Parental Practices Supporting Positive Eating Behaviors During Independent Eating Occasions Among Early Adolescent Children

Thesis

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Abstract

**Background:** Childhood obesity is a public health crisis in the United States. Because adolescence is a critical period in development with increased risk of onset, complications, or persistence of overweight or obesity, it is important to understand the familial, environmental, individual, and social influences on adolescents’ eating behaviors as they gain autonomy and begin making independent food choices. Parental practices are key influences on young children’s food preferences, although external factors increasingly influence children’s food choices with increasing age. The parents’ influence on young children is well documented, but parents’ influence on adolescents at independent eating occasions is unknown. Socioeconomic status affects parenting practices and eating behaviors, suggesting that differences may emerge between income levels.

**Objective:** To explore and identify key parental practices that impact eating behaviors and food choices during independent eating occasions and compare between low-income and non-low-income families.

**Methods:** Low-income (≤185% USDA poverty guidelines) and non-low-income families (n=11 families total) in the Columbus, OH, area were recruited. Families
were eligible if the parent had responsibility for food preparation and acquisition for the 10-13 year old child at least three days per week. In-depth interviews were conducted with parents about their child’s eating-related behaviors. Parents completed an online questionnaire assessing their home food inventory and food security.

**Results:** Parents reported monitoring (regulating home food availability, providing food, setting limits), mentoring (discussing diet and health, reminding their children about healthy options), and role modeling (setting an example, promoting good habits) to influence their children’s eating behaviors at independent eating occasions. Both low-income and non-low-income parents reported engaging in these behaviors, although low-income parents expressed additional concern over the cost and convenience of foods and changed their monitoring behaviors accordingly.

**Conclusions:** Parents behave as monitors, mentors, and role models to influence their children’s eating behaviors. Understanding the extent to which and why parents engage in these practices, and their influence on adolescents’ eating behaviors and weight, will inform future educational materials and interventions to ultimately improve adolescents’ weight status. Identifying the different needs of low-income and non-low-income families will allow tailoring of interventions by income level.
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Chapter 1: Introduction

Childhood obesity is an ongoing public health crisis in the United States. As of 2012, 31.8% of 2-19 year old youth were considered overweight or obese, with 16.9% classified as obese (Ogden et al., 2014). Although the prevalence of childhood obesity has plateaued, the high percentage is concerning because of the consequences of obesity on children's health.

A range of adverse health outcomes are associated with childhood and adolescent overweight and obesity. These include obstructive sleep apnea, hypertension, dyslipidemia, metabolic syndrome, cardiovascular disease (CVD), type 2 diabetes mellitus, and psychosocial abnormalities such as depression or compromised peer relationships (Daniels et al., 2005). Sixty percent of overweight children and adolescents have at least one risk factor for CVD (Dietz 2004), and the prevalence of pre-diabetes in 12-19 year olds is at 16.1%, with overweight adolescents at a 2.6 times higher risk than their normal weight peers (Li et al., 2009). These findings are concerning because obesity in adolescence is associated with increased mortality in adult men, and increased type 2 diabetes, CVD, and metabolic syndrome in adult men and women (Dietz 2004; Kim et al., 2017). Furthermore, childhood BMI correlates significantly with adult BMI (Guo et al.,
Eighty percent of overweight adolescents are overweight as adults (Dietz 2004).

Obesity results from an imbalance between energy intake and expenditure. Excess adipose tissue accumulates in the body as storage for the excess energy consumed (Daniels et al., 2005). In order to prevent this unhealthy weight gain, it is important to understand the environment children and adolescents are living and eating in, and the various influences on their food choices. Parental BMI correlates most strongly with adolescents’ weight status. Additionally, nearly a quarter of the total variance in adolescents’ BMI can be explained by environmental factors in the home, family, neighborhood, peer, and school settings. Characteristics such as lower availability of unhealthy food, less frequent family meals, less parental pressure to eat, greater parental restriction of unhealthy foods, a higher proportion of overweight friends, a lower proportion of parks and recreation space, and a perceived lack of safety in the neighborhood are all associated with higher BMI z-scores in adolescents (Larson et al., 2013).

Parental feeding practices have been identified as key influences on children’s food preferences. Parents have an important role selecting and providing food for their children, role modeling different eating behaviors, and engaging in various child feeding practices (Savage et al., 2007). Modeling has been shown to be especially influential; whether parents consciously or unintentionally model different eating behaviors, their children mimic their consumption of both healthy and unhealthy foods (Gregory et al., 2010; Palfreyman et al., 2014; Brown and Ogden 2004). Parental monitoring of children’s food selection has also been shown
to be important, especially with young children, who select significantly more unhealthy foods when left on their own than when supervised by a parent (deBourdeaudhuij 1997; Klesges et al., 1991). This suggests that as role models and monitors, it is important that parents guide their children toward healthy eating practices from a very young age.

As children get older, other factors begin to influence their food choices as well. Teachers have been shown to be powerful role models (Perikkou et al., 2013), and the role of peers becomes increasingly more important the older the adolescents are (Contento et al., 2006; Nørgaard et al., 2013; Salvy et al., 2011; Wouters et al., 2010; Smith et al., 2016). Adolescents choose different foods for different reasons when eating with their peers versus their family (Contento et al., 2006), and associations have been shown between what an adolescent eats and what friends in their peer group are eating (Wouters et al., 2010). Adolescents select foods consistent with the image of themselves they are trying to project to their peers (Nørgaard et al., 2013; Salvy et al., 2011). This is especially true of snack food and soft drink choices (Wouters et al., 2010; Salvy et al., 2011; Norgaard et al., 2013).

Because adolescence is a critical period in development when the risk of onset, complications, or persistence of overweight or obesity is increased (Dietz 2004), it is important to understand the variety of familial, environmental, individual, and social influences on adolescents’ eating behaviors. The multistate group conducting this proposed study has been investigating the parents’ role in early adolescents’ eating behaviors, with two prior studies over the past decade.
This prior work has explored the associations between parental practices and early adolescents’ calcium intake, and parental motivations for engaging in these practices, in low-income, nationally representative samples. These studies have found that parents have three primary roles for promoting calcium intake: monitors of intake, mentors, and role models (Edlefsen et al., 2008).

Making calcium-rich foods and beverages available at home, role modeling intake of calcium-rich foods and beverages, and setting expectations for healthy beverage consumption are key practices parents can use to encourage adequate calcium intake in their early adolescents (Richards et al., 2014). Parents were motivated to set good examples for their children and provide healthy food and beverage options by their desire to promote good health and to feel emotionally rewarded by engaging in these behaviors (Richards et al., 2014).

The current study aims to investigate beyond calcium-rich foods and beverages to the impact of parental practices on early adolescents’ behaviors at independent eating occasions. Because there are also differences in behaviors and obesity risk by socioeconomic status, both low-income and non-low-income families will be included in the sample to begin to identify and characterize the effect of income level on parental practices. In-depth interviews with parents and their 10-13 year old children will be used to explore the practices parents engage in to influence their early adolescent’s eating behaviors, the extent to which parents are aware of what their adolescents eat at independent eating occasions, motivators and barriers to engaging in these practices, and how parents feel these practices are influencing their children’s healthy eating. The objective is to:
Objective 1: Explore and identify key parental practices that may impact eating behaviors and food choices during independent eating occasions and weight among early adolescents.

Specific aims of this objective include:

Aim 1: Identify key parental practices that influence early adolescents at independent eating occasions
Aim 2: Compare parental practices between low-income and non-low-income families

The results from this formative research will be used to develop a quantitative questionnaire to examine any associations between key parental practices and early adolescents’ positive eating behaviors and weight, and develop communications for parents and nutrition professionals to disseminate via Extension and other programming.
Chapter 2: Review of Literature

2.1 Childhood Obesity

The Centers for Disease Control and Prevention define childhood overweight and obesity by body mass index (BMI) percentiles. Overweight is classified as BMI in the 85th through 95th percentile, and obese is greater than or equal to the 95th percentile, based on age- and sex-specific growth charts (CDC, 2015). Data from the 2011 – 2012 National Health and Nutrition Examination Survey (NHANES) indicate that 16.9% of 2-19 year old children are obese, and 31.8% are overweight or obese. The prevalence of obesity has not changed significantly when compared to the 2003/2004 NHANES data for the same age group (p = 0.78), but it is concerning because the prevalence has remained high. Analysis of the 2011-2012 data shows no differences in overweight and obese status by gender, but significant differences by race and age. Notably, obesity rates were lower in non-Hispanic white youth than non-Hispanic black (p = 0.048) or Hispanic (p < 0.001) youth. There was no difference between non-Hispanic black and Hispanic youth (p = 0.31). A trend of increasing obesity with increasing age was also apparent (P < 0.001). In this sample of 12–19 year old adolescents, 13.9% met the adult definition of obesity: BMI ≥ 30 (Ogden et al., 2014).

Childhood BMI correlates significantly with adult BMI. Eighty percent of all overweight adolescents grow up into obese adults (Dietz 2004). A longitudinal
study by Guo et al. (1999) tracked BMI in individuals from childhood into adulthood. At age 18, BMI $\geq 60^{th}$ percentile is an “excellent” predictor of overweight at age 35, with “good” predictive values at age 13, and “moderate” predictive values younger than age 13.

2.1.1 Health Effects of Childhood Obesity

A range of adverse health outcomes has been associated with overweight in adolescence, including obstructive sleep apnea, hypertension, dyslipidemia, metabolic syndrome, inflammation, cardiovascular disease (CVD), type 2 diabetes mellitus, and psychosocial abnormalities such as depression or compromised peer relationships (Daniels et al., 2005). These diseases are already occurring in overweight adolescents at alarmingly high rates. Sixty percent of overweight children and adolescents have at least one risk factor for CVD (Dietz 2004). In addition, NHANES 2005 – 2006 data on 12–19 year olds showed that the prevalence of impaired fasting glucose was 13.1%, impaired glucose tolerance was 3.4%, and pre-diabetes was 16.1% (Li et al., 2009).

Adolescence has been identified as a critical periods in development when the risk of onset, complications, or persistence of overweight or obesity is increased. Health issues like those listed above are worrisome because they persist beyond adolescence. Obesity in adolescence is associated with increased mortality in adult men, increased type 2 diabetes and CVD in adult men and women (Dietz 2004), and increased risk of metabolic syndrome in adulthood (Kim et al., 2017). The current study focuses on early adolescents, 10-13 year olds, to try to catch them during this critical period and discern ways to prevent the weight gain.
2.1.2 Costs of Childhood Obesity

In addition to the detrimental effects on health, childhood obesity also has monetary and other costs. From 1979 to 1999, the rates of obesity-related hospital discharge diagnoses, such as sleep apnea or gallbladder disease, and the cost of these hospitalizations tripled among 6 – 17 year olds (Dietz 2004). Data from the 2002-2005 Medical Expenditure Panel Survey (MEPS) for 6-19 year old children showed that expenditures for obese children were $194 higher for outpatient visits, $114 higher for prescription drugs, and $12 higher for emergency room visits compared to expenditures for normal or underweight children. Nationwide, higher BMI in childhood is associated with $14.1 billion additional costs in outpatient visits, prescription drugs, and emergency room visits annually (Trasande and Chatterjee, 2009). The cost of adolescent overweight is projected to increase to $45 billion from 2020 to 2050 (Hammond and Levine, 2010).

In addition to these direct costs for the diagnosis and treatment of comorbidities associated with obesity, other indirect costs such as decreased productivity in the workplace and increased transportation costs for more fuel and larger vehicles to carry overweight people will also begin to accrue. Overweight and obese children and adolescents also have lower educational attainment, which opens up a host of problems in terms of their academic success, self-esteem, and future human capital (Hammond and Levine, 2010). Prevention would be much less costly, both financially and physically, to children and their families, if it were possible.
2.2 Influences on Children’s Eating Behaviors

In order to prevent unhealthy weight gain in children and adolescents, it is important to understand the environment they are living and eating in, and the various influences on their food choices. Childhood food preferences evolve based on a variety of influences, starting out with genetic and parental influences early on, then with environmental and peer influences having a larger impact as the child gets older.

Children are born with basic predispositions to foods. These include unlearned, reflexive reactions to basic tastes, such as preferring sweet and salty and rejecting sour and bitter flavors, neophobic reactions to new foods, and the ability to associate contexts and consequences with various foods (Birch 1999). The social contexts and physiological consequences associated with new foods impact the child’s acceptance of the food, and it can take 10-16 exposures before the child accepts the new food (Savage et al., 2007). As such, the home food environment and parental feeding practices in early childhood can heavily influence the child’s food preferences (Birch 1999; Savage et al., 2007).

