EXAMINING THE IMPACT OF FAMILY NEWSLETTERS ON THE BREAKFAST CONSUMPTION HABITS OF PRESCHOOL CHILDREN AND FAMILIES

by

SIENNA ANTOINETTE VANGELDER

(Under the Direction of Diane Bales)

ABSTRACT

Childhood obesity is a growing problem in the United States. The negative consequences of childhood obesity have been well documented, and research has been conducted on the prevention, intervention, and treatment of this health issue. Eating breakfast is one indicator that has been associated with improved nutrition and protection against obesity. The current study sought to examine breakfast consumption among preschoolers and to evaluate the effectiveness of family newsletters in promoting eating a healthy breakfast. Before and after receiving newsletters about breakfast consumption, 36 families of preschool children completed pre- and post-surveys about breakfast frequency and quality. Data was analyzed to assess changes in breakfast consumption for the experimental group. The results indicated that just reading the newsletters did not have a significant effect on breakfast frequency or quality for preschool children and families. Limitations and directions for future research are discussed.

INDEX WORDS: Childhood obesity, Preschool, Breakfast consumption, Family newsletters
EXAMINING THE IMPACT OF FAMILY NEWSLETTERS ON THE BREAKFAST
CONSUMPTION HABITS OF PRESCHOOL CHILDREN AND FAMILIES

by

SIENNA ANTOINETTE VANGELDER
B.S., The University of Arizona, 2012

A Thesis Submitted to the Graduate Faculty of The University of Georgia in Partial Fulfillment
of the Requirements for the Degree

MASTER OF SCIENCE

ATHENS, GEORGIA

2014
EXAMINING THE IMPACT OF FAMILY NEWSLETTERS ON THE BREAKFAST CONSUMPTION HABITS OF PRESCHOOL CHILDREN AND FAMILIES

by

SIENNA ANTOINETTE VANGELDER

Major Professor:    Diane Bales

Committee:    Charlotte Wallinga

David Wright

Electronic Version Approved:

Maureen Grasso

Dean of the Graduate School

The University of Georgia

May 2014
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>LIST OF TABLES</th>
<th>vii</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIST OF FIGURES</td>
<td>viii</td>
</tr>
</tbody>
</table>

## CHAPTER

1  **INTRODUCTION** ............................................................................................................. 1
   Definition of Terms ............................................................................................................... 1
   Background .......................................................................................................................... 1
   Purpose of the Study ............................................................................................................ 4

2  **LITERATURE REVIEW** ................................................................................................. 5
   Theoretical Framework ........................................................................................................ 5
   Childhood Obesity Prevention ............................................................................................ 8
   The Role of the Family in Child Obesity Prevention ....................................................... 9
   Family-School Collaboration in Child Obesity Prevention .............................................. 12
   Using Family Newsletters in Child Obesity Prevention ................................................. 13
   Breakfast Consumption ..................................................................................................... 14
   Gaps in Existing Literature ............................................................................................. 16
   Summary ............................................................................................................................ 17
   Research Questions ......................................................................................................... 17

3  **METHOD** ................................................................................................................... 19
   Design ............................................................................................................................... 19
   Participants ....................................................................................................................... 20
Description of the Family Newsletters .......................................................... 20
Measures ........................................................................................................ 23
Procedure ....................................................................................................... 27
Data Analysis .................................................................................................. 27
4 RESULTS ..................................................................................................... 29
Demographics .................................................................................................. 29
Breakfast Frequency and Quality ................................................................. 32
Parent and Child Breakfast Consumption ....................................................... 39
Family Newsletters and Breakfast Consumption ............................................ 40
Evaluation of the Family Newsletters ............................................................ 50
5 DISCUSSION .............................................................................................. 54
Breakfast Consumption Habits of Preschool Children and Families ............... 54
Breakfast Frequency and Quality ................................................................... 54
Parent and Child Breakfast Consumption ....................................................... 56
Family Newsletters and Breakfast Consumption ............................................ 57
Evaluation of the Family Newsletters ............................................................ 59
Limitations ..................................................................................................... 60
Implications and Directions for Future Research ........................................... 63
Conclusions ..................................................................................................... 65
REFERENCES ............................................................................................... 66
APPENDICES ................................................................................................. 77
Appendix A: Parent Consent Form ................................................................... 77
Appendix B: Parent Pre-Survey ....................................................................... 80
Appendix C: Parent Post-Survey ........................................................................................................85
Appendix D: Family Newsletters for Experimental Group ...........................................................91
Appendix E: Family Newsletters for Control Group .......................................................................96
LIST OF TABLES

Table 1: Newsletter readability.................................................................22
Table 2: Assessing breakfast quality (Adapted from Radcliffe et al., 2004)................25
Table 3: Child and parent demographics......................................................31
Table 4: Breakfast food group frequencies and percentages among children.............37
Table 5: Breakfast food group frequencies and percentages among parents.................38
Table 6: Changes in average breakfast food group consumption among children...........46
Table 7: Changes in average breakfast food group consumption among parents............47
Table 8: Family newsletters read and family fun activities tried.................................51
LIST OF FIGURES

Figure 1: Applying the ecological model to child weight status (Davidson & Birch, 2001). .......7
Figure 2: Changes in average breakfast quality scores.................................................................49
CHAPTER 1

INTRODUCTION

Definition of Terms

*Overweight*: Body mass index (BMI) at or above the 85\textsuperscript{th} percentile and lower than the 95\textsuperscript{th} percentile for children of the same age and sex (Barlow, 2007).

*Obese*: Body mass index (BMI) at or above the 95\textsuperscript{th} percentile for children of the same age and sex (Barlow, 2007).

*Healthy Eating*: Healthy (or healthful) eating emphasizes fruits, vegetables, whole grains, and fat-free or low-fat milk products and a limited intake of saturated fats, trans fats, cholesterol, salt, and added sugars (Dietary Guidelines for Americans, 2010).

Background

Childhood obesity is a national public health concern. According to the Centers for Disease Control and Prevention (CDC), obesity prevalence among children and adolescents has almost tripled since 1980. Data from the 1976-1980 and 2007-2008 National Health and Nutrition Examination Surveys (NHANES) revealed an increase from 5\% to 10.4\% in the prevalence of obesity among 2-to 5-year olds. The 2007-2008 NHANES data found that 21.2\% of preschool children were either overweight or obese. Today, approximately 12\% of preschoolers in the United States are obese (CDC, 2013). Among children from low-income families, these numbers are even more severe (Sothern, 2004). According to the 2009 Pediatric Nutrition Surveillance System (PedNSS), 1 in 3 low-income children are obese or overweight before their fifth birthday (CDC, 2012). The child obesity epidemic has also disproportionately
affected certain racial/ethnic groups, with higher prevalence of obesity among Black and Mexican American individuals (Barlow, 2007).

Because obese children are more likely to become obese adults (Caprio et al., 2008; Must & Anderson, 2003), it makes sense to focus prevention and intervention efforts on young children. Previous studies show that the preschool years, in particular, are a critical stage for education and prevention efforts (Barlow, 2007; Bellows et al., 2011; Birch & Ventura, 2009), in part because this is a time when many children establish nutritional and activity habits that may follow them through adulthood (Hodges et al., 2013).

Childhood obesity is associated with a variety of psychosocial and physiological complications (Daniels, 2006; Ludwig, 2007; Must & Anderson, 2003) such as poor self-esteem, anxiety, depression, sleep apnea, and asthma (Ludwig, 2007). Obese children are also more likely to have high blood pressure, high cholesterol, and type 2 diabetes, which are risk factors for cardiovascular disease (CDC, 2012). The associations between child obesity and these negative health consequences illustrate the potential impairments on quality of life that can result from the disease.

There are many risk factors for childhood obesity (Caprio et al., 2008; Reilly et al., 2005). Child lifestyle (e.g., sedentary activity, physical activity, and dietary intake) and family characteristics (e.g., sedentary activity, physical activity, dietary intake, nutritional knowledge, and child feeding practices) are extremely influential on the potential development of overweight or obesity (Davison & Birch, 2001). For example, a higher percentage of fat intake in children has been linked to a higher percentage of body fat and greater increases in BMI, while lower levels of physical activity have been associated with increases in BMI (Davison & Birch, 2001). Individual attributes such as gender, race/ethnicity, SES, and birth weight can also be associated
with preschool overweight and obesity (Kitsantas & Gaffney, 2010; Oldroyd, Renzaho, & Skouteris, 2011).

Given that children’s dietary intake is central to the development of overweight and obesity (Davison & Birch, 2001), nutrition is one of the most significant components of obesity interventions. While a poor quality diet may increase a child’s likelihood of becoming obese, a healthy diet can protect children against obesity and is an essential part of a healthy lifestyle (Fox et al., 2010). Breakfast consumption is one specific area of children’s diets that is considered an important determinant of a healthy lifestyle (Affenito, 2007). According to the Food Research and Action Center (2011), eating breakfast has both academic and health-related benefits for children, which may explain why breakfast is often referred to as the most important meal of the day. Unfortunately, breakfast skipping is a highly prevalent behavior among children in the U.S. (Affenito, 2007), with 12% to 34% of youth regularly skipping breakfast (Pereira et al., 2011). This is significant because breakfast eaters are less likely to be overweight and obese than their breakfast-skipping peers (Rampersaud et al., 2005). In addition to breakfast frequency, breakfast quality is an important factor to consider because a low-quality breakfast can compromise overall nutrition (Alexy, Wicher, & Kersting, 2010).

Family involvement is a key component of childhood obesity prevention and intervention programs (Blom-Hoffman et al., 2008; Golan, 2006; Golan & Weizman, 2001; Heinberg et al., 2010; McGarvey et al., 2004; Watson et al., 2011). As such, past research has focused on child obesity and the family context, with special attention being paid to the family food environment (Lindsay et al., 2006; Macfarlane et al., 2009). In light of the fact that children do not develop in isolation, it is important to consider the impact of the home and family context on children’s nutrition-related behaviors and practices. As young children develop habits related to food and
activity, parents can shape the environment to promote either healthful or unhealthful eating (Lindsay et al., 2006). Parents influence children’s dietary practices through numerous pathways such as the types of foods made available, parent modeling, and parent nutritional knowledge (Davison & Birch, 2001). Family newsletters have been identified as one way to target parent knowledge (Brotherson, Holmes, & Bouwhuis, 2012), which may be significant considering that the interactions between children, parents, and their environment are influential in determining child behavior, particularly behaviors related to health and nutrition (Watson et al., 2011).

**Purpose of the Study**

The purpose of the current study is to explore parents’ influence on children’s dietary practices by examining breakfast frequency and quality among preschool children and their families. I aim to a) assess the effectiveness of family newsletters as an educational tool for families of preschool-age children and b) evaluate whether or not reading these newsletters changes breakfast consumption habits. Past literature will be reviewed to evaluate what is already known about childhood obesity interventions and breakfast consumption within this population. Social cognitive theory, Bronfenbrenner’s ecological model, and the Six-Cs model will be used to examine the various contexts (e.g., home, school) that influence child obesity prevention efforts.
CHAPTER 2

LITERATURE REVIEW

Through this literature review, I will examine research on the role of the family and family-school collaboration in obesity prevention efforts. Additionally, I will explore past literature related to breakfast consumption as an indicator of improved nutrition and a form of protection against obesity. Literature will be conceptualized according to social cognitive theory (Bandura, 1986), Bronfenbrenner’s ecological theory (Bronfenbrenner, 1986), and the Six-Cs model (Harrison et al., 2011).

