported no use of salad dressing, whereas mothers all reported use of creamy, oil-based or fat-free dressings (100%). As for fast food consumption, fathers (44.4%) consumed fast-food twice per week, whereas mothers (33.3%) and children (44.4%) consumed fast-food once per week.

Discussion

The goal of this research study was to determine the resemblance between the diets of both parents and their children by having parents complete questionnaires about their demographics, food frequency, and food behaviors and that of their children (ages 2 to 18 years).

Results of the study indicate that there are associations in the consumption of certain foods between children and their mothers and fathers. Our data indicate that children's diets resemble those of their fathers in regards to the consumption of sweets, sweetened beverages, fats, and grains. Children's diets resemble those of their mothers in regards to the consumption of vegetables, protein, and fat. In general, children in the study consumed excess sweets (5.69 ± 4.31) and sugar sweetened beverages (1.50 ± 3.68), adequate amounts of grains (19.81 ± 8.74), vegetables (7.72 ± 5.30), protein (13.19 ± 8.00), and fats (1.67 ± 2.22). The results also convey that children may observe and practice healthier food behaviors from their mothers, while obtaining more negative eating behaviors from their fathers. The study on paternal influences by Hall et. al. concluded that there were positive associations with intake cookies in regards to fathers' influences on their children's diets.⁸ These data are in agreement with the current study, which found consumption of sweets to be correlated more with fathers than mothers.

Protein foods were eaten in very large quantities amongst the fathers included in the study. Fathers also consumed more added fats than the mothers or children included in this study. Larger consumption of sweets and sugar-sweetened beverages by the fathers seemed to be mimicked by children due to the fact that mothers had a lower intake of both of these food groups. Larger intakes of sweets and sugar-sweetened beverages can increase the amount of calories an individual consumes per day, which could eventually lead to weight gain. These foods could also take the place of healthier items in the diet, such as fruits and vegetables, and

lead to an imbalanced diet. Preference for sweetened foods may not solely be influenced by the fathers, but by genetics as well. The review by Birch concluded that individuals are genetically predisposed to prefer sweet and salty tastes due to the fact that these flavors may have indicated energy density in times when food was scarce; this may also have an effect on the children's intake levels of sweets and sugar-sweetened beverages.² The previously mentioned study by Benton also discovered that children may prefer sweet tastes due to the fact that many years ago when food was scarce sweet flavors probably insinuated a good energy source.⁵ Children may also have the tendencies to eat larger amounts of sugary foods and beverages, not solely because their fathers eat larger amounts, but because they are naturally prone to do so.

Results established that children may model their higher vegetable consumption based on the mothers eating behaviors. Mothers may play a larger role in food preparation, leading to the serving of more vegetables, which may influence children to consume more of them than they would if their fathers were playing the larger role in food preparation. This trend may also imply that if the mother has a low vegetable intake, then the children in that family may also have low vegetable intakes because that is who they model vegetable intake after. Low vegetable intake could mean an individual's diet is unbalanced and they may fill that void of intake with higher amounts of food that are not as healthy for them. It also means that the individual will miss out on intake of fiber and certain vitamins and minerals. Skinner and colleagues concluded that mothers influence the preferences of their children based on their own likes and dislikes.¹⁰ In this case, if vegetables are not preferred by the mother, then the child will not prefer them either meaning that parents must show interest in consuming vegetables if they desire their children to do the same.

Research by Beydoun and Wang assessed parent-child associations in overall quality of the diets observed.⁹ The study revealed that, although the parent-child correlations were generally weak to moderate, the resemblance varies based on which food group is being analyzed and to which parent the child's diet is being compared.⁹ This is much like the current study due to the fact that there were correlations associated with each parent. Fathers displayed a stronger influence on children in regards to sweets and sugar-sweetened beverages, whereas mothers demonstrated more of an influence on vegetable and protein consumption. Both studies show that each parent displays an influence on their child's diet; however, the nature of this influence is dependent on the food group.

The results that children model their eating behaviors and food preferences after both parents in regards to different food groups shows that both parents are involved in the development of food preferences. However the trend seems to be that mothers have a greater influence on the foods that are eaten during mealtime, whereas fathers tend to have a greater influence on foods that are consumed during snack or dessert times. Again, this leads back to the thought that maybe mothers in this particular study group are more involved in the planning out and serving of meals than the fathers are, where as fathers are influencing or permitting snacks and desserts. The focus should be placed on the entire family as a whole when counseling children struggling with obesity issues, and not just directly on the children. Healthier behaviors, such as vegetable intake, seemed to resemble those of the mothers and unhealthy behaviors, such as fast food, sweets, and sugar sweetened beverage intake, resembled those of the fathers. Knowing this could potentially aid health professionals in their efforts to decrease childhood obesity by focusing on educating the father to lead the family by adopting a healthier lifestyle that the entire family can follow.

Limitations of this study included the time it took to complete the questionnaires, the uncertainty of whether parents truly filled it out together, homogeneity of the population, potential bias of the parents when completing the questionnaires and inaccuracy of food frequency questionnaires. It was relatively time consuming for participants to complete due to the fact that they had to fill out a lengthy food frequency questionnaire for each member of their family. The result of this limitation was the extremely low response rate, which resulted in a homogeneous population in the sample. Most individuals were white non-Hispanic, with the exception of four who were white Hispanic and one who was Hispanic. Demographics not collected were economic status of each family or birthdates; the birthdates would have generated more accurate results while using the CDC growth chart calculator. Due to the remote online data collection, there is also little way of knowing whether parents truly completed the questionnaires together or if just one parent completed them alone. There is also no way of guaranteeing that the parents did not let children fill out the questionnaires if they deemed them old enough. This means that the results may not be consistent with what was originally intended.

The food frequency questionnaires, although previously verified for use, did not involve every type of food or evenly distribute food items from each food group. Thompson and colleagues evaluated multiple methods of dietary assessment.¹³ As for food frequency questionnaires, they established that participants may have difficulty summarizing intake due to unstable diet. This instability could come from economic issues, change in seasonal availability and price.¹³ Another limitation was that many people are biased when completing food frequency questionnaires and may unintentionally, or intentionally, answer with responses that are not accurate, which could affect the data tremendously.

Conclusion

In this pilot study, it was revealed that children may pick up eating behaviors and food preferences from both their fathers and their mothers, with the behavioral tendency of mimicking mealtime behaviors from their mothers and snack and dessert time behaviors from their fathers. More research, with a larger and more heterogeneous population group, is necessary to further confirm the findings of this study.