2.2.1 Parent Influence

Parents bear the most responsibility in terms of their children’s food preferences, providing both the genes and the environment for their young children. An infant’s flavor preferences are influenced by what the mother eats while she is pregnant, as the fetus can taste, smell, and swallow amniotic fluid, which picks up strong flavors from the mother’s diet (Savage et al., 2007). Parents also provide the first social environment for the infant, and the baby adapts to the parent’s culture.
The parents select and provide food for their children, model eating behaviors, and use different feeding practices. These influences, combined with the different perceptions of weight, eating, and health that have developed in different cultures over time, impact children’s eating behaviors from a very young age (Savage et al., 2007).

Parents adapt their feeding practices to their children’s needs, based on how much they want their children to eat and how their children are eating and growing. Typical practices include using food as a reward, using food to pacify, pressuring the child to eat, restricting foods, monitoring or controlling a child's eating, modeling different habits, not buying unhealthy foods, keeping certain foods out of the child’s sight or reach, or serving different portion sizes (Gibson et al., 2012). Greater parental pressure to eat has been associated with lower weight children, although this does not necessarily suggest causation – it could be that parents have to pressure underweight or picky eaters to eat more (Gibson et al., 2012).

Food restriction of unhealthy, highly palatable foods has been associated with higher weight status and greater weight gain, although again, causation is not the only explanation. Parents may restrict foods because children have strong appetites or impulsive dispositions and strong enjoyment of food. This restriction could be a successful way to monitor children’s intake, or it could be counterproductive, if it makes the child want the food more (Gibson et al., 2012). In one study, adolescents who reported more permissiveness from their parents at age 10 ate more fatty and sweet foods, more snacks, and less healthy foods. Adolescents whose parents placed strict restrictions on unhealthy foods during childhood
reported lower consumption of unhealthy foods in adolescence. These childhood rules reportedly had a lasting influence into adolescence. (deBourdeaudhuij 1997).

In a novel study to determine how the presence of a parent influences young children's food choices, Klesges et al. (1991) found a significant effect of food choice condition (4-7 year old child choosing food independently; choosing food after being told it would be inspected by their mother; and choosing food while monitored by their mother) on energy (p < 0.001), saturated fat (p < 0.001), sugar (p < 0.001), and sodium (p < 0.003). Young children chose significantly fewer unhealthy foods when parental involvement was imminent or happening (p < 0.001). Interestingly, parental involvement was only associated with child selection of fewer unhealthy foods, not a higher selection of more nutritious foods. This study shows that young children will not independently choose healthy foods, so parental monitoring has an important role in promoting nutritious food choices.

Beyond being monitors of their children’s dietary intake, parents also have an important role as role models. The Parental Modeling of Eating Behaviors Scale (PARM) is a 15-item questionnaire that assesses verbal modeling, unintentional modeling, and behavioral consequences. Findings from an administration of the PARM to mothers of 18-month-old to eight-year-old children demonstrated that mothers intentionally model consumption of healthy foods, such as fruits and vegetables, but unintentionally model less healthy foods, such as savory snacks (Palfreyman et al., 2014). In another study, parents and their 9-13 year old children answered matched questionnaires about snack intake, eating motivations, and body dissatisfaction, and their answers revealed correlations between parents and
children for all three parameters, emphasizing the importance of parental modeling (Brown and Ogden, 2004).

2.2.2 Peer Influence

While parents are arguably the most important role models in children’s early lives, other figures also have increasingly significant influences, especially as the children get older. Teachers can significantly impact school-age children’s eating behaviors (Perikou et al., 2013). Peer influence is also important to explore further, as adolescents become more autonomous and spend more time with their peers. Adolescents aged 10-16 years reported purchasing and consuming snacks consistent with their self-image when with their peers, and in these situations, peer influence had a bigger effect on the perceived importance of a snack’s attributes than the adolescent’s personal factors. The youngest adolescents and girls were the most easily influenced by peers (Nørgaard et al., 2013).

The importance of parental versus peer influence on snacking was further examined by Salvy et al. (2011). Children aged five to seven years and adolescents aged 13 to 15 years were brought to the lab for lunch on two occasions, once with their mothers and once with a friend. Lunch offerings were sandwich ingredients and healthy and unhealthy snacks, categorized by energy density (0.47 kcal/g for healthy snacks; 4.62 kcal/g for unhealthy). Participants could choose any of the items for their lunch. Food selection was differentially influenced by the presence of a mother compared to a friend. In both male and female younger children, fewer unhealthy snacks were chosen when the mother was there, consistent with Klesges et al. (1991) findings. Adolescent females consumed less energy from unhealthy
snacks and more energy from healthy snacks when their friends were present compared to their mothers. This reiterates Nørgaard et al. (2013) findings that adolescents will select foods to convey a certain image of themselves; in this case, choosing healthy snacks over unhealthy snacks to convey a good impression of healthy eating around their friends. Interestingly, adolescent boys were not influenced by social context.

Boys are not entirely impervious to the influence of their peers, though. In a sample of 12-17 year olds surveyed at school, boys had a stronger association between peer group consumption and individual consumption of snack foods and soft drinks than girls. Overall, snack and soft drink consumption was higher in boys than girls. Peer group consumption of these items was associated with individual consumption (p = 0.007), especially if these foods were readily available at the school (Wouters et al., 2010).

### 2.2.3 Environmental and Other Influences

Peer and environmental influences become more important as adolescents get older. Smith et al. (2016) sought to quantify the genetic and environmental influences on food preferences, using 18-19 year old twins as participants. Genetic factors influenced preferences for all of the food groups on the survey, with heritability ranging from 0.18-0.53. Environmental factors not shared between the two twins in a family explained the remaining variance in food preferences. These results show that although genetic influences are stable over time, they have the strongest impact in childhood. By adolescence, as twins start to have their own
unique environments and experiences with food, these different environmental factors begin to outweigh the shared genetic factors.

Family resemblance in food preferences has been shown to be surprisingly small. Surveys completed by college students and their parents about food and aesthetic preferences and values revealed that the correlation between parent/child food preferences was only 0.17 (Rozin 1991). The remaining variance in food preference would be due to other factors, such as environmental or peer influences, which would be relevant to these college students, as evidenced by other findings (Contento et al., 2006; Nørgaard et al., 2013; Salvy et al., 2011; Wouters et al., 2010; Smith et al., 2016). On the survey, values correlated between parents and children more than food preferences, at 0.54 (Rozin 1991).

Values can have an important influence on food choices and preferences. Parents of 3-5 year old children report values such as religion and spirituality, family, and health motivating them to encourage their children’s eating behaviors and shaping the household food environment (Beltran et al., 2011). Parents’ feelings correlate with their children’s eating behaviors, and there is a bidirectional influence between parents and their children (Coesens et al., 2010). This again emphasizes the importance of modeling and the family environment in shaping a child’s food preferences and choices.

2.3 Adolescent Food Choices

As children mature into adolescents and become more autonomous, the variety of influences they grew up with begin to manifest as they make food choices.
Contento et al. (2006) sought to understand how and why adolescents choose foods. In interviews, 11-18 year old adolescents cited taste, familiarity, habit, health, dieting, and “fillingness” as their primary criteria for selecting foods. They had personal food-decision-making rules, such as for determining when to trade off taste for health. Core lunch items were selected for taste, whereas secondary items were chosen for health reasons. Different patterns emerged at different meals as well, with taste dictating choices at lunch with peers, but health having more significance at dinner with family.

Habit is also one of the most powerful predictors of eating behavior. Habitual behavior can be defined by three characteristics: little information is needed to make decisions; intentions are poor predictors of behavior; and the behavior is triggered by situational cues. By these criteria, daily eating behaviors are largely habitual. The correlation between habits and eating behaviors is 0.43, with habits accounting for 18% of the variance in eating behaviors. Habits predict snack, fruit, vegetable, soft drink, meat, fish, and chip consumption (van’t Riet et al., 2011). This reasoning and the importance of situational cues to habits further emphasizes the importance of environmental influences on eating behaviors, and should also be considered in how and why adolescents make food choices.

### 2.4 Impact on Weight Status

An individual’s eating behaviors and environment can impact their weight status. A study of black and white girls at ages 9-10 years and 19-20 years showed that even after adjusting for baseline adiposity, race, parental education, physical
activity, television viewing, total energy intake, and dieting for weight loss, there was a significant association between lower total eating frequency and greater increases in BMI over ten years (p=0.036). This suggests that eating less frequently predicts for greater gains in adiposity throughout adolescence for females (Ritchie 2012).

The Eating and Activity in Teens study (EAT 2010) found that higher BMI z-scores were significantly associated with home and family factors such as lower availability of unhealthy food, less frequent family meals, less parental pressure to eat, greater parental restriction of unhealthy foods, and higher parent BMI. A higher proportion of overweight friends and a lower proportion of parks and recreation space and a perceived lack of safety in the neighborhood were also associated with higher BMI z-scores. For both boys and girls, parental BMI was the strongest correlate with the adolescent’s weight status. Overall, nearly a quarter of total variance in BMI was explained by environmental factors in the home, family, neighborhood, peer, and school settings (Larson et al., 2013).

2.5 Prior Multistate Work

The USDA multistate group conducting this current study has done two prior Agricultural Experiment Station-funded multistate projects investigating parents’ influence on early adolescents, focusing on calcium intake. In an interview-based evaluation of parental strategies influencing the child’s calcium intake, three primary parental roles emerged: monitors of intake; mentors; and models. As monitors of intake, parents provided foods and beverages and set expectations
about their consumption. Parents expressed feeling that they had the strongest impact at dinnertime, when they prepared the meal. Parents and their children agreed that the children had more independence and choice at breakfast and lunch. As mentors, parents had conversations with their children, providing encouragement and reasoning with them for why they should eat calcium-rich foods. Parents explained the link between food, nutrients, and health, and the importance of moderation and balance. Some, but not all, parents consciously admitted to modeling (Edlefsen et al., 2008), although other studies have shown that modeling frequently occurs unintentionally (Palfreyman et al., 2014; Brown and Ogden, 2004). Few ethnic differences emerged, and most parents agreed that enforcing rules and monitoring their children’s intake became more difficult as the children got older and more independent (Edlefsen et al., 2008).

These interviews were also analyzed to determine the parents’ perspective of how household meal patterns and beverage considerations influenced the adolescents’ intake of calcium-rich foods. Most parents reported having breakfast at home, with the child preparing their own breakfast. The most common items were cereal with milk, cereal bars, and other calcium-fortified foods. The vast majority of parents reported that their children had lunch at school, either bought at school or brought from home. Most parents were unconcerned about what their child had for lunch, and were uncertain about what their child chose for lunch at school. Dinner was usually at home in the early evening, with food prepared by the mother. Beverages were usually the child’s choice, although parents said the child’s willingness to drink milk decreased as the child got older. Snacks were self-
prepared by the child, and milk was a rare choice. Parents reported that when eating out, milk was a rare choice, and it was difficult to find healthy foods (Cluskey et al., 2008). This shows again how the environment can be very influential over the adolescent’s food choices.

To this end, the multistate group held focus groups with parents of 10-13 year olds, seeking to identify the perceived benefits of different parenting practices that promoted intake of calcium-rich foods and beverages (CRF/B) by their early adolescent children. Each session focused on one of three topics: making CRF/B available; role modeling intake of CRF/B; or setting healthy beverage expectations. Child health promotion was one of the top benefits identified across all three topics. Parents also cited emotional rewards, such as feelings of pride, confidence, and relief from stress or worry, as another main benefit of making CRF/B available in their home. Interestingly, parents were more likely to identify perceived health benefits for their children than for themselves. Anticipating better short- or long-term health outcomes for their children prompted parents to behave in certain ways (Richards et al., 2014).

Emotion-based messages were developed based on the focus group results to motivate parents to engage in the three behaviors identified to promote calcium intake among their early adolescents. The messages were poster-style designs with text and images endorsing setting healthy beverage expectations making CRF/B available, or role modeling intake of CRF/B. Asian and Hispanic parents viewed these messages, and the majority found the message comprehension acceptable. Ratings of the motivational value of the messages were high, with 69% of parents
agreeing that the setting healthy beverage messages were motivational, 67.4% for making CRF/B available, and 80% for role modeling. The majority of parents (>70%) also reported already engaging in these behaviors (Banna et al., 2016). These data are promising, showing that the qualitative results from focus groups (Richards et al., 2014) can be used to design practical, pertinent messages to promote CRF/B intake in the general public.

