The Impact of Parent Education on Parental Feeding Practices

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The Impact of Parent Education on Parental Feeding Practices
The Impact of Parent Education on Parental Feeding Practices

A thesis submitted in partial fulfillment of the requirements for the degree of Master of Science in Human Environmental Sciences

by

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ABSTRACT

This research looked at the potential impact that parent education may have on the feeding practices of parents of young children. Since eating behaviors are a national concern for both children and adults, it's important to examine how we can create not just healthier children but, as a result, healthier adults. This study utilized an intervention that was an adapted version of a healthy eating curriculum created by Sesame Workshop and the California WIC association with the intention of improving parental feeding practices through a behavior-based approach. Previous research with this curriculum has addressed only low-income populations, with a relatively long-term (6 months) intervention. The current study examined the effects of a relatively short-term (one month) intervention on the feeding behaviors of a middle-class, highly educated sample. This intervention implemented in this study was found to significantly increase positive parental feeding practices -- specifically, parental involvement in encouraging balanced and varied diets for children, creating healthy environments and access to healthy foods, and behaviors supportive of child control. This intervention also led to an increased variety of fruits consumed as well as an increased consumption of fresh fruits and vegetables by the families involved.
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To Kevin Rucker I extend my sincere gratitude for acting as the sounding board for my ideas. I also acknowledge my parents who have taught me what it means to be truly passionate and have consistently supported all that I've dreamed to accomplish.
DEDICATION

This thesis is dedicated to my grandfather, Omer Brawley, who has stood with fervent support in my corner from the beginning. Through his hard work and perseverance I've learned that anything can be achieved. For always believing in me, regardless of my accomplishments, I dedicate my hard work over the last two years to you.
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I. INTRODUCTION

A. STATEMENT OF THE PROBLEM

Eating behaviors have become a national concern in the United States as the population has become increasingly aware of the impact eating behaviors have on overall health (Wang & Beydoun, 2007). It is an especially great concern for parents, as appropriate eating behaviors are imperative for the positive development of young children (Rosales, Reznick, & Ziesel, 2009; Wardle, 1995). A relationship has been found between parent interaction in regard to food and the weight of the child involved (Skouteris et al., 2012). In 2009-2010, 32% of the children in the United States were overweight and 17% were obese (Ogden, Carrol, Kit, & Flegal, 2012). The number of overweight preschool-aged children has doubled since the 1980s, which is likely due to increased engagement in sedentary behaviors, overconsumption of unhealthy foods, and lack of essential nutrients supplied from healthy food choices (McCurdy & Gorman, 2010; Nicklas & Hayes, 2008). In 2007 to 2008, 12% of children, aged 2-19 years, were at or above the 97th percentile for Body Mass Index (BMI) and 17% were at or above the 95th percentile (Ogden, Carroll, Curtin, Lamb, & Flegal, 2010).

Healthy People 2020 (U.S. Department of Health, n.d.) identified diet as one of the key factors that contributed to overall health, because diet not only has the potential to reduce the risk for many chronic illnesses; but it also has the potential to increase lifespan and improve the quality of life. Nutrition greatly impacts children as their bodies develop rapidly; without the necessary nutrients, children are likely to have an increased risk for many chronic diseases, malnutrition, developmental delays, and even obesity (U.S. Department of Health, n.d.). Children who are obese are likely to stay obese into adulthood which also puts them at risk for chronic diseases as adults (Deckelbaum & Williams, 2001; Ogden et al., 2010).
According to the Academy of Nutrition and Dietetics (AND), supporting parents in the creation of healthy eating environments is the key to increasing the health of children (Nicklas & Hayes, 2008). Parents have influence over their children to alter their behaviors and perceptions about food and also play a crucial role in increasing children’s healthy food consumption (Wardle, 1995). It is important that parental involvement be incorporated in programs, as parents need to be aware of healthy eating behaviors and feeding practices that support overall health. The AND has found an association between the feeding practices of parents during their children’s early years and their children’s eating behaviors in adolescence (Nicklas & Hayes, 2008).

Parents must be included in the process of improving the nutrition of young children. The feeding practices parents use are critical to understanding childhood nutrition. In order to improve childhood nutrition, parental feeding practices must first be addressed (Nicklas & Hayes, 2008). The parental feeding practices examined in this study have been previously studied and linked to various child outcomes. Certain parental feeding practices are associated with positive child outcomes. The practices that have been linked to healthy eating behaviors include: encouragement of a balanced and varied diet, healthy food environments, parental monitoring, and the support of child control. These behaviors are associated with various positive child outcomes, including optimal growth and development in children, increased consumption of healthy foods, and lower weight (Gable & Lutz, 2000; Klesges, Stein, Eck, Isbell, & Klesges, 1991; Marshall, Golley, & Hendrie, 2011; Nicklas & Hayes, 2008).

B. STATEMENT OF PURPOSE

The research aim of this study was to look at the impact of a parent education program on the feeding practices of parents. More specifically, the following hypotheses were investigated:
1) Parent engagement in behaviors associated with child control will increase after the intervention as compared with the control group.

2) Parent engagement in parental monitoring will increase after the intervention as compared with the control group.

3) Parent engagement in behaviors associated with balance and variety will increase after the intervention as compared with the control group.

4) Parent provision of healthy food environments will increase after the intervention as compared with the control group.

II. REVIEW OF THE LITERATURE

A. THEORETICAL PERSPECTIVE

Jean Piaget theorized that children in the preoperational stage of development, between the ages of 2 and 7, could not fully understand abstract concepts as they are still developing the ability to reason in a logical and systematic manner (Piaget, 1952). With regard to eating behaviors, children in this age group are egocentric and focused on wants and needs that they are aware of and can feel rather than those that are abstract, such as their bodies’ need for protein, calcium, and other nutrients. While young children are sometimes able to reiterate nutrition knowledge, it is unlikely that they would be able to apply such knowledge to their eating behaviors. Therefore it is important that parents are aware of healthy eating behaviors and use such knowledge in the feeding practices that they engage in with their children. Piaget believed that preoperational age children were able to classify utilizing only one characteristic. Past research has shown that children ages 4 and above can categorize healthy and unhealthy foods (Nguyen, 2007). However, Piaget didn't address young children's imprecise thought processes. Wellman and Johnson (1982) found that while 5-to 6-year old children were able to classify
foods as healthy or unhealthy, they still had certain misconceptions, such as believing that all foods were equal regarding their impact on height and weight.

The role that parents play in creating a positive food environment for their children is emphasized more in Lev Vygotsky’s theory of socio-cultural development. Vygotsky’s theory suggests that someone who has more knowledge in a domain can work with the child to scaffold the child’s learning (Vygotsky, 1978). Vygotsky uses two concepts to form the basis of his theory, the zone of proximal development and scaffolding. The zone of proximal development is the difference between what a child can do by himself and what he can do with help. Applying this concept to healthy eating behaviors, on their own most young children would choose the food that tastes better based on their past familiarity with the food; however, with guidance, children have the opportunity to learn to engage in healthy eating behaviors. Scaffolding is the guidance and encouragement given by the adult to help the child accomplish a task that she would not be able to do independently. Adults scaffold the child’s healthy eating by selecting healthy foods to make available for the child to eat and by encouraging the child in appropriate ways.

One way adults can guide children to engage in healthy eating behaviors is through modeling. Social Learning Theory (Bandura, 1977) specifies that children learn in a social context and that parents are essential as children learn through observation and imitation of others. The Health Belief Model (Rosenstock, Strecher, & Becker, 1988), which applied Bandura’s ideas to the state of health, provided the theoretical basis for the parent intervention in this study. This theory states that there are three components to improve health: the existence of a health concern, susceptibility to such a concern, and the reduction of the risk for the concern. The health concern that existed for this study was poor nutrition during early childhood. The
susceptibility to this concern was that children are unaware of and possibly unable to comprehend the concepts involved in healthy eating, as well as lack of parent knowledge regarding appropriate healthy feeding practices. This risk of susceptibility may be reduced when parents know how to create healthy food environments and engage in feeding practices that support and foster healthy eating behaviors. There is a health motive that exists which weighs the reward of addressing a health concern (the potential to increase lifelong health) against the cost of not addressing it (the potential to increase the susceptibility).

Family Systems Theory (Bowen, 1966) further supports parents as the target audience for an intervention to improve young children's health. This theory assumes that families function as a system and what affects one member of the family will affect the whole family. Thus, to impact children's eating behaviors, parents must also be addressed. If one family member experiences change it is assumed that other members will adapt to such change.

B. CHILD FACTORS

Cognitive development of young children. Young children are not cognitively advanced enough to understand the abstract concepts underlying healthy eating behaviors (Piaget, 1952). Children who are not yet able to grasp abstract concepts cannot understand how a body utilizes the nutrients from food and therefore, why it's important to engage in healthy eating behaviors (Contento et al., 1995; Wardle, 1995). It is unlikely that young children have the cognitive capacity to understand why consuming a healthy diet is important nor do they have the resources or problem solving abilities to choose such a diet for themselves.

Past research has shown that children are capable of understanding health concepts but not necessarily adept at applying such knowledge. Nguyen, McCullough, and Noble (2011) found children's ability to give explanations for choosing a healthy food to increase after
participating in a program that provided them with health-related information. The children in this study were successfully able to take the new knowledge gained and use it to explain healthy behaviors: however, other studies have looked into the details of said explanations. Raman (2011) found that young children were more focused on the quantity of food and its relation to physical growth, rather than the nutrient value of a food, likely because quantity is a concrete, observable characteristic of food. In Raman's study young children identified healthy eating as important to increasing their height and weight but did not understand that it played a role in the prevention of illness.

Other studies have found similar results with young children focused on healthy eating as key to physical growth (Slaughter and Ting, 2010; Wellman & Johnson, 1982). However, the age at which children begin to understand these abstract concepts is debated. Slaughter and Ting (2010) found that between ages 5 and 8 children started to relate healthy eating to more abstract benefits while Wellman and Johnson (1982) found that kindergarten children still associated quantity eaten with physical growth. In Wellman and Johnson's study, the children even reported that increased consumption of any food (specifically green beans, candy, or water) would lead to increased height and weight. They also found that children in this age group were aware that diets needed to be varied to be considered healthy, and that only consuming one healthy food would not constitute a healthy diet. This shows that preschool children are able to understand healthy diet concepts to some extent; however, their ability to fully grasp these concepts is limited by their inability to comprehend abstract concepts. This also makes it difficult for them to apply these learned concepts.

The classification of foods as healthy or unhealthy is another important concept in young children's cognitive understanding of health. Children under 3 years of age often demonstrated
difficulty in classifying foods as healthy or unhealthy and were less able than older children to give explanations for their classifications (Nguyen, 2007). Nguyen found this difficulty was due to an inability to differentiate between healthy foods that might have unhealthy characteristics, such as french fries. However, two studies have found that after 4 years of age children were more successful at classifying foods into groups as well as providing explanations for their classification methods (Nguyen, 2007; Nguyen, 2008). Specifically, children were able to think about a food in two different contexts, for example, cake is an unhealthy food but it can be enjoyed at birthday parties. As young children age their ability to think about food and its health properties increases; however, it is still unlikely that they would be able to choose healthy diets independently until they are able to fully consider abstract concepts.