Theoretical Framework

The social cognitive perspective is characterized by modeling, observational learning, and participation in an individual’s social setting (Bandura, 1986). Modeling is a process in which behavior is learned by basing one’s own actions on the observed actions of another individual (Bandura, 1986). Children’s natural tendency to imitate may explain why modeling via observational learning is an effective way to alter child behavior (Gibson et al., 2012). Children’s food choices, in particular, have been shown to be socially modifiable by adults (Addessi et al., 2005). According to Davison and Birch (2001), there is reason to believe that children will want to eat, and through repeated exposure learn to enjoy, foods that they see their parents eating. Past studies show that modeling by parents and teachers can be a useful strategy to encourage healthy eating and may help explain the strong associations between parent and child eating habits (Gibson et al., 2012).
Bronfenbrenner’s ecological model (1986) posits that human development occurs within a larger system, and that there are multiple levels of influence on development ranging from the most proximal to the most distal. These levels are the microsystem, mesosystem, macrosystem, exosystem, and chronosystem. The microsystem refers to an individual’s immediate surroundings and includes the family, school, child care, and home environments. The mesosystem refers to connections between microsystems and includes parent-teacher relationships. The macrosystem refers to general attitudes, values, and beliefs of the individual’s society such as cultural attitudes and ideologies. The exosystem refers to settings that the individual may not directly belong to, but that impact the individual nonetheless, such as the workplace of a child’s parent. Finally, the chronosystem refers to the cultural and historical context of the time, including transitions and events over the life course. The ecological model also emphasizes the bidirectional influences between the individual and the environment within these various contextual levels.

In a study on childhood overweight, Davison and Birch (2001) used Bronfenbrenner’s ecological model to illustrate individual risk factors for overweight and the relevant family and community influences on the child (see Figure 1). They identified child risk factors such as dietary patterns, child characteristics such as gender and age, family characteristics such as parent dietary intake and nutritional knowledge, and community characteristics such as socioeconomic status and ethnicity (Davison & Birch, 2001) that may contribute to a child’s risk of obesity.
Harrison and colleagues (2011) also built on the ecological model to create a model specific to childhood overweight and obesity. The Six-Cs model acknowledges the influence of select genetic and environmental factors on the child, suggests a system for categorizing environmental influences, and can be adapted to various stages of child development ranging from infancy through adolescence (Harrison et al., 2011). The levels, or “Six Cs,” of this model include the cell, child, clan, community, country, and culture. Cell represents genetic predispositions and biological factors (e.g., obesity-predisposing genes, food allergies). Child represents personal and behavioral characteristics (e.g., dietary intake). Clan represents family characteristics (e.g., parent nutritional knowledge, parent encouragement of healthy eating). Community represents the child’s social world outside the home (e.g., school snack). Country represents state- and national-level institutions (e.g., government funding of nutrition campaigns). Finally, culture represents societal and cultural factors (e.g., cultural norms for
portion size). This model incorporates significant factors from Bronfenbrenner’s model and expands on variables more salient to the current study.

These models provide a general overview of the various factors associated with child weight status and demonstrate the fit between these specific types of variables and the ecological systems framework. In general, they present a big picture of the multiple contributors to child obesity. Pulling from the ecological perspective and Six-Cs model, the microsystem (which includes both child and clan) and mesosystem are the contexts most significant to the current study. As previously discussed, there are multiple child and parent characteristics related to nutrition that may be especially significant to obesity prevention programs. For the current study, I am most interested in four of these constructs, specifically as they relate to breakfast consumption. The constructs are: a) parent nutritional knowledge, attitudes, and beliefs, b) child nutritional knowledge, attitudes, and beliefs, c) parent dietary intake and quality, and d) child dietary intake and quality. Each of these variables falls within the microsystem. At the mesosystem level, the interaction between the family and school contexts is important to the acquisition of child and parent nutritional knowledge. According to the social cognitive perspective, it seems plausible that parent nutritional knowledge and parent dietary intake influence child nutritional knowledge and child dietary intake. These relationships are significant because child dietary intake impacts the potential development of obesity.

**Child Obesity Prevention**

Over time, as rates of child obesity have steadily increased, there has been a surge of research related to the prevention, intervention, and treatment of this health issue. Given the costs and challenges associated with treatment, obesity prevention programs are an especially important area of focus (Barlow, 2007). In order to be effective, these types of prevention efforts
should concentrate on promoting a healthy lifestyle while incorporating large system approaches that account for the child’s family and other environmental factors (O’Dea, 2005). A number of previous prevention programs have focused primarily on physical activity (Bellows et al., 2011; Hodges et al., 2013), but the majority include an emphasis on nutrition and eating behaviors (Baskale & Bahar, 2011; Schwartz & Puhl, 2003), indicating that diet and nutrition are particularly important components of obesity prevention.

Barlow (2007) asserts that all children, starting from birth, should be targets for prevention efforts in order to establish healthy eating behaviors for life. However, although there are numerous studies related to obesity prevention programs for school-age children, the number of studies focusing on preschool children is limited (Bluford, Sherry, & Scanlon, 2007). Developing specific interventions focused on preventing obesity in preschoolers is important because the interventions can enhance children’s quality of life by improving overall psychological and physical health (Hodges et al., 2013). The first five years of life, in particular, are a critical period in which children are learning more about food and eating than they are at any other time (Birch & Ventura, 2009).

**The Role of the Family in Child Obesity Prevention**

The home and family environment has been identified as an important target area in child obesity prevention programs (Boonpleng et al., 2013; Sothern, 2004). In fact, many researchers believe that the home environment is the single most important setting for shaping children’s eating behaviors (Golan, 2006; Lindsay et al., 2006). The results of previous studies have demonstrated links between family structure and obesity (Schmeer, 2012), parent-child feeding behaviors and obesity (Birch et al., 2001; Clark et al., 2007), and the family food environment and weight status (Koszewski et al., 2011; Macfarlane et al., 2009; Swanson et al., 2011).
Additionally, research shows that parents influence child knowledge, beliefs, attitudes, and practice regarding food and eating habits (Golan & Weizman, 2001). These parent-child processes are central to children’s diet and subsequent risk for obesity.

**The relationship between parent nutritional knowledge and child nutritional knowledge.** Past research indicates that parental influences are early determinants of food attitudes in young children (Sothern, 2004). In keeping with the ecological framework, it is important to recognize that child nutritional knowledge, attitudes, and beliefs do not simply happen, but are shaped and formed by parent nutritional knowledge, attitudes, and beliefs. Anliker and colleagues (1990) were some of the first to examine the ways in which parents communicated with their preschool children about foods and nutrition. They found that the quantity and specificity of nutrition-related messages given by parents were significantly and positively correlated with children’s nutritional knowledge (Anliker et al., 1990). More recently, a study of 5-and 6-year old Australian children showed that parent knowledge of nutrition predicted child knowledge of nutrition (Zarnowiecki et al., 2011), highlighting the importance of early parent-child communication in the development of nutrition awareness.

**The relationship between parent nutritional knowledge and child diet.** Evidence suggests that parents’ understanding and knowledge of nutrition impacts child dietary practices (Campbell, Crawford, & Ball, 2006; Davison & Birch, 2001). Research shows that parents’ knowledge of nutrition is influential in children’s development of habits that can lead to overweight or obesity because of their authority over food selection and eating patterns (Lindsay et al., 2006). A lack of parental nutritional knowledge can contribute to improper portion or serving size and inappropriate food choices (Lindsay et al., 2006; Davison & Birch, 2001). For example, many parents believe fruit juice to be healthy, but in fact, research shows that frequent
fruit juice consumption may increase the risk of overweight among preschoolers because of the high sugar content (Lindsay et al., 2006).

In contrast, parent knowledge of healthy food behaviors can positively impact children’s dietary practices. As one example, mothers’ nutritional knowledge has been positively associated with children’s increased fruit and vegetable intake (Davison & Birch, 2001). This might be because an increased focus on and understanding of health leads parents to purchase more healthful foods such as fruits and vegetables for their child (Davison & Birch, 2001). These findings are particularly relevant to the preschool population, considering that young children do not make or prepare their own meals, instead eating what is provided to them by their parents. For this reason, parental education and awareness of healthy eating habits and nutrition for children are particularly important components of child obesity prevention efforts (Sothern, 2004).

The relationship between parent diet and child diet. There is also a relationship between parent and child eating habits whereby parents can act as an authority figure that shapes their child’s eating habits (Barlow, 2007). According to social cognitive theory, the process of implementing a new behavior is enhanced by the presence of social models. Given that parents serve as a child’s first model of eating behavior, they have a significant influence on their child’s diet (Golan & Weizman, 2001). Just as parents can model a healthy eating style in the home environment by selecting and consuming healthy foods, they can also present a poor example by overeating or eating excessively fast (Golan & Weizman, 2001).

One study examined the impact of social influence on preschool nutrition by assessing 2- to 5-year old children’s behavior towards new foods when an adult model was not eating, was eating food of a different color, or was eating food of the same color (Addessi et al., 2005).
Results showed that children accepted and ate the new food when an adult was eating food of the same color (Addessi et al., 2005), indicating the significant impact of observational learning. In another study of preschool food behaviors and the home environment, children’s fruit and vegetable consumption was positively, significantly associated with parent’s fruit and vegetable consumption (Wyse et al., 2011). These findings demonstrate that modifying parent diet can be an effective strategy for interventions focused on children’s eating behaviors (Wyse et al., 2011).

Family-School Collaboration in Child Obesity Prevention

Although it is clear that the family context is central to child health outcomes, obesity prevention efforts need to focus not only on individual and family levels, but also on the children’s other contexts (Boonpleng et al., 2013). There is evidence that in order for child overweight and obesity prevention efforts to be effective, they should focus primarily on the child, family, and family-school collaboration (Boonpleng et al., 2013). The following are examples of successful home-school interventions with young children.

In a study of a literacy-based health education program, a home-school intervention served to bridge home and school cultures in an urban population (Blom-Hoffman et al., 2008). Interactive children’s books related to positive nutrition practices were sent home to families of kindergarten and first grade children. Parents, children, and teachers had positive perceptions of the books, and parents’ nutritional knowledge increased on key concepts as a result of the material (Blom-Hoffman et al., 2008).

Sweitzer and colleagues (2010) evaluated the effectiveness of a nutrition intervention entitled “Lunch Is in the Bag.” This intervention targeted parents of preschool children to increase the number of servings of fruits, vegetables, and whole grains in sack lunches sent from home. The program included parent handouts, classroom activities, education stations, and
teacher trainings designed to fit child care environments. Results indicated that the intervention was effective in improving the nutritional quality of children’s sack lunches, as demonstrated by an increased number of servings of vegetables (Sweitzer et al., 2010).

Another study evaluated the effects of a preschool nutrition education program on children’s nutritional knowledge and behaviors (Baskale & Bahar, 2011). After receiving nutrition education related to the food groups and USDA food pyramid, children’s knowledge scores and consumption of healthy foods such as fish, citrus fruits, and leafy vegetables increased (Baskale & Bahar, 2011). It is clear that the early childhood education environment can help enhance parent and child learning. Taken together, the results from each of these studies show how the home and school environments can work together to impact both families and children through nutrition-focused education and awareness.