Tables and Figures

Table 1. Child Participant Demographic Data of Age, Ethnicity, Height, Weight, and BMI

	All (18)	Female (10)	Male (8)
Age	7.2 ± 4.8	6.8 ± 3.7	7.8 ± 6.1
Ethnicity			
White Non-Hispanic	14	8	6
White-Hispanic	4	2	2
Height (cm)	124.67 ± 29.35	122.80 ± 20.51	127.00 ± 39.23
Weight (kg)	30.92 ± 19.07	28.06 ± 12.40	34.15 ± 25.15
BMI (Percentile)	58.55 ± 29.02	57.65 ± 33.09	59.56 ± 25.89
Data expressed as mean ± standard deviation			

Table 2. Parent Participant Demographic Data of Age, Ethnicity, Height, Weight, and BMI

	All (18)	Female (9)	Male (9)
Age	40.06 ± 6.18	39.11 ± 6.09	41.00 ± 6.50
Ethnicity			
White Non-Hispanic	17	8	9
Hispanic	1	1	0
Height (cm)	173.85 ± 9.90	165.66 ± 5.35	182.03 ± 5.39
Weight (kg)	83.78 ± 21.30	72.02 ± 18.70	95.56 ± 17.41
BMI (kg/m ²)	27.39 ± 5.20	26.03 ± 5.56	28.76 ± 4.72
Data expressed as mean ± standard deviation			

Table 3. Means and Standard Deviations for Food Group Intake of Children, Mothers and Fathers

Food Group	Children	Mothers	Fathers
Protein	13.19 ± 8.00	13.14 ± 5.56	21.78 ± 3.47
Fruits	11.28 ± 4.42	7.78 ± 5.52	10.28 ± 5.98
Vegetables	7.72 ± 5.30	8.83 ± 6.08	5.28 ± 3.03
Grains	19.81 ± 8.74	9.78 ± 2.39	23.17 ± 16.06
Dairy	13.39 ± 8.40	7.44 ± 5.81	10.28 ± 4.42
Added Fats	1.67 ± 2.22	3.56 ± 3.15	4.17 ± 4.32
Sweets	5.69 ± 4.31	5.36 ± 2.51	6.78 ± 5.16
Sweetened Drinks	1.50 ± 3.68	1.83 ± 1.92	2.06 ± 2.69
Fast Food	0.94 ± 1.11	0.56 ± 0.70	1.56 ± 2.28
Alcohol	0.00 ± 0.00	2.83 ± 2.09	6.44 ± 8.85
Data expressed as mean ± standard deviation			

Table 4. Frequency of Response and Percentages of Cooking and Eating Preferences in Children, Mothers and Fathers

Question	Answer	Children (18) N (%)	Mother (9) N (%)	Father (9) N (%)
32 P- Between butter and margarine, C-Between butter and margarine,	P- I almost always use butter. C- my child almost always uses butter.	5 (27.7%)	3 (33.3%)	1 (11.1%)
	P - I almost always use margarine. C- my child almost always uses margarine.	3 (16.6%)	0 (0%)	4 (44.4%)
	P - I use both. C- my child uses both.	2 (11.1%)	4 (44.4%)	1 (11.1%)
	P - I don't use butter or margarine. C - my child does not use butter or margarine.	8 (44.4%)	2 (22.2%)	2 (22.2%)
	No answer	0 (0%)	0 (0%)	1 (11.1%)
33 P- The person who cooks my food, C- The person who cooks my child's food,	P- almost always uses butter, shortening or lard for cooking and baking. C- almost always uses butter, shortening or lard for cooking and baking.	4 (22.2%)	1 (11.1%)	1 (11.1%)
	P - almost always uses vegetable oil or margarine for cooking and baking. C- almost always uses vegetable oil or margarine for cooking and baking.	9 (50%)	3 (33.3%)	4 (44.4%)
	P - does both. C- does both.	3 (16.6%)	4 (44.4%)	2 (22.2%)
	P - doesn't use any fat at all for cooking and baking. C - doesn't use any fat at all for cooking and baking.	2 (11.1%)	1 (11.1%)	0 (0%)
	No answer	0 (0%)	0 (0%)	1 (11.1%)

34 P- When I use milk, C- When my child uses milk,	P- I almost always use whole milk. C- he/she almost always uses whole milk.	6 (33.3%)	1 (11.1%)	1 (11.1%)
	P- I use both whole and lowfat (2%) milk. C- he/she uses both whole and lowfat (2%) milk.	0 (0%)	0 (0%)	0 (0%)
	P- I almost always use lowfat (2%) milk. C- he/she almost always uses lowfat (2%) milk.	3 (16.6%)	2 (22.2%)	2 (22.2%)
	P- I use both lowfat (2%) and nonfat (skim) milk, or 1% milk. C- he/she uses both lowfat (2%) and nonfat (skim) milk, or 1% milk.	4 (22.2%)	1 (11.1%)	0 (0%)
	P- I almost always use nonfat (skim) milk. C- he/she almost always uses nonfat (skim) milk.	4 (22.2%)	3 (33.3%)	3 (33.3%)
	P- I don't use milk. C- he/she does not use milk.	1 (5.5%)	2 (22.2%)	2 (22.2%)
	No answer	0 (0%)	0 (0%)	1 (11.1%)
35 P- When I eat chicken or turkey, C- When my child eats chicken or turkey,	P - I almost always eat the skin. C- he/she almost always eats the skin.	1 (5.5%)	0 (0%)	1 (11.1%)
	P - I almost never eat the skin. C- he/she almost never eats the skin.	13 (72.2%)	6 (66.6%)	6 (66.6%)
	P - I do both. C - he/she does both.	1 (5.5%)	2 (22.2%)	1 (11.1%)
	P - I don't eat chicken or turkey. C - he/she does not eat chicken or turkey.	3 (16.6%)	1 (11.1%)	0 (0%)
	No answer	0 (0%)	0 (0%)	1 (11.1%)