2.5.1 Current Multistate Work

The current multistate project has been developed from this line of research. The years of experience the multistate group has working with parents and their early adolescent children makes a continuation of this research a logical next step. The current study will branch out beyond CRF/B practices, with an end goal of reducing osteoporosis, to parental influence on adolescents’ independent eating behaviors overall, with an end goal of reducing obesity. The important role parents have in their children’s eating preferences and behaviors has been well-documented (Birch 1999; Savage et al., 2007; Gibson et al., 2012; Gregory et al., 2010; deBourdeaudhuij 1997; Klesges et al., 1991; Palfreyman et al., 2014; Brown and Ogden, 2004; Rozin 1991). The prior multistate work has shown the important role parents have in influencing their children’s calcium intake (Edlefsen et al., 2008), and has exposed eating occasions where parents feel they do and do not have power over their children’s food choices (Cluskey et al., 2008). As early adolescents, these children are at a vulnerable point where they are becoming more independent and becoming more influenced by their peers (Contento et al, 2006; Nørgaard et al., 2013; Salvy et al., 2011; Wouters et al., 2010; Smith et al., 2016). Understanding
how these influences come together at this vulnerable time is crucial, and prompted the development of the current study.

There are some limitations to the multistate work, namely that the samples are often convenience samples near large universities, making the populations generally more educated than average. The ethnic diversity of the prior samples was also limited to Asian, Hispanic, and non-Hispanic white, which excluded many of the other minority groups living in the United States and limited generalizability. However, the multistate nature of the work is also a tremendous strength. With 12 states working together, a diverse, nationally representative sample is assembled, and researchers across the country can collaborate to address issues pertinent to the entire US population (Edlefsen et al., 2008; Cluskey et al., 2008; Richards et al., 2014; Reicks et al., 2011; Reicks et al., 2012; Cluskey et al., 2015; Banna et al., 2016).
Chapter 3: Methods

A convenience sample of parents and their early adolescent children was recruited through fliers, announcements, personal connections, and presentations at a local faith-based community center and by word of mouth. Parent/child dyads or triads were eligible if the parent had primary responsibility for food acquisition and preparation for the child(ren) at least three days each week, and the child(ren) was 10 – 13 years old. Eligible families were classified as low-income or non-low-income, based on the USDA Poverty Guidelines. Low-income families had yearly income at or below 185% of the USDA poverty guideline for their household size. Non-low-income families had income at any level higher than this (Appendix A: Recruitment Screening Script).

Once parents and children were recruited, they participated in two contacts with researchers over a span of three consecutive days. The first contact was an orientation meeting as an introduction to the study (Time 1). At the second in-person contact (Time 2), an in-depth interview was conducted. The interview was audio recorded and served as a formative evaluation of parents’ roles in children’s independent eating occasions.

At the first contact, the parent consented for him- or herself to participate in the study (Appendix B: Consent Form). The researcher addressed any questions or concerns the parent had about the study.
The researcher interviewed the parent at the second contact. During the parent interview, the parent was asked about the child’s typical intake on a weekday and a weekend day. The parent explained what the child usually eats, in what context, why the child chooses those items, what the parent would prefer the child eats, and why they feel that way. From these descriptions, settings for independent and non-independent eating occasions were identified, and the subsequent questions were used to characterize these occasions. The researcher probed about specific food items, such as fruits and vegetables, sugar sweetened beverages, and salty snacks.

Parents were also asked about the extent to which they strive to establish behavioral practices in regards to the child’s eating occasions, such as availability, role modeling, setting rules and expectations. The benefits of and barriers to these parental behaviors were assessed, including duration of using these practices, the parent’s perception of their impact on the child, how eating at home versus away from home affects food choices, and various rules or encouragements used for independent eating occasions. These questions and probes were based on previously published behavioral checklists, namely the 15-item Parental Modeling of Eating Behavior Scale (Palfreyman et al., 2014).

Parents were asked about aspects of the home food environment, focused on the child’s degree of freedom or restriction accessing foods, the availability of healthy and unhealthy foods, acquisition of foods, and the child’s influence on what is purchased. Parents were also asked about any specific strategies they used to role model eating behaviors, establish routines or expectations, provide healthy choices,
and be aware of the child’s food choices and eating behavior during independent eating occasions.

The interview concluded with the parent completing a questionnaire on Qualtrics that included a home food inventory, demographics, food security, and utilization of food assistance programs. Finally, the parent’s height, weight, and waist circumference were measured by a trained researcher (Appendix F: Parent Interview Script and Qualtrics Questionnaire; Appendix E: Anthropometry Instructions and Recording Form). Height was measured using a Hopkins Road Rod Portable Stadiometer, weight was measured using a BalanceForm High Accuracy Digital Scale, and waist circumference was measured using a Health Mobius body tape measure.

The interviews were transcribed by three transcribers then coded by two researchers by hand, with data summarized by key themes based on a thematic analysis approach (Braun and Clarke, 2006). An inductive, grounded method was used (Yale University). Interviews were coded line-by-line de novo, to identify answers to two research questions: Where do independent and non-independent eating occasions occur? What practices do parents use to influence their children’s eating behaviors at independent eating occasions? A code structure was developed (Appendix G: Code Structure).

Data was also collected from the child participants. The child protocol included photos of everything the child ate or drank for one day, an in-depth interview, questionnaires, and anthropometry. The methods and results from the child data are beyond the scope of this thesis and are not presented here, but will be
published in the future. Both the child and the parent data from the low-income families will be contributed to the USDA multistate team for the main study’s analysis. Findings will serve as a formative evaluation to inform future objectives of this USDA multistate project.
Chapter 4: Results

4.1 Demographics

Demographic data from participants is presented below (Table 1). Parents reported child demographic data on the Qualtrics questionnaire.

4.2 Eating Occasion Settings

Among these 10-13 year old early adolescents, per parent report, independent eating occasions occur in the morning before school, at school, especially during lunchtime, after school, with grandparents, with friends, on the weekends, or late in the evening. Non-independent eating occasions occur the most often at dinnertime on weekdays, and on the weekends at breakfast and other meals, and snacks throughout the day.

4.2.1 Independent Eating Occasions

Independent eating occasions commonly occur in the mornings before school. The father of a 12-year-old girl reported that, “In the morning time...she and her sister typically will get up and ... they’re on their own... I’m in the house, they make their own breakfast”. The mother of 10- and 13-year old boys similarly reported that they’re eating breakfast while she’s getting dressed for work.
<table>
<thead>
<tr>
<th>Table 1. Participant Demographic Data</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Child Age</strong></td>
</tr>
<tr>
<td>10 years</td>
</tr>
<tr>
<td>11 years</td>
</tr>
<tr>
<td>12 years</td>
</tr>
<tr>
<td>13 years</td>
</tr>
<tr>
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<td>African American</td>
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<tr>
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<td><strong>Child Gender</strong></td>
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</tr>
<tr>
<td>Female</td>
</tr>
<tr>
<td><strong>Parent Age</strong></td>
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<tr>
<td>35-54 years</td>
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<tr>
<td>Female</td>
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<tr>
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</tr>
<tr>
<td>Received high school diploma or GED</td>
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<tr>
<td>Some college or technical school</td>
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<tr>
<td>4-year college, university degree or advanced degree</td>
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<tr>
<td><strong>Parent Employment Status</strong></td>
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<tr>
<td>Employed full-time</td>
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<tr>
<td>Employed part-time</td>
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<tr>
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<td><strong>Annual Household Income Range</strong></td>
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<td>$45,000 - $64,999</td>
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<td>$85,000 or more</td>
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<tr>
<td>Prefer Not to Answer</td>
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Table 1 Continued

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<th>Parent Race/Ethnicity</th>
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</tr>
</thead>
<tbody>
<tr>
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<td>3 (50)</td>
<td>1 (20)</td>
</tr>
<tr>
<td>African American</td>
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<td>1 (20)</td>
</tr>
<tr>
<td>Parent Marital Status</td>
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<td>Single</td>
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<td></td>
<td></td>
</tr>
<tr>
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<td>4 (36)</td>
<td>3 (50)</td>
<td>1 (20)</td>
</tr>
<tr>
<td>2</td>
<td>6 (55)</td>
<td>3 (50)</td>
<td>3 (60)</td>
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<tr>
<td>3</td>
<td>1 (9)</td>
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<td>1 (20)</td>
</tr>
<tr>
<td>Number of Children (&lt;18 years) in Household</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>4 (36)</td>
<td>3 (50)</td>
<td>1 (20)</td>
</tr>
<tr>
<td>3</td>
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<td>2 (40)</td>
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<tr>
<td>4</td>
<td>1 (9)</td>
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<td>1 (20)</td>
</tr>
<tr>
<td>5+</td>
<td>1 (9)</td>
<td>0 (0)</td>
<td>1 (20)</td>
</tr>
</tbody>
</table>

Eating occasions during the school day were always independent. The mother of a 10-year-old girl and a 12-year-old boy clearly articulated, “Monday through Friday they’re obviously at school for lunch”. Lunch foods and snacks were either packed from home or bought at the school. Parents were less aware of what was being purchased at school. They referred generally to it, in terms like, “She eats... the school lunch”, without much elaboration about specific foods, locations, or presence of other people. One mother admitted that the photos her 13-year-old daughter took for the study were eye-opening. She said, “I guess I just assumed she was getting some decent nutrition at school... I’m a little concerned now to be honest. This started some conversations about what she actually gets at school and what her options are and I’ve been a little disappointed”.

After-school independent eating occasions varied, but most parents expressed that they were becoming more common as their adolescents got older
and gained autonomy. There was a clear difference emerging even across the three-year age range of early adolescents, with 10-year-olds having noticeably less independence than 13-year-olds. One mother explained that her 10-year-old son went to the after-care program at the YMCA, while her 13-year-old son went home alone after school. The father of a 12-year-old girl said she and her 14-year-old sister were home alone having snacks after school. In contrast, the parents of 10-year-old children more often had other plans for after school, such as going with a grandparent or to an after-care program. While still independent, the child was not entirely alone.

Parents reported not being sure what their early adolescents were eating if they were at their friends’ houses. The mother of a 10-year-old girl and a 12-year-old boy knew that, “They’ll be eating at a friend’s house if they go”, but was not sure about any of the specifics of the foods. Children also usually had more independence on the weekends, because the days were less structured. The mother of a 13-year-old girl said that on the weekends, “There’s probably more times she’s alone in terms of having the opportunity to eat things”. The mother of a 10-year-old girl and a 13-year-old boy affirmed that weekends were more variable, saying, “There’s really no rhyme or reason to what we end up doing... it’s just kind of by the seat of our pants”, which resulted in children having more independence. The father of an 11-year-old girl and a 13-year-old girl reported that compared to weekdays, “They eat more food on... Saturday Sundays ... cuz it’s a long day at home”.

After dinner was another time that early adolescents had independent eating occasions. The mother of a 13-year-old girl said, “Maybe late evening... she probably
has the opportunity to maybe snack a little bit when I’m not present”. In contrast, other parents did not allow their children to eat later at night. The father of an 11-year-old girl and a 13-year-old girl said, “After dinner we don’t eat anything”.

4.2.2 Non-Independent Eating Occasions

The most commonly reported non-independent eating occasion was weekday dinner. Weekend eating occasions were also frequently non-independent. Parents reported family breakfasts more often on weekends. The mother of a 13-year-old boy said she tries to make pancakes once a weekend, because her son really likes them. The mother of a 13-year-old girl agreed that on the weekends her daughter, “chooses something that’s a little heartier…. They just have the opportunity to eat like a larger breakfast cuz they have more time”. The father of a 12-year-old girl reported preparing pancakes, eggs, sausage or bacon, and grits for his daughters on the weekends, versus his daughter serving herself cereal in the morning on weekdays.

4.3 Parental Practices to Influence Child Eating Behaviors at Independent Eating Occasions

Parents reported engaging in a variety of practices to influence their children’s eating behaviors at independent eating occasions. The array of parenting practices fell into three broad categories: monitoring intake, mentoring, and role modeling. Both low-income and non-low-income parents reported engaging in all of these behaviors.
4.3.1 Monitoring Intake

Parents use a variety of means to monitor what their adolescents eat when they are not around. The availability of food at home is critical. This includes what the parents buy and keep in the house, how frequently they buy certain items, and where they keep these items. The mother of a 13-year-old boy explained,

“Sometimes I have to, if I know there are things in there that I don’t want him to eat I kind of have to hide them in the top cupboard way in the back ... I may put them someplace where I don’t normally put them because then he won’t find them and he won’t eat them”.

The mother of a 10-year-old girl reported engaging in the same behavior. Her daughter’s favorite snack was chips, but because these have “no nutritional value ... They are on the top shelf of the pantry... We try to move them up there”. Other parents accomplish this monitoring by simply not keeping the foods they do not want their children eating in the house. The father of a 12-year-old girl said, “We don’t get a whole lot of junk food... usually they’re just not eating those, what I would consider bad options, they’re usually not available in the house”.