**Taste preference during infancy.** The cognitive development associated with maturation is one biological factors that comes into play when considering young children's healthy eating behaviors, another is taste preference. Preferences for food are determined through environmental factors as well as through genetic disposition (Benton, 2004). Infants are born with a preference for sweet-tasting substances, making it unlikely that they will develop a preference for vegetables early in life (Contento et al., 1995). Some children are more willing to taste sour foods than others, just as some children are more hesitant of foods than others; Benton identifies this as partially due to genetics. Taste preference may start long before infants are offered their first taste of solid foods, but children's genetic predispositions for various tastes are further expanded on through experience with different texture and flavors throughout life (Scaglioni, Salvioni, & Galimberti, 2008).

Taste preferences develop throughout life, starting in pregnancy. Infants gain exposure to foods through amniotic fluid during pregnancy as well as through breast milk during infancy
Particularly, breast milk transmits certain flavors of foods (Mennella, Lukasewycz, Castor, & Beauchamp, 2011). Mennella et al. found that when mothers consume a given food, infants are more likely to develop a preference for that food.

While infants may have already developed taste preferences earlier than age 6 months, it is not until this time that infants are usually developmentally ready for the introduction of solid foods (Schwartz, Scholtens, Lalanne, Weenen, & Nicklaus, 2011). The timing of this introduction as well as the consideration of the foods served to infants can be critical in their development of healthy eating behaviors and can continue to impact their taste preferences during childhood (Nicklaus, 2011; Schwartz et al., 2011). These researchers have also found that exposure to various sensory properties of foods is critical in this introduction. Further, familiarity with different foods is important in the development of healthy eating behaviors (Aldridge, Dovey, & Halford, 2009). Aldridge et al. labeled three components of familiarity -- visual, taste, and contextual -- as important in the development of eating behaviors. This familiarity with foods can begin early in life. While there are a number of factors that can impact infants during their introduction to solids, past research has found that mothers often attend to their infants’ cues in determining when their infants are ready for solid foods and what to feed them (Caton, Alhern, & Hetherington, 2011).

Finally, Schwartz et al. (2011) found that encouraging children's self-regulation and self-feeding skills during infancy is critical as well. If infants are supported in their self-regulation and self-feeding they will be more competent at such skills throughout childhood.

**Developmental issues.** Taste preferences are critical during infancy; however they are just as critical during the toddler and preschool years. While taste preferences may already have developed during utero and infancy, the toddler and preschool years are a time when children
begin selecting foods for themselves. It is known that the habits that children develop early in life have the potential to influence their behaviors into adulthood (Ogden et al., 2010). Therefore, the toddler and preschool years become a critical time period in children's development of healthy eating behaviors that, if fostered, will continue with them throughout life.

During the toddler and preschool years there are many challenges parents may face in regard to food. Food neophobia, or the fear of new foods, is a developmentally appropriate behavior that usually develops around age 2 (Benton, 2004). Benton identifies continued exposure to new foods, especially those that they do not like, as essential in helping children to overcome their food neophobia. While exposure to actual foods is the most beneficial, a study by Heath, Houston-Price, and Kennedy (2011) found that when children were exposed to pictures of food through books they became more willing to taste those foods. This finding suggests that increasing children's exposure to food throughout their day in a variety of ways may increase their willingness to try new foods.

Feeding difficulties are a common challenge for parents of this age group. Children between the ages of 2 and 5 years have more parent-reported feeding difficulties as compared to later childhood (Sanders, Patel, Le Grice, & Shepard, 1993). Sanders et al. explored the relationship between feeding difficulties and disruptive behaviors during mealtimes and found that toddler and preschool aged children who demonstrated food refusal at mealtimes often engaged in noncompliant behaviors during the same mealtime. This led to increased levels of parental stress and more difficulty in relation to food, resulting in increased pressure from the parent. Parental pressure to consume a food was directly linked to child resistance to consume the same food. These results reflect typical behaviors during the toddler years, such as being less
inclined to try new foods and less understanding of socially acceptable behavior. Sanders et al. found that as children age their ability to feed themselves and communicate often leads to a natural transition to more child control. This supports the idea that parental interaction with a child in relation to food may be different as a result of the child's development and thus their eating behaviors. If children are encouraged to consume healthier options during early childhood this may increase the likelihood that they will consume healthier options throughout childhood and into adulthood (Ogden et al., 2010).

While feeding difficulties decline as children age, the obesity rate increases. Children between 6 and 11 years have higher obesity rates than 2 to 5 year olds (Nicklas & Hayes, 2008). Even between 2 and 5 years children become more likely to consume more calories from foods that are less healthful (Wilson, 2000). Wilson looked at the impact of sweetened milk on overall calorie consumption for a meal and found that children who drank the higher caloric milk ate the same amount of food as the children who drank the milk with fewer calories, thus leaving the group that drank the higher calorie milk to consume more calories overall during the meal. As children aged this finding became more pronounced.

If children learn healthy eating behaviors during early childhood it is assumed, based on past research, that children will continue to engage in healthy eating behaviors throughout their childhood (Ogden et al., 2010). Therefore, targeting parents of children while they are learning to make healthy choices and develop healthy eating behaviors is essential in improving the health of children.

Gender. The relationship between gender and eating behaviors varies considerably through the research. For children under age 5, gender was not a significant factor influencing eating behaviors; however, it was shown to play a larger role as children aged (Gibson, Wardle,
& Watts, 1998; Ogden et al., 2010). According to Ogden et al. (2010), there were no significant differences between males and females in weight or BMI over the course of 1999 to 2008 for children under 5 years of age. Gibson et al. found similar results for children under 5, though males consumed more calories per day whereas females consumed more fats. For 6 to 9 year olds, however, Ogden et al. found significant gender differences in body weight to height relationships, with males having greater body weight for height than females.

Past research has examined eating behaviors during childhood for females. Moore, Bradlee, Gao, & Singer (2006) studied the effect of dairy intake on weight. Moore et al. found that girls between ages 3 and 6 consumed less than the recommended amount of dairy per day. Children who consumed less than the recommended amount of dairy during childhood were more likely to have more subcutaneous fat by adolescence as compared to their peers who consumed adequate dairy. A similar pattern was found for both genders, however, since girls consumed fewer servings of dairy than males between ages 3 and 6 they were more likely to have greater subcutaneous fat in adolescence.

Carper, Fisher, and Birch (2000) studied the link between parental pressure in relation to food and their daughter's eating behaviors. This study found a relationship between parental pressure to eat and their daughters’ perception of pressure which led to the child's engagement in poor eating behaviors, specifically the disregard of internal cues and increased attention to external cues. While little research has found direct effects of gender on eating behaviors during childhood, there may be an impact of child gender on parents’ feeding practices and, as a result, on the eating behaviors of their female children.
C. FAMILY CONTEXT

Children spend the majority of their time with their families; thus, the family context plays an important role in the development of eating behaviors. Parents, caregivers, and siblings all influence young children's behaviors. Young children are strongly influenced by the family context, making the family an ideal target in improving children's health behaviors (Hetherington, Cecil, Jackson, & Schwartz, 2011).

Past studies have found a relationship between the eating behaviors of older and younger siblings. De Leeuw, Snoek, Van Leeuwe, Van Strien, and Engels (2007) found that older siblings engaged in more positive eating behaviors as compared to younger siblings. Al-Shookri, Al-Shukaily, Hassan, Al-Sheraji, and Al-Tobi, 2011(2011) supported this result, finding that the presence of an older sibling increased the positive eating behaviors of a younger sibling. However, another study found that parents react to the differing needs and temperaments of each child and alter their feeding practices in response to the specific behaviors of each child (Webber, Cooke, & Wardle, 2010). This relationship between siblings and feeding practices is an area that could use substantially more research.

Although siblings are part of the family context that impacts young children's healthy eating behaviors, parents are likely to be the most important factor, as they provide the majority of the meals for the child. Parental feeding practices are a crucial component in children’s nutrition, as appropriate and positive parental feeding practices lead to increased fruit and vegetable consumption by children, among other positive health-related behaviors (Gibson et al., 1998). Past research has shown a strong correlation between parent and child eating behaviors, preferences, and attitudes (Haire-Joshu et al., 2008; Wardle 1995; Yung, Lee, Ho, Keung, & Lee, 2010. Therefore, to improve children's healthy eating, parent behaviors must be addressed.
Behavior change is the ultimate goal for education about healthy eating, as behavior change is what can lead to a positive impact on health.

Two family factors that research has shown to be critical to the understanding of children’s healthy eating are the educational level of parents and the annual household income. Most studies have found a positive correlation between educational levels of parents and their knowledge of healthy eating behaviors (Al-Shookri et al., 2011; Gibson et al., 1998; Moore et al., 2006). In support of this concept, Wardle (1995) found that children’s diets are impacted by parental cognition levels. Similarly, Nasir et al. (2012) found a positive correlation between children's cognitive performance and household income. Nasir et al. found that children who had higher cognitive performance also had parents that perceived a greater sense of responsibility for their child's eating behaviors. As income rises it would be assumed that the likelihood of availability and access to healthy foods increases; however, Gable and Lutz (2000) did not find a significant relationship between income and the availability of fruits and vegetables in the household. Gable and Lutz did find that when fruits and vegetables were available in the household child consumption of less nutritious foods decreased. Therefore, it seems that access to fruits and vegetables may be a stronger predictor of healthy eating behaviors than income.

**Parental techniques that discourage healthy habits.** Parents have the ability to impact their children's eating behaviors both in a negative and positive manner. Many misconceptions about feeding practices exist in the United States that in fact have a detrimental impact on children's eating behaviors (Hodges, 2003).

There are many popular techniques, with both positive and negative outcomes, that parents use to encourage children to engage in healthy eating behaviors. Using rewards to
encourage children to eat a given food is one technique utilized; however, it is often unsuccessful at increasing the child’s preference for the food (Benton, 2004). Utilization of this technique increases negative feelings toward the food and creates a perpetual cycle of not eating the food without a reward. Similarly, using preferred foods to reward children for appropriate behaviors often encourages them to consume food when not hungry and to view the liked food as good, regardless of nutritional benefit (Peters, Sinn, Campbell, & Lynch, 2011). Parental control and pressure is a technique utilized by parents to encourage children to consume more; however, child weight is directly correlated with parental control and enforced pressure to consume (McPhie et al., 2011). Along with techniques that have negative impact, a negative emotional atmosphere during mealtimes is linked to a decrease in vegetable consumption by children (Vereecken, Rovner, & Maes, 2010). Children are strongly influenced by the mealtime environment, therefore it is important that parents engage in practices that encourage rather than discourage healthy habits.

**Child control.** Child control, as opposed to parental control, is the amount of power the child has over her mealtime experience. In a study by Benton (2004), children’s control over their own eating at mealtimes was associated with positive outcomes in terms of health. In addition, children who had control over how much food they consumed weighed less than children who did not have control. Vereecken et al. (2010) found that parents who engaged in more parental control at mealtimes had children who consumed fewer vegetables, whereas parents who engaged in more support of child control at mealtimes had children who consumed more vegetables.