Using Family Newsletters in Child Obesity Prevention

Family newsletters have been identified as a potentially useful way to enhance parent education. Past studies show that newsletters are effective educational tools because they target specialized populations and enhance parent knowledge, confidence, and skills (Brotherson, Holmes, & Bouwhuis, 2012; Walker, 2005). Brotherson, Holmes, and Bouwhuis (2012) evaluated the impact of parenting newsletters on fathers of kindergarten children. The results showed that approximately 90% of the participants in their sample read the newsletters, with about 50% reading all or most of it, and the majority of fathers indicating that the newsletters increased their knowledge and improved positive parenting behaviors (Brotherson, Holmes, & Bouwhuis, 2012). Although the content of these newsletters was not related to childhood obesity prevention, these findings suggest that parent newsletters may be an effective way to target parent knowledge, attitudes, and behaviors.
Parent newsletters have also been used in preschool interventions specific to child obesity (Fitzgibbon et al., 2011; Witt & Dunn, 2012). Over 600 preschoolers enrolled in Head Start programs participated in the “Hip Hop to Health Jr.” obesity prevention program, which targeted television viewing, physical activity, and diet (Fitzgibbon et al., 2011). Family members were included in the program through the use of parent newsletters. The intervention was successful in increasing physical activity and decreasing screen time. However, no specific data related to the newsletters were reported. Parents also received newsletters as part of the “Color Me Healthy” nutrition and physical activity program for preschoolers (Witt & Dunn, 2012). Results of this study indicated that children who were exposed to the program significantly increased their consumption of fruits and vegetables (Witt & Dunn, 2012). Although evaluations of the program indicated that it had a positive influence on healthful eating, the impact of the newsletters was not analyzed or discussed. Because family newsletters have been components of successful previous interventions with preschoolers, it seems logical to explicitly examine their impact.

**Breakfast Consumption**

Although breakfast is a significant component of health and nutrition, breakfast skipping has become increasingly common in the U.S. (Alexy, Wicher, & Kersting, 2010). Among preschool children, breakfast consumption declined by 5% between 1965 and 1991 (Alexy, Wicher, & Kersting, 2010). Considering that 8% of 6-11 year olds and 23% of adolescents skip breakfast (CDC, 2008), it appears that the incidence of breakfast skipping increases with age. This is significant because breakfast skipping has been linked to poorer overall dietary quality (Pereira et al. 2011). According to the Food Research and Action Center (2011), children and adolescents who eat breakfast have better weight-related outcomes, such as lower BMI and less likelihood of being chronically obese, than children who skip breakfast.
Among children and adolescents, regular breakfast consumption is considered a determinant of a healthful lifestyle (Affenito, 2007). The daily consumption of breakfast appears to have a strong protective effect in preventing weight gain and obesity (Leidy, 2013), which may be due to the fact that breakfast consumption can increase feelings of fullness and help with appetite control (Leidy & Racki, 2010). In a study of Canadian preschoolers, children who skipped breakfast were significantly more likely to be classified as overweight or obese (Dubois et al., 2009). Similarly, Utter and colleagues (2007) examined breakfast consumption among 5-14 year olds in New Zealand and found that skipping breakfast was associated with higher BMI. Young children who frequently eat breakfast also tend to have a higher quality diet (e.g., more milk, vegetables, fruits, and whole grains) and an increased consumption of key vitamins and minerals compared to those who skip breakfast (Leidy, 2013). This was confirmed in the Dubois et al. (2009) study; children who regularly ate breakfast consumed more servings of vegetables, grains, and dairy throughout the day as compared to those who skipped breakfast. Additionally, breakfast consumers typically eat fewer unhealthy snacks, which tend to be calorie-dense, high in saturated fat, and/or high in sugar (Leidy, 2013). In keeping with this idea, children from the Utter et al. (2007) study who missed breakfast were more likely to consume unhealthy snack foods.

In addition to breakfast frequency, breakfast quality is important to the maintenance of a healthy diet (Alexy, Wicher, & Kersting, 2010) because the types of foods consumed at breakfast can influence health outcomes (Leidy, 2013). High-protein breakfasts are particularly beneficial because they help regulate appetite throughout the day (Leidy & Racki, 2010). The increased feelings of fullness associated with consuming a high-protein breakfast can help to decrease unhealthy dietary practices such as overeating (Leidy & Racki, 2010). Daily breakfast
consumption consisting of healthful foods from a variety of food groups (e.g., fruit, protein, dairy) that are high in nutritive value can positively impact children’s health and well being (Rampersaud et al., 2005). Together, breakfast frequency and quality contribute to appetite regulation, overall dietary intake, and the potential risk for obesity (Pereira et al., 2011).

In view of the ecological model, there are various child and family characteristics that may influence breakfast consumption habits. For instance, lack of monetary resources to provide breakfast, lack of time to prepare and eat breakfast, lack of knowledge about health and nutrition, and unavailability of foods for breakfast all contribute to children’s breakfast skipping (Deshmukh-Taskar et al., 2010). In a review of the family correlates related to breakfast consumption among adolescents and young adults, Pearson, Biddle, and Goreley (2009) found that parental breakfast eating was positively associated with adolescents’ breakfast consumption. Similarly, an empirical study of breakfast consumption and obesity during adolescence and young adulthood identified the need for parental promotion of breakfast at home and/or with schools to strengthen school-based breakfast programs (Merten, Williams, & Shriver, 2009).

Although these studies are not specific to preschool children, they illustrate the parent-child relationship as it relates to dietary influence and social modeling of breakfast consumption, which is salient to the current study. Given what it is known about the relationship between parent and child nutritional knowledge and dietary intake, it is likely that if parents are able to influence adolescent breakfast habits, then they are capable of influencing preschool breakfast habits.

Gaps in Existing Literature

Even though research has shown the benefits of regular, healthy breakfast consumption in protecting against child obesity, few studies have examined breakfast consumption of
preschoolers and their families. Additionally, despite the fact that family newsletters have been shown to be a useful tool in increasing parent knowledge, they have not previously been evaluated as part of an obesity prevention program. In sum, to my knowledge, no previous studies have evaluated the efficacy of family newsletters related specifically to breakfast consumption as an educational tool for parents of preschoolers.

Summary

Child obesity is a complex issue with many contributing factors and various potential prevention and intervention strategies. Past literature indicates that nutrition, and specifically breakfast consumption, is an important component of child obesity prevention. Previous studies suggest that in order to be effective, child obesity interventions should target the child through a collaboration between the family and school environments. There is evidence that family involvement is key to successful interventions, in part because of the associations between parents’ nutritional knowledge, parents’ eating habits, child nutritional knowledge, and child eating habits. Newsletters have been identified as one way to increase parent knowledge, thus influencing parent and child eating habits. Using this literature review as a lens through which to view the current study, there is reason to believe that providing parents with a family newsletter related to breakfast consumption could have a positive influence on their own breakfast habits and on those of their child.

Research Questions

The goal of this study is to examine frequency and quality of breakfast consumption among preschoolers and their families, and to evaluate the effectiveness of family newsletters in promoting breakfast consumption. The study examines the following research questions related to breakfast consumption and family newsletter effectiveness:
(a) What is the frequency and quality of breakfast consumption among preschool children and their families?

(b) Is there a relationship between parent and child breakfast consumption?

(c) Is reading the family newsletters associated with a change in frequency and/or quality of breakfast consumption among preschoolers and their families?

(d) What is the perception of the newsletters among families who report reading them?
CHAPTER 3

METHOD

This study sought to measure breakfast consumption behaviors among preschoolers and their families, and to draw conclusions about the impact of family newsletters on these behaviors. Quantitative and qualitative survey research was used to assess parent and child demographics, breakfast-eating habits, and the effectiveness of family newsletters.

Design

This research used a quasi-experimental design. Quasi-experimental designs compare groups and provide tests of causal influences (D’Onofrio et al., 2013). Quasi-experiments are characterized by groups of study participants who are not randomly assigned, but the features of the design allow the researcher to rule out likely alternative explanations for an association (D’Onofrio et al., 2013). More specifically, this study utilized a non-equivalent groups design, in which an experimental and control group received a pre- and post-test. For this study, half of the classrooms at each preschool were randomly assigned to either the experimental or control group. Randomization was performed by classroom instead of by individual in an effort to prevent parent exposure to the family newsletters from the other group. Both groups were comprised of preschool children and parents living in the Athens, Georgia or Watkinsville, Georgia area. The experimental group received four family newsletters over the course of four weeks related to eating a healthy breakfast (see Appendix D). The control group received four family newsletters over the course of four weeks related to oral health (see Appendix E). All respondents in both groups completed identical pre- and post-surveys (see Appendix B and C).
Participants

Participants were recruited from a total of twenty classrooms at three preschool programs in Athens, Georgia or Watkinsville, Georgia. All three preschools are private half-day programs; one is a Georgia lottery funded program and the other two are associated with churches. All participants were parents of 3 to 5 year olds currently enrolled in preschool. Across the three programs, the pool of potential participants included approximately 300 families. Of these, 68 families signed consent forms to participate in the study, 55 families completed pre-surveys, and 36 completed both pre- and post-surveys. Only participants who completed all parts of the study were included in data analyses. Therefore, the final sample consisted of 36 parents of preschoolers. There were 7 participants from one preschool, 13 from another, and 16 from a third preschool. The experimental group consisted of 15 parents and the control group consisted of 21 parents.

Description of the Family Newsletters

All participating families received four one-page newsletters containing educational information and a family fun activity. The experimental newsletters covered topics related to breakfast consumption. The four subtopics that were explored are the benefits of breakfast, the negative effects of skipping breakfast, breakfast ideas with foods from several food groups, and ideas on making healthy breakfast meals fun for kids. The control newsletters covered topics related to oral health. This topic was selected because it is health-related but does not contain information about healthy eating. The four subtopics that were explored are the importance of regular dental visits, independence and the age when children can brush their own teeth, setting routines for brushing teeth, and thumb sucking. The experimental and control newsletters had a similar design and used the same layout, fonts, and color scheme. It was important that the
newsletters had a uniform look because this eliminated differences in newsletter format (such as black and white versus color, easy to read versus difficult to read, etc.) and therefore, allowed the researcher to make comparisons between the control and experimental group based on newsletter content.

**Newsletter readability.** The experimental newsletters had already been tested and revised, but the control newsletters had not. To ensure that the newsletters were straightforward and easy to comprehend, I tested the readability level of each individual newsletter using the SMOG Index (www.readabilityformulas.com). The SMOG Index produces a score indicating the grade level that an average individual would need to be in to read the text (e.g., a score of 6.4 indicates that an average student in 6th grade would be able to read the text). This score is based on sentence structure, punctuation, and word choice. Responses from the National Assessment of Adult Literacy (conducted in 1992 and 2003) showed that the average American adult reads at the 9th grade level and more than 20% of adults read at or below the 5th grade level (U.S. Department of Education, National Center for Education Statistics, 2007). Considering these statistics, I aimed for a readability level between 5 and 8, ensuring the newsletters would be appropriate for a majority of adults. Using the SMOG Index, I tested each oral health newsletter and revised them if the score was not between 5 and 8. The breakfast newsletters had previously been tested and revised according to this same index. Both the initial and revised readability scores for each newsletter are listed in Table 1 below.
Table 1. Newsletter readability.