Keeping healthy foods readily available at home was just as important as not keeping the unhealthy foods around. The mother of a 10-year-old girl and a 13-year-old boy reiterated this, explaining, “They’ll go to apples too... saying that they eat ravioli and whatever, they will eat apples too if they’re here”. The mother of a 10-year-old girl agreed, stating that “just keeping things in supply that would give her options” is an important way that she tries to influence what her daughter chooses. The mother of a 13-year-old boy said she will,

“try and put those [healthy options] in the front where he can kinda see them so he, you know, might want to grab that... stuff that I want him to eat, I might try to place it in the refrigerator where I think he might see it”.

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Some parents monitor what their children eat when they are not around by providing the food. A common method was to pack the child’s lunch or set guidelines about what to pack. The mother of a 10-year-old girl reported that her daughter usually packs her own lunch, but that she might “kinda make her take something” because “I want her to have some balance”. The mother of a 10-year-old girl and a 12-year-old boy said that, “we’ll usually pack their lunches and usually it’s like a peanut butter sandwich with some sort of vegetable or fruit... usually put like a little thing of chips and maybe like two little cookies... maybe a cheese stick. Yogurt”, and that she feels good about these choices that she provides. This was a very common structure for a packed lunch reported by both the parents and the children: a protein or main option, a fruit or vegetable, a salty snack, and a sweet treat. To this end, the mother of 10- and 13-year-old boys similarly that, “In their lunches... I’ve been trying to incorporate either a fruit or a vegetable... and try and balance it out to make sure it’s somewhat healthy”. By providing the food, these parents know exactly what their children are eating when they are not around.

Many parents also set expectations or limits for certain foods. These parents used a variety of behaviors to accomplish this. The father of a 12-year-old girl was talking about how much she loves cereal, and said she can “have it for breakfast but not the rest of the day”. The mother of a 13-year-girl limited her children’s intake by “being sugar free during the week... and then allowing them to have more things on the weekend”. Other parents monitor their children’s portions, more so with sons than daughters. One mother was talking about an Italian dinner she had with her 10- and 13-year-old sons, and how her 13-year-old would have eaten all 12
breadsticks if given the opportunity, so she “put one on his plate and that was it... I know I have to limit... I kinda have to pay a little bit more attention”. The mother of another 13-year-old boy also said, “I don’t feel like he’s very good at giving himself a limit... for sure he needs some help with that”. She explained that he will buy candy on his own at the drugstore then eat it all in one sitting, so she tells him, “Those should not be gone in one day... That should be taking you for the whole week” to help him moderate his intake. The father of a 12-year-old girl was more direct, saying that “The word ‘NO’ is usually what I use... If they ask, can we have soda, the answer’s no... can I have ramen noodles, the answer’s no”. Sugary foods, salty snack foods, and sugar-sweetened beverages were the most commonly limited foods.

4.3.2 Mentoring

Parents relied heavily on mentoring their early adolescents to help them make better food choices. This was the most commonly reported practice, and it encompassed a wide variety of behaviors. Most parents reported talking to their children about the link between diet and health, including both positive and negative effects. The mother of a 10-year-old girl who was dealing with lack of appetite due to ADHD medication, and newly identified lactose intolerance, said, “We talked to her about how it affects her physically... like how it affects her weight loss or gain or her hyperactivity or her tummy aches”. The African American mother of a 13-year-old girl talked to her daughter about issues such as blood pressure and acne and the link to diet, because she “wants them to be aware of that at an early age... things they could be susceptible to just because of.... Genes and background".

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Sugar specifically was a common point of contention. The mother of a 13-year-old boy warned him, “You’re gonna be a diabetic if you don’t stop [eating sugar] … this is what this turns into”. The father of 11- and 13-year-old girls explained to them, “If you continue to eat sugar you will get diabetes… you will get fat… the more you eat sugar the more you get sick”. His daughters had recently moved to the United States, so he explained how he uses the differences in the typical American diet compared to their native diet to point out the importance of eating well.

Most parents were not concerned about their children’s current weight, but wanted to instill good habits that would help them maintain a healthy weight. The mother of a 10-year-old girl and a 13-year-old boy was concerned that, “Right now… they’re just too active to have it catch up with them too much … but… In the future if they don’t like make some more changes and, you know, turn the corner a little bit… they could get big”.

The mother of a 13-year-old girl also expressed concern about her daughter’s weight in the future and used her own experiences to mentor her daughter. The mother explained, “I’ve always struggled with my weight, and I get it, I know you want this [unhealthy food]… but this option is going to be a lot healthier for you and I don’t want you to deal with the same stuff that I deal with”.

Athletics were also an important motivator for using health and the effect of food on the body to mentor the early adolescents. The mother of a 13-year-old boy told him, “you really need to eat… this cuz you know it’s gonna help you be strong, it’s gonna help you build muscle”. Similarly, the mother of another 13-year-old boy explained, “I have really been working with him on trying to make better food
choices because he’s an athlete and he just, he needs to work on how he fuels his body”. Parents report that their children respond well to these appeals to athleticism. The mother of a 13-year-old girl said the sports season presented a “huge opportunity” help her daughter make healthier food choices, and that her daughter was “doing better during her volleyball season... making better choices without being prompted”.

Most parents said this mentoring occurred as part of a “constant conversation” about healthy eating choices. The father of 11- and 13-year-old girls said, “They have the information. We talk about it every day. And we emphasize, so it’s not like they don’t know. They know”. The mother of a 10-year-old girl and a 13-year-old boy reported using media to get the conversation started, saying, “We have watched like ‘Food Matters’... and we just talk about what’s healthy and what’s not”. Parents recognized that this period of early adolescence was an important time to start instilling these healthy eating behaviors, engaged their children in conversations about it regularly, and encouraged them to start becoming more autonomous. The mother of 10- and 13-year-old boys said, “We’re really working on for them to be able to be a little more independent... they’re old enough”. The mother of a 13-year-old girl reiterated this, saying, “I want her to learn how to you know, do some things on her own... create independence too”.

Parents used a variety of techniques to continue to mentor their children as they developed this independence. The mother of a 13-year-old boy said that when her son is home alone after school, “I’ll call [him] cause I know he’s home for that short period of time by himself, and I'll ask him what he ate and he'll tell me and I'll
say, you know, what can you eat to, you know, so that you’re making a better choice”. Reminding their children of the healthier choices available was a common mentoring technique. The mother of a 10-year-old girl reported, “We had pictures posted on the fridge with other choices, especially the beverages”. She also reported using “reminders of some of the recipes that we have done in the past or things that she is capable of doing on her own”.

Reminding early adolescents and repeating the information about healthy eating was very important to helping them make good choices and continue learning. The mother of a 13-year-old girl reported that she would, “Try to remind them even though we’re eating it, everything should be in moderation. So just because we have pizza on Friday doesn’t mean we should have pizza every Friday. Or like what’s going on the pizza, we can still make good choices in terms of what’s on it”.

The mother of a 10-year-old girl and a 13-year-old boy agreed that “the education piece” is important. With her children, she said, “I’ll tell them I don’t think that’s a good choice and why... it’s just more of like a constant conversation... I try to point out what’s healthy... I just tell why”. The mother of a 10-year-old girl reported, “Encouraging good choices”. Similarly, the mother of a 13-year-old girl also told her daughter, “I hope you’re making wise choices during the day”. By keeping the dialogue open and frequent, parents were hoping to help their children make the healthiest food choices possible.

Parents also mentored their children’s grandparents about appropriate food choices. Time with grandparents was considered an independent eating occasion, but parents reported being displeased with what their children ate during this time. The mother of a 13-year-old girl stated, “Grandparents offer things we don’t offer”.

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The mother of a 10-year-old girl explained that, “Her grandma will usually give her what she wants... even if we have a meal ready and prepared”, the grandmother will take the child out for fast food, because that is what the child prefers. The father of 11- and 13-year-old girls reported the same thing, saying,

“For sure when they are with grandma, they eat junk. I know because Grandma doesn’t have time to go, take them at home and cook for them. So she’ll wanna be out having fun with them and then they eat ...[at] Taco Bell”.

This father has been mentoring the grandmother as well as his daughters, reminding her, “Don’t feed them too much junk,” and helping her develop healthier, quick options to prepare at home for the girls.

4.3.3 Role Modeling

Parents reported consciously striving to model good behaviors for their early adolescents. The mother of a 10-year-old girl said the primary way she tries to influence her daughter to eat healthy is by “just modeling it”. Another mother of a 10-year-old girl said, “I try and eat healthy, I try and set a good example... to just teach her what good eating is, so when I’m not around she’ll know what to do”. The father of 11- and 13-year-old girls said, “We eat on the table... We all eat the same”. The mother of a 10-year-old girl agreed, stating, “If she sees me doing the same things or following the same rules that I give to her then it’s usually fine... it’s not like I’m scarfing down a whole bag of chips but then telling her not to do it”. The mother of a 13-year-old girl echoed this concern, explaining that, “When my husband and I are eating it, it’s hard to justify not letting her have it... [if] any of the rest of us are eating it I wouldn’t expect her not to eat it".
Parents sought to instill good habits when they were around their children, so that the children would continue those behaviors when they were away from their parents. The mother of a 10-year-old girl said, “I just try and instill that in her at home when I am around, so that when I'm not around she'll have that in the back of her mind”. The mother of a 13-year-old girl expressed her concern differently, explaining that, “I do worry about... some of the stuff she is eating... cuz I don't want her to get in certain habits”.

Parents used what they knew and believed to influence the habits their children formed at home. Family history played a big role, and food-related behaviors appeared to be passed down through generations. The father of a 12-year-old girl explained that, “Part of it's culture too. I grew up and we ate in the house, so that's what I feel like we should be doing... honestly that probably drives more of this than even the nutritional content of the foods... like I said it's probably more cultural than it is like some sort of intellectual, you know, thought process. It's just what we believe”.

The mother of 10- and 13-year-old boys agreed, saying that she “would go back to what my mom did for me”. The habits formed in their own childhoods continued to influence the parents long into adulthood and as they raised their own children.

The parents reported the role of peers as role models for their children too. The mother of a 13-year-old girl said that, “peer pressure is always an issue” making it more difficult to get her daughter to make healthy choices at independent eating occasions. She speculated that her daughter faces, “that pressure to kinda give in, or the temptation to eat whatever everybody else is eating”. The mother of a 13-year-old boy who was a picky eater saw this peer pressure as an advantage, though. She
reported encouraging him to try new things, which he is not always willing to try, but said she is,

“Really waiting for... his friends to be like, ‘Oh let's all go to Chipotle’ – he won't even go to Chipotle – you know like, ‘Let's go to Chipotle and have a burrito’. And... I think that peer pressure... he’s gonna try something and then he’s gonna be like, ‘Oh, I like this’“.

When independent eating occasions occur with the early adolescents’ peers, the peer pressure and modeling by friends can have an influence on the adolescent.

4.4 Inter-Parent Variations

All parents reported engaging in behaviors from all three types of parenting practices. However, the degree to which parents used certain practices varied. Although every parent engaged in every practice, each parent tended toward one specific practice more than the other two; which specific practice was favored varied between the parents and was context-specific. See Table 2 for overview of inter-parent variations.

4.4.1 Variations Between Low-Income and Non-Low-Income Parents

Both low-income and non-low-income parents reported engaging in the same three practices. Which one of the three practices the parents tended toward and what behaviors they engaged in was context-specific, and that was where the effect of income became apparent. This manifested as differences in monitoring behaviors, such as home food availability, providing food to the child, and limiting portions.