36	P- I almost always have it fried or cooked with oil or another fat, or with gravy C- he/she almost always has it fried or cooked with oil or another fat, or with gravy	0 (0%)	0 (0%)	0 (0%)
C- When my child eats meat, fish or poultry,	P- I almost always have it broiled, baked, or stewed, and without gravy C- he/she almost always has it broiled, baked, or stewed, and without gravy	7 (38.8%)	6 (66.6%)	5 (55.5%)
	P- I do both. C- he/she does both.	8 (44.4%)	2 (22.2%)	3 (33.3%)
	P- I don't eat meat, fish or poultry. C- he/she does not eat meat, fish or poultry.	3 (16.6%)	1 (11.1%)	0 (0%)
	No answer	0 (0%)	0 (0%)	1 (11.1%)
37	P- I almost always have a "regular-fat" cheese (like Cheddar, Jack, Swiss, or cream cheese). C- he/she almost always has a "regular-fat" cheese (like Cheddar, Jack, Swiss, or cream cheese).	2 (11.1%)	3 (33.3%)	2 (22.2%)
P- When I eat cheese, C- When he/she eats cheese,	P - I almost always have a part-skim cheese (Mozzarella, Ricotta, Neufchatel, or Farmers). C- he/she almost always has a part-skim cheese (Mozzarella, Ricotta, Neufchatel, or Farmers).	5 (27.7%)	3 (33.3%)	2 (22.2%)
	P- I do both. C- he/she does both.	9 (50%)	3 (33.3%)	3 (33.3%)
	P- I don't eat cheese. C- he/she does not eat cheese.	2 (11.1%)	0 (0%)	0 (0%)
	No answer	0 (0%)	0 (0%)	1 (11.1%)

38 P- When I eat cooked vegetables, C- When my child eats cooked vegetables,	P- I almost always have them with butter, margarine or sauce; or cooked with butter, margarine, oil, or another fat. C- he/she almost always has them with butter, margarine or sauce; or cooked with butter, margarine, oil, or another fat.	3 (16.6%)	0 (0%)	0 (0%)
	P- I almost always have them without any of the fats listed above. C- he/she almost always has them without any of the fats listed above.	8 (44.4%)	5 (55.5%)	4 (44.4%)
	P- I do both. C- he/she does both.	5 (27.7%)	4 (44.4%)	4 (44.4%)
	P- I don't eat cooked vegetables. C- he/she does not eat cooked vegetables.	2 (11.1%)	0 (0%)	0 (0%)
	No answer	0 (0%)	0 (0%)	1 (11.1%)
39 P- When I eat potatoes, rice or bulgur, C- When my child eats potatoes, rice or bulgur,	P- I almost always have them with butter, margarine, sour cream, gravy or sauce; or fried. C- he/she almost always has them with butter, margarine, sour cream, gravy or sauce; or fried.	4 (22.2%)	3 (33.3%)	2 (22.2%)
	P- I almost always have them without any of the fats listed above. C- he/she almost always has them without any of the fats listed above.	7 (38.8%)	2 (22.2%)	2 (22.2%)
	P- I do both. C- he/she does both.	5 (27.7%)	3 (33.3%)	4 (44.4%)
	P- I don't eat potatoes, rice or bulgur. C- he/she does not eat potatoes, rice or bulgur.	2 (11.1%)	1 (11.1%)	0 (0%)
	No answer	0 (0%)	0 (0%)	1 (11.1%)

40 P- When I eat pasta, C- When my child eats pasta,	P- I almost always have it with butter, margarine, cream or white sauce. C- he/she almost always has it with butter, margarine, cream or white sauce.	3 (16.6%)	1 (11.1%)	0 (0%)
	P- I almost always have it plain or with tomato sauce. C- he/she almost always has it plain or with tomato sauce.	9 (50%)	6 (66.6%)	6 (66.6%)
	P- I do both. C- he/she does both.	6 (33.3%)	1 (11.1%)	1 (11.1%)
	P- I don't eat pasta. C- he/she does not eat pasta.	0 (0%)	1 (11.1%)	1 (11.1%)
	No answer	0 (0%)	0 (0%)	1 (11.1%)
41 P- When I eat bread, rolls, or muffins, C- When my child eats bread, rolls, or muffins,	P- I almost always have them with butter, margarine or mayonnaise. C- he/she almost always has them with butter, margarine or mayonnaise.	2 (11.1%)	3 (33.3%)	3 (33.3%)
	P- I almost always have them without butter, margarine or mayonnaise. C- he/she almost always has them without butter, margarine or mayonnaise.	14 (77.7%)	4 (44.4%)	4 (44.4%)
	P- I do both. C- he/she does both.	2 (11.1%)	2 (22.2%)	1 (11.1%)
	P- I don't eat bread, rolls or muffins. C- he/she does not eat bread, rolls or muffins.	0 (0%)	0 (0%)	0 (0%)
	No answer	0 (0%)	0 (0%)	1 (11.1%)

42 P- When I use salad dressing, C- When my child uses salad dressing,	P- I usually use a creamy or bleu cheese dressing. C- he/she usually uses a creamy or bleu cheese dressing.	2 (22.2%)	1 (11.1%)	2 (22.2%)
	P- I usually use an oil-based dressing. C- he/she usually uses an oil-based dressing.	0 (0%)	1 (11.1%)	1 (11.1%)
	P- I use both creamy and oil-based dressings. C- he/she uses both creamy and oil-based dressings.	1 (5.5%)	3 (33.3%)	1 (11.1%)
	P- I usually use low calorie or fat-free salad dressing. C- he/she usually uses low calorie or fat-free salad dressing.	5 (27.7%)	4 (44.4%)	2 (22.2%)
	P- I don't use salad dressing. C- he/she don't use salad dressing.	10 (55.5%)	0 (0%)	2 (22.2%)
	No answer	0 (0%)	0 (0%)	1 (11.1%)
	43 P- How many times did you eat out (restaurant, deli, fast food) in the last 7 days? C- How many times did your child eat out (restaurant, deli, fast food) in the last 7 days?	0	5 (27.7 %)	1 (11.1%)
1		8 (44.4%)	3 (33.3%)	0 (0%)
2		4 (22.2%)	3 (33.3%)	4 (44.4%)
3		0 (0%)	1 (11.1%)	3 (33.3%)
4		0 (0%)	1 (11.1%)	0 (0%)
No answer		1 (5.5%)	0 (0%)	1 (11.1%)
P= Parent question in questionnaire C= Child question in questionnaire				

Figure 1. Correlation between the reported serving of sweets children and their mother and father consume per week