<table>
<thead>
<tr>
<th>Newsletter</th>
<th>Initial Readability</th>
<th>Revised Readability</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Breakfast Fuels Your Day”</td>
<td>7.9</td>
<td>6.7</td>
</tr>
<tr>
<td>“A Healthy Breakfast Feeds the Brain”</td>
<td>7.1</td>
<td>6.2</td>
</tr>
<tr>
<td>“What to Eat for Breakfast?”</td>
<td>9.9</td>
<td>7.3</td>
</tr>
<tr>
<td>“Making Breakfast Can Be Fun”</td>
<td>6.8</td>
<td>5.7</td>
</tr>
<tr>
<td>“Regular Dental Visits”</td>
<td>9.4</td>
<td>7.8</td>
</tr>
<tr>
<td>“Independence”</td>
<td>6.5</td>
<td>6.5</td>
</tr>
<tr>
<td>“Routines”</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>“Thumb Sucking”</td>
<td>8.3</td>
<td>7.2</td>
</tr>
</tbody>
</table>

The minimum revised readability score was 5.7 and the maximum score was 7.8. The mean readability level for all newsletters was 6.675.

**Pilot study.** After testing the readability level of each control group newsletter, and making appropriate revisions, a small pilot study was conducted to gain feedback on newsletter content from parents of preschoolers (the experimental group newsletters related to breakfast had been previously pilot-tested and so were not piloted again for this study). Four parents of preschoolers reviewed each of the control group newsletters related to dental health. The dental health newsletters and a short questionnaire were distributed in person. After reviewing the newsletters, respondents answered “how likely are you to read the newsletters?” and “how likely are you to do the family fun activities?” using a 5-point Likert scale (1 to 5, with 1 representing “not likely” and 5 representing “very likely”). They also answered the question “do the newsletters provide useful information about oral health to parents of preschoolers?” with “no,”
“not sure,” or “yes.” Finally, they answered the open-ended questions “what did you like about the newsletters?” and “what changes would you make to improve the newsletters?” The feedback was positive, with all four parents reporting that they were likely or very likely (4s and 5s) to read the newsletters and do the family fun activities. The group also expressed their opinions about the newsletters in an informal interview. All four indicated that the newsletters provided useful information about oral health to parents of preschoolers, and no major changes were suggested. The results from this pilot study suggested that the control newsletters were suitable for the target population.

**Measures**

All participants received a pre-survey prior to, and a post-survey after, receiving the newsletters. A survey was chosen because the questions can be answered quickly; parents are likely to be busy, and may be more willing to participate in this type of study if there is not a great time commitment. In order to evaluate the effectiveness of the family newsletters in increasing knowledge about and consumption of high-quality, regular breakfast, parents completed two measures regarding their own and their child’s breakfast consumption habits. The pre-survey also included a demographic survey, and the post-survey included a basic evaluation of the newsletters. Because the control group received newsletters related to oral health, the pre- and post-surveys also included questions related to oral health. These questions were excluded from analysis because they do not pertain to the research questions of the current study. The following sections describe the components of the parent surveys.

**Demographics.** Demographic data were collected at the end of the pre-survey. Questions were asked about child gender, child age, parent gender, parent age, parent education level, and number of children in the home. Parents chose the best answer from multiple options.
**Children’s breakfast consumption.** This measure was designed to assess children’s breakfast consumption habits. Breakfast was defined as the first meal of the day, typically eaten in the morning. Parents reported the frequency and quality of the child’s average weekly breakfast consumption. To assess frequency, they answered the question “over the last week how often did your child eat breakfast?” using a 4-point Likert scale (0 times a week, 1-3 times a week, 4-6 times a week, 7 times a week). Descriptive words (e.g., “always”) were not included in the survey so as not to influence respondent answers. Additionally, they answered the question “does your child eat breakfast (not including morning snack) at school?” by choosing “yes” or “no.”

Breakfast quality was measured based on whether the respondent ate a variety of food groups for breakfast. The five core food groups, as defined by the United State Department of Agriculture and illustrated by MyPlate, are grains, vegetables, fruits, dairy, and protein. These food groups set the foundation for a healthy diet, and adequate daily intake from all groups is recommended. To assess quality, parents answered a question about each food group, such as “on average, how often does your child eat something from the grains group for breakfast?” Parents were also asked to list what their child ate for breakfast the previous day (i.e., 24-hour recall). Food recalls are often used as a way to assess dietary intake among preschoolers (Serdula et al., 2001). Responses from the 24-hour recall were categorized by food group and compared to responses from the questionnaire. Using the information from the 24-hour recall, respondents were assigned a breakfast quality score. This score is based on the five core food groups and ranges from 1 (zero food groups) to 5 (representing foods from three or more different food groups). This scoring system was adapted from two Australian studies that examined the quality of children’s breakfast consumption (O’Sullivan et al., 2009; Radcliffe et al., 2004). In this
system, a score of 1 to 3 represents lower breakfast quality, and a score of 4 or 5 represents higher breakfast quality.

Table 2. Assessing breakfast quality (Adapted from Radcliffe et al., 2004).

<table>
<thead>
<tr>
<th>Score</th>
<th>Definition</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>No food</td>
<td>Nothing</td>
</tr>
<tr>
<td>2</td>
<td>Food from ‘extra’ foods only (e.g., sweets)</td>
<td>Chocolate bar</td>
</tr>
<tr>
<td>3</td>
<td>Food from one food group</td>
<td>Banana</td>
</tr>
<tr>
<td>4</td>
<td>Food from two food groups</td>
<td>Cereal and milk</td>
</tr>
<tr>
<td>5</td>
<td>Food from three or more food groups</td>
<td>Toast, an apple, and milk</td>
</tr>
</tbody>
</table>

**Parents’ breakfast consumption.** Parents also reported the frequency and quality of their own typical weekly breakfast habits. They answered the same questions (except whether they eat breakfast at school) that they were asked about their children, and responded using the same 4-point Likert scale (0 times a week, 1-3 times a week, 4-6 times a week, 7 times a week). They were also asked to list what they ate for breakfast the previous day (i.e., 24-hour recall). Using this information, parents also received a breakfast quality score as outlined above.

**Evaluation of family newsletters.** An evaluation of the family newsletters was included at the end of the post-survey for all participants in both groups. Responses from the control group were not analyzed because they do not address the research questions. First, parents answered two questions to assess whether they read and used the newsletters. Questions included “how many of the newsletters did you read?” and “how many of the family fun activities did you try?”, and respondents answered on a scale of 0 to 4. Parents also responded to statements using a 5-point Likert scale that ranged from strongly disagree to strongly agree. Statements included “the family newsletters were informational,” “the family newsletters were clear and easy to
read,” “the family newsletters were useful and practical,” “the design of the family newsletters was appealing,” “the family fun activities were fun and interesting,” “the instructions for the activities were clear and easy to understand,” and “I would recommend the newsletters to other parents of preschoolers.” Finally, parents were asked, “what did you like best about the newsletters?” and “what changes would you make to improve the newsletters?”

**Pilot study.** The pre- and post-surveys were pilot-tested with parents of preschoolers. Four respondents read and evaluated each survey. Two of these respondents also evaluated the control newsletters. Parents answered “how likely are you to complete the pre-survey?” and “how likely are you to complete the post-survey?” using a 5-point Likert scale (1 to 5, with 1 representing “not likely” and 5 representing “very likely”). They also answered the question “do the surveys appropriately measure breakfast consumption and oral health habits?” with “no,” “not sure,” or “yes.” Finally, they answered the open-ended questions “what did you like about the surveys?” and “what changes would you make to improve the surveys?” Three parents reported they were likely or very likely to complete both the pre- and post-survey (4s and 5s) and one parent indicated she was somewhat likely to complete them (3s). The group also expressed their opinions about the newsletters in an informal interview. All four agreed that the surveys appropriately measured breakfast consumption and oral health habits, and no major changes were suggested. The results from this pilot study indicated that the surveys were suitable for the target population.

**Validity.** Content validity asks if the items of a survey measure the content they were intended to measure (Creswell, 1994, p. 121). This is a measure of how appropriate the survey items seem to reviewers with knowledge on the subject (Litwin, 1995, p.35). To this end, certain survey questions were included, discarded, or modified based on recommendations by committee
members and results from the pilot study. For instance, breakfast frequency questions were modified to include examples of each food group. These types of revisions helped make the questions clear, concise, and easy to understand. This provides some assurance that the survey questions truly measured the concepts I aimed to measure (breakfast quality, breakfast frequency, and newsletter effectiveness).

**Procedure**

Parents were recruited to participate in the study through the distribution of a parent letter and consent form explaining the study (see Appendix A). Consent forms were distributed in the children’s classrooms through the child’s cubby or family communication folder, and parents were encouraged to return the forms to a folder in the classroom within a week.

Data collection took place for two months, and occurred in multiple preschool classrooms simultaneously. Parents who chose to participate in the study filled out the pre-survey and returned it to a folder in their child’s classroom within a week. Parents who returned the pre-survey received four family newsletters over the course of four weeks. Two weeks after receiving all four newsletters, a post-survey was sent home. This amount of time provided a short break for families to digest the information and ensured that the post-surveys were indicative of behavior about two months after receiving the pre-surveys. Families were encouraged to return the completed post-surveys to a folder in the child’s classroom within a week. After that time period had passed, the preschool directors sent out reminders to parents who had not completed the post-survey, encouraging them to return the surveys.

**Data Analysis**

All analyses were conducted with SPSS. Descriptive statistics (e.g., mean, standard deviation) were calculated to study participant demographics, the frequency and quality of
breakfast consumption, and how parents evaluated the newsletters. Frequencies were compared to investigate demographic differences between the experimental and control group in child gender and age, parent gender and age, parent education, marital status, and number of children in the family. Correlations were used to analyze the association between child breakfast quality and parent breakfast quality. Paired sample t-tests were used to compare breakfast frequency and quality in the pre- and post-tests to determine whether the family newsletters were effective.
CHAPTER 4
RESULTS

This study examined four main research questions related to breakfast consumption and family newsletter effectiveness. Demographics are presented first (see Table 3), followed by the results for each of these four questions.

Demographics

Nearly all of the parents who participated in the study were female; there were 33 females (91.7%) and 3 males (8.3%). Parent ages ranged from 25 to 54. Among the participants, 26 parents (72.2%) were between 35-44 years old, 9 parents (25%) were between 25-34 years old, and 1 parent (2.8%) was between 45-54 years old. The experimental and control groups were similar with regard to parent age. For both groups, the majority of parents were in the 35-44 year range; 73.3% of the experimental group and 71.4% of the control group were in this range.

Of the 36 preschool children in the study, 20 (55.6%) were boys and 16 (44.4%) were girls. There were more boys in the experimental group (73.3%) than the control group (42.9%). Children’s ages ranged from 3 to 5. Among all participants, there were 18 (50%) four-year-olds, 13 (36.1%) five-year-olds, and 5 (13.9%) three-year-olds. For both groups, about half of the children (53.3% of the experimental group and 47.6% of the control group) were four years old. There were more three-year-olds in the experimental group (20%) than the control group (9.5%).