Nicklas and Hayes (2008) concluded that the division of control should be shared between the parent and child with child in control over what and how much he will eat. Parents
should have control over what the child is served, since they are able to apply health related knowledge where young children are not. Child control allows the child an opportunity to self-regulate with regard to his eating behaviors and his body (Schwartz et al., 2011). By allowing children to choose what and how much to eat, parents are supporting their children's ability to recognize and respond to their internal cues.

Children have an innate ability to recognize their internal cues of hunger; however, the environment can have a negative or positive impact on their ability to do so (Nicklas & Hayes, 2008). Internal cues of hunger tell children when they are full and when to eat more (Orrell-Valente et al., 2007; Ramsay, Branen, Fletcher, Johnson, & Sigman-Grant, 2010). Ramsay et al. claims that there is an ongoing trend for parents to ignore children’s internal cues of hunger in an effort to encourage children to eat more healthy foods. Even though the foods may be healthy, this still sends a message to children to eat more food than their bodies may need. In Ramsay et al.’s study, adults encouraged children to ignore their internal cues of hunger by offering rewards to eat more, or by using pressure or control tactics. This may be done by encouraging children to clean their plates, through offering children dessert if they eat their dinner, or by taking away an incentive if they refuse to eat a given food. Encouraging children to ignore their internal cues of hunger in an effort to encourage them to eat more healthy food items can lead to detrimental food behaviors when they become adults (Hodges, 2003). These negative behaviors include decreased self-regulation in regard to food and disregard of internal cues (Carper et al., 2000).

**Monitoring.** Although parental attempts to control the amount that children eat can have negative results, it is still a parent’s role to make sure children are offered healthy food. One strategy for doing so is monitoring, or keeping track of the unhealthy foods consumed by children (Klesges et al., 1991. Golan and Weizman (2001) created a behavior-based family
intervention to decrease obesity in children. They identified parental monitoring as a key concept in increasing children's healthy behaviors and helped parents to understand effective ways to engage in parental monitoring. As a result, children experienced weight loss and increased their consumption of healthy foods.

Marshall et al. (2011) supported the idea that parents were a critical component in influencing the eating behaviors of young children, specifically in making sure that children eat primarily healthy foods. Increased parental monitoring has been correlated with less consumption of unhealthy foods and lower weight status of children (Klesges et al., 1991). Klesges et al. studied the effect of parental monitoring on children's food choices and found that when children knew parents were around they both chose healthier foods and consumed fewer unhealthy foods.

Parental perception of responsibility for monitoring their children's intake has been shown to be related to healthy eating behaviors in children (Hubbs-Tait, Kennedy, Page, Topham, & Harrist, 2008). Parents who are concerned about their children's weight are more likely to engage in monitoring behaviors (Moore, Harris, & Bradlyn, 2012). However, Moore et al. also found that an increased concern about a child's weight was correlated with parental pressure and unhealthy dieting. Parental monitoring was also identified as a key concept in increasing children's healthy behaviors in a study by Golan and Weizman (2001).

**Encouraging a healthy diet.** Along with results supporting monitoring, Klesges et al. (1991) supported the concept that young children are unlikely to make healthy food choices for themselves, but with the encouragement and support of adults they can learn to choose more balanced and healthy options. Nicklas & Hayes (2008) found that parental encouragement of a balanced and varied diet was associated with optimal growth and development in children. They
concluded that parents can encourage a healthy diet by supporting children in consumption of high nutrient foods, modeling positive eating behaviors, and providing a positive atmosphere during mealtimes.

Parent expectations are important in encouraging a healthy diet. Blissett (2011) found that parents who had reasonable expectations for their children's eating behaviors, coupled with emotional warmth and responsiveness to their children's needs, were more likely to have children that ate more fruits and vegetables than other children. Parents with high expectations of their children's eating behaviors had reasonable, developmentally appropriate expectations for how their children should be behaving. They expected their children to consume a healthy diet and accompanied these expectations by supportive parental practices, such as modeling and having fruits and vegetables available to the child.

While parents play an important role in encouraging children to engage in healthy eating behaviors children do not necessarily seek out such information. In a study by Nguyen (2012) it was found that children were averse to listen to their parents regarding the health value of a given food. While children were most likely to turn to their mother or teacher for advice regarding taste of food or basic information about a food, they did not seek out information about the healthiness of a given food.

Exposure to new foods is a critical technique for encouraging healthy eating behaviors, as children often need to be repeatedly exposed to foods before they will agree to eat them. This addresses the issue of food neophobia in young children. Through continued exposure to new foods, the food becomes less intimidating (Benton, 2004). The AND has indicated that children may need be exposed to new foods eight to ten times before they will consume them (Nicklas & Hayes, 2008). Therefore, an effective way to encourage children to consume a new food is
through continuing to serve the food to the child, in spite of the fact that the child may choose not to eat it.

**Family food environments.** The family food environment is a crucial component in the development of eating behaviors as children spend the majority of their time within the family context (Wardle, 1995; Gibson et al., 1998). Nicklas & Hayes (2008) found a relationship between the frequency of family meals eaten together and the child's diet. Similarly, McCurdy and Gorman (2010), found a positive correlation between food related self-regulation and the frequency of families eating meals together, with children in families who eat more meals together demonstrating higher self-regulation in regard to food. There were many negative factors that decreased this correlation however, with the largest factor being TV viewing during mealtimes.

The family also provides a context in which eating behaviors and attitudes develop. Positive mealtime environments are correlated with increased healthy food consumption by the child, and negative mealtime environments have been correlated with decreased healthy food consumption by the child (Benton, 2004). Benton also found that within the mealtime environment food preferences can be encouraged or discouraged. Positive food environments, those that include the availability of healthy foods, have been associated with healthier food consumption by children (Gable & Lutz, 2000). Vereecken et al. (2010) characterized positive environments as those with child choice and availability of healthy options.

Negative mealtime environments also can impact fruit and vegetable consumption. Vereecken et al. (2010) found that negative mealtime environments negatively influenced the consumption of vegetables. This negative environment was characterized by increased amounts
of pressure. Vereecken also found that when comparing fruits and vegetables, the meal time environment surrounding vegetables was often more negative than for fruits.

Hetherington et al. (2011) found that children who were exposed to healthy food environments during childhood were more likely to have healthy eating habits that lasted into adulthood. The AND states the eating environments during childhood are critical in the development of eating behaviors throughout life (Nicklas & Hayes, 2008). Availability of healthy foods is also critical to maintaining a healthy diet, because children that do not have healthy foods available do not have the opportunity to consume them or practice healthy eating behaviors associated with these foods.

D. PARENT EDUCATION PROGRAMS

Parent education programs have utilized many different methods to attempt behavior modification, with differing levels of success. The evidence regarding the effectiveness of parent education programs is contradictory. The most common finding was an increase in nutrition related knowledge with no behavior change (Blom-Hoffman, Wilcox, Dunn, Leff, & Power, 2008; Katz et al., 2011).

Blom-Hoffman et al. (2008) found that after an intervention, parental knowledge of nutritional messages and concepts increased; however, there was no significant difference in their fruit and vegetable consumption. This research shows that a gain in parental knowledge about best practices does not necessarily lead to behavior change for parents or children. A similar relationship was found by Katz et al. (2011), who implemented a nutrition program geared toward school age children and their parents. Nutrition knowledge increased for both children and parents; however, there were no significant changes in the consumption of fruits and vegetables. In this study parents were simply given take-home materials, rather than
receiving a focused educational program. Blom-Hoffman et al. took a unique approach and looked at the effectiveness of interactive books depicting healthy eating on children’s fruit and vegetable consumption. Both studies found significant gains in nutrition related knowledge; however, they did not find any significant behavioral increases in terms of a healthier diet.

Some studies have found significant behavior change in parent and child behavior after parents participated in the education programs (Haire-Joshu et al., 2008; Valenzuela et al., 2011). Haire-Joshu et al. found that a home based intervention was successful at significantly increasing the fruit and vegetable consumption of both parents and children, as well as increasing parent nutrition knowledge. However, this program was implemented in the home environment so only one family could be reached at a time, which is time consuming, expensive, and limiting to the number of parents that can be reached and impacted by this intervention. Valenzuela et al. studied the effectiveness of a program to increase physical activity and healthy diets. This program did lead to increased involvement in healthy behaviors. This may have been due to the level of involvement of the program. The program involved many hands-on components, such as preparing for a marathon. Those individuals that were serious about running in the marathon would have an incentive to engage in healthier behaviors to excel in the marathon.

Two studies that did show significant behavior change utilized the family as a means to create behavior modification. Epstein, Wing, Steranchak, Dickson, and Michelson (1980) compared the effects of a behavior based intervention and a nutrition knowledge-based intervention with mother-child duos. Both interventions were identical with the exception that the behavior modification intervention also utilized behavior prompts to support the information. It was found that children who were overweight and participated in the behavior modification intervention displayed significantly greater weight loss as compared to the knowledge based
intervention. The family context was found to be a significant way to improve the weight loss of children who were obese as well as to increase their consumption of healthy foods (Golan & Weizman, 2001). This intervention focused on improving parental knowledge and environmental change to support healthy behaviors. The study worked to increase parental behaviors supportive of positive health, including: the importance of parental monitoring, promoting communication between the parent-child duo, and modeling. The intervention also worked to help parents create environmental change which focused on behavioral changes that the family could make, such as scheduling or portioning meals. Programs that were successful at altering behaviors focused on specific behaviors to change, rather than focusing on solely increasing knowledge.

Most studies of parent education programs have utilized low-income families as their population. In these studies it was common to find a positive correlation between parental knowledge and the eating behaviors of their young children (Dickin, Lent, Lu, Sequeira, & Dollahite, &., 2012). There were no studies identified that provided a healthy eating education program solely for parents within the middle income population.

Ritchie, Whaley, Spector, Gomez, and Crawford (2010) offered a nutrition education program for Women, Infants, and Children (WIC) participants. Participants in WIC were exposed to the Healthy Habits Every Day Curriculum (California WIC Association, n.d.), modified from Sesame Workshop's Healthy Habits for Life Curriculum (2007), through group workshops and individual counseling. They found that, after the intervention, participants recognized most key nutritional messages more so than they had previously. Participants also reported consuming a greater variety of fruits after the intervention. An increase was also seen for vegetable intake, however this was not a significant increase. The current study adapted the
Healthy Habits for Life and WIC curricula to implement a parent education program with middle class parents of children between the ages of 18 months and 5 years.

E. HYPOTHESES

1) Parent engagement in behaviors associated with child control will increase after the intervention as compared with the control group.

2) Parent engagement in parental monitoring will increase after the intervention as compared with the control group.

3) Parent engagement in behaviors associated with balance and variety will increase after the intervention as compared with the control group.

4) Parent provision of healthy food environments will increase after the intervention as compared with the control group.