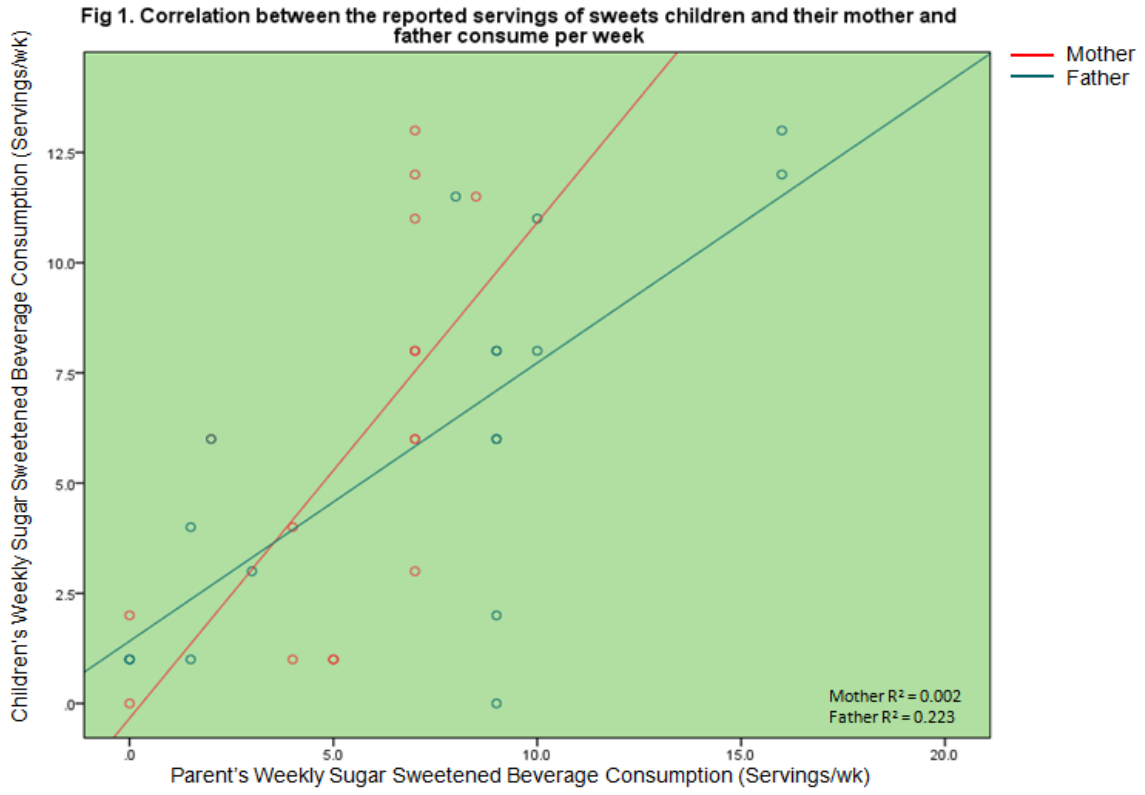


Figure 2. Correlation between the reported serving of sugar sweetened beverages children and their mother and father consume per week

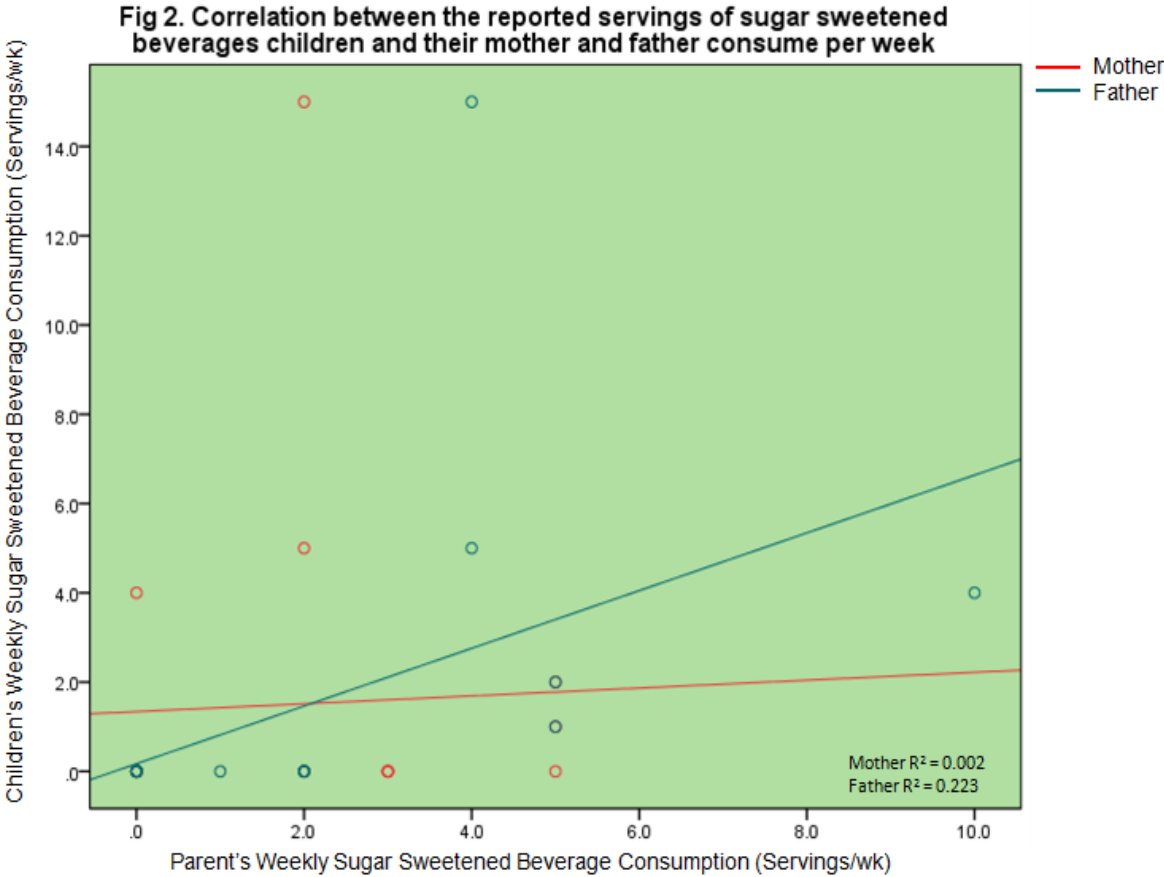


Figure 3. Correlation between the reported serving of vegetables and their mother and father consume per week