The majority of the respondents reported that 2 adults (86.1%) lived in their household, 3 participants (8.3%) reported that 1 adult lived in the household and 2 participants (5.6%) reported that 3 adults lived in the household. The number of children in the household varied;
61.1% had two children in the household, 19.4% had four or more, 11.1% had one, and 8.3% had three children living in the household. Among the experimental group, 86.7% had two adults in the household and 80% had two children. Among the control group, 85.7% had two adults in the household and 47.6% had two children; 33.3% of the control group had four or more children in the household.

The parents in this sample were highly educated; more than half (61.1%) had a Master’s or Doctorate degree, 22.2% had a Bachelor’s degree, 13.0% had completed some college work, and 2.8% had an Associate degree. Among the parents in the experimental group, 53.3% had a Master’s or Doctorate degree, 26.7% had a Bachelor’s degree, and 20% had complete some college work. Among the parents in the control group, 66.7% had a Master’s or Doctorate degree, 19% had a Bachelor’s degree, 9.5% had completed some college work, and 4.8% had an Associate degree. There were no participants who had completed less than some college work.
Table 3. Child and parent demographics.

<table>
<thead>
<tr>
<th></th>
<th>Experimental Group</th>
<th>Control Group</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td><strong>Parent Gender</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>1</td>
<td>6.7</td>
<td>2</td>
</tr>
<tr>
<td>Female</td>
<td>14</td>
<td>93.3</td>
<td>19</td>
</tr>
<tr>
<td><strong>Parent Age</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25-34</td>
<td>4</td>
<td>26.7</td>
<td>5</td>
</tr>
<tr>
<td>35-44</td>
<td>11</td>
<td>73.3</td>
<td>15</td>
</tr>
<tr>
<td>45-54</td>
<td>0</td>
<td>0.0</td>
<td>1</td>
</tr>
<tr>
<td><strong>Child Gender</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>11</td>
<td>73.3</td>
<td>9</td>
</tr>
<tr>
<td>Female</td>
<td>4</td>
<td>26.7</td>
<td>12</td>
</tr>
<tr>
<td><strong>Child Age</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>20.0</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>8</td>
<td>53.3</td>
<td>10</td>
</tr>
<tr>
<td>5</td>
<td>4</td>
<td>26.7</td>
<td>9</td>
</tr>
<tr>
<td><strong>Adults in Household</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>6.7</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>13</td>
<td>86.7</td>
<td>18</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>6.7</td>
<td>1</td>
</tr>
<tr>
<td><strong>Children in Household</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>6.7</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>12</td>
<td>80.0</td>
<td>10</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td>13.3</td>
<td>1</td>
</tr>
<tr>
<td>4+</td>
<td>0</td>
<td>0.0</td>
<td>7</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Some college work/ No degree</td>
<td>3</td>
<td>20.0</td>
<td>2</td>
</tr>
<tr>
<td>Associate degree/ 2 year degree</td>
<td>0</td>
<td>0.0</td>
<td>1</td>
</tr>
<tr>
<td>Bachelor’s degree/ 4 year degree</td>
<td>4</td>
<td>26.7</td>
<td>4</td>
</tr>
<tr>
<td>Master’s degree/ Ph.D.</td>
<td>8</td>
<td>53.3</td>
<td>14</td>
</tr>
</tbody>
</table>
**Breakfast Frequency and Quality**

The first research question asked, “What is the frequency and quality of breakfast consumption among preschool children and their families?” This question is answered by the breakfast consumption behaviors reported in the pre-surveys, before parents received the family newsletters (see Table 4 and Table 5).

**Frequency.** Half of the parents (50%) reported that their child ate breakfast at school and half (50%) reported that their child did not eat breakfast at school. However, 12 of 18 the parents who reported that their child ate breakfast at school attended programs that did not offer breakfast. This indicates that parents misunderstood the question or responded to this question in a manner different from the way it was intended. Because so many parents appeared to misunderstand this question, data from this question were not analyzed further.

Nearly all of the parents (91.7%) reported that over the last week, their child ate breakfast 7 times; the rest reported that their child ate breakfast 4 to 6 times (8.3%). Among the experimental group, 93.3% of the children ate breakfast 7 times and 6.7% ate breakfast 4 to 6 times. Among the control group, 90.5% of the children ate breakfast 7 times and 9.5% ate breakfast 4 to 6 times.

The majority of parents (66.7%) also reported eating breakfast 7 times that week; 19.4% reported eating breakfast 4 to 6 times, and 13.9% reported eating breakfast 1 to 3 times. There were some differences in parents’ breakfast consumption frequency between the experimental and control groups. Among the experimental group, 86.7% of the parents ate breakfast 7 times and 13.3% ate breakfast 4 to 6 times. Among the control group, 52.4% of the parents ate breakfast 7 times, 23.8% ate breakfast 4 to 6 times, and 23.8% ate breakfast 1 to 3 times.
**Grains.** Among all participants, more than half of the children (52.8%) ate something from the grains group 7 times over the past week for breakfast. Among the experimental group, slightly less than half of the children (46.7%) ate something from the grains group 4 to 6 times over the past week, and 40% ate something from the grains group 7 times. Among the control group, more than half of the children (61.9%) ate something from the grains group 7 times over the last week for breakfast.

Among all participants, slightly less than half of the parents (46.1%) ate something from the grains group 4 to 6 times over the past week, and the same number of parents (46.1%) ate something from the grains group 1 to 3 times. Among the experimental group, an equal number of parents ate something from the grains group for breakfast 1 to 3 times (33.3%) over the last week, 4 to 6 times (33.3%), and 7 times (33.3%). Among the control group, 38.1% of parents ate something from the grains group for breakfast 1 to 3 times over the last week and 38.1% ate something from the grains group 4 to 6 times.

**Vegetables.** Among all participants, the majority of children (88.9%) did not eat something from the vegetables group for breakfast over the last week. This was also true for both the experimental and control group. Among the experimental group, 86.7% of the children ate something from the vegetables group for breakfast 0 times over the last week. Among the control group, 90.5% ate something from the vegetables group for breakfast 0 times over the last week.

Among all participants, 63.9% of the parents did not eat something from the vegetables group for breakfast over the last week, and 25% ate something from the vegetables group 1 to 3 times. This was also true for both the experimental and control group. Among the experimental group, 60% ate something from the vegetables group for breakfast 0 times over the last week, and 26.7% ate something from the vegetables group 1 to 3 times. Among the control group,
66.7% ate something from the vegetables group for breakfast 0 times over the last week, and slightly 23.8% ate something from the vegetables group 1 to 3 times.

**Fruits.** Among all participants, less than half of the children (44.4%) ate something from the fruits group for breakfast 1 to 3 times over the last week, and 27.8% ate something from the fruits group 4 to 6 times. Among the experimental group, less than half (46.7%) ate something from the fruits group for breakfast 1 to 3 times over the past week, 26.7% ate something from the fruits group 0 times, and 13.3% ate something from the fruits group 4 to 6 times. Among the control group, less than half of the children (42.9%) ate something from the fruits group for breakfast 1 to 3 times over the last week, 38.1% ate something from the fruits group 4 to 6 times, and 19% ate something from the fruits group 7 times that week.

Among all participants, more than half of the parents (55.6%) ate something from the fruits group for breakfast 1 to 3 times over the last week, 25% ate something from the fruits group 7 times, and 13.9% ate something from the fruits group 0 times. Among the experimental group, less than half of the parents (46.7%) ate something from the fruits group for breakfast 1 to 3 times over the last week, 26.7% ate something from the fruits group 7 times, and 20% something from the fruits group 0 times. Among the control group, most parents (61.9%) ate something from the fruits group for breakfast 1 to 3 times over the last week, and 23.8% ate something from the fruits group 7 times.

**Protein.** Among all participants, more than half of the children (61.1%) ate something from the protein group for breakfast 1 to 3 times over the last week, and 19.4% ate something from the protein group 0 times. Among the experimental group, 53.3% of the children ate something from the protein group for breakfast 1 to 3 times over the last week, and 26.7% ate something from the protein group 0 times. Among the control group, 66.7% ate something from
the protein group for breakfast 1 to 3 times over the last week, and 19% ate something from the protein group 4 to 6 times.

Among all participants, less than half of the parents (41.7%) ate something from the protein group for breakfast 1 to 3 times over the last week, 27.8% ate something from the protein group 4 to 6 times, and 22.2% ate something from the protein group 0 times. Among the experimental group, 40% of the parents ate something from the protein group for breakfast 1 to 3 times over the last week, and 40% ate something from the protein group 4 to 6 times. Among the control group, 42.9% ate something from the protein group for breakfast 1 to 3 times over the last week, 28.6% ate something from the protein group 0 times, and 19% ate something from the protein group 4 to 6 times.

**Dairy.** Among all participants, less than half of the children (41.7%) ate something from the dairy group for breakfast 7 times over the last week, 25% ate something from the dairy group 4 to 6 times, and 25% ate something from the dairy group 1 to 3 times. Among the experimental group, 33.3% ate something from the dairy group for breakfast 7 times over the last week, 26.7% ate something from the dairy group 4 to 6 times, and 26.7% ate something from the dairy group 1 to 3 times. Among the control group, less than half (47.6%) ate something from the dairy group for breakfast 7 times over the last week, 23.8% ate something from the dairy group 4 to 6 times, and 23.8% ate something from the dairy group 1 to 3 times.

Among all participants, more than half of the parents (52.8%) ate something from the dairy group for breakfast 1 to 3 times over the last week, and 25% ate something from the dairy group 0 times. Among the experimental group, more than half (53.3%) ate something from the dairy group for breakfast 1 to 3 times over the last week, and 33.3% ate something from the dairy group 0 times. Among the control group, more than half (52.4%) ate something from the dairy
group for breakfast 1 to 3 times over the last week, 19% ate something from the dairy group 4 to 6 times, and 19% ate something from the dairy group 0 times.

**Sweets.** Among all participants, half of the children (50%) ate something sweet for breakfast 0 times over the last week, and 41.7% ate something sweet 1 to 3 times. Among the experimental group, 46.7% ate something sweet for breakfast 0 times over the last week, and 46.7% ate something sweet 1 to 3 times. Among the control group, slightly more than half (52.4%) ate something sweet for breakfast 0 times over the last week, and 38.1% ate something sweet 1 to 3 times.

Among all participants, majority of parents (72.2%) ate something sweet for breakfast 0 times over the last week. This was true for both the experimental and control group. Among the experimental group, 73.3% ate something sweet for breakfast 0 times over the last week, and 26.7% ate something sweet 1 to 3 times. Among the control group, 71.4% ate something sweet for breakfast 0 times over the last week, and 28.6% ate something sweet 1 to 3 times.
Table 4. Breakfast food group frequencies and percentages among children.