None of the six non-low-income parents reported cost as a barrier or factor in any of the behaviors they engaged in. Even with monitoring portions or having
Table 2. Inter-parent Variations in Parental Practices to Influence their Early Adolescents’ Eating Behaviors

<table>
<thead>
<tr>
<th>Parent</th>
<th>Child Age/Gender</th>
<th>Income Level</th>
<th>Practice</th>
<th>Behaviors</th>
<th>Context</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mother</td>
<td>10-year-old girl</td>
<td>Non-Low</td>
<td>Mentoring</td>
<td>Reminders</td>
<td>Daughter has ADHD and mother reported that frequent reminders were the most helpful to her daughter – photos on the fridge, verbal reminders and encouragement, asking about what she had eaten, discussing health effects of diet and how her diet affected her ADHD.</td>
</tr>
<tr>
<td>Mother</td>
<td>10-year-old girl; 13-year-old boy</td>
<td>Non-Low</td>
<td>Mentoring</td>
<td>Conversations about health</td>
<td>Mother regularly engaged both of her children in conversations about the link between diet and health.</td>
</tr>
<tr>
<td>Mother</td>
<td>10-year-old girl; 12-year-old boy</td>
<td>Non-Low</td>
<td>Monitoring</td>
<td>Providing food; Making rules</td>
<td>Mother packs lunch for both children and monitors the availability of foods at home, sets rules about what they are allowed to have.</td>
</tr>
<tr>
<td>Mother</td>
<td>13-year-old girl</td>
<td>Non-Low</td>
<td>Monitoring</td>
<td>Rules and Expectations</td>
<td>Mother had many rules and expectations or limitations for her children’s diet (ex: sugar free during the week); most mentoring was reminders to follow the rules. Mother reported using the word “NO” regularly.</td>
</tr>
<tr>
<td>Father</td>
<td>12-year-old girl</td>
<td>Non-Low</td>
<td>Monitoring</td>
<td>Availability of food at home; Setting rules and limits</td>
<td>Father carefully monitored what foods he kept in his house, and enforced the rules and limitations he set for these foods. Father reported using the word “NO” regularly.</td>
</tr>
<tr>
<td>Mother</td>
<td>10-year-old boy; 13-year-old boy</td>
<td>Non-Low</td>
<td>Monitoring</td>
<td>Availability of food at home; Setting limits</td>
<td>Mother provided foods for her sons at both breakfast and lunch, and monitored the availability of foods at home. Mother reported hiding certain foods or labeling them in the kitchen so her sons knew what they were and were not allowed to eat. Mother also set portion limits, especially for her older son.</td>
</tr>
<tr>
<td>Mother</td>
<td>10-year-old girl</td>
<td>Low</td>
<td>Role Modeling</td>
<td>Forming habits at home</td>
<td>Mother emphasized wanting her daughter to form healthy habits at home, so she would know what to do when she was on her own. Mother role-modeled these behaviors, and often gave her daughter no choice but to do the same</td>
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<td>Mother role-modeled these behaviors, and often gave her daughter no choice but to do the same</td>
</tr>
<tr>
<td>Father</td>
<td>11-year-old girl; 13-year-old girl</td>
<td>Low</td>
<td>Mentoring</td>
<td>Conversations about health</td>
<td>Both daughters had recently (&lt;6 months ago) moved to the US. Father reported engaging his daughters regularly about the effect of diet on health and how aspects of the typical American diet could have detrimental effects</td>
</tr>
<tr>
<td>Mother</td>
<td>10-year-old boy; 11-year-old boy</td>
<td>Low</td>
<td>Monitoring</td>
<td>Offering choices; Setting limits</td>
<td>Mother offers her sons choices to get them to eat more; Sets limits about what they can have and where</td>
</tr>
<tr>
<td>Mother</td>
<td>11-year-old boy</td>
<td>Low</td>
<td>Monitoring</td>
<td>Setting limits; Availability of food at home</td>
<td>Mother tried to limit her son’s intake of junk foods. Son has ADHD and little appetite, but will choose junk foods when he is hungry, so mother tries to limit this. Mother reported struggling with this because she keeps the junk food available at home</td>
</tr>
<tr>
<td>Mother</td>
<td>13-year-old girl</td>
<td>Low</td>
<td>Monitoring</td>
<td>Setting limits</td>
<td>Mother has 5 children and 3 stepchildren, and reported that setting limits was important in their household so there was enough to go around, and so that they could afford enough</td>
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</table>
their child buy lunch at school, these behaviors were determined by the parent’s concern for the child’s health and wellbeing, ability to share and limit him- or herself to a reasonable portion, or the parent or child’s preference for packing versus buying lunch.

In contrast, cost was a factor in how the five low-income parents behaved. One mother with a 13-year-old daughter who participated in the study had a household of ten total, two adults and eight children. This mother relied on setting limits as her primary means of monitoring her children’s intake, and these limits were determined by cost. Minutes into the interview, she admitted, “Food is an expense for sure”. She later explained how when all eight children were present, they often relied on convenience foods that could feed everyone easily, such as pizza. The mother said, “I let all the children know how many they can have, not just because of health reasons but because they can’t just have as much as they want or we wouldn’t be able to afford to buy pizza”.

She further explained that in terms of snacks, both for her 13-year-old daughter and her younger children, “None of the children, especially having so many, none of them really have free rein to go in and get whatever they want. So it is typically pretty controlled”. This mother also talked about how all of her children, including her 13-year-old daughter, eats lunch at school because they qualify for reduced price lunches, and “It’s forty cents for their meals, so we tend to have them get the school lunches cuz that’s just cheaper than trying to pack lunches”.

The low-income mother of 10- and 11-year-old boys also talked about the school breakfast and lunch program, and how she knows her sons always have the
option of having these meals at school, especially if they don’t have the chance to eat in the morning before leaving. She reported that although she knows her sons have access to the free meals, she’s not sure if they actually eat anything, especially at breakfast. The low-income mother of the 13-year-old girl who also relied on school breakfast and lunch for her children similarly expressed uncertainty about what her daughter actually got from the school. This mother explained that because of participating in this study,

“I'm actually finding out some new things... I guess I kinda thought that she was eating fairly healthy at school... I mean they've just been eating lunches at school and to be honest this is started some conversations about what she actually gets at school and what her options are and I've been a little disappointed...I guess I assumed that they had a nice well-balanced meal but... I'm a little concerned now to be honest that she's not getting a whole lot of nutrition at her breakfast and lunch meals of the day”.

The low-income father of 11- and 13-year-old girls also talked about the cost of food at school. In contrast to these families, his daughters did not receive free meals. He explained that he made sure,

“They know that food at school we pay for that, it's not free food... They know we get involved if they eat every week because we don't qualify for free food, so they know the limits... They can't even try. So if they didn't bring their own lunch, they have to drink water until they come back home”.

He engaged in the same types of limiting behaviors because of the cost of food, but in a different manner than the other parents.

The mother of the 10- and 11-year-old boys also mentioned that she receives SNAP benefits, and that she limits what her sons eat because, “Without [limits] they are non-stop snacking”. She reported trying to explain to her 10-year-old son that some foods need to be limited because she is a single mom relying on food assistance programs and not receiving any financial support from the boys’ father.
The single mother of an 11-year-old boy, who has three other children as well, similarly discussed the challenges of raising and feeding her four kids on her own, and how she often relies on pre-packaged foods or take out because, “It’s so convenient and with my crazy life, you know where I’m on the go all the time”. The low-income single mother of a 10-year-old girl echoed the same thing when talking about foods like chicken nuggets and corn dogs she serves for lunch or dinner, stating, “I don’t think they’re the healthiest options but I’m ok with it, I buy it, cuz it’s convenient”. While the non-low-income parents also talked about convenience foods and their children’s preference for them, these parents were more likely to be limiting the availability of these foods or not buying them, whereas low-income parents reported also knowing these foods were not the best options, but relying on them and keeping them available because of the low cost and the convenience.
Parents used three key practices to influence their early adolescent children at independent eating occasions: monitoring, mentoring, and role modeling. This is consistent with findings from the prior work done by this USDA multistate team of investigators, which found that parents had three primary roles, as monitors, mentors, and role models, to influence their early adolescent’s calcium intake (Edlefsen et al., 2008). Similar behaviors were reported in the prior study, with parents monitoring their children's calcium intake by preparing and providing foods, mentoring them about the health effects of nutrition and encouraging moderation and balance, and role modeling both good and bad behaviors consciously or subconsciously. This is consistent with earlier work by other investigators that also showed how parents have important roles as monitors (Gibson et al., 2012; Klesges et al., 1991) and role models (Gibson et al., 2012; Palreyman et al., 2014; Brown and Ogden, 2004).

Reported eating patterns were similar between the current study and the prior calcium study. Although the focus was on calcium specifically, not independent eating occasions, parents talked about their children preparing their own breakfast at home in the morning and buying or bringing lunch to eat at school, then the parent preparing dinner at home in the evening, where they had the most control over what their children ate (Cluskey et al., 2008). Interestingly, when
talking about school lunches, which would be defined as an independent eating occasion by the current study's protocol, most parents reported not knowing what their children had for lunch and not being concerned about it (Cluskey et al., 2008), consistent with the parents in the current study who were unsure of what their children had when they bought lunch at school.

School lunch, reported by essentially all parents as an independent eating occasion for their early adolescents, is an interesting eating occasion that may warrant further investigation in the future. Parents in the current and prior studies (Cluskey et al., 2008) reported uncertainty about what their children had for lunch at school, especially if the child purchased the school lunch. Parents in the sample for the current study who packed lunch for their children used this as a way to monitor what their children ate, and to try to incorporate healthier options and more balanced meals. They also reported that their children were eating lunch with their peers at school. Peer influence has been shown to have a strong effect on adolescents' food choices (Nørgaard et al., 2013; Salvy et al., 2011; Wouters et al., 2010). Parents reported that peers influenced their children, leading them to make more unhealthy choices and presenting options that the parent did not make available. The overall effect was poorer food choices in the presence of friends. This is in contrast to the findings by Salvy et al. (2011), which showed that female adolescents (aged 13-15 years) chose more healthy snacks with their peers, but consistent with Nørgaard et al. (2013) and Wouters et al. (2010) findings which showed adolescents made more unhealthy choices in the company of their peers.

Although these 10-13 year old early adolescents are gaining more autonomy,
having more independent eating occasions, and making more of their own food-related decisions, it was clear that parents still have an important role and do their best to have a positive influence on their children. All parents were invested in their children's eating behaviors, and wanted to help them make good choices. Savage et al. (2007) showed that this parent influence starts young. The current study shows that parents try to retain this influence as their children get older. However, by the time children reach late adolescence, at 18-19 years old, environmental factors can account for nearly 50-80% of variations in food choices (Smith et al., 2016). The current study shows that this influence is growing already when children are in early adolescence.

Additionally, the correlation between parent and child food preferences has been shown to be low, at 0.17 (Rozin 1991). Although this correlation between food preferences is low, the current study and other prior studies have shown that eating behaviors are similar between parents and children because of parents' influence as role models, and the bidirectional influence of children on their parents in return (Savage et al., 2007; Palfreyman et al., 2014; Coesens et al., 2010; Edlefsen et al., 2008). Parents reported role modeling both good and bad eating behaviors, and knowing this could impact their children's eating behaviors. The Parental Modeling of Eating Behaviors Scale (Palfreyman et al., 2014), which was used in the development of the parent interview questions, assesses the degree of verbal and unintentional modeling by the parent and its behavioral consequences. As expected based on this scale, parents discussed modeling behaviors intentionally and unintentionally. It has also been shown that there is a bidirectional influence
occurring (Coesens et al., 2010), whereby children also influence their parents. The parents in the current study reported taking their children’s preferences and desires into account, and letting the children influence the home food environment as well, in ways such as keeping foods the child liked available and preparing meals the child would like.

Parents also reported role modeling in the hopes that it would help their children observe and start to develop healthy habits. Habit has been shown to be a powerful predictor of eating behaviors, correlated at 0.43 (van’t Riet et al., 2011), suggesting that parents who role model and mentor to promote habits in their early adolescents could be having a greater impact than they realize. Interestingly, parents referred to copying the way their parents had raised them, showing that habits can persist over decades and that emulating behaviors a parent role modeled can persist into adulthood. Parents reported family values, culture, and the way their parents raised them as influences on their parenting behaviors, consistent with findings by Beltran et al. (2011) that values, including family, are a strong motivator for parental feeding practices and help shape the home food environment.

The inclusion of both low-income and non-low-income households was novel in the current study. The barriers to healthy eating reported by low-income parents that were not mentioned by non-low-income parents, such as the cost of food, dependence on the school breakfast and lunch programs, and reliance on convenience foods, are worth further investigation to gain a deeper understanding of the differences between households of different income levels. The biggest differences were in monitoring behaviors, not mentoring or role modeling. This
suggests that low-income parents may feel they have the most control as monitors, and in this way can manage the cost and convenience of foods. The different barriers cited and differences in monitoring behaviors suggest that future interventions may need to be tailored by income level.
Chapter 6: Epilogue

Low-income and non-low-income parents of 10-13 year old early adolescents use three key parental practices to influence their children’s behaviors at independent eating occasions: monitoring intake, mentoring, and role modeling. This is consistent with prior studies that have shown that parents have important roles as monitors, mentors, and role models influencing their children’s food preferences and intake of calcium-rich foods and beverages (Savage et al., 2007; Gibson et al., 2012; Klesges et al., 1991; Palfreyman et al., 2014; Brown and Ogden, 2004; Edlefsen et al., 2008). All parents reported engaging in all of these behaviors to varying extents.