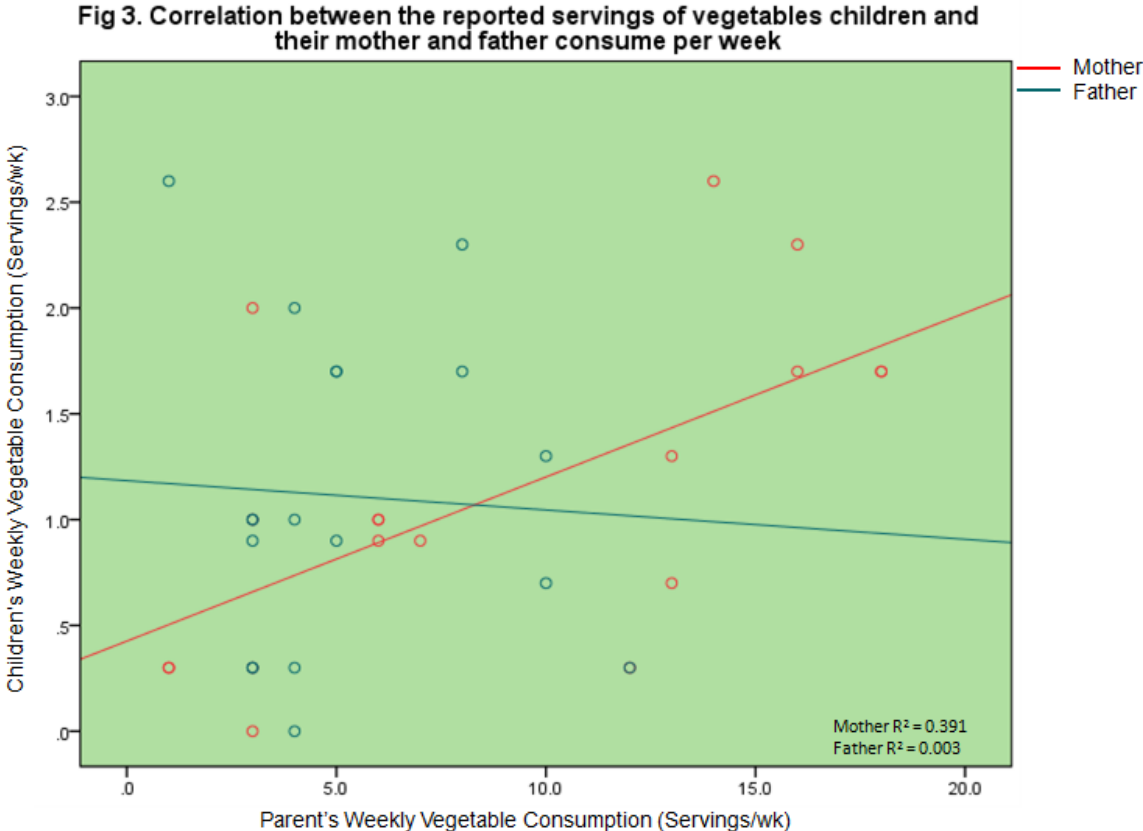


Figure 4. Correlation between the reported serving of protein children and their mother and father consume per week

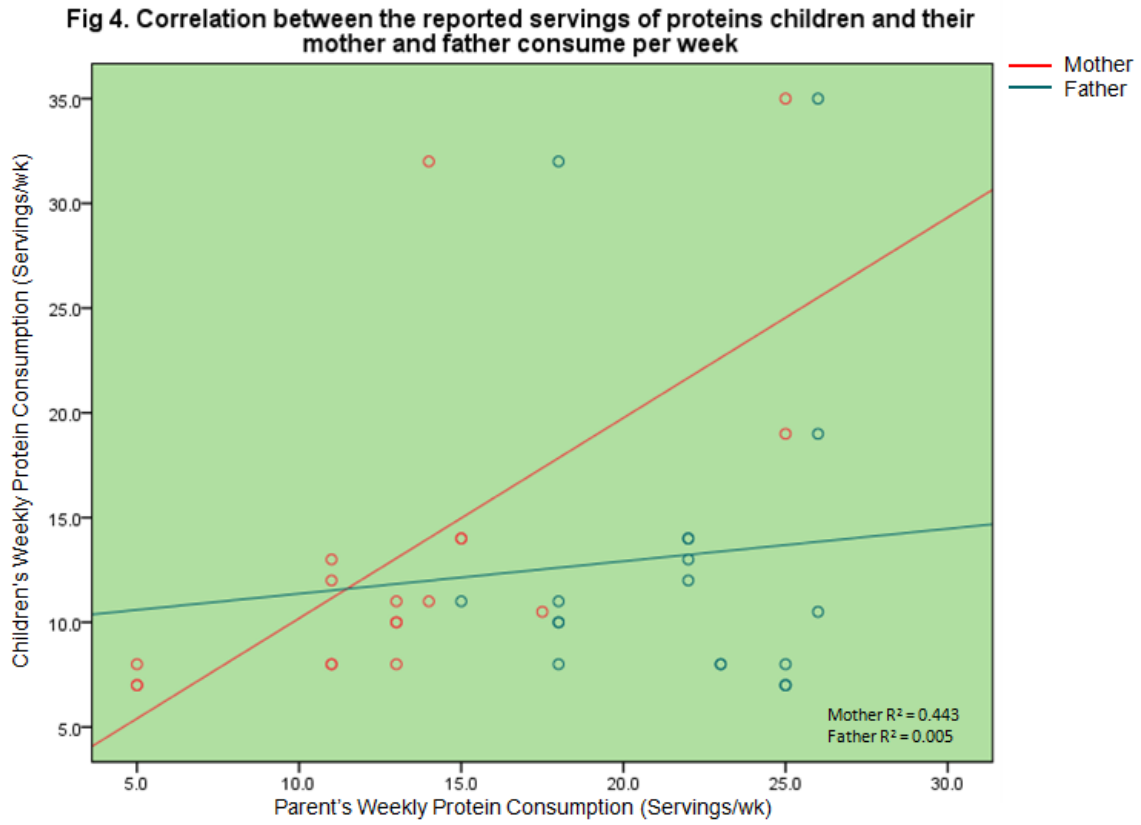


Figure 5. Correlation between the reported serving of grains children and their mother and father consume per week