III. METHOD

This study utilized an experimental design to measure the effectiveness of a parent education program in changing parents' feeding practices with their young children. An intervention was created based on the Healthy Habits Everyday curriculum, adapted by the California WIC Association, and the Healthy Habits for Life curriculum, created by Sesame Workshop. Parents participated in two sessions that focused on parental monitoring, child control, healthy eating environments, and encouraging balanced and varied diets. A comparison of pre- and post-questionnaires for the intervention group versus a control group was used to determine the effectiveness of the program. This research was classified as Exempt by the Institutional Review Board of the University of Arkansas (see Appendix A for the IRB Approval).
A. SUBJECTS

The participants were 28 parents of children who attended the Jean Tyson Child Development Study Center (JTCDSC) between February and May of 2013 and were between the ages of 18 months and 5 years. A consent form and letter explaining the study were placed in the cubby of all children between 18 months and 5 years. The parent who cooks the majority of the meals for the child was asked to attend the meetings. The letter (see Appendix B) provided complete information about what the study would involve, and invited parents to participate. The letter also included a date and time for an introductory informational meeting. The consent form (see Appendix C) included a place for the participants to write what times they would be available to attend a workshop.

Forty consent forms were returned to the researcher. Four of these parents did not attend the informational meeting. The remaining 36 participants were randomly assigned to two different groups. Slight modifications were made to make sure that the mean ages and gender distribution were approximately equivalent for both groups. The 18 participants that were assigned to the experimental group were emailed informing them when the meetings would be held. Of the 18 participants, one dropped from the study due to child care constraints and another two never showed up for the parent meetings and were not responsive to email communication. Of the remaining 15, four participants were unable to attend due to time constraints. These participants were moved to the control group and participants with children of equivalent ages and genders were invited to attend the parent education program for the experimental group. Three participants were able to attend, and were switched to the experimental group. Fourteen participants participated in both sessions of the workshop and were available to fill out the pre- and post-questionnaires. Nineteen participants who were
assigned to the control group filled out both pre- and post- questionnaires. To create two groups that were equal in size, 14 participants in the control group were randomly selected for inclusion in the analysis, while controlling to ensure that the distribution of children’s age and gender remained approximately equivalent for the experimental and control groups. The data on the remaining five participants from the control group were discarded for the purpose of this analysis.

The majority of the parents, 75%, were between the ages of 30 and 39. Among the parents, 86% were female, and 68% of the children were female. Most of the participants, 61%, had completed a graduate degree. A large majority of the participants, 82%, were Caucasian, with the next largest group being Asian, at 11%. The majority of the parents, 79%, reported that their child spent 31-40 hours per week in child care, while the remaining 21% reported that their child spent more than 40 hours per week in child care. Half of the participants were parents of only one child, while 29% reported that there was one child younger than the participatory child in the household. The remaining 21% reported having at least one child that was older than the participatory child. The mean age of children for the entire sample of parents was 33.61 months. In the experimental group the average child age was 33.64 months, with an average for the control group children of 33.57 months. Parents with female children made up 64% of the experimental group and 71% of the control group.

B. MEASURES

**Comprehensive Feeding Practices Questionnaire (CFPQ).** The CFPQ was created by Musher-Eizenman and Holub (2007) to assess the feeding practices of parents with young children. There are 71 questions, 50 of which had been previously validated. These questions are divided into 14 subscales of eating behaviors, but only four of the subscales were used in this
study: 1) monitoring, 2) child control, 3) healthy food environments and availability, and 4) encouraging balance and variety.

The CFPQ survey has been validated multiple times, with parents of children ranging from 18 months to 8 years, in paper and electronic formats (Musher-Eizenman & Holub, 2007). The scale was found to be appropriate for use with parents of a wide-range of educational levels, as the overall Flesch-Kincaid reading level was 6.4. Confirmatory Factor Analysis indicated that the factor structure and fit of the model were good ($X^2(1061) = 1580$, RMSEA = 0.057, $CFI = .98$). Validity for the four subscales of the CFPQ used in this study was documented with the following internal consistency coefficients: parental monitoring, $\alpha = .81$; healthy eating environments, $\alpha = .75$; child control, $\alpha = .68$; and encouraging balance and variety, $\alpha = .58$. The reliability of the CFPQ measure was assessed in another study with children between 3 and 6 years old, yielding high test-retest reliability (Interclass Correlation Coefficient > .80) and internal consistency (Cronbach’s alpha between .80 and .90) (Doaei, Kalantari, Gholamalizadeh, & Rashidkani, 2013).

Eleven questions from the four CFPQ subscales were selected for use in this study, based on their association with positive versus negative child outcomes (see Appendix D for the full text of these 11 questions). Each question was rated on a 5-point Likert scale. Four of the questions asked about frequency of various behaviors and had possible responses of never, rarely, sometimes, mostly, or always. The remaining seven questions were statements about feeding practices that parents were asked to rate with disagree, slightly disagree, neutral, slightly agree, or agree.

Questions about family eating behaviors. Ten questions were used regarding family eating behaviors (see Appendix E). These questions were modified from a survey created by
Ritchie et al. (2010), who evaluated the effectiveness of a California WIC nutrition education program based on Sesame Workshop’s Healthy Habits For Life curriculum (Sesame Workshop, 2007). The questions that discussed fruit and vegetable consumption were selected for use in the present study to assess whether the intervention would lead to an increase in fruit and vegetable consumption of families. Three questions were asked regarding the frequency of the family’s consumption of certain foods in which participants responded with the number of times they engaged in that behavior in the last week. One question asked parents how often they considered colors (one of the concepts discussed in the intervention) in terms of their diet. The remaining six questions required participants to compare their current eating behaviors to one month ago to document change in eating behaviors. These questions were modified to match the parameters of the current intervention. As this study examined change over a one month intervention period whereas the Ritchie et al. study had a much longer intervention period, the questions were changed to examine feeding practices compared to one month ago, rather than six months.

**Pre- and post- session tests.** A 10-item, multiple choice knowledge survey was created for session 1 and session 2 to assess the parents’ knowledge of the concepts discussed in the intervention (see Appendix F). The knowledge survey was given to participants at the beginning of the session and then again at the end to assess understanding and/or learning of the concepts covered. There were two surveys created, one for each session.

**Feedback questionnaire.** Feedback questionnaires were given to participants after session 1 and after session 2 (see Appendix G). Each questionnaire had four statements about the usefulness of the concepts and activities for the two topics in each session. Participants were asked to rate their level of agreement with the statements on a Likert scale with the possible responses of strongly agree, agree, neutral, disagree, or strongly disagree. Each questionnaire
also listed the recipes and activities that were discussed in the session and asked each participant to place a check next to those that were implemented with his or her child.

**Demographic questionnaire.** The demographic questions consisted of parent’s age and gender, child’s age and gender, highest level of parental education, ages of other children in the household, ethnicity, engagement in ethnic-based cooking, and number of hours spent in child care (see Appendix H for Demographic Questionnaire).

**C. PROCEDURES**

**Informational meeting and pretest.** At the informational meeting the participants were given the demographic questionnaire, modified CFPQ, and questions about family eating behaviors to complete. Participants were informed of what the intervention would require on their part and that they would be given the results of the study once the research was complete. Participants were informed that they would be asked a series of questions regarding their children’s eating behaviors as well as their family’s eating behaviors and asked to fill out the questionnaires. Each participant was asked to consider their child between 18 months and 5 years when the questions asked about their child. Participants who had two or more children between 18 months and 5 years were informed of the child that they should consider for the purpose of the questionnaires. This child was selected by the researcher to create two groups (experimental and control) with equivalent ages and genders. A log was created with the numbers 100 through 150, and participants were asked to match the number on their questionnaire to the number on the log and write down their name. This was done so that responses for each participant could be tracked together, while including only ID numbers in data files in order to maintain confidentiality for participants involved. Participants were told
that there would be two workshops conducted, and that they would be informed via email when their workshop had been scheduled.

**Random assignment.** The participants were randomly assigned to one of two groups. The random assignment was done in such a way as to create two groups with approximately equivalent ages of children, numbers of male and female children. One group served as the intervention group and the other, the control group. The intervention group was assigned to the first workshop and the control group was assigned to the second workshop (to be conducted after the data collection for the research was complete). Participants were emailed to inform them which workshop they were invited to attend.

**Intervention.** The intervention focused on parental knowledge of healthy and unhealthy foods and feeding behaviors. The researcher implemented two group intervention sessions that were based on the *Healthy Habits for Life* curriculum created by Sesame Workshop (2007) and the *Healthy Habits Every Day* curriculum adapted by the California WIC Association (n.d.). The sessions were held two weeks apart. The key messages of the intervention were from the "Food and Drink to Grow On" section, of the *Healthy Habits for Life* curriculum, and included: "Eat Your Colors", "Sometime Foods and Anytime Foods", and "What My Body Tells Me". The "Sometime and Anytime Foods" component focused on the foods that are the healthiest, and can be eaten whenever hungry, versus foods that are less healthy and should be eaten less often. The "Eat Your Colors" message focused on the benefits of consuming a variety of fruits and vegetables of a variety of colors, including the benefits this has for the body. "What My Body Tells Me" was used to discuss internal cues of hunger and parental behaviors to support the development of sensitivity to these cues in children. In addition, there was a discussion of appropriate ways for parents to engage in monitoring children’s eating behaviors to help parents
understand their role in building their children’s healthy habits. The content on monitoring was
developed using the ideas from the "Sometime and Anytime Foods" section, but focusing on
what adults can do to be more aware of what their children are eating and how to assist children
in making healthy decisions. Discussion topics and a game, complementing the topics above,
were utilized from the *Healthy Habits Every Day* curriculum.

Session 1 included the concepts of "Eat Your Colors" and "Sometime and Anytime
Foods" and session 2 focused on "What My Body Tells Me" and monitoring. The sessions were
held two weeks apart. This curriculum included a lecture component with a power point where
information was given to the parents, as well as group discussions about the topics and take-
home handouts with activities for parents to implement with their children. The group
discussions included prompts from the facilitator regarding how each participant cooks and
serves different fruits and vegetables and the challenges in encouraging their children to eat
them. Worksheets adapted from the *Healthy Habits for Life* curriculum with activities for
parents and children to engage in together were sent home with the participants (see Appendix I
for the intervention handouts). A knowledge survey was given to the participants before and
after each session to assess knowledge of the concepts discussed in the intervention.

**Post-test.** Two weeks after the second session, the participants in both the control and
experimental groups completed the modified CFPQ and the questions about family eating
behaviors again. After the research was completed, the second workshop (which was identical to
the first workshop) was offered to the control group.
IV. RESULTS

A. SESSION ANALYSIS

A paired t-test was run to determine the effectiveness, in terms of acquired knowledge, of each session. The session quiz contained 10 questions, with an optimal score of 10. The scores on the session 1 post-test ($M = 9.36$, $SD = 0.94$) were significantly greater than the scores on the session 1 pre-test ($M = 7.36$, $SD = 1.22$), $t(13) = 6.03$, $p < .01$. The scores on the session 2 post-test ($M = 7.00$, $SD = 1.30$) were also significantly greater than the scores on the pre-test ($M = 5.57$, $SD = 1.45$), $t(13) = 4.62$, $p < .01$.