The inclusion of both low-income and non-low-income families was novel in the current study. Differences emerged between income levels in regards to how parents considered the cost and convenience of foods, which manifested as differences in monitoring behaviors and motivations for engaging in these behaviors.

Data from the low-income families will be compiled with data from 10 other sites across the country as part of the USDA W3003 multistate project and used to inform the development of quantitative questionnaires assessing parental practices and their relation to child eating behaviors and weight status, and ultimately educational materials to be distributed through Extension.


Yale University. “Fundamentals of Qualitative Research Methods: Data Analysis (Module 5)”. YouTube, narrated by Leslie Curry, PhD, MPH, 23 June 2015, https://www.youtube.com/watch?v=opp5tH4uD-w.
Appendix A: Recruitment Screening Script

W3003 Objective I Recruitment Screening Script
Thank him/her for calling and confirm that parent meet criteria for participation.

Say:
"Let me tell you a little more about the study and then I will ask you a series of questions to find out if you are eligible for the study. We are interviewing parents and their 10-13 year-old child to better understand adolescent food choices and what environmental, social, and parental factors influence those food choices.

This study involves meeting with you and your child two times and asking your child to send us pictures of the food he/she eats (we will provide the camera/phone to take pictures).

The first time we meet in person with you and your child. During this meeting I will explain the study procedures and I ask you and your child to sign consent and assent forms, respectively. Then, I will ask your child to take pictures of everything he/she eats for one full day. I will ask your child to send pictures via WhatsApp to me on a real-time basis (i.e., text pictures immediately after they are taken). WhatsApp is a phone application that allows exchanging messages without having to pay for them. I may send text message reminders to your child to remind him/her to take pictures that day. We expect this meeting to last about 30 m and that your child would spend about 30 m taking pictures.

The second time we will also meet in person with you and your child about 1-3 days after your child completes the pictures task. During the second meeting, [name] will interview you while your child watches a movie (approved by you-parent) or plays a board/card/online game (approved by you-parent). I will be available to supervise your child while you talk with [name]. [Name] and you will meet in a separate room but one that is close to where your child will be. After you and [Name] finish the interview, he/she will interview your child while you complete an online survey. We expect the second meeting to last two hours.

In addition, [Name] or I will take your and your child height and weight during the second meeting.

Overall, we expect that your participation in the study will take about 3 hours. You and your child will each receive a $30 gift card ($60 total) for participating in the study.
If you are still interested, I will ask you a series of questions now to see if you are eligible.

<< If subject is still interested, continue with screening questions.>>

Parental Screening Questions
1. Are you a parent or caregiver of a 10-13 year old child?
   - Yes - > continue screening
   - No - > Thank them for taking time to call about the study, but based on their response, they are not eligible for the study.

2. What is the name of the child aged 10-13 who will be participating in this study?
   (Note: If the caregiver has more than one child 10-13 years of age in the household, ask which child would be best able to respond to interview questions and be comfortable speaking with an adult they do not know. If more than one child meets these criteria, then ask the parent to select a child.)
   - Response (Name of child: __________________) - > continue screening
   - No response - > Thank them for taking time to call about the study, but based on their response, they are not eligible for the study.

3. Are you the primary person responsible for providing food for [child's name identified by parent]? By this I mean shopping, cooking and preparing food at home for [child's name identified by parent] at least half of the time.
   - Yes - > continue screening
   - No - > Thank them for taking time to call about the study, but based on their response, they are not eligible for the study.

4. Does [child's name identified by parent] currently live with you at least 3 days a week or more?
   - Yes - > continue screening
   - No - > Thank them for taking time to call about the study, but based on their response, they are not eligible for the study.

5. Do you feel comfortable reading and speaking English?
   - Yes - > continue screening
   - No - > Thank them for taking time to call about the study, but based on their response, they are not eligible for the study.

6. How many people are in your household (including all children and adults)?
   # people in household: ________
7. Did your household earn equal to or less than [$ amount listed for that family's household size, based on Poverty Guidelines below] last year? 

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<tr>
<th><strong>2015 Poverty Guidelines for the 48 Contiguous States &amp; District of Columbia</strong></th>
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<td>Persons in family/household</td>
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Each Additional Family member add +$7,696

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<th><strong>2015 Poverty Guidelines for Alaska</strong></th>
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<td>Persons in family/household</td>
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Each Additional Family member add +$9,620

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<th><strong>2015 Poverty Guidelines for Hawaii</strong></th>
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<td>Persons in family/household</td>
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Each Additional Family member add +$8,843
8. Overall, how successful are you in getting [child’s name identified by parent] to make healthy food choices when you are not around? On a scale of 1 to 5, with 1 being not all successful to 5 being very successful (if response is I don’t know, ask them to provide their best guess)

- > any response, continue screening
  - 1 and 2 = strivers (internal use only – for classification purposes)
  - 3, 4 and 5 = succeeders (internal use only – for classification purposes)

9. What are some challenges you have in getting your child to make healthy food choices when you are not around?

[If respondent answers with few words or evident that language may be a barrier in the interview, thank parent or caregiver for their time but tell them that based on their responses to the screening, they are not eligible for the study.]

10. If subject is eligible based on screening, schedule time to meet with parent and child to discuss consent/assent forms (or have them return the child/parent assent forms if handed out to children at an after-school program) and procedures for child’s data collection on phone/camera (in-person contact 1).

To set an interview date, research assistant will need to have a calendar with dates available for the first meeting.

Say:

1. “These dates are available (list available days) for our first meeting, which one would you like?”

2. After parent chooses a day, confirm the date by saying: “We will meet on [month and day] at [time]. The location is [name of location and address].

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<td>Location:</td>
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3. “We will remind you the day before the interview. Would you prefer an email, phone call, or a text? Could I have your name and phone number or email address?”

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<th>Name:</th>
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<tr>
<td>Contact Info:</td>
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4. “Please remember to bring your 10-13 year-old child with you.”

11. Ask if parent has questions

Say:

“Do you have question about the study?”

- If YES: Respond to the questions.
If unable to respond to some questions then say: “I do not have a response for you at this time. I will be happy to return to you with a response”

Research Assistant: Write the question(s) and consult with PI.>

- If NOT: say OK.

12. Thank parent for taking the time to call and participating in the study. We will plan to see you <<state date and time>> at <<state location>>.

13. At in-person contact 1, schedule time to meet with parent/child for 2nd time (1-3 days after child assigned to collect photos).

14. At in-person contact 2, parent and child come to appointment at the same time. Parent is interviewed first while the child is watching a movie, playing a game, etc. (with supervision by a research assistant). Then the parent will complete the online survey while the child is being interviewed.

Note: Researchers may want to alter the contacts to meet separately with parents and/or children according to the site and parent preferences.
Appendix B: Consent Form

Consent to be a Research Subject

Introduction
This research study is being conducted by Carolyn Gunther, PhD, Laura Hopkins, MPH, RD, and Christine Penicka, BS at Ohio State University to study 10-13 year old children’s food choices and what environmental, social, and parental factors influence those foods choices. The results of this study will be used in a larger study concerning 10-13 year old children’s food choices.

You were invited to participate because you are a parent of a child aged 10-13 years, you are the main person who provides food for this child, and you feel comfortable reading and speaking English.

Procedures
If you agree to participate in this research study, you will be asked to complete tasks on two (2) occasions, which will take two and a half (2.5) hours (total time). Your child will be given an additional task, as will be described briefly below and in more detail on the parental permission form.

Contact 1 (in person)
• You and your child will meet with the researchers so the researchers can outline what will happen at Contacts 2 and 3. The researchers will also schedule a follow-up meeting with you and your child (Contact 3). Also at Contact 1, your child will be trained how to use the camera provided by the researchers in order for him/her to take pictures of the foods/drinks they each during one day and how to send these pictures electronically to the researchers.
• The total time commitment for this meeting (Contact 1) will be thirty (30) minutes.

Contact 2 (via smart phone)
• Your child will use the app on the smartphone to take pictures of everything he/she eats and drinks throughout one day and to answer a few questions (where he/she was and who he/she was with). Your child will send these pictures and answers to questions to the researchers through the smartphone.

Contact 3 (in person)
• You and your child will meet with the researchers 1-3 days after your child send pictures to the researchers (this day/time will be scheduled at the Contact 1 meeting).
• You will be interviewed for approximately sixty (60) minutes about your child’s typical day and his/her food intake pattern or routine and your thoughts about your influence on your child’s food choices. The researcher will also ask you about the kinds of foods available in your home, any rules you have about what foods you want your child to eat, and what you think about your child’s eating behaviors when you are around and when you are not around them. While you are being interviewed, your child will be with another researcher in a room close-by watching a movie (one approved by you) and/or playing a board/card/online game (one approved by you).
• The researcher will take your height, weight, and waist circumference at the end of the interview.
• While your child is being interviewed, you will be asked to complete a thirty (30) minute online survey to provide more information about foods available in your home, family meals, any rules you have about what foods you want your child to eat, your eating behaviors, your child’s eating behaviors when you are around them and when you are not, your thoughts about your and your child’s weight, and demographic questions (e.g., you and your child’s age, gender, etc.).
• The total time commitment for Contact 3 is two (2) hours.

**Risks/Discomforts**
There is minimal risk in taking part in this study. The researcher will be asking you questions about the foods you and your child eat, which some people feel are personal questions, and will be measuring your height, weight, and waist circumference. If you prefer not to answer a question just let the researcher know. Your height, weight, and waist circumference measurements will be taken in a private location and only the researcher will be able to see the numbers (unless you would like to know your own numbers, then you can ask the researcher for this information).

**Benefits**
There will be no direct benefits to you in taking part in this study. It is hoped, however, that through you taking part in this study that the researchers may learn more about factors that influence 10-13 year old children’s food choices when their parents are around and when their parents are not around. It will also provide us insights into ways researchers can help parents encourage their children to make healthy food choices.

**Confidentiality**
We will work to make sure that no one see your survey responses without approval. But, because we are using the Internet, there is a chance that someone could access your online responses without permission. In some cases, this information could be used to identify you. Your data will be protected with a code to reduce the risk that other people can view the responses.

The research data will be kept in a locked filing cabinet and on password protected computers in a locked room and only the researchers will have access to the data. At the conclusion of the study, all identifying information will be removed and the data will be kept indefinitely in the researcher’s locked filing cabinet, password protected computers, and locked room.
Compensation
You will receive two (2) $15 Walmart or Target gift cards for participating in this research study ($30 total); the first gift card will be given after the first meeting (Contact 1) and the second will be given after the second meeting (Contact 3).

Participation
Taking part in this research study is voluntary. You have the right to withdraw at any time or refuse to participate entirely without jeopardy to your standing with the university or any community program.

Questions about the Research
For further questions about the study or if you feel you have been harmed as a result of study participation, you may contact Carolyn Gunther at 614-292-5125 or gunther.22@osu.edu.

Questions about Your Rights as Research Participants
If you have questions regarding your rights as a research participant contact IRB Administrator, Sandra Meadows, Ohio State University, Office of Responsible Research Practices, 1960 Kenny Road, Columbus, OH 43210. Call 800--677-6251.

Signing the consent form

I have read (or someone has read to me) this form and I am aware that I am being asked to participate in a research study. I have had the opportunity to ask questions and have had them answered to my satisfaction. I voluntarily agree to participate in this study.

I am not giving up any legal rights by signing this form. I will be given a copy of this form.

Printed name of subject ____________________________________________
Signature of subject ____________________________________________

AM/PM

Date and time

Printed name of person authorized to consent for subject (when applicable) ____________________________
Signature of person authorized to consent for subject (when applicable) ____________________________

AM/PM

Relationship to the subject ____________________________________________
Date and time ____________________________________________
**Investigator/Research Staff**

I have explained the research to the participant or his/her representative before requesting the signature(s) above. There are no blanks in this document. A copy of this form has been given to the participant or his/her representative.

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<th>Printed name of person obtaining consent</th>
<th>Signature of person obtaining consent</th>
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Appendix C: Parent Interview Script and Qualtrics Questionnaire

W3003 Objective 1 Parent Interview Script

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<thead>
<tr>
<th>Researcher Instructions</th>
<th>Interview Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review information about procedures, data handling, and confidentiality with parent/child.</td>
<td>Today we are going to talk about foods that your child eats. We will ask you about this when you or other caregivers are around. I will also ask you about this when you or other caregivers are not around.</td>
</tr>
<tr>
<td></td>
<td>What does a typical school day or week day look like for your child regarding where and when they eat? (before school, after school, meals, snacks). When you are not around, is your child alone or is someone with them?</td>
</tr>
<tr>
<td></td>
<td>What does a typical non-school day or weekend day look like for your child regarding where and when they eat? When you are not around, is your child alone or is someone with them?</td>
</tr>
</tbody>
</table>

INDEPENDENT Eating Occasions

For each of the different contexts mentioned in the first question by the parents ask this question to fill out the table.