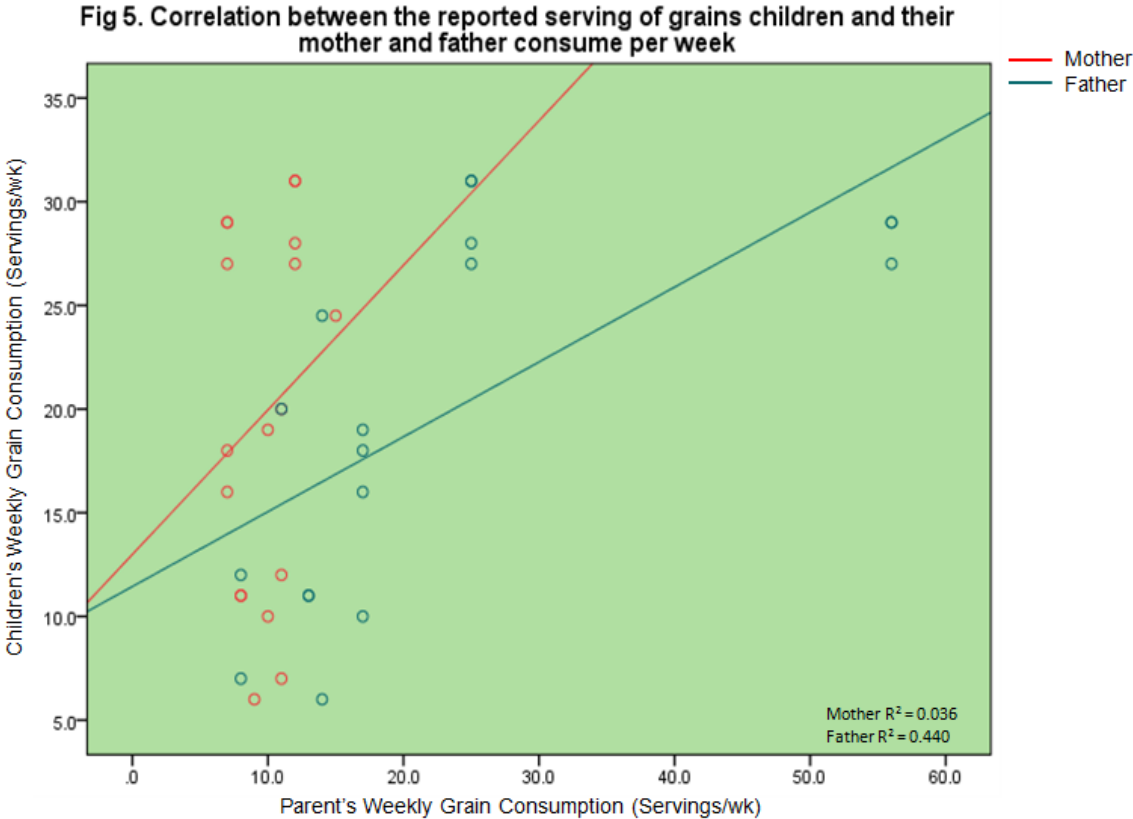
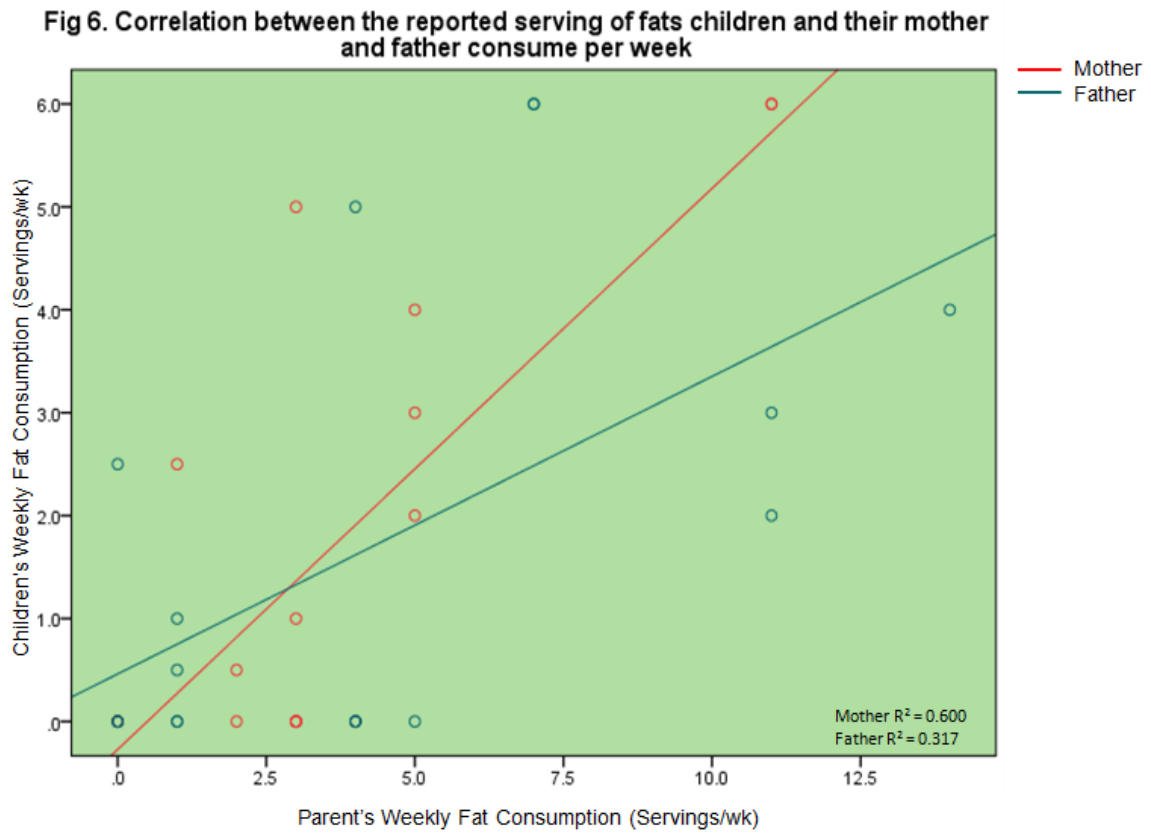


Figure 6. Correlation between the reported serving of fats children and their mother and father consume per week



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Appendix A

James Madison University
Department of Health Sciences

Consent for Investigative Procedure (Informed Consent)

You are being asked to participate in a research study designed to evaluate the eating behaviors and preferences of parents and their children (ages 2 to 18 years old) living with them.

Research Procedures:

Upon completing the informed consent, questionnaires will be sent to you in a paper format. Instructions will request that an individual food preference questionnaire be completed by the parents living under the same roof. In addition both parents (together) will complete a food preference questionnaire for each child in the household. The questionnaires may take up to an hour to complete, depending on the amount of people in the family. It will include basic demographic information about the family members and then a food frequency questionnaire. When completed, the questionnaire will be turned into Dr. Jeremy Akers.

Note: In the event you discover that any of the following information is not clear, please ask one of the investigators to explain immediately.

Compensation

Participants will have the option of entering in a raffle for a \$25 gift card, provided by the Study Coordinator. Your name will not be affiliated with the study data.

Risks

There are lower than minimal risks associated with this study. Confidentiality will be maintained by giving all questionnaire results a questionnaire number. Names will not be associated with any of the questionnaire results.

Benefits

This questionnaire poses a great opportunity to evaluate yours and your family's eating behaviors. This could help participants identify areas of strength and weakness in their diets and those of their family members. Being knowledgeable about personal strengths and weaknesses is very helpful in the event of the participants desiring to make eating behavior changes.