Feedback from both sessions was positive, with all participants (except one outlier) finding the materials and information useful and all participants reporting implementing at least one activity and one recipe with their children. The responses were coded with 0 for a response of strongly disagree and 4 for a response of strongly agree. The four responses for each participant were averaged. Feedback on the usefulness of the materials and activities was equivalent or slightly higher for session 2 ($M = 3.64$, $SD = 1.06$) versus session 1 ($M = 3.57$, $SD = 1.05$). Participants also reported having engaged in more activities and recipes from the intervention with their children in session 2 ($M = 4.79$, $SD = 1.63$) than in session 1 ($M = 3.64$, $SD = 1.74$).

B. INTERVENTION ANALYSIS

Total scores on parental feeding practices, as well as each subscale score, were analyzed using a 2 (Treatment) X 2 (Test time) ANOVA in which the test time (pre-test score versus post-test score) served as a repeated measure. The analysis of overall CFPQ scores revealed a significant interaction of Treatment by Test Time, $F(1, 26) = 17.55$, $p < .01$. The post-test CFPQ
scores were significantly higher for the experimental group and there was no significant difference for the control group (See Table 1 for means).

The analysis of the subscale of Child Control revealed a significant interaction of Treatment by Test Time, $F(1, 26) = 5.94, p < .03$. The subscale of Child Control demonstrated significantly greater post-test scores for the experimental group with no significant difference for the control group.

The analysis of the subscale of Encouraging Balance and Variety revealed a significant interaction of Treatment by Test Time, $F(1, 26) = 7.75, p < .01$. The subscale of Encouraging Balance and Variety demonstrated significantly greater post-test scores for the experimental group with no significant difference for the control group.

The analysis of the subscale of Healthy Eating Environment and Availability revealed a significant interaction of Treatment by Test Time, $F(1, 26) = 6.93, p < .02$. The subscale of Healthy Eating Environment and Availability demonstrated significantly greater post-test scores for the experimental group and there was no significant difference for the control group.

Table 1

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Mean Differences in Test-Score by Treatment on CFPQ Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment</td>
<td>Pre-test</td>
</tr>
<tr>
<td><strong>Parental Feeding Practices, Questions 1 -11</strong> (Maximum possible score = 55)</td>
<td></td>
</tr>
<tr>
<td>Experimental</td>
<td>46.93</td>
</tr>
<tr>
<td>Control</td>
<td>46.64</td>
</tr>
<tr>
<td><strong>Parental Monitoring, Questions 1 - 3</strong> (Maximum possible score = 15)</td>
<td></td>
</tr>
<tr>
<td>Experimental</td>
<td>12.29</td>
</tr>
<tr>
<td>Control</td>
<td>10.86</td>
</tr>
<tr>
<td><strong>Child Control, Question 4</strong> (Maximum possible score = 5)</td>
<td></td>
</tr>
<tr>
<td>Experimental</td>
<td>3.29</td>
</tr>
<tr>
<td>Control</td>
<td>3.86</td>
</tr>
<tr>
<td><strong>Encouraging Balance and Variety, Questions 5 - 7</strong> (Maximum possible score = 15)</td>
<td></td>
</tr>
<tr>
<td>Experimental</td>
<td>14.07</td>
</tr>
<tr>
<td>Control</td>
<td>14.64</td>
</tr>
<tr>
<td><strong>Healthy Eating Environments/Availability, Questions 8 - 11</strong> (Maximum possible score = 20)</td>
<td></td>
</tr>
<tr>
<td>Experimental</td>
<td>17.29</td>
</tr>
<tr>
<td>Control</td>
<td>17.29</td>
</tr>
</tbody>
</table>

Note: Treatment by Test Time Interaction significance levels: *$p < .05$, **$p < .01$*
Results indicated that there were no significant main effects or interactions for the subscale of Parental Monitoring. This was likely because the experimental group had higher initial scores on this subscale than the control group.

C. FAMILY EATING BEHAVIORS ANALYSIS

A 2 (Treatment) X 2 (Test time) ANOVA in which test time (pre-test versus post-test score) served as a repeated measure, was also used to evaluate results on questions 12 - 14. These questions discussed the quantity of 100% fruit juice, fruit, and vegetables consumed in the last week. Responses to each question were analyzed individually. None of these measures, the quantity of 100% fruit juice consumed, quantity of fruits consumed, or quantity of vegetables consumed, showed significant differences between the pre- and post-tests for either the experimental group or for the control group (See table 2 for the means of these analyses).

Table 2

<table>
<thead>
<tr>
<th></th>
<th>Pre-test</th>
<th>Post-test</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>100% Fruit Juice, Question 12 (Maximum possible score = 8)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimental</td>
<td>2.79</td>
<td>3.29</td>
<td>+0.50</td>
</tr>
<tr>
<td>Control</td>
<td>3.64</td>
<td>3.21</td>
<td>-0.43</td>
</tr>
<tr>
<td><strong>Fruit, Question 13 (Maximum possible score = 8)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimental</td>
<td>5.64</td>
<td>6.14</td>
<td>+0.50</td>
</tr>
<tr>
<td>Control</td>
<td>5.71</td>
<td>5.79</td>
<td>+0.08</td>
</tr>
<tr>
<td><strong>Vegetables, Question 14 (Maximum possible score = 8)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimental</td>
<td>5.79</td>
<td>5.79</td>
<td>0</td>
</tr>
<tr>
<td>Control</td>
<td>5.43</td>
<td>5.57</td>
<td>+0.14</td>
</tr>
</tbody>
</table>

Questions 15 - 21 were analyzed using McNemar’s Chi-Square tests. Question 15 asked parents how often they considered colors in choosing their diets, and Questions 16 - 21 asked parents to compare their family's current eating behaviors to the previous month. These questions were designed to assess changes in the families’ eating behaviors. McNemar’s Chi-square tests were performed to compare the percentage of responses on questions 15 - 21 (comparing the optimal answer with all non-optimal answers) for test time, in which test time is
a repeated measure (pre-and post-test). The optimal response was determined based on the focus messages of the intervention, encouraging families to consume a greater amount and greater variety of fruits and vegetables. The optimal response was coded with a 1, and all other responses were coded as a 0 (See Appendix E for coding).

The experimental group displayed significant differences by test time on three different measures. The percentage of parents that reported consuming a variety of fruits (Question 17) was significantly greater on the post-test than on the pre-test for the experimental group, (McNemar’s $X^2(1, N = 14) = 0.82, p < .02$, with no significant differences for the control group (See Table 3). The percentage of parents that reported consuming fresh fruits (Question 18) was also significantly greater on the post-test than the pre-test for the experimental group, (McNemar’s $X^2(1, N = 14) = 2.24, p < .04$, with no significant differences for the control group (See Table 4). Finally, the percentage of parents that reported consuming fresh vegetables (Question 21) was significantly greater on the post-test than on the pre-test for the experimental group, (McNemar’s $X^2(1, N = 14) = 1.75, p < .04$ with no significant differences for the control group (See Table 5).

<table>
<thead>
<tr>
<th>Table 3</th>
<th>Consumption of Greater Variety of Fruits Compared to Last Month, Question 17</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes on Pre-Test</td>
</tr>
<tr>
<td>Experimental</td>
<td>1</td>
</tr>
<tr>
<td>Control</td>
<td>3</td>
</tr>
</tbody>
</table>

Note  Significance levels:  *$p < .05$

<table>
<thead>
<tr>
<th>Table 4.</th>
<th>Consumption of More Fresh Fruits Compared to Last Month, Question 18</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes on Pre-Test</td>
</tr>
<tr>
<td>Experimental</td>
<td>4</td>
</tr>
<tr>
<td>Control</td>
<td>6</td>
</tr>
</tbody>
</table>

Note  Significance levels:  *$p < .05$
<table>
<thead>
<tr>
<th></th>
<th>Yes on Pre-Test</th>
<th>Yes on Post-Test</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exper</td>
<td>2</td>
<td>8</td>
<td>+6*</td>
</tr>
<tr>
<td>Control</td>
<td>3</td>
<td>6</td>
<td>+3</td>
</tr>
</tbody>
</table>

Note: Significance levels: *p < .05.

There were no significant differences by test time for the experimental group in the percentage of parents that reported on any of the following measures: thinking about different colors (Question 15), eating more vegetables of all types in the last month (Question 19), or consumption of a greater variety of vegetables (Question 20). Ritchie et al. (2010) found similar patterns of behavior change, with the intervention having a bigger impact on consumption of fruits than on vegetable consumption.

Statistical tests could not be performed on one measure (Question 16) because there were no participants who reported the optimal response on the pre-test. Seven intervention participants reported eating more fruits of all types compared to a month ago on the post-test, whereas none had reported that on the pre-test.

V. DISCUSSION

There has been minimal testing of the feeding practices of the middle income or high-educational levels with the population. This is the first study known to the author that documents the impact that a parent-education intervention can have on parental feeding practices with this socioeconomic group. The purpose of this intervention was to test the effectiveness of a parent intervention at improving parental feeding practices with a middle income, high education population. Since there has been no past research with this demographic group, it was unknown whether or not parents in this socio-economic group would be interested in or benefit from an education program to improve their feeding practices with their children. In fact, it
might be speculated that parents in this demographic would already have high levels of knowledge before the intervention. However, this study documented that even a middle income, high education parent population can benefit from education regarding feeding practices and healthy eating. It was hypothesized that the experimental group would engage in more positive feeding practices after participation in the education program. This was found true overall for parental feeding practices, as well as for 3 different subscales of parent feeding practices: support of child control, encouraging balance and variety, and healthy eating environments/availability of healthy foods. After the intervention, parents reported improvements in all of the feeding behaviors addressed with the exception of parental monitoring.

Many previous interventions, both with behavior-related results and knowledge-related results, lasted much longer than this intervention (Haire-Joshu et al., 2008; Katz et al., 2011; Ritchie et al., 2010). Specifically, Ritchie et al.'s intervention, which used similar messages, lasted over the course of 6 months. It might be expected that a much shorter intervention may not demonstrate significant results, but in spite of the intervention's relative brevity many significant improvements in parent behaviors were documented in this study.

The sessions were successful at increasing parental knowledge about appropriate parental feeding practices and young children’s eating behavior, which was in line with past research showing increased nutrition knowledge gains (Blom-Hoffman et al., 2008; Katz et al., 2011). The sessions were also successful at providing parents with resources to use with their children (through recipes and activities), as shown through the number of activities and recipes that parents actually used with their children.
The intervention had an effect on increasing the amount of fresh fruits and vegetables that the family was consuming; however, there was no change in consumption of canned, frozen, or dried fruits and vegetables. The intervention was successful at encouraging parents to provide their families with more fresh fruits and vegetables for consumption. A significant increase was also found for consumption of a greater variety of fruits. This finding was unique and unexpected as past research has not supported behavior change at such a quick rate. However, Ritchie et al. (2010) found similar findings in regard to improvement in family consumption of fruits but not vegetables. Past research has shown few results regarding behavior change after an intervention in relation to eating behaviors. Blom-Hoffman et al. (2008) and Katz et al. (2011) both found knowledge gains without behavior change. As stated previously, there is little research that examines the effectiveness of parent education programs in changing behaviors of the middle class or highly-educated population. Therefore, this research is significant in that it was successfully able to alter feeding behaviors using a relatively short intervention with this population.