<table>
<thead>
<tr>
<th>Food Group</th>
<th>Group</th>
<th>N</th>
<th>%</th>
<th>N</th>
<th>%</th>
<th>N</th>
<th>%</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0 Times a Week</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grains</td>
<td>Experimental</td>
<td>0</td>
<td>0.0</td>
<td>2</td>
<td>13.3</td>
<td>7</td>
<td>46.7</td>
<td>6</td>
<td>40.0</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>1</td>
<td>4.8</td>
<td>5</td>
<td>23.8</td>
<td>2</td>
<td>9.5</td>
<td>13</td>
<td>61.9</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>1</td>
<td>2.8</td>
<td>7</td>
<td>19.4</td>
<td>9</td>
<td>25.0</td>
<td>19</td>
<td>52.8</td>
</tr>
<tr>
<td>Vegetables</td>
<td>Experimental</td>
<td>13</td>
<td>86.7</td>
<td>1</td>
<td>6.7</td>
<td>1</td>
<td>6.7</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>19</td>
<td>90.5</td>
<td>2</td>
<td>9.5</td>
<td>0</td>
<td>0.0</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>32</td>
<td>88.9</td>
<td>3</td>
<td>8.3</td>
<td>1</td>
<td>2.8</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Fruits</td>
<td>Experimental</td>
<td>4</td>
<td>26.7</td>
<td>7</td>
<td>46.7</td>
<td>2</td>
<td>13.3</td>
<td>2</td>
<td>13.3</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>0</td>
<td>0.0</td>
<td>9</td>
<td>42.9</td>
<td>8</td>
<td>38.1</td>
<td>4</td>
<td>19.0</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>4</td>
<td>11.1</td>
<td>16</td>
<td>44.4</td>
<td>10</td>
<td>27.8</td>
<td>6</td>
<td>16.7</td>
</tr>
<tr>
<td>Protein</td>
<td>Experimental</td>
<td>4</td>
<td>26.7</td>
<td>8</td>
<td>53.3</td>
<td>1</td>
<td>6.7</td>
<td>2</td>
<td>13.3</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>3</td>
<td>14.3</td>
<td>14</td>
<td>66.7</td>
<td>4</td>
<td>19.0</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>7</td>
<td>19.4</td>
<td>22</td>
<td>61.1</td>
<td>5</td>
<td>13.9</td>
<td>2</td>
<td>5.6</td>
</tr>
<tr>
<td>Dairy</td>
<td>Experimental</td>
<td>2</td>
<td>13.3</td>
<td>4</td>
<td>26.7</td>
<td>4</td>
<td>26.7</td>
<td>5</td>
<td>33.3</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>1</td>
<td>4.8</td>
<td>5</td>
<td>23.8</td>
<td>5</td>
<td>23.8</td>
<td>10</td>
<td>47.6</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>3</td>
<td>8.3</td>
<td>9</td>
<td>25.0</td>
<td>9</td>
<td>25.0</td>
<td>15</td>
<td>41.7</td>
</tr>
<tr>
<td>Sweets</td>
<td>Experimental</td>
<td>7</td>
<td>46.7</td>
<td>7</td>
<td>46.7</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>6.7</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>11</td>
<td>52.4</td>
<td>8</td>
<td>38.1</td>
<td>2</td>
<td>9.5</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>18</td>
<td>50.0</td>
<td>15</td>
<td>41.7</td>
<td>2</td>
<td>5.6</td>
<td>1</td>
<td>2.8</td>
</tr>
</tbody>
</table>
Table 5. Breakfast food group frequencies and percentages among parents.

<table>
<thead>
<tr>
<th>Food Group</th>
<th>Group</th>
<th>0 Times a Week</th>
<th>1-3 Times a Week</th>
<th>4-6 Times a Week</th>
<th>7 Times a Week</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Grains</td>
<td>Experimental</td>
<td>0</td>
<td>0.0</td>
<td>5</td>
<td>33.3</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>1</td>
<td>4.8</td>
<td>8</td>
<td>38.1</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>1</td>
<td>2.8</td>
<td>13</td>
<td>36.1</td>
</tr>
<tr>
<td>Vegetables</td>
<td>Experimental</td>
<td>9</td>
<td>60.0</td>
<td>4</td>
<td>26.7</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>14</td>
<td>66.7</td>
<td>5</td>
<td>23.8</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>23</td>
<td>63.9</td>
<td>9</td>
<td>25.0</td>
</tr>
<tr>
<td>Fruits</td>
<td>Experimental</td>
<td>3</td>
<td>20.0</td>
<td>7</td>
<td>46.7</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>2</td>
<td>9.5</td>
<td>13</td>
<td>61.9</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>5</td>
<td>13.9</td>
<td>20</td>
<td>55.6</td>
</tr>
<tr>
<td>Protein</td>
<td>Experimental</td>
<td>2</td>
<td>13.3</td>
<td>6</td>
<td>40.0</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>6</td>
<td>28.6</td>
<td>9</td>
<td>42.9</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>8</td>
<td>22.2</td>
<td>15</td>
<td>41.7</td>
</tr>
<tr>
<td>Dairy</td>
<td>Experimental</td>
<td>5</td>
<td>33.3</td>
<td>8</td>
<td>53.3</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>4</td>
<td>19.0</td>
<td>11</td>
<td>52.4</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>9</td>
<td>25.0</td>
<td>19</td>
<td>52.8</td>
</tr>
<tr>
<td>Sweets</td>
<td>Experimental</td>
<td>11</td>
<td>73.3</td>
<td>4</td>
<td>26.7</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>15</td>
<td>71.4</td>
<td>6</td>
<td>28.6</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>26</td>
<td>72.2</td>
<td>10</td>
<td>27.8</td>
</tr>
</tbody>
</table>
Quality. Parents and children were assigned a breakfast quality score based on a 24-hour recall question (“what did you/your child eat for breakfast yesterday?”). This score indicated the number of different food groups eaten and ranged from 1 to 5, with 1 to 3 representing a low-quality breakfast, and 4 and 5 representing a high-quality breakfast. Six of the participants (4 from the control group and 2 from the experimental group) did not answer this question, and therefore, were not assigned a quality score. Less than half of the children (44.4%) received a 4, 22.2% received a 5, 13.9% received a 3, and 2.8% received a 2. Within the experimental group, 7 children (46.7%) received a 4, 3 children (20%) received a 5, and 3 children (20%) received a 3. Within the control group, 9 children (42.9%) received a 4, 5 children (23.8%) received a 5, 2 children (9.5%) received a 3, and only 1 child (4.8%) received a 2.

About one-third of the parents (36.1%) received a 4, 22.2% received a 5, 11.1% received a 3, 8.3% received a 2, and 5.6% received a 1. Within the experimental group, 7 parents (46.7%) received a 4, 3 parents (20%) received a 5, 2 parents (13.3%) received a 3, and 1 parent (6.7%) received a 2. Within the control group, 6 parents (28.6%) received a 4, 5 parents (23.8%) received a 5, 2 parents (9.5%) received a 3, 2 parents (9.5%) received a 2, and 2 parents (9.5%) received a 1.

Parent and Child Breakfast Consumption

The second research question asked, “Is there a relationship between parent and child breakfast consumption?” Correlation coefficients were computed between parent and child breakfast frequency averages, and between parent and child breakfast quality scores to determine whether parent and child breakfast consumption behaviors were related.

Among the experimental group, the correlation between parent breakfast frequency (i.e., the number of times the individual reported eating breakfast over the last week) and child
breakfast frequency was not statistically significant in the pre-test, $r(13)=-.105, p=.710$ or in the post-test, $r(13)=.354, p=.196$. It is worth noting that, although parent breakfast frequency and child breakfast frequency were not significantly correlated, the means were similar. In the pre-test, the mean child breakfast frequency score was 3.93 and the mean parent breakfast frequency score was 3.87. In the post-test, the mean child breakfast frequency score was 3.8 and the mean parent breakfast frequency score was 3.67. Among the control group, the correlation between parent breakfast frequency and child breakfast frequency was statistically significant in the pre-test, $r(19)=.505, p<.05$ and was also statistically significant in the post-test, $r(19)=.536, p<.05$.

Among the experimental group, the correlation between parent breakfast quality score and child breakfast quality score was not statistically significant in the pre-test, $r(11)=-.273, p=.366$ but was significant in the post-test, $r(8)=.885, p<.01$. Among the control group, the correlation between parent breakfast quality score and child breakfast quality score was statistically significant in the pre-test, $r(15)=.574, p<.05$ but was not significant in the post-test, $r(12)=-.052, p=.861$. These results showed that, overall, there were relationships between parent and child breakfast frequency and quality for the control group. For the experimental group, there was a relationship between parent and child breakfast quality in the post-test, but not in the pre-test.

**Family Newsletters and Breakfast Consumption**

The third research question asked, “Is reading the family newsletters associated with a change in frequency and/or quality of breakfast consumption among preschoolers and their families?” Paired sample t-tests were conducted to compare the mean breakfast frequency and breakfast quality scores pre-test and post-test for the experimental and control group (see Table 6 and Table 7).
**Frequency.** Frequency of eating breakfast did not change between pre- and post-surveys for children or parents in either group. For the mean frequency scores, 1=0 times a week, 2=1-3 times a week, 3=4-6 times a week, and 4=7 times a week. Among children in the experimental group, there was not a statistically significant change in the average times a week they ate breakfast after parents received the newsletters ($M=3.8$, $SD=.414$) compared to before the newsletters ($M=3.93$, $SD=.258$), $t(14)=1.468$, $p=.164$. Among children in the control group, the average times a week they ate breakfast after parents received the newsletters ($M=3.90$, $SD=.301$) was the same as before the newsletters ($M=3.90$, $SD=.301$). Among parents in the experimental group, there also was not a statistically significant change in the average times a week they ate breakfast after they received the newsletters ($M=3.67$, $SD=.489$) compared to before the newsletters ($M=3.87$, $SD=.352$), $t(14)=1.87$, $p=.082$. Among parents in the control group, there was not a statistically significant change in the average times a week they ate breakfast after they received the newsletters ($M=3.24$, $SD=.768$) compared to before the newsletters ($M=3.29$, $SD=.845$), $t(20)=.439$, $p=.666$. These results showed that simply reading the family newsletters was not associated with a change in breakfast frequency for parents or children in the experimental or control group.

**Grains.** Among children in the experimental group, there was not a statistically significant change in the average times a week they ate something from the grains group for breakfast after the receiving the newsletters ($M=3.27$, $SD=.704$) was the same as before the newsletters ($M=3.27$, $SD=.704$), $t(14)=0$, $p=1$. Among children in the control group, the average times a week they ate something from the grains group for breakfast after receiving the newsletters ($M=3.29$, $SD=.784$) was the same as before the newsletters ($M=3.29$, $SD=1.01$), $t(20)=0.00$, $p=1.00$. Among parents in the experimental group, there was not a statistically
significant change in the average times a week they ate something from the grains group for breakfast after receiving the newsletters ($M=3.00, SD=.707$) compared to before the newsletters ($M=3.08, SD=.862$), $t(12) = .322, p = .753$. Among parents in the control group, there was not a statistically significant change in the average times a week they ate something from the grains group for breakfast after receiving the newsletters ($M=2.57, SD=.870$) compared to before the newsletters ($M=2.71, SD=.845$), $t(20) = 1.14, p = .267$. These results showed that reading the family newsletters was not associated with a change in grain consumption for parents or children in the experimental or control group.