<table>
<thead>
<tr>
<th>Context</th>
<th>Foods and Beverages</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Where and when does your child typically eat when you or other caregivers are not around?

Probe:
- Think about times during the day when you’re not home, or they’re in school, or they’re out with friends.
- Who might be with them, if anyone?
- What might they be doing besides eating, if anything?

Let’s talk about the types of foods your child usually eats or drinks when they’re at [context].

What is it about the foods and beverages that you listed that makes your child want to eat them?
Think about the foods and beverages you listed. Are there any that you prefer your child would eat, or would not eat?

Think about the foods and/or beverages that you listed that you want your child to eat or drink when you are not around. What is it about the food or drink that makes you feel that way? What do you say or do so your child will eat or drink these foods or beverages?

Think about the foods and/or beverages that you listed that you don’t want your child to eat or drink when you are not around. What is it about the food or drink that makes you feel that way? What do you say or do so your child won’t eat or drink these foods or beverages?

What about [SSBs, salty snacks, sweets, fruits and vegetables]. Are these foods that you prefer or do not prefer your child to eat or drink when you are not around? Tell me more about that.

You mentioned that you....[whatever the parent said they do or say to influence what their child eats or drinks]. How does [child’s name] respond?

• Probe: What works and does not work?

• Probe: What makes it hard to get [child’s name] to eat the foods you want them to eat when you are not around? What makes it easy?

• Probe: What makes it hard to keep your child from eating things you don’t want them to have when you are not around? What makes it easy?

Where and when does your child typically eat when you or other caregivers are around?

Probe:

• Who might be with them, if anyone?

• What might they be doing besides eating, if anything?

Let’s talk about the types of foods your child usually eats or drinks when they’re at [context].
the first question by the parents ask this question to fill out the table.

<table>
<thead>
<tr>
<th>Context</th>
<th>Foods and Beverages</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Instructions: probe to find out if there are other foods not on the list that are preferred or not preferred

Skip this question if the parent does not list any foods they prefer their child to eat.

Skip this question if the parent does not list any foods they prefer their child not to eat.

If parents don’t mention SSBs or salty snacks or sweets, fruits and vegetables then ask this question.

Use this format for whatever the parents say they say or do to influence what their child eats or drinks. If parent did not mention anything, ask the last 2

What is it about the foods and beverages that you listed that makes your child want to eat them?

Think about the foods and beverages you listed. Are there any that you prefer your child would eat, or would not eat?

Think about the foods and/or beverages that you listed that you want your child to eat or drink when you are around. What is it about the food or drink that makes you feel that way? What do you say or do so your child will eat or drink these foods or beverages?

Think about the foods and/or beverages that you listed that you don’t want your child to eat or drink when you are around. What is it about the food or drink that makes you feel that way? What do you say or do so your child won’t eat or drink these foods or beverages?

What about [SSBs, salty snacks, sweets, fruits and vegetables]. Are these foods that you prefer or do not prefer your child to eat or drink when you are around? Tell me more about that.

You mentioned that you....[whatever the parent said they do or say to influence what their child eats or drinks]. How does [child’s name] respond?

- Probe: What works and does not work?
- Probe: What makes it hard to get [child’s name] to eat the foods you want them to eat when you are around? What makes it easy?
- Probe: What makes it hard to keep your child from eating things you don’t want them to have when you are around? What makes it easy?
Are you concerned about your child’s weight? If concerned, then:
  * How concerned are you?
Tell me more about how you address your concerns.

**QUALTRICS SURVEY LINK**

After the interview, have parents complete the Qualtrics survey using the online link or hard-copy (if your site prefers this method).

https://byu.az1.qualtrics.com/SE/?SID=SV_6xJArBeZLOTusLj

**During data collection, document the following items:**

<table>
<thead>
<tr>
<th>Question</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>How long did the interview take?</td>
<td>Minutes</td>
</tr>
<tr>
<td>How long did it take subjects to complete the survey?</td>
<td>Minutes</td>
</tr>
<tr>
<td>Were any of the interview questions hard for the subjects to understand?</td>
<td>If yes, which questions?</td>
</tr>
<tr>
<td>For example: Did they ask for clarification on any of the questions?</td>
<td></td>
</tr>
<tr>
<td>Were they unsure how to answer the question?</td>
<td></td>
</tr>
<tr>
<td>Did they give a confused facial expression?</td>
<td></td>
</tr>
</tbody>
</table>
Parent Survey (Qualtrics Link: https://umn.qualtrics.com/SE/?SID=SV_bg5BNn3dp2yM2G1)

Q1.1 This first section will ask you questions about food items you have had in your home in the past 7 days. (Source: Fulkerson, 2008)

Q1.2 In the past 7 days, have you had the following food items in your home?

<table>
<thead>
<tr>
<th>Item</th>
<th>Yes (3)</th>
<th>No (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ready-to-eat cereals (42)</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>Granola bar or cereal bar (40)</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>Snack crackers (32)</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>Potato chips (33)</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>Corn chips or tortilla chips (34)</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>Cheese curls or puffs (35)</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>Bagel chips (36)</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>Pretzels (37)</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>Popcorn (38)</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>Nuts (peanuts, cashews or other nuts) (39)</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>Sports bar or supplement bar (41)</td>
<td>☑</td>
<td>☑</td>
</tr>
</tbody>
</table>

Q1.3 In the past 7 days, have you had the following food items in your home?

<table>
<thead>
<tr>
<th>Item</th>
<th>Yes (3)</th>
<th>No (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lunchmeat, hot dogs, corn dogs (21)</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>Bread (22)</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>Tortillas (23)</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>English muffins, bagels (24)</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>Pita bread (25)</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>Cookies (any flavor or variety) (26)</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>Cake/cupcakes (any flavor or variety) (27)</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>Muffins (any flavor or variety) (28)</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>Brownies, bars (any variety) (29)</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>Pastries, sweet rolls, donuts (30)</td>
<td>☑</td>
<td>☑</td>
</tr>
<tr>
<td>Other snack cakes (31)</td>
<td>☑</td>
<td>☑</td>
</tr>
</tbody>
</table>
Q1.4 In the past 7 days, have you had the following food items in your home?

<table>
<thead>
<tr>
<th>Food Item</th>
<th>Yes (3)</th>
<th>No (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milk (all types and flavors)</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Yogurt or yogurt drinks (2)</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Cheese (3)</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Fresh, ready-to-eat vegetables (4)</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Frozen vegetables (5)</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Canned vegetables (6)</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Fresh, ready-to-eat fruits (7)</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Frozen fruits (8)</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Dried fruits (example, raisins) (9)</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Canned fruits (10)</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

Q1.5 In the past 7 days, have you had the following food items in your home?

<table>
<thead>
<tr>
<th>Food Item</th>
<th>Yes (3)</th>
<th>No (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frozen dairy treats (ice cream, ice cream bars, frozen yogurt) (11)</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Popsicles or frozen juice bars (12)</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Pizza, pizza rolls (13)</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Hot Pockets (14)</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Burritos or other Mexican snacks (15)</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Chicken nuggets (16)</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>French fries or tator tots (17)</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Egg rolls (18)</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Ramen noodles (19)</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Macaroni and cheese (20)</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
Q1.6 In the past 7 days, have you had the following food items in your home?

<table>
<thead>
<tr>
<th>Food Item</th>
<th>Yes (3)</th>
<th>No (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regular soda pop (any variety or flavor) (43)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diet soda pop (any variety or flavor) (44)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Iced tea or lemonade (45)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sports drink (example, Gatorade (46)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>100% fruit juice (labeled as 100% juice) (47)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fruit drinks (example, Capri Sun, Tampico, Kool Aid) (48)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bottled water (49)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Energy drinks (example, Rockstar, Red Bull, Monster) (50)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Q1.7 During the past 7 days, how many times did all, or most of your family living in your house eat a meal together? [Source: D. Neumark-Sztainer, P. Hannan, M. Story, J. Croll, C. Perry. Family meal patterns: Associations with socio-demographic characteristics and improved dietary intake among adolescents J Am Diet Assoc, 103 (2003), pp. 317–322]

- Never
- 1 or 2 times
- 3 or 4 times
- 5 or 6 times
- 7 times
- More than 7 times

Q1.8 This next section asks you a series of questions about you and your 10-13 year-old child.
If you have more than one 10-13 year old child, please answer these questions about the child participating in this study.
Q1.9 How often would you say your child is successful at each of the following when you are not around? [Source: Succeeders vs. Strivers. Kapsak, 2013. J Acad Nutr Diet – Adapted]

| Limiting sweet and salty snack foods such as potato chips, candy, ice cream, cake or pastries (1) | Never | Rarely | Sometimes | Mostly | Always |
| Limiting sugary drinks such as soda, fruit drinks, sports drinks, energy drinks (2) | ☒ | ☒ | ☒ | ☒ | ☒ |
| Choosing foods from all food groups that are good for them and lower in calories such as fruits and vegetables, whole grains, lean meats and low-fat dairy (3) | ☒ | ☒ | ☒ | ☒ | ☒ |
| Limiting how much they eat at meals and snacks (4) | ☒ | ☒ | ☒ | ☒ | ☒ |
Q1.10 Please mark how true or untrue each of the following statements is about your child. Your son or daughter: (Source: Impulsivity Scale (Elis Rothbart, 2001))

<table>
<thead>
<tr>
<th>Statement</th>
<th>Almost always untrue (1)</th>
<th>Usually untrue (2)</th>
<th>Sometimes true/sometimes untrue (3)</th>
<th>Usually true (4)</th>
<th>Almost always true (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has a hard time waiting his/her turn to speak when excited. (1)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Opens presents before s/he is supposed to. (2)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Is more likely to do something s/he shouldn't do the more s/he tries to stop her/himself. (3)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Is able to stop him/herself from laughing at inappropriate times. (4)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Is usually able to stick with his/her plans and goals. (5)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

Q1.11 Please mark your level of concern for each of the following questions. (Source: Birch et al, 2001. Appetite – not modified; Factor: Concern About Child Weight)

<table>
<thead>
<tr>
<th>Question</th>
<th>Not Concerned (1)</th>
<th>A Little Concerned (2)</th>
<th>Fairly Concerned (3)</th>
<th>Very Concerned (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>How concerned are you about your child eating too much when you aren't around? (1)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>How concerned are you about your child having to diet to maintain a desirable weight? (2)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>How concerned are you about your child becoming overweight? (3)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
Q1.12 Please mark how much you do each of the following things. *(Source: Birch, 2001. Appetite – modified; Monitoring)*

<table>
<thead>
<tr>
<th></th>
<th>Never (1)</th>
<th>Rarely (2)</th>
<th>Sometimes (3)</th>
<th>Mostly (4)</th>
<th>Always (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>How much do you keep track* of the sweets (candy, ice cream, cake pastries) that your child eats? (1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How much do you keep track of the snack foods (e.g., potato chips, Doritos, cheese puffs) that your child eats? (4)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How much do you keep track of the high-fat foods that your child eats? (2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How much do you keep track of the fruits and vegetables your child eats? (3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How much do you keep track of the milk or foods with calcium, like cheese and yogurt, your child consumes? (5)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How much do you keep track of foods labeled as whole grain that your child eats? (6)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*(If respondent asks what “keep track” means say - pay attention, aware of)*
Q1.13 Please mark how much you agree or disagree with the following statements. *(Source: Birch, 2001. Appetite; Anderson, 2005. Prev Med.–modified; Factor: Restriction)*

<table>
<thead>
<tr>
<th>Statement</th>
<th>Disagree (1)</th>
<th>Slightly Disagree (2)</th>
<th>Neutral (3)</th>
<th>Slightly Agree (4)</th>
<th>Agree (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I like to be sure that my child does not eat too many sweets (candy, ice cream, cake or pastries). (1)</td>
<td>生态圈</td>
<td>生态圈</td>
<td>生态圈</td>
<td>生态圈</td>
<td>生态圈</td>
</tr>
<tr>
<td>I like to be sure that my child does not eat too many high-fat foods. (2)</td>
<td>生态圈</td>
<td>生态圈</td>
<td>生态圈</td>
<td>生态圈</td>
<td>生态圈</td>
</tr>
<tr>
<td>I like to be sure that my child does not eat too much of her/his favorite food. (3)</td>
<td>生态圈</td>
<td>生态圈</td>
<td>生态圈</td>
<td>生态圈</td>
<td>生态圈</td>
</tr>
<tr>
<td>I intentionally keep some foods out of my child’s reach. (4)</td>
<td>生态圈</td>
<td>生态圈</td>
<td>生态圈</td>
<td>生态圈</td>
<td>生态圈</td>
</tr>
<tr>
<td>If I did not guide or regulate my child's eating, she/he would eat too many junk foods. (5)</td>
<td>生态圈</td>
<td>生态圈</td>
<td>生态圈</td>
<td>生态圈</td>
<td>生态圈</td>
</tr>
</tbody>
</table>