A. LIMITATIONS AND FUTURE RESEARCH

The major limitation of this study was the sample size and the restricted demographics of the sample. Due to the relatively small sample size, the researcher was unable to analyze possible interaction effects of the intervention in regard to child gender and age. Future research should explore the impact of parent education to address feeding practices of a broader sample of middle income families and address incentives to encourage participants to take part in education programs, since the potential effectiveness of the program with this population has now been established. In addition, future research with larger samples could address possible child age and gender differences in regard to change in parental feeding practices.
Other limitations of the current research were that it only looked at short-term effects and utilized self-report data. One technique for expanding on this study would be to test the effectiveness of the behavior change longitudinally, as this research only examined short-term effects and did not address the impact of a parent education program in improving parental feeding practices long-term. In addition, this research utilized self-report data to determine behavior change. The high educational levels of these parents may have led participants to fill out the questionnaires based on what they perceived that they were supposed to say rather than what they actually learned or behavior that they actually changed. This may be addressed to some extent in future research by employing a food diary methodology to assess behavior change.

Finally, a limitation of this study was that it did not specifically address the impact of the intervention on children. Future research may benefit from analyzing the direct impact or changes that children experienced as a result of the parent intervention as well as the longer term impacts that children and families may experience.

B. CONCLUSION

Parent education programs can have a significant effect on changing the behavioral strategies that parents use when engaging with their children. This study demonstrated the effectiveness of a parent education program about healthy feeding and eating behaviors in changing middle-class, high-education parents’ feeding practices with their children. Participation in the parent education program also led to an increase in the fresh fruit and vegetable consumption that the participants reported for their families. Ultimately, the results of this intervention showed that parent education programs have the potential to alter the eating behaviors that young children develop and increase the healthy behaviors they engage in
throughout life, starting them on the path toward healthy development and reducing the risk for chronic disease.

This research is applicable for child care providers and other professionals working with young children and their families as a means to improve children's eating behaviors. The majority of past programs designed to improve children’s healthy eating ignore the family as a key component in improving young children's behaviors. This research helps demonstrate the effectiveness of focusing on parent behavior to change the behaviors of children. Furthermore, this research should be considered in future policy as support to focus on the family when looking to reach and improve young children’s healthy eating.
VI. REFERENCES


MEMO

To:    Gienda Revelle, Ph.D., Associate Professor
        Lara Brawley, B.S., M.S. Graduate Student
CC:    George Wardlow, Director of School of Human Environmental Sciences
        Ro Windwalker, Compliance Coordinator, Research Support and Sponsored Programs
From:  William Bailey, Ph.D., Associate Professor
        Member University IRB Committee
Date:  1/10/2013
Re:    Exempt Approval of Research Proposal The Impact of Parent Education on Parental Feeding Practices

This is to inform you that your research protocol The Impact of Parent Education on Parental Feeding Practices has been reviewed and is approved as exempt. There is no risk to the parents involved in this research due to the nature of the information collected. The respondent's identities in this study are sufficiently protected.

You may proceed to collect data your respondents. However, if it is furthered determined by the RSSP Compliance Office that your research protocol does not meet exempt standards, you will be informed. You will be required to cease collection on new data from human subjects. The data that you have previously collected may not be used in any publication.

As a representative of the University IRB Committee, I wish you success in your data collection process. It gives committee members satisfaction in the process of furthering the research activities of the University of Arkansas and our goal of remaining a Research I Institution in the future.
January 24, 2013

MEMORANDUM

TO: Larra Brawley
    Glenda Revelle

FROM: Ro Windwalker
       IRB Coordinator

RE: New Protocol Approval

IRB Protocol #: 13-01-413

Protocol Title: The Impact of Parent Education on Parental Feeding Practices

Review Type: ☒ EXEMPT ☐ EXPEDITED ☐ FULL IRB

Approved Project Period: Start Date: 01/24/2013 Expiration Date: 01/23/2014

Your protocol has been approved by the IRB. Protocols are approved for a maximum period of one year. If you wish to continue the project past the approved project period (see above), you must submit a request, using the form Continuing Review for IRB Approved Projects, prior to the expiration date. This form is available from the IRB Coordinator or on the Research Compliance website (http://vpred.uark.edu/210.php). As a courtesy, you will be sent a reminder two months in advance of that date. However, failure to receive a reminder does not negate your obligation to make the request in sufficient time for review and approval. Federal regulations prohibit retroactive approval of continuation. Failure to receive approval to continue the project prior to the expiration date will result in Termination of the protocol approval. The IRB Coordinator can give you guidance on submission times.

This protocol has been approved for 60 participants. If you wish to make any modifications in the approved protocol, including enrolling more than this number, you must seek approval prior to implementing those changes. All modifications should be requested in writing (email is acceptable) and must provide sufficient detail to assess the impact of the change.

If you have questions or need any assistance from the IRB, please contact me at 210 Administration Building, 5-2208, or irb@uark.edu
APPENDIX B: LETTER TO PARENTS

January 28, 2013

Dear Parents,

We are gearing up for the research study of healthy feeding practices and eating behaviors conducted by our own graduate student, Larra Brawley. She was a teacher last year at the IDC and has been in infant and toddler rooms and preschool rooms this year modeling for and mentoring students who are taking UA classes in Infant and toddlerhood, child guidance, and curriculum and assessment. She has had her thesis proposal meeting and has received approval from the IRB to begin collecting data. I know you will want to participate and support Larra as she follows her plan. You will receive the results of her research as well as the benefits the study will have for you and your child. So please respond favorably to her invitation. Thank you.

Sincerely,

Vernoice G. Baldwin, M.S.
Academic Program Director
Jean Tyson Child Development Study Center

Dear Parents,

I would like to invite you to participate in a research study. I am a graduate student at the University of Arkansas, and this research is being conducted under the supervision of Associate Professor Glenda Revelle. The purpose of this study is to test the effectiveness of a parent education program in increasing healthy feeding practices and eating behaviors.

If interested, you will be invited to attend a brief informational meeting to learn more about the project and then asked to participate in two sessions, each lasting one hour. The sessions will include demonstrations of hands on activities for you to implement with your child, as well as materials for you to take home. The goal of the program will be to support parents in encouraging their children to develop healthy eating habits.

If you are interested in participating in this study, please sign the attached Consent Form and return it to the Jean Tyson Child Development Study Center office as soon as possible, but no later than Friday, February 8th.

Thank you for considering participation in this study.

Sincerely,

Larra Brawley
APPENDIX C: CONSENT FORM

Consent Form for the Parental Feeding Practices Study

Research Procedures. This study is concerned with identifying the impact of a parent education program on healthy feeding practices and eating behaviors. If you agree to participate you will be asked to attend a brief introductory session and two additional sessions both one hour in length, as well as fill out surveys about your feeding practices in regard to your child between the ages of two and five years. You may skip any questions that make you feel uncomfortable and may discontinue your participation in the research study at any time without penalty. Your participation in this research is purely voluntary. There are no known risks associated with this research.

Confidentiality. Confidentiality is protected to the extent allowed by law in the state of Arkansas. Neither your name nor your child’s name will appear in any research files. You will be assigned a unique identifying code number that will be associated all your data. All data will be stored on computers protected by password. All results of the research will be reported in aggregate. At the conclusion of the study the list containing your name and its associated code number will be destroyed.

Questions regarding this study. If you have any questions about this study, please contact one of the researchers: Dr. Glenda Revelle, 479.575.2192, grevelle@uark.edu or Larra Brawley, lbrawley@uark.edu.

By signing below you are indicating that you plan to participate in this research study.

Signature __________________________________________ Date____________________
Print Your Name __________________________________________
Your Child’s Date of Birth (including year) _______________________
Your Child’s Gender (circle one) Male Female

What times would you be most available to attend research sessions, please include days of the week in which you would be available? (you may check more than one)
   ______ Weekdays, early morning – which days?______________________________
   ______ Weekdays, lunch time – which days? ______________________________
   ______ Weekdays, late afternoon – which days? __________________________
   ______ Week-ends – what days/times? ____________________________________

Please keep this copy for your files.

Problems or concerns. If you have concerns or complaints regarding the study, you may contact the University of Arkansas Research Compliance Officer, Iroshi (Ro) Windwalker at 479.575.2208 or irb@uark.edu.
# APPENDIX D: CFPQ

**Parental Feeding Practices Questionnaire**

Answer the following questions based on your child who is between eighteen months and five years old. If you have more than one child in this age group answer the questions based on the older child.

<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. How much do you keep track of the sweets (candy, ice cream, cakes, pies, pastries) that your child eats?</td>
<td>Never (1), Rarely (2), Sometimes (3), Mostly (4), Always (5)</td>
</tr>
<tr>
<td>2. How much do you keep track of the snack food (potato chips, Doritos, cheese puffs) that your child eats?</td>
<td>Never (1), Rarely (2), Sometimes (3), Mostly (4), Always (5)</td>
</tr>
<tr>
<td>3. How much do you keep track of high-fat foods that your child eats?</td>
<td>Never (1), Rarely (2), Sometimes (3), Mostly (4), Always (5)</td>
</tr>
<tr>
<td>4. At dinner, do you let this child choose from what is served?</td>
<td>Never (1), Rarely (2), Sometimes (3), Mostly (4), Always (5)</td>
</tr>
<tr>
<td>5. I encourage my child to try new foods.</td>
<td>Disagree (1), Slightly Disagree (2), Neutral (3), Slightly Agree (4), Agree (5)</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>
| 6. I encourage my child to eat when hungry and stop when full. | Disagree (1)  
Slightly Disagree (2)  
Neutral (3)  
Slightly Agree (4)  
Agree (5) |
| 7. I encourage my child to eat a variety of foods. | Disagree (1)  
Slightly Disagree (2)  
Neutral (3)  
Slightly Agree (4)  
Agree (5) |
| 8. Most of the food I keep in the house is healthy. | Disagree (1)  
Slightly Disagree (2)  
Neutral (3)  
Slightly Agree (4)  
Agree (5) |
| 9 If I make a variety of healthy foods available to my child, I trust that s/he will choose a healthy diet. | Disagree (1)  
Slightly Disagree (2)  
Neutral (3)  
Slightly Agree (4)  
Agree (5) |
| 10 A variety of healthy foods are available to my child at each meal served at home. | Disagree (1)  
Slightly Disagree (2)  
Neutral (3)  
Slightly Agree (4)  
Agree (5) |
| 11 There are always fresh fruits and vegetables in my house. | Disagree (1)  
Slightly Disagree (2)  
Neutral (3)  
Slightly Agree (4)  
Agree (5) |
### APPENDIX E: QUESTIONS ABOUT FAMILY EATING BEHAVIORS

<table>
<thead>
<tr>
<th>Question</th>
<th>12 In the last week, how many times did your family drink 100 percent orange juice, grapefruit juice or other 100 percent juice? Do not count fruit drinks, soft drinks, or other sugar-sweetened drinks.</th>
</tr>
</thead>
<tbody>
<tr>
<td>13 In the last week, how often did your family eat fruit counting fresh, canned, dried, and frozen fruit, but not counting juices?</td>
<td></td>
</tr>
<tr>
<td>14 In the last week, how often did your family eat vegetables? Please include vegetables eaten in salads, soups, and mixed dishes, and count fresh, frozen, and canned vegetables.</td>
<td></td>
</tr>
</tbody>
</table>
15 Fruits and vegetables come in many different colors. How much do you and your family think about eating fruits and vegetables of different colors? Would you say you try to eat many different colors of fruits and vegetables or that you don’t think about the colors?