Confidentiality

All data and results will be kept confidential. Your questionnaire answers will be assigned an identification number. At no time will you or your family's name be identified with individual data. All hard copy data will be secured in a locked cabinet in a locked office and all electronic data will be on a password protected computer with a password protected file. Upon completion of the study, all information that matches up individual respondents with their answers will be destroyed. The nature of this research is publishable. When data from this research is used for manuscripts, presentations, or posters are used, no

identifiable information will be used. The email used for the random \$25 gift card will not be affiliated with any data collected.

Freedom to Withdraw

You are free to withdraw from the study at any time for any reason. Simply inform the experimenters of your intention to cease participation. Circumstances may come up that the researcher will determine that your child should not continue as a participant in the study. For example, lack of compliance to instructions, failure to attend sessions and illness could be reasons for the researchers to stop your child’s participation in the study.

Approval of Research

This research has been authorized, as required, by the Institutional Review Board for Research Involving Human Subjects at James Madison University, and by the Department of Health Sciences. You will receive a copy of this form to take with you.

Questions about the Study

If you have questions or concerns during the time of your participation in this study, or after its completion or you would like to receive a copy of the final aggregate results of this study, please contact:

Principal Investigator and Study Coordinator

Kirsten Boestfleisch
Dietetics Major
James Madison University ‘14
boestfkb@dukes.jmu.edu

Research Advisor

Jeremy D. Akers, PhD, RD
Department of Health Sciences
James Madison University
801 Carrier Dr., MSC 4301
akersjd@jmu.edu
540-568-8974

Questions about Your Rights as a Research Subject

Dr. David Cockley
Chair, Institutional Review Board
James Madison University
(540) 568-2834
cocklede@jmu.edu

Giving of Consent

I have read the informed consent and fully understand the procedures and conditions of the project. I have had all my questions answered, and I hereby give my consent to be a participant in this research study. I also give consent to use the data I filled out for my child (children). I understand that I may withdraw from the study at any time. The investigator provided me with a copy of this form. I certify that I am at least 18 years of age.

Name of Parent 1 (Printed)

Name of Parent 1 (Signed)

Date

Name of Parent 2(Printed)

Name of Parent 2 (Signed)

Date

Name of Witness (Printed)

Name of Witness (Signed)

Date

How many children ages 2 to 18 years live in your household? _____

Appendix B

Parent Questionnaire: This three-part survey should be completed by each parent living in the same home as the child. Part 1 asks demographic information, part 2 will ask questions about food frequency and part 3 will ask about cooking preferences. Please answer the questions to the best of your ability and using complete honesty.

Part 1:

- Age: _____
- Gender: _____
- Ethnicity: _____
- Height: _____
- Weight: _____

Part 2: In the first column, please fill in the number for how many weekly servings of each food item you consume. In the second column, please write in whether your average portion of that item is large, average, or small. A reference for average portion size can be found in the third column.

Food Item	Average Weekly Servings	Serving Size:			Size of average serving
		Lg.	Av.	Sm.	
Red meat (beef, pork, and ham, veal, lamb)					4 ounces*
Meat dishes (casseroles, tacos, pizza, meat sauce)					1 cup casserole 1 taco or pizza slice
Chicken or turkey					1 lg or 2 sm pieces
Fish or shellfish, including fish canned in water					4 ounces*, ½ can
Bacon, sausage					2 pieces
Luncheon meats (salami, bologna, hot dogs, etc. including turkey and chicken varieties)					1 piece
Low fat luncheon meats (at least 95% fat free)					1 piece
How many of the above servings are from fast food outlets? (McDonald's, Taco Bell, etc.)					

*roughly the size of a deck of cards

Food Item	Average Weekly Servings	Serving Size:			Size of Average Serving
		Lg.	Av.	Sm.	
Whole eggs or egg yolks					1 eggs or yolk
Milk, yogurt or cottage cheese					1 cup (8 ounces)
Cheese or cream cheese					1 ounce/slice
Ice Cream					½ cup (1 scoop)
Fruits, fresh or dried					1 whole piece or 1 cup cut-up fruit
Fruit Juice					½ cup (4 ounces)
Vegetable salads or raw vegetables					1 cup
Cooked vegetables (fresh, frozen, or canned)					½ cup
Spaghetti, noodles or other pastas					1 cup
Dried beans, split peas, or lentils					¾ cup (cooked)
Potatoes, rice or bulgur					¾ cup or 1 potato
Bread, bagels, rolls, tortillas, English muffins, homemade low fat muffins					1 piece
Biscuits, bakery muffins, croissants, flaky rolls					1 piece or slice
Cold or hot breakfast cereals					1 med. bowl
Salad dressing					2 Tbsp.
Mayonnaise					1 Tbsp.
Nuts, nut butters (like peanut butter)					2 Tbsp.
Chips or French fries					1 cup
Baked desserts and pastries (cake, cookies, etc.)					1 slice or 2 cookies
Donuts or sweet rolls					1 piece
Chocolate or candy bars					1 candy bar
Alcoholic drinks					1 drink, 1 can of beer, 1 glass of wine
Sweetened beverages, not including diet drinks (soft drinks, fruit drinks, etc.)					1 large glass, 1 can

Part 3: Please mark the statement that most accurately describes your eating or cooking preferences.

Between butter and margarine,

- I almost always use butter.
- I almost always use margarine.
- I use both.
- I don't use butter or margarine.

The person who cooks my food,

- almost always uses butter, shortening or lard for cooking and baking.
- almost always uses vegetable oil or margarine for cooking and baking.
- does both.
- doesn't use any fat at all for cooking and baking.

When I use milk,

- I almost always use whole milk.
- I use both whole and lowfat (2%) milk.
- I almost always use lowfat (2%) milk.
- I use both lowfat (2%) and nonfat (skim) milk, or 1% milk.
- I almost always use nonfat (skim) milk.
- I don't use milk.

When I eat chicken or turkey,

- I almost always eat the skin.
- I almost never eat the skin.
- I do both.
- I don't eat chicken or turkey.

When I eat meat, fish or poultry,

- I almost always have it fried or cooked with oil or another fat, or with gravy
- I almost always have it broiled, baked, or stewed, and without gravy
- I do both.
- I don't eat meat, fish or poultry.

When I eat cheese,

- I almost always have a "regular-fat" cheese (like Cheddar, Jack, Swiss, or cream cheese).
- I almost always have a part-skim cheese (Mozzarella, Ricotta, Neufchatel, or Farmers).
- I do both.
- I don't eat cheese.

When I eat cooked vegetables,

- I almost always have them with butter, margarine or sauce; or cooked with butter, margarine, oil, or another fat.
- I almost always have them without any of the fats listed above.
- I do both.
- I don't eat cooked vegetables.