**Vegetables.** Among children in the experimental group, the average times a week they ate something from the vegetables group for breakfast after receiving the newsletters ($M=1.2, SD=.414$) was the same as before the newsletters ($M=1.2, SD=.561$), $t(14) = 0, p = 1$. Among children in the control group, there was not a statistically significant change in the average times a week they ate something from the vegetables group for breakfast after receiving the newsletters ($M=1.40, SD=.503$) compared to before the newsletters ($M=1.10, SD=.308$), $t(19) = -2.35, p = .03$. Among parents in the experimental group, there was not a statistically significant change in the average times a week they ate something from the vegetables group for breakfast after receiving the newsletters ($M=1.71, SD=.914$) compared to before the newsletters ($M=1.64, SD=.929$), $t(13) = -0.434, p = .671$. Among parents in the control group, there was not a statistically significant change in the average times a week they ate something from the vegetables group for breakfast after receiving the newsletters ($M=1.38, SD=.590$) compared to before the newsletters ($M=1.43, SD=.676$), $t(20) = .439, p = .666$. These results showed that reading the family newsletters was not associated with a change in vegetable consumption for parents or children in the experimental or control group.
Fruits. Among children in the experimental group, there was not a statistically significant change in the average times a week they ate something from the fruits group for breakfast after receiving the newsletters ($M=2.27$, $SD=.799$) compared to before the newsletters ($M=2.13$, $SD=.990$). $t(14) = -.521, p = .610$. Among children in the control group, there was not a statistically significant change in the average times a week they ate something from the fruits group for breakfast after receiving the newsletters ($M=2.81$, $SD=.873$) compared to before the newsletters ($M=2.76$, $SD=.768$), $t(20) = -.370, p = .715$. Among parents in the experimental group, there was not a statistically significant change in the average times a week they ate something from the fruits group for breakfast after receiving the newsletters ($M=2.43$, $SD=.851$) compared to before the newsletters ($M=2.50$, $SD= 1.09$), $t(13) = .434, p = .671$. Among parents in the control group, there was not a statistically significant change in the average times a week they ate something from the fruits group for breakfast after receiving the newsletters ($M=2.29$, $SD=.845$) compared to before the newsletters ($M=2.43$, $SD=.978$), $t(20) = 1.14, p = .267$. These results showed that reading the family newsletters was not associated with a change in fruit consumption for parents or children in the experimental or control group.

Protein. Among children in the experimental group, the average times a week they ate something from the protein group for breakfast after receiving the newsletters ($M=2.07$, $SD=.458$) was the same as before the newsletters ($M=2.07$, $SD=.961$), $t(14) = 0, p = 1$. Among children in the control group, the average times a week they ate something from the protein group for breakfast after receiving the newsletters ($M=2.05$, $SD=.669$) was the same as before the newsletters ($M=2.05$, $SD=.590$), $t(20) = 0.00, p = 1.00$. Among parents in the experimental group, there was not a statistically significant change in the average times a week they ate something from the protein group for breakfast after receiving the newsletters ($M=2.53$, $SD=.713$) compared to before the newsletters ($M=2.50$, $SD=.644$), $t(13) = .633, p = .538$. Among parents in the control group, there was not a statistically significant change in the average times a week they ate something from the protein group for breakfast after receiving the newsletters ($M=2.50$, $SD=.570$) compared to before the newsletters ($M=2.43$, $SD=.588$), $t(20) = .462, p = .650$. These results showed that reading the family newsletters was not associated with a change in protein consumption for parents or children in the experimental or control group.
SD=.915) compared to before the newsletters \((M=2.40, SD=.828)\), \(t(14) = -.695, p = .499\). Among parents in the control group, the average times a week they ate something from the protein group for breakfast was significantly greater after receiving the newsletters \((M=2.52, SD=.680)\) than before the newsletters \((M=2.10, SD=.944)\), \(t(20) = -2.91, p < .01\). These results showed that reading the family newsletters was not associated with a change in protein consumption for parents or children in the experimental group, but there was a statistically significant change in protein consumption for parents in the control group.

**Dairy.** Among children in the experimental group, there was not a statistically significant change in the average times a week they ate something from the dairy group for breakfast after receiving the newsletters \((M=2.73, SD=1.28)\) compared to before the newsletters \((M=2.8, SD=1.08)\), \(t(14) = .367, p = .719\). Among children in the control group, the average times a week they ate something from the dairy group for breakfast after receiving the newsletters \((M=3.14, SD=1.01)\) was the same as before the newsletters \((M=3.14, SD= .964)\), \(t(20) =0.00, p = 1.00\). Among parents in the experimental group, there was not a statistically significant change in the average times a week they ate something from the dairy group for breakfast after receiving the newsletters \((M=2.13, SD=.834)\) compared to before the newsletters \((M=1.80, SD=.676)\), \(t(14) =-1.78, p = .096\). Among parents in the control group, there was not a statistically significant change in the average times a week they ate something from the dairy group for breakfast after receiving the newsletters \((M=2.67, SD=.913)\) compared to before the newsletters \((M=2.19, SD=.873)\), \(t(20) =-2.50, p = .021\). These results showed that reading the family newsletters was not associated with a change in dairy consumption for parents or children in the experimental or control group.
Sweets. Among children in the experimental group, there was not a statistically significant change in the average times a week they ate something sweet after receiving the newsletters ($M=1.33, SD=.724$) compared to before the newsletters ($M=1.67, SD=.817$), $t(14) = 2.09, p = .055$. Among children in the control group, the average times a week they ate something sweet after receiving the newsletters ($M=1.57, SD=.598$) was the same as before the newsletters ($M=1.57, SD=.676$), $t(20) = 0.00, p = 1.00$. Among parents in the experimental group, there was not a statistically significant change in the average times a week they ate something sweet was after receiving the newsletters ($M=1.43, SD=.646$) compared to before the newsletters ($M=1.29, SD=.469$), $t(13) = -.806, p = .435$. Among parents in the control group, there was not a statistically significant change in the average times a week they ate something sweet after receiving the newsletters ($M=1.24, SD=.436$) compared to before the newsletters ($M=1.29, SD=.463$), $t(20) = 1.00, p = .329$. These results showed that reading the family newsletters was not associated with a change in sweets consumption for parents or children in the experimental or control group.
Table 6. Changes in average breakfast food group consumption among children.

<table>
<thead>
<tr>
<th>Group</th>
<th>Food Group</th>
<th>Pretest</th>
<th>Posttest</th>
<th>Mean</th>
<th>N</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Grains</td>
<td></td>
<td></td>
<td>3.27</td>
<td>15</td>
<td>.70</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3.27</td>
<td>15</td>
<td>.70</td>
</tr>
<tr>
<td></td>
<td>Vegetables</td>
<td></td>
<td></td>
<td>1.20</td>
<td>15</td>
<td>.56</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.20</td>
<td>15</td>
<td>.41</td>
</tr>
<tr>
<td></td>
<td>Fruits</td>
<td></td>
<td></td>
<td>2.13</td>
<td>15</td>
<td>.99</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.27</td>
<td>15</td>
<td>.80</td>
</tr>
<tr>
<td></td>
<td>Protein</td>
<td></td>
<td></td>
<td>2.07</td>
<td>15</td>
<td>.96</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.07</td>
<td>15</td>
<td>.46</td>
</tr>
<tr>
<td></td>
<td>Dairy</td>
<td></td>
<td></td>
<td>2.80</td>
<td>15</td>
<td>1.08</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.73</td>
<td>15</td>
<td>1.28</td>
</tr>
<tr>
<td></td>
<td>Sweets</td>
<td></td>
<td></td>
<td>1.67</td>
<td>15</td>
<td>.82</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.33</td>
<td>15</td>
<td>.72</td>
</tr>
<tr>
<td>Control</td>
<td>Grains</td>
<td></td>
<td></td>
<td>3.29</td>
<td>21</td>
<td>1.01</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3.29</td>
<td>21</td>
<td>.78</td>
</tr>
<tr>
<td></td>
<td>Vegetables</td>
<td></td>
<td></td>
<td>1.10</td>
<td>20</td>
<td>.31</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.40</td>
<td>20</td>
<td>.50</td>
</tr>
<tr>
<td></td>
<td>Fruits</td>
<td></td>
<td></td>
<td>2.76</td>
<td>21</td>
<td>.77</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.81</td>
<td>21</td>
<td>.87</td>
</tr>
<tr>
<td></td>
<td>Protein</td>
<td></td>
<td></td>
<td>2.05</td>
<td>21</td>
<td>.59</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.05</td>
<td>21</td>
<td>.67</td>
</tr>
<tr>
<td></td>
<td>Dairy</td>
<td></td>
<td></td>
<td>3.14</td>
<td>21</td>
<td>.96</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3.14</td>
<td>21</td>
<td>1.01</td>
</tr>
<tr>
<td></td>
<td>Sweets</td>
<td></td>
<td></td>
<td>1.57</td>
<td>21</td>
<td>.68</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.57</td>
<td>21</td>
<td>.60</td>
</tr>
</tbody>
</table>
Table 7. Changes in average breakfast food group consumption among parents.

<table>
<thead>
<tr>
<th>Group</th>
<th>Food Group</th>
<th>Mean</th>
<th>N</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental&lt;br&gt; Grains</td>
<td>Pretest</td>
<td>3.08</td>
<td>13</td>
<td>.86</td>
</tr>
<tr>
<td></td>
<td>Posttest</td>
<td>3.00</td>
<td>13</td>
<td>.71</td>
</tr>
<tr>
<td></td>
<td>Vegetables&lt;br&gt; Pretest</td>
<td>1.64</td>
<td>14</td>
<td>.93</td>
</tr>
<tr>
<td></td>
<td>Posttest</td>
<td>1.71</td>
<td>14</td>
<td>.91</td>
</tr>
<tr>
<td></td>
<td>Fruits</td>
<td>Pretest</td>
<td>2.50</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Posttest</td>
<td>2.43</td>
<td>14</td>
<td>.85</td>
</tr>
<tr>
<td></td>
<td>Protein</td>
<td>Pretest</td>
<td>2.40</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Posttest</td>
<td>2.53</td>
<td>15</td>
<td>.92</td>
</tr>
<tr>
<td></td>
<td>Dairy</td>
<td>Pretest</td>
<td>1.80</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Posttest</td>
<td>2.13</td>
<td>15</td>
<td>.83</td>
</tr>
<tr>
<td></td>
<td>Sweets</td>
<td>Pretest</td>
<td>1.29</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Posttest</td>
<td>1.43</td>
<td>14</td>
<td>.65</td>
</tr>
<tr>
<td>Control&lt;br&gt; Grains</td>
<td>Pretest</td>
<td>2.71</td>
<td>21</td>
<td>.85</td>
</tr>
<tr>
<td></td>
<td>Posttest</td>
<td>2.57</td>
<td>21</td>
<td>.87</td>
</tr>
<tr>
<td></td>
<td>Vegetables&lt;br&gt; Pretest</td>
<td>1.43</td>
<td>21</td>
<td>.68</td>
</tr>
<tr>
<td></td>
<td>Posttest</td>
<td>1.38</td>
<td>21</td>
<td>.59</td>
</tr>
<tr>
<td></td>
<td>Fruits</td>
<td>Pretest</td>
<td>2.43</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>Posttest</td>
<td>2.29</td>
<td>21</td>
<td>.85</td>
</tr>
<tr>
<td></td>
<td>Protein*</td>
<td>Pretest</td>
<td>2.10</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>Posttest</td>
<td>2.52</td>
<td>21</td>
<td>.68</td>
</tr>
<tr>
<td></td>
<td>Dairy</td>
<td>Pretest</td>
<td>2.19</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>Posttest</td>
<td>2.67</td>
<td>21</td>
<td>.91</td>
</tr>
<tr>
<td></td>
<td>Sweets</td>
<td>Pretest</td>
<td>1.29</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>Posttest</td>
<td>1.24</td>
<td>21</td>
<td>.44</td>
</tr>
</tbody>
</table>

*Note.* *p<.01
Quality. Among children in the experimental group, there was not a statistically significant change in the average breakfast quality score after receiving the newsletters ($M=4.3, SD=.675$) compared to before the newsletters ($M=4.2, SD=.632$), $t(9) =-.361, p = .726$. Among children in the control group, there was not a statistically significant change in the average breakfast quality score after receiving the newsletters ($M=4.69, SD=.630$) compared to before the newsletters ($M=3.92, SD=.862$), $t(12) =-.2.74, p = .018$. Among parents in the experimental group, there was not a statistically significant change in the average breakfast quality score after receiving the newsletters ($M=4.20, SD=.632$) compared to before the newsletters ($M=3.90, SD=.876$), $t(9) =-1.00, p = .343$. Among parents in the control group, there was not a statistically significant change in the average breakfast quality score after receiving the newsletters ($M=3.31, SD=1.44$) compared to before the newsletters ($M=3.46, SD=1.51$), $t(12) =.433, p = .673$.