<table>
<thead>
<tr>
<th>Try to eat different colors</th>
<th>Don’t think about colors</th>
<th>Don’t know</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>(0)</td>
<td>(0)</td>
</tr>
</tbody>
</table>

16 Compared to one month ago, are you and your family now eating more, less, or about the same amount of fruits?

<table>
<thead>
<tr>
<th>More</th>
<th>Less</th>
<th>About the Same</th>
<th>Don’t Know</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>(0)</td>
<td>(0)</td>
<td>(0)</td>
</tr>
</tbody>
</table>

17 Compared to one month ago, are you and your family now eating a greater variety of fruits or larger amounts of the same types of fruits?

<table>
<thead>
<tr>
<th>Greater Variety</th>
<th>Large Amount/Same Type</th>
<th>Both</th>
<th>Don’t Know</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>(0)</td>
<td>(0)</td>
<td>(0)</td>
</tr>
</tbody>
</table>

18 Compared to one month ago, are you and your family now eating more fresh fruits that are not canned, frozen, or dried?

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
<th>Don’t Know</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>(0)</td>
<td>(0)</td>
</tr>
</tbody>
</table>

19 Compared to one month ago, are you and your family now eating more, less or about the same amount of vegetables?

<table>
<thead>
<tr>
<th>More</th>
<th>Less</th>
<th>About the Same</th>
<th>Don’t Know</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>(0)</td>
<td>(0)</td>
<td>(0)</td>
</tr>
</tbody>
</table>

20 Compared to one month ago, are you and your family now eating a greater variety of vegetables or are you eating larger amounts of the same types of vegetables?

<table>
<thead>
<tr>
<th>Greater Variety</th>
<th>Larger Amount/Same Type</th>
<th>Both</th>
<th>Neither</th>
<th>Don’t Know</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>(0)</td>
<td>(0)</td>
<td>(0)</td>
<td>(0)</td>
</tr>
</tbody>
</table>

21 Compared to one month ago, are you and your family now eating more fresh vegetables, meaning vegetables that are not canned or frozen?

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
<th>Don’t Know</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>(0)</td>
<td>(0)</td>
</tr>
</tbody>
</table>
Session 1 Test

Circle the letter for the best answer to each question.  #_____  

1. How many times may children need to be offered a new food before they'll try it?  
   a. 5  
   b. 8  
   c. 10 or more times  

2. It's important to eat fruits and vegetables of a variety of colors because:  
   a. they're appealing to children.  
   b. they provide diverse nutrients, vitamins, and minerals.  
   c. It helps children learn color names.  

3. The plant chemicals that provide dark and light colors:  
   a. are not important for health  
   b. can help fight off some disease  
   c. can increase the chance of getting certain illnesses  

4. Intake of which of the following should be limited:  
   a. calcium  
   b. vitamins  
   c. protein  
   d. sodium  

5. Children should be encouraged to eat lots of foods that are high in:  
   a. fat  
   b. sugar  
   c. sodium  
   d. calcium  

6. How many child-sized servings of fruits and vegetables are recommended to be eaten each day?  
   a. at least 3  
   b. at least 5  
   c. at least 7  

7. To encourage the development of healthy eating behaviors parents should choose:  
   a. what to serve  
   b. how much the child eats  
   c. which foods the child eats among those that are served  
   d. all of the above  

8. Children innately prefer sweet foods.  
   a. True  
   b. False
9. Which of the following does NOT encourage a child to consume a disliked food?
   a. continue to serve the food
   b. let the child explore the food
   c. have the child clean his plate

10. When is it okay for children to have foods that are high in fat, sugar, and salt?
   a. Never
   b. Sometimes
   c. Whenever they ask

Session 2 Test

Circle the letter or letters for the answer(s) to each question. #_____
Circle more than one letter if more than one answer is correct.

1. Eating 5 servings of fruits and vegetables increases the likelihood that your child:
   a. Will eat more sometime foods
   b. Will eat more anytime foods
   c. Will eat less anytime foods.

2. It's important to monitor your child's intake of.
   a. Healthy foods
   b. Unhealthy foods

3. Children may need to be served food at least 10 times before
   a. they like it
   b. they'll taste it
   c. they'll eat a whole serving

4. Scheduling meals and snacks throughout the day does not support the development of healthy eating behaviors.
   a. True
   b. False

5. Children are more likely to develop healthy eating habits when their parents:
   a. serve healthy foods
   b. serve foods on a schedule

6. It's important to let children choose their food for which of the following reasons:
   a. They learn to make healthy choices
   b. They feel proud to choose healthy foods
   c. They know what's best for their bodies

7. Our bodies tell us when we're hungry and when we're full.
   a. True
   b. False

8. If children are encouraged to clean their plate they may be...
   a. overeating
   b. ignoring their internal cues
   c. developing healthy eating behaviors
9. Internal cues of hunger are:
   a. biological cues that tell us what type of food to eat
   b. biological cues that tell us when we're hungry and when we're full.
   c. environmental cues that tell us when we're hungry
   d. environmental cues that tell us what type of food to eat

10. Young children have internal cues of hunger.
    a. True
    b. False
APPENDIX G: FEEDBACK QUESTIONNAIRES

Feedback for Session 1 of the Healthy Eating Behaviors Workshop.

<table>
<thead>
<tr>
<th></th>
<th>Agree</th>
<th>Slightly Agree</th>
<th>Neutral</th>
<th>Slightly Disagree</th>
<th>Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I found the Eating a Rainbow of Fruits and Vegetables information useful.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I found the Eating a Rainbow of Fruits and Vegetables take home materials useful.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I found the Sometime and Anytime Foods information useful.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I found the Sometime and Anytime Foods take home materials useful.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Place a check next to the recipes that you implemented with your child.

__ Amazing Apple Dip
__ Microwave Baked Apples
__ Now and Later Zucchini Muffins
__ Other Recipes

Place a check next to the activities that you implemented with your child.

__ Sometime and Anytime Foods Game
__ Kitchen Tour
__ I Spy Colors
__ Grocery Store Checklist
__ Picked a New Food from the Grocery Store
__ Colorful Menus
Feedback for Session 2 of the Healthy Eating Behaviors Workshop.

<table>
<thead>
<tr>
<th>Agree</th>
<th>Slightly Agree</th>
<th>Neutral</th>
<th>Slightly Disagree</th>
<th>Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>I found the Monitoring information useful.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>I found the Monitoring take home materials useful.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>I found the What my Body Tells Me information useful.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>I found the What my Body Tells Me take home materials useful.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Place a check next to the recipes that you implemented with your child.

- Peanut butter yogurt dip
- Vegetables with low fat salad dressing
- Fruit smoothies
- Fruit kebabs
- Fruit salad
- Bowl of fruit where children can access it
- Other recipes

Place a check next to the activities that you implemented with your child.

- Eating healthy foods together
- Exploring full and empty
- "If You're Hungry and You Know It" song
- Hungry and Full Meter
## APPENDIX H: DEMOGRAPHIC QUESTIONNAIRE

### Demographic Questionnaire

<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Your Age</td>
<td>19 or Younger</td>
</tr>
<tr>
<td></td>
<td>20 – 29</td>
</tr>
<tr>
<td></td>
<td>30 – 39</td>
</tr>
<tr>
<td></td>
<td>40 – 49</td>
</tr>
<tr>
<td></td>
<td>50 or Older</td>
</tr>
<tr>
<td>2. Your Gender</td>
<td>Female</td>
</tr>
<tr>
<td></td>
<td>Male</td>
</tr>
<tr>
<td>3. Child’s Age</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>5</td>
</tr>
<tr>
<td>4. Child’s Gender</td>
<td>Female</td>
</tr>
<tr>
<td></td>
<td>Male</td>
</tr>
<tr>
<td>5. Number of children in the household that are younger than the child?</td>
<td>____</td>
</tr>
<tr>
<td>6. Number of children in the household that are older than the child?</td>
<td>____</td>
</tr>
<tr>
<td>7. Your highest level of education</td>
<td>Less than High School</td>
</tr>
<tr>
<td></td>
<td>High School Graduate or GED</td>
</tr>
<tr>
<td></td>
<td>Some College</td>
</tr>
<tr>
<td></td>
<td>Bachelor’s Degree</td>
</tr>
<tr>
<td></td>
<td>Some Graduate School</td>
</tr>
<tr>
<td></td>
<td>Graduate Degree</td>
</tr>
<tr>
<td></td>
<td>Technical Degree</td>
</tr>
<tr>
<td>Question</td>
<td>Options</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td>8. What is your ethnicity/race?</td>
<td>Hispanic and any race</td>
</tr>
<tr>
<td></td>
<td>American Indian</td>
</tr>
<tr>
<td></td>
<td>Asian</td>
</tr>
<tr>
<td></td>
<td>African American</td>
</tr>
<tr>
<td></td>
<td>Caucasian</td>
</tr>
<tr>
<td></td>
<td>Other _____________</td>
</tr>
<tr>
<td>9. Do you use ethnic based recipes when cooking for your family?</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>No</td>
</tr>
<tr>
<td>10. How many hours per week does your child participate in child care?</td>
<td>Less than 20 hours</td>
</tr>
<tr>
<td></td>
<td>21 – 30 hours</td>
</tr>
<tr>
<td></td>
<td>31 – 40 hours</td>
</tr>
<tr>
<td></td>
<td>More than 40 hours</td>
</tr>
</tbody>
</table>
APPENDIX I: INTERVENTION HANDOUTS

Recipes
Here are some great anytime snacks to try at home!
Make them with your children!

Amazing Apple Dip

What you need
- Apples cut into thin slices
- Vanilla-flavored yogurt
- Whole-grain cereal “O”s

What to do
- Set up an apple dipping station by setting out your plate of sliced apples along with bowls of yogurt and cereal. Let your child dip the apple slices.

Microwaved Baked Apples

Looking for an easy and delicious way to add fruit to your child’s lunch? Pack these baked apples in single serving containers.

Ingredients
- 2 small apples, sliced (peel if desired)
- 1 tbsp. apple juice
- ½ tsp. brown sugar
- Dash of cinnamon

Directions
1. Combine ingredients in a microwave-safe bowl
2. Cover with plastic wrap.
3. Microwave 2-3 minutes, or until apples are soft. Stir. Serve when cool.