When I eat potatoes, rice or bulgur,

- I almost always have them with butter, margarine, sour cream, gravy or sauce; or fried.
- I almost always have them without any of the fats listed above.
- I do both.
- I don't eat potatoes, rice or bulgur.

When I eat pasta,

- I almost always have it with butter, margarine, cream or white sauce.
- I almost always have it plain or with tomato sauce.
- I do both.
- I don't eat pasta.

When I eat bread, rolls, or muffins,

- I almost always have them with butter, margarine or mayonnaise.
- I almost always have them without butter, margarine or mayonnaise.
- I do both.
- I don't eat bread, rolls or muffins.

When I use salad dressing,

- I usually use a creamy or bleu cheese dressing.
- I usually use an oil-based dressing.
- I use both creamy and oil-based dressings.
- I usually use low calorie or fat-free salad dressing.
- I don't use salad dressing.

How many times did you eat out (restaurant, deli, fast food) in the last 7 days? _____

Child Questionnaire: This three-part survey should be completed by both parents, who live in the same home as the child, together for each child. Part 1 asks demographic information, part 2 will ask questions about food frequency and part 3 will ask about cooking preferences. Please answer the questions to the best of your ability and using complete honesty.

Part 1:

1. Age: _____
2. Gender: _____
3. Ethnicity: _____
4. Height: _____
5. Weight: _____

Part 2: Both parents living in the same home as the child should fill out this survey together. In the first column, please fill in the number for how many weekly servings of each food item your child consumes. In the second column, please write in whether their average portion of that item is large, average, or small. A reference for average portion size can be found in the third column.

Food Item	Average Weekly Servings	Serving Size:			Size of average serving
		Lg.	Av.	Sm.	
Red meat (beef, pork, and ham, veal, lamb)					4 ounces*
Meat dishes (casseroles, tacos, pizza, meat sauce)					1 cup casserole 1 taco or pizza slice
Chicken or turkey					1 lg or 2 sm pieces
Fish or shellfish, including fish canned in water					4 ounces*, ½ can
Bacon, sausage					2 pieces
Luncheon meats (salami, bologna, hot dogs, etc. including turkey and chicken varieties)					1 piece
Low fat luncheon meats (at least 95% fat free)					1 piece
How many of the above servings are from fast food outlets? (McDonald's, Taco Bell, etc.)					

*roughly the size of a deck of cards

Food Item	Average Weekly Servings	Serving Size:			Size of Average Serving
		Lg.	Av.	Sm.	
Whole eggs or egg yolks					1 eggs or yolk
Milk, yogurt or cottage cheese					1 cup (8 ounces)
Cheese or cream cheese					1 ounce/slice
Ice Cream					½ cup (1 scoop)
Fruits, fresh or dried					1 whole piece or 1 cup cut-up fruit
Fruit Juice					½ cup (4 ounces)
Vegetable salads or raw vegetables					1 cup
Cooked vegetables (fresh, frozen, or canned)					½ cup
Spaghetti, noodles or other pastas					1 cup
Dried beans, split peas, or lentils					¾ cup (cooked)
Potatoes, rice or bulgur					¾ cup or 1 potato
Bread, bagels, rolls, tortillas, English muffins, homemade low fat muffins					1 piece
Biscuits, bakery muffins, croissants, flaky rolls					1 piece or slice
Cold or hot breakfast cereals					1 med. bowl
Salad dressing					2 Tbsp.
Mayonnaise					1 Tbsp.
Nuts, nut butters (like peanut butter)					2 Tbsp.
Chips or French fries					1 cup
Baked desserts and pastries (cake, cookies, etc.)					1 slice or 2 cookies
Donuts or sweet rolls					1 piece
Chocolate or candy bars					1 candy bar
Alcoholic drinks					1 drink, 1 can of beer, 1 glass of wine
Sweetened beverages, not including diet drinks (soft drinks, fruit drinks, etc.)					1 large glass, 1 can

Part 3: Please mark the one statement that most accurately describes your child’s eating preferences and your choices when cooking for your child.

Between butter and margarine,

- my child almost always uses butter.
- my child almost always uses margarine.
- my child uses both.
- my child does not use butter or margarine.

The person who cooks my child’s food,

- almost always uses butter, shortening or lard for cooking and baking.
- almost always uses vegetable oil or margarine for cooking and baking.
- does both.
- doesn’t use any fat at all for cooking and baking.

When my child uses milk,

- he/she almost always uses whole milk.
- he/she uses both whole and lowfat (2%) milk.
- he/she almost always uses lowfat (2%) milk.
- he/she uses both lowfat (2%) and nonfat (skim) milk, or 1% milk.
- he/she almost always uses nonfat (skim) milk.
- he/she does not use milk.

When my child eats chicken or turkey,

- he/she almost always eats the skin.
- he/she almost never eats the skin.
- he/she does both.
- he/she does not eat chicken or turkey.

When my child eats meat, fish or poultry,

- he/she almost always has it fried or cooked with oil or another fat, or with gravy
- he/she almost always has it broiled, baked, or stewed, and without gravy
- he/she does both.
- he/she does not eat meat, fish or poultry.

When he/she eats cheese,

- he/she almost always has a “regular-fat” cheese (like Cheddar, Jack, Swiss, or cream cheese).
- he/she almost always has a part-skim cheese (Mozzarella, Ricotta, Neufchatel, or Farmers).
- he/she does both.
- he/she does not eat cheese.

When my child eats cooked vegetables,

he/she almost always has them with butter, margarine or sauce; or cooked with butter, margarine, oil, or another fat.

he/she almost always has them without any of the fats listed above.

he/she does both.

he/she does not eat cooked vegetables.

When my child eats potatoes, rice or bulgur,

he/she almost always has them with butter, margarine, sour cream, gravy or sauce; or fried.

he/she almost always has them without any of the fats listed above.

he/she does both.

he/she does not eat potatoes, rice or bulgur.

When my child eats pasta,

he/she almost always has it with butter, margarine, cream or white sauce.

he/she almost always has it plain or with tomato sauce.

he/she does both.

he/she does not eat pasta.

When my child eats bread, rolls, or muffins,

he/she almost always has them with butter, margarine or mayonnaise.

he/she almost always has them without butter, margarine or mayonnaise.

he/she does both.

he/she does not eat bread, rolls or muffins.

When my child uses salad dressing,

he/she usually uses a creamy or bleu cheese dressing.

he/she usually uses an oil-based dressing.

he/she uses both creamy and oil-based dressings.

he/she usually uses low calorie or fat-free salad dressing.

he/she don't use salad dressing.

How many times did your child eat out (restaurant, deli, fast food) in the last 7 days? _____