Q1.14 Please mark how much you agree or disagree with the following statements. *(Source: Parental Modeling of Eating Behaviours Scale (PARM) – Palfreyman, 2014.)*
<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree (4)</th>
<th>Disagree (5)</th>
<th>Neutral (6)</th>
<th>Agree (7)</th>
<th>Strongly Agree (8)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I make comments on my eating behaviors/food choices when I am with my child (e.g. 'I'll be healthy and have vegetables'). (1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I try to influence my child's food preferences by verbally stating my own (e.g. 'I love carrots, they're one of my favorites'). (2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I verbally encourage my child to copy my eating behaviors. (3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I tend to talk more often about foods I would like my child to eat. (4)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I try to talk more often about foods I would like my child to eat. (5)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I explain my food choices verbally to my child (e.g. 'I think I'm going to have some fruit with my pudding as I like it and it's good for me'). (6)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My child has picked up eating behaviors from me which I have not intentionally encouraged him/her to adopt (e.g. having tomato sauce with most meals, or eating vegetables first). (7)</td>
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<tr>
<td>My child has picked up eating behaviors from me which I had tried to hide from him/her (e.g. avoiding certain foods). (8)</td>
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<tr>
<td>My child has adopted eating behaviors from me which I did not previously realize I did (e.g. eating certain foods first). (9)</td>
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<tr>
<td>If I intentionally emphasize certain eating behaviors/food preferences, my child is more likely to copy them. (10)</td>
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<tr>
<td>When I show my child I enjoy fruits and vegetables, he/she tries them. (11)</td>
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<tr>
<td>The eating behaviors of other family members influence what my child eats. (12)</td>
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<tr>
<td>My child is more likely to try or eat</td>
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</tbody>
</table>
new foods if I eat the new foods with him/her. (13)  
My child is more likely to try new foods he/she has seen me eating. (14)  
My child asks to try foods from my plate which he/she sees me eating. (15)

<table>
<thead>
<tr>
<th>Q1.15 Please answer the following question about you and your child. (Source: Birch et al, 2001. Appetite – modified)</th>
</tr>
</thead>
<tbody>
<tr>
<td>At present do you think you are... (1)</td>
</tr>
<tr>
<td>Your child now is... (2)</td>
</tr>
<tr>
<td>Noticeably Underweight (1)</td>
</tr>
<tr>
<td>☐</td>
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<tr>
<td>☐</td>
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<td>☐</td>
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<td>☐</td>
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</tbody>
</table>

Q1.16 During your childhood, were you ever overweight? (Source: Birch et al, 2001. Appetite – modified)  
☐ Yes (1)  
☐ No (2)  

Q1.17 During your childhood, were you ever underweight? (Source: Birch et al, 2001. Appetite – modified)  
☐ Yes (1)  
☐ No (2)  

Q2.1 In which state do you currently reside?  
{drop down list}  

Q2.2 What is the current date?  

Q2.3 What is the age of the child in this study?  
☐ 10 years (1)  
☐ 11 years (2)  
☐ 12 years (3)  
☐ 13 years (4)
Q2.4 Is this child a boy or girl?
- Boy (1)
- Girl (2)

Q2.5 Is this child Hispanic/Latino?
- Yes (1)
- No (2)

Q2.6 What is this child’s race?
- White/Caucasian (1)
- African American (2)
- Asian (3)
- Native American (4)
- Pacific Islander (5)
- Other (6) ____________________

Q2.7 What is your relationship to the child in this study?
- Parent (includes step parent or foster parent) (1)
- Grandparent (2)
- Aunt or uncle (3)
- Sibling (4)
- Other, please specify (5) ____________________

Q2.8 How old are you?
- 18-25 (3)
- 26-34 (4)
- 35-54 (5)
- 55-64 (6)
- 65 or over (7)

Q2.9 What is your gender?
- Male (1)
- Female (2)

Q2.10 What is your highest level of formal education?
- Have not completed high school (1)
- Received high school diploma or GED (2)
- Some college or technical school (3)
- 4-year college, university degree or advanced degree (4)
Q2.11 Which of the following best describes your employment status? (Mark only one)
○ Student (1)
○ Homemaker (2)
○ Not employed (3)
○ Employed part-time (4)
○ Employed full-time (5)
○ Retired (6)

Q2.12 What is your annual household income range?
○ Below $25,000 (4)
○ $25,000 - $44,999 (5)
○ $45,000 - $64,999 (6)
○ $65,000 - $84,999 (7)
○ $85,000 or more (8)
○ Prefer not to answer (9)

Q2.13 Are you Hispanic/Latino?
○ Yes (7)
○ No (8)

Q2.14 What is your race?
○ White/Caucasian (1)
○ African American (2)
○ Asian (4)
○ Native American (5)
○ Pacific Islander (6)
○ Other (7) ____________________

Q2.15 Please indicate your marital status:
○ Single (1)
○ Married (2)
○ Separated (3)
○ Divorced (4)
○ Widowed (5)
○ Never Married (6)
Q2.16 How many adults, counting yourself, over the age of 18 live in your home?
- 1 (1)
- 2 (2)
- 3 (3)
- 4 (4)
- 5+ (5)

Q2.17 How many children (under the age of 18) are currently living in your house?
- 0 (1)
- 1 (2)
- 2 (3)
- 3 (4)
- 4 (5)
- 5+ (6)

Q2.18 Please indicate if the following statement was often true, sometimes true or never true for your household over the past 12 months: (Hager et al, 2010)
We worried whether our food would run out before we got money to buy more.
- Often true (1)
- Sometimes true (2)
- Never true (3)
- Don’t know or prefer not to answer (4)

Q2.19 Please indicate if the following statement was often true, sometimes true or never true for your household over the past 12 months: (Hager et al, 2010)
The food that we bought just didn’t last, and we didn’t have money to get more.
- Often true (4)
- Sometimes true (5)
- Never true (6)
- Don’t know or prefer not to answer (8)
Q2.20 Which of the following best describes your family?
- I was not born in the United States (U.S) (1)
- I was born in the U.S and at least one of my parents was not born in the U.S (2)
- My parents and I were born in the U.S and at least one of my grandparents was not born in the U.S (3)
- My parents, all my grandparents, and I were born in the U.S (4)

Q2.21 What language do you speak at home?
- I don't speak English at home (1)
- I speak only English at home (2)
- I speak English and other language each about the same amount at home (3)
- I speak another language more than English at home (4)
- I speak more English than other language at home (5)

Q2.22 How long have you lived in the U.S.?
- Less than 1 year (1)
- 1-3 years (2)
- 4-6 years (3)
- 7-10 years (4)
- More than 10 years (5)

Q2.23 Are you or your family members participating in the following programs? (Mark all that apply)
- WIC (Women, Infants, and Children Special Supplemental Nutrition Program) (1)
- Food Stamps/EBT/SNAP (2)
- Free/reduced priced school lunch (3)
- None (4)
- Prefer not to answer (5)
Q2.24 Which of the following nutrition classes have you attended? (Mark all that apply)
- SNAP - Education (formerly called Food Stamps) (2)
- EFNEP - Expanded Food and Nutrition Education Program (3)
- WIC (4)
- Cooking Matters (5)
- Extension, community education or school nutrition course (6)
- Any other nutrition class (7)
- Have not attended any nutrition classes (8)

Q2.25 Overall, how easy or hard was the survey to complete?
- Very easy (1)
- Easy (2)
- Somewhat easy (3)
- Neutral (4)
- Somewhat hard (5)
- Hard (6)
- Very hard (7)

Q2.26 Overall, how easy or hard was the one-on-one interview to complete?
- Very easy (1)
- Easy (2)
- Somewhat easy (3)
- Neutral (4)
- Somewhat hard (5)
- Hard (6)
- Very hard (7)

Q2.27 What is your opinion about the length of time it took you to complete the online survey?
- Extremely too long (1)
- Too long (2)
- Just about right (3)
- Too short (4)
- Extremely too short (5)
Q2.28 What is your opinion about the length of time it took to complete the one-on-one interview?
- Extremely too long (1)
- Too long (2)
- Just about right (3)
- Too short (4)
- Extremely too short (5)

Q2.29 Please share any additional comments you have about the survey or one-on-one interview.
Appendix D: Anthropometry Instructions and Recording Form

Protocol for Measuring Waist Circumference

All participants (parents and children) will give consent/assent prior to measuring waist circumference (see consent and assent forms).

Position the participant with feet shoulder width apart and arms crossed over the chest in a relaxed manner. Take a position to the right side of the participant’s body.

Using the NIH protocol, the waist circumference measurement should be **taken at the top of the iliac crest**.

Ask if it is okay to feel the participant’s hip to locate the top of their hip bone. If they agree, then you will find this landmark.

Do this by gently pushing on the upper right hipbone of the client until you locate the uppermost lateral border of the iliac crest.

Position the tape directly around the abdomen so that the inferior edge of the tape is at the level of the landmarked point.

Use a cross-handed technique to bring the zero line of the tape in line with the measuring aspect of the tape.

Ensure that the measuring tape is positioned in a **horizontal plane** around the abdomen.

Apply tension to the tape to ensure it is snug, **without causing indentation** to the skin or shirt.

At the end of a normal expiration, take the measurement **to the nearest 0.1cm**.

**These measurements for children will be done in the presence of their parent/guardian.**
USDA W3003 Multistate Study

Biometric Measurement Form

Directions: Ask participants to remove shoes, sweaters, heavy outer clothing, and items from their pockets before measurements. Please fill in all of the requested information below.

Sex:  □ Male  □ Female  Participant’s name: __________________________

WEIGHT (in kg, not pounds):

1ST Measurement
2ND Measurement
Absolute Difference (Subtract lower reading from higher)

If difference is more than 0.1 kg, take a 3rd measurement

3rd Measurement

HEIGHT (in cm, NOT inches):

1ST Measurement
2ND Measurement
Absolute Difference (Subtract lower reading from higher)

If difference is more than 0.5 cm, take a 3rd measurement

3rd Measurement
**WAIST CIRCUMFERENCE (in cm, NOT inches)**

<table>
<thead>
<tr>
<th>1&lt;sup&gt;ST&lt;/sup&gt; Measurement</th>
<th>2&lt;sup&gt;ND&lt;/sup&gt; Measurement</th>
<th>Absolute Difference</th>
<th>3&lt;sup&gt;rd&lt;/sup&gt; Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</tbody>
</table>

If difference is more than **1.0cm**, take a 3<sup>rd</sup> reading.

Please indicate any concerns about these measurements by checking the appropriate box(es) below:

<table>
<thead>
<tr>
<th>Weight: Wearing bulky or heavy clothing or a cast/splint</th>
<th>Height: Interfering hairstyle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waist: Wearing baggy shirt, hard to measure</td>
<td>Weight: Wearing short sleeved shirt</td>
</tr>
<tr>
<td>Height and weight: Refused to remove shoes</td>
<td>Other notes:</td>
</tr>
</tbody>
</table>
Appendix E: Code Structure

Where do independent eating occasions occur?

- With grandparent/great aunt
- With friends – sleepovers, play dates, after school
- After school
  - 1-2x/wk
- Weekends
- Rest of the family out
- School lunch/at school
- Morning
- Evening

What practices do parents use to influence their children’s eating behaviors at independent eating occasions?

- Monitoring intake
  - Availability of food at home
    - Top shelf of pantry
    - Hide certain foods
    - Frequency – always, common, occasionally, never
    - Not at home, child can get on their own
  - Provide food/supplements for child
    - Pack child’s school lunch
    - Make sure it’s healthy/balanced
    - Prepare breakfast
  - Set limits/expectations
    - Rules – what to pack
    - Designate foods for other occasions

- Mentoring
  - Conversation about physical effects – diet/health link
    - “scare” tactics – diabetes, obesity...
  - Awareness about what is available
  - Cost of food
  - Ask
    - Quality vs. quantity
    - Actually consuming what was purchased or provided
  - List foods
    - Quality vs. quantity
  - Reminders
    - Pictures on fridge with other choices
- Awareness of what is available
- What has been prepared in the past
- What child can prepare on his or her own
  - Phone calls when child is home alone
  - Conversation with grandparents – “mentoring” them about expectations
  - Media – films
- Role modeling
  - Habits formed when parents are around