Although the differences were not statistically significant, it is important to note that average breakfast quality scores slightly increased among children and parents in the experimental group. Among the control group, children’s average breakfast quality scores also increased and parents’ average quality scores slightly decreased. See Figure 2 for a comparison of parent and child breakfast quality scores before and after reading the newsletters.
Figure 2. Changes in average breakfast quality scores.
Evaluation of the Family Newsletters

The fourth research question asked, “What is the perception of the newsletters among families who report reading them?” At the end of the post-survey, parents indicated how many of the newsletters they read and how many of the family fun activities they tried (see Table 8). Overall, 13 (36.1%) of the parents read all 4 newsletters, 10 parents (27.8%) read 3, 8 parents (22.2%) read 2, 1 parent (2.8%) read 1, and 2 parents (5.6%) read 0. For the experimental group, 6 parents (40%) read 4 newsletters, 4 (26.7%) read 2 newsletters, 3 (20%) read 3 newsletters, 1 (6.7%) read 1 newsletter, and 1 (6.7%) read 0 newsletters. For the control group, 7 parents (33.3%) read 4 newsletters, 7 (33.3%) read 3 newsletters, 4 (19%) read two newsletters, and 1 (4.8%) read 0 newsletters. Overall, 15 (41.7%) of the parents tried 0 of the activities, 9 parents (25%) tried 1, 5 parents (13.9%) tried 2, 2 parents (5.6%) tried 3, and 1 parent (2.8%) tried 4. For the experimental group, 7 parents (46.7%) tried 0 of the family fun activities, 5 (33.3%) tried 1, 1 (6.7%) tried 2, and 1 (6.7%) tried 4. For the control group, 8 parents (38.1%) tried 0 of the family fun activities, 4 (19%) tried 1, 4 (19%) tried 2, and 2 (9.5%) tried 3. Results showed that most parents read all 4 newsletters, followed by an almost even amount of parents that read 2 or 3 newsletters. A very small percentage read 1 or did not read any of the newsletters. In contrast, most parents did not try any of the family fun activities, followed by parents that tried 1 or 2. A very small percentage of families tried 3 or 4 of the family fun activities.
Table 8. Family newsletters read and family fun activities tried.

<table>
<thead>
<tr>
<th></th>
<th>Experimental Group</th>
<th>Control Group</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>Newsletters Read</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td>6.7</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>6.7</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Family Fun Activities Tied</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>7</td>
<td>46.7</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>33.3</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>6.7</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>0.0</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>6.7</td>
<td>0</td>
</tr>
</tbody>
</table>


Parents also evaluated the newsletters with seven questions using a 5-point Likert scale ranging from strongly disagree to strongly agree. Responses from the control group were not analyzed because those newsletters were not the focus of the study. Most parents agreed with positive statements about the newsletters. The following are specific percentages for each individual question.

“The family newsletters were informational.” For the experimental group, 60% of the parents agreed with this statement, 20% strongly agreed, 6.7% were not sure, and 6.7% strongly disagreed.

“The family newsletters were clear and easy to read.” For the experimental group, 53.3% of the parents agreed with this statement and 40% strongly agreed.

“The family newsletters were useful and practical.” For the experimental group, 60% of the parents agreed with this statement, 20% strongly agreed, 6.7% were not sure, and 6.7% strongly disagreed.

“The design of the family newsletters was appealing.” For the experimental group, 66.7% of the parents agreed with this statement and 26.7% strongly agreed.

“The family fun activities were fun and interesting.” For the experimental group, 53.3% of the parents agreed with this statement, 13.3% strongly agreed, 13.3% were not sure, 6.7% disagreed, and 6.7% strongly disagreed.

“The instructions for the family fun activities were clear and easy to understand.” For the experimental group, 53.3% of the parents agreed with this statement, 33.3% strongly agreed, and 6.7% were not sure.
“I would recommend the newsletters to other parents of preschoolers.” For the experimental group, 60% of the parents agreed with this statement, 20% strongly agreed, 6.7% disagreed, and 6.7% strongly disagreed.

Finally, parents were asked what they liked best about the newsletters and what changes they would make to improve the newsletters. Most parents reported that they enjoyed the newsletters, and did not have any suggestions for improvement. However, a few participants indicated changes they would make to improve the newsletters. The following are sample participant responses regarding what parents enjoyed about the newsletters.

- “Quick and easy to read”
- “Easy to read, concise, and packed with information”
- “Aesthetically pleasing”
- “The design was nice”
- “Good examples of healthy meals”
- “Enjoyed the meal ideas”
- “It’s always refreshing to read something kid friendly and directed towards family time”

The following are sample participant responses regarding what changes parents would make to improve the newsletters.

- “Would add more recipes”
- “Could include a suggestion area where you tell families what they could try that week”
- “Should add more nutrition information and ideas for quick/freezer recipes for week-day breakfasts”
- “The newsletters didn’t work for our family because of our dietary restrictions”
- “This was good basic information that most of our preschool’s fairly educated parents already have. I would not pass it on to my friends but it would be good for younger parents/lower SES/etc. Our family is vegan so I cringe when I see dairy touted as healthy additions”
CHAPTER 5
DISCUSSION

Breakfast Consumption Habits of Preschool Children and Families

This study sought to explore breakfast consumption habits of preschool children and families, and to evaluate whether reading family newsletters related to breakfast had an impact on these habits. Results of the study showed that reading the newsletters did not have a significant effect on breakfast frequency or quality for preschool children and families. Key findings, limitations, and implications for future research are discussed below.

Breakfast Frequency and Quality

Although past literature indicates the importance of healthy breakfast consumption as a component of child obesity prevention, few studies have previously examined breakfast consumption patterns among preschoolers and their families. In this study, almost all preschool children in both the experimental and control groups ate breakfast 7 days a week. Among parents, more than half ate breakfast 7 days a week, and the rest either ate breakfast 1 to 3 days a week or 4 to 6 days a week. No parents in this sample reported skipping breakfast 7 days a week; however, individuals that ate breakfast 1 to 3 days a week clearly skipped breakfast the rest of the week.

It is unusual that more parents did not report consistently skipping breakfast considering the high prevalence of breakfast skipping that has been reported in past studies. This may be because parents in this sample were highly educated (more than half held Master’s or Doctorate degrees) and therefore already knew the importance of eating breakfast regularly. There is also a
chance that participant responses were not reflective of their true experience due to the social desirability bias. This bias refers to the idea that individuals may respond to questions in a way that they believe is socially acceptable. This point is discussed in more detail in the limitations section.

Frequencies for six food groups (grains, protein, fruits, vegetables, dairy, sweets) were calculated to examine what parents and preschoolers were eating for breakfast. For children, the grains food group was consumed most frequently, with over 50% eating grains 7 days a week. Dairy was the next most common food group consumed, with slightly less than 50% eating dairy 7 days a week. Protein and fruits fell in the middle and were most commonly eaten 1 to 3 times a week. Unsurprisingly, sweets and vegetables were the groups least frequently consumed at breakfast, with a majority of children eating them 0 times a week. This is most likely because vegetables are not typically thought of as breakfast food and are not included in many common breakfast meals (e.g., cereal, oatmeal, toast). Although some sweets are more commonly included in the breakfast foods category (e.g., donuts), many parents have restrictions on how frequently these types of foods can be consumed.

Similarly, for parents, the grains food group was consumed most frequently, with less than 50% eating grains 4 to 6 times a week and less than 50% eating grains 1 to 3 times a week. Fruits, dairy, and protein were the next most common food groups and were all most commonly consumed 1 to 3 times a week. Again, sweets and vegetables were the groups least frequently consumed, with majority of parents eating them 0 times a week.

Results showed that for both groups, most of the parents and children ate a high-quality breakfast. A high-quality breakfast in this study (indicated by a quality score of 4 or 5) was characterized by eating a variety of food groups; the more food groups consumed, the higher the
score (excluding sweets). For example, eating toast (grain), with a banana (fruit), and a glass of milk (dairy), would receive a 5. Child breakfast quality scores ranged from 2 to 5 and parent breakfast quality scores ranged from 1 to 5, showing that although the majority ate a high-quality breakfast, there were several that ate a low-quality breakfast. There is a possibility that time and convenience impacted the quality scores. For instance, if parents were rushed and grabbed something quick on the way out the door that meal would most likely contain fewer food groups than sitting down and having a bowl of cereal with milk. Most high-quality breakfasts (e.g., cereal, smoothies, oatmeal with fruit) take time to prepare and time to consume, which means they are not as easy to eat on the go. Additionally, many preschool children are picky eaters and will eat only certain food items. Perhaps parents served the foods for breakfast that they knew their child would actually eat.

**Parent and Child Breakfast Consumption**

In view of the ecological model and social cognitive theory, it seems logical that parent and child diet would be linked. Past studies have shown this to be true (Addessi et al., 2005; Barlow, 2007; Golan & Weizman, 2001; Wyse et al., 2011). Results from this study also indicated that there is a relationship between child and parent diet. For the control group, statistically significant correlations were found between parent breakfast frequency and child breakfast frequency, as well as between parent breakfast quality score and child breakfast quality score. For the experimental group, there was a relationship between parent and child breakfast quality only in the post-test. It is unclear why this association was found in the post-test but not in the pre-test. Taken together, these relationships provide some evidence for the idea that if a parent regularly eats a healthy breakfast, there is a higher chance his or her child also regularly eats a healthy breakfast. Additional research is needed to further examine these associations.
Parent nutritional knowledge, attitudes, and beliefs may be particularly significant to this association. If parents know the importance of eating a healthy breakfast and the consequences of skipping breakfast, they may be more likely to eat a healthy breakfast themselves, and to feed their child in a similar manner (or vice versa). Parents may also model these behaviors. One participant