Now and Later Zucchini Muffins

What you need
- 1 ½ c. shredded zucchini (about 2 small)
- 2 c. whole-grain pancake or biscuit mix
- 1 tsp. cinnamon
- 1 tsp. allspice
- 2 eggs
- ¾ c. brown sugar
- ¼ c. unsweetened applesauce
- 2 tsp. fresh lemon juice
- Grater
- Measuring cups and spoons
- Muffin tin and paper liners

What to do
1. Preheat oven to 375 F. Wash zucchini, remove ends (leave skin on for extra fiber), and shred.
2. Place grated zucchini on paper towels and squeeze to remove water. Measure 1 ½ cups of squeezed-dry zucchini.
3. In a large bowl, mix whole-grain pancake mix (or biscuit mix) with spices.
4. In a separate bowl, whisk together eggs, brown sugar, applesauce, and lemon juice.
5. Fold the egg-sugar mixture and shredded zucchini into the pancake-spice mixture (do not over mix).
6. Line a 12 cup muffin tin with paper liners. Fill each muffin cup 2/3 full with batter.
7. Bake 10 – 15 minutes or until golden. Remove muffins from tin and cool on a wire rack.
Healthy Tips and Activities for Families

Anytime Foods and Sometime Foods

Children need healthy options in order to make healthy choices. At home give your child lots of healthy foods and drinks to choose from so that no matter what they pick, you’ll know they are getting the nutrients they need to grow and learn every day (“Would you like an apple or a banana? Would you like some salad or some yogurt?”) You can empower children as they make their own choices.

Take a tour around the kitchen together and look at the foods you are eating every day to make sure you have lots of the anytime foods such as fruits, vegetables, whole grains, low fat milk/cheese/yogurt, and lean meats. If you discover any chips, cookies, candy, sodas, or sports drinks, pause to remember that these foods are high in sugar, fat, and/or salt and are only sometime foods.

Throw your child a curve.
Try clever new combinations:
- Cream cheese with a peach or nectarine
- Graham crackers with strawberries or banana
- Cucumbers or red bell pepper with hummus
- Melons or grapes with cheese
- Mushrooms and fresh greens with low fat ranch dressing
- Fresh tomato, mozzarella cheese, and fresh basil

It’s hard for children to choose cucumbers over a cookie, and they don’t always have to. Sometimes it’s okay to have cookies. But focus on anytime foods every day by letting your child choose from a variety of healthy foods, including fruits and veggies, and offering water and low fat milk to drink.

You can help at home. Offer your child the choice between two healthy options such as tomatoes and cucumbers, rather than between vegetables and a cookie or other sweet. In addition to offering children lot of healthy foods, you can model healthy eating and a physically active lifestyle.

Let your child do it. Children enjoy eating snacks they make themselves. A turkey cheese rollup is the perfect “recipe” for the first-time cook. Set out a piece of lean turkey deli meat, lay a slice of cheese on top and roll it up.
**Going to the supermarket** can be a great learning opportunity. Your child can help make healthy choices as you shop. Focus on the outermost aisles of the store when you’re grocery shopping. Often, that’s where you’ll find the healthiest foods, such as fresh produce, dairy products, meats, and seafood. Head down the other aisles with a plan for what you want, instead of giving your child the chance to spot sugar cereals, unhealthy snacks, or other foods you don’t want to buy.

Some ways to involve your child as you shop:
- Let your child push a kid-sized cart, if the store offers them.
- Give your child a small check off as they’re found.
- Challenge your child to select a new food to try, focusing on fruits, vegetables, whole grains, or low fat dairy products.
- Play “I Spy Colors” to find all the red foods, green foods, etc.

> Remember, young children may need to be offered a new food more than ten times before they will eat it, so put a little on the plate. Children who eat all five servings of fruits and vegetables each day are more likely to get the nutrients they need.

**Colorful Menus**

Plan a meal with your child that includes at least three different colors, like red peppers, black beans, and brown rice. Buy the items together. While you’re preparing the meal, have your child create a dinner menu or draw a plate with all the foods on it. Display the menu near the table. Have your child count all of the colors on the plate.

**Helpful Websites:**

- [www.eatright.org/kids/](http://www.eatright.org/kids/)
- [www.choosemyplate.gov/preschoolers.html](http://www.choosemyplate.gov/preschoolers.html)
Fruit and Vegetable Rainbow

Here’s a handy list of fruits and vegetables by color. Remind your child to “eat their colors”!

**Purple**
- Blackberries
- Elderberries
- Plums
- Purple cabbage
- Purple Belgian endive
- Black currants
- Purple figs
- Raisins
- Purple carrots
- Purple peppers
- Dried plums
- Purple grapes
- Purple asparagus
- Eggplant
- Potatoes (Purple fleshed)

**Red**
- Blood oranges
- Cranberries
- Red pears
- Strawberries
- Red peppers
- Red onions
- Tomatoes
- Red apples
- Red grapes
- Pomegranates
- Watermelon
- Radishes
- Red potatoes
- Cherries
- Red grapefruit
- Raspberries
- Beets radicchio
- Rhubarb

**Green**
- Avocados
- Honeydew
- Green pears
- Asparagus
- Broccoli rabe
- Green beans
- Chayote squash
- Leafy greens
- Green onions
- Green peppers
- Spinach
- Green apples

**Orange**
- Apricots
- Nectarines
- Peaches
- Butternut squash
- Rutabagas
- Cantaloupe
- Oranges
- Persimmons
- Carrots
- Sweet potatoes
- Mangoes
- Papayas
- Tangerines
- Pumpkins

**White**
- Bananas
- White peaches
- Ginger
- Kohlrabi
- Parsnips
- Potatoes (white fleshed)
- Shallots
- Turnips
- Brown pears
- Cauliflower
- Jerusalem artichokes
- Onions
- White nectarines
- Garlic
- Jicama
- Mushrooms
**Sometime & Anytime Foods**

**Anytime Foods**: These are the foods that are good to eat anytime. They are the healthiest foods that have nutrients to help your child grow up healthy. Examples: fruits and vegetables, nonfat and low fat milk.

**Sometime Foods**: These foods are the least healthy. That’s why they’re once-in-awhile foods. Examples: French fries, cookies, and ice cream.

<table>
<thead>
<tr>
<th>Food Group</th>
<th>Anytime Foods</th>
<th>Sometime Foods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vegetables</td>
<td>Fresh, frozen, steamed, or canned vegetables (low sodium) without added fat (such as butter) or sauces</td>
<td>Any vegetable fried in oil</td>
</tr>
<tr>
<td>Fruits</td>
<td>All fresh and frozen fruits, canned fruits packed in their own juice</td>
<td>Fruits canned in syrup, dried fruits</td>
</tr>
<tr>
<td>Breads &amp; Cereals</td>
<td>Whole-grain breads, pitas, and tortillas; whole-grain pasta, brown rice, oatmeal; hot and cold unsweetened whole-grain breakfast cereals</td>
<td>Doughnuts, muffins, croissants, and sweet rolls; sweetened breakfast cereals; crackers, cookies, and chips; cakes and pies</td>
</tr>
<tr>
<td>Milk &amp; Milk Products</td>
<td>Nonfat and low fat milk; nonfat and low fat yogurt; low fat and nonfat cheese; low fat and nonfat cottage cheese</td>
<td>Whole milk; full-fat cheese and cheese spreads; cream cheese; yogurt made from whole milk; ice cream, and frozen yogurt; puddings</td>
</tr>
<tr>
<td>Meats, Poultry, Fish, Eggs, &amp; Beans</td>
<td>Beef and pork that have been trimmed of their fat; extra-lean ground beef; chicken and turkey without skin; tuna canned in water; fish and shellfish that’s been baked, broiled, steamed, or grilled; beans; split peas and lentils; tofu; egg whites and substitutes</td>
<td>Beef and pork that haven’t been trimmed of their fat, fried hamburgers, ribs, bacon, fried chicken, chicken nuggets, hot dogs, deli lunch meats, pepperoni, sausage, salami, fried fish and shellfish, whole eggs cooked with added fat</td>
</tr>
<tr>
<td>Drinks</td>
<td>Water, nonfat and low fat milk, unsweetened ice teas and lemonade</td>
<td>Whole milk, regular soda, sweetened iced teas and lemonade, fruit drinks with less than 100% juice</td>
</tr>
</tbody>
</table>
What My Body Tells Me

When children are urged to clean their plates, it can lead to overeating. Instead, serve your child small portions of food. A child who is still hungry can have a second small portion. This minimizes waste and encourages children to stop eating when they’re full.

Every child has different food needs. It’s okay for a child to take only a little bit of food and then say he is full. However, it is not okay for him to then want to eat cake, or other sometime foods instead! By paying attention to your child’s cues and listening to him, you can make sure he’s eating the right amount. One way to think about this balance is that you provide the healthy choices but your child decides how much to eat.

Activity Ideas

➢ *Eat Healthy Foods Together:* Whether you are serving your child or he is serving himself, start by putting small amounts of each food on the plate and letting him choose if and what to eat. When he finishes eating, ask, “Are you still hungry?” Giving him the chance to respond helps your child learn to make healthy choices. Encourage everyone at the table to mention how they are feeling: “Hmmm, I’m just a little bit hungry. I’ll have a couple more bites and then I’ll be finished.”

➢ *Explore Full and Empty:* The next time your child is taking a bath encourage her to explore filling and emptying small and big containers (e.g., plastic measuring cups). Point out that our stomachs also can be full or empty.

➢ *Hungry-Full Meter:* Sometimes it can be useful for children (and adults!) to have a visual reminder that says, “Stop and listen to your body. How are you feeling?”

### If You’re Hungry and You Know It

If you’re hungry and you know it, say, “I’m hungry!” (2 times)

If you’re hungry and you know it
And you really want to show it.
If you’re hungry and you know it,
Eat a pear!

If you feel full and you know it, say, “No more, please!” (2 times)

If you feel full and you know it, Then say “No” so you can show it.
If you feel full and you know it
Just say, “No more food.”

If you’re thirsty and you know it, say, “I’m thirsty!” (2 times)

If you’re thirsty and you know it
And you really want to show it.
If you’re thirsty and you know it,
Drink some water!
Monitoring Meals

Monitor your child’s food by making sure she's eating anytime foods every day and eating sometime foods every once in a while.

Tips
➢ Serve meals on a schedule.
➢ Let the child choose from healthy foods.
➢ Help the child learn to make healthy choices for himself.
➢ Let the child choose between two or more healthy foods.
➢ Help the child to feel proud to choose foods that are healthy.
➢ Keep healthy foods in the house.
➢ Serve your child healthy foods.
➢ Help your child to plan meals.
➢ Involve your child in the kitchen.
➢ Remember, you may need to offer the food ten or more times before the child will taste it.

Fun ways to serve fruits and vegetables:
- Bowl of fruit that children can access by themselves
- Fruit salad
- Fruit kebabs on toothpicks
- Fruit smoothies
- Add vegetables to your family’s favorite recipes
- Dip vegetables into low fat salad dressing
- **Peanut Butter Yogurt Dip:** Mix together 1 cup of plain non-fat greek yogurt and 1/2 cup of peanut butter. Serve with fruit.

Helpful Websites:
- [http://www.sesamestreet.org/parents/topicsandactivities/toolkits/healthyhabits](http://www.sesamestreet.org/parents/topicsandactivities/toolkits/healthyhabits)
- [http://www.choosemyplate.gov/preschoolers.html](http://www.choosemyplate.gov/preschoolers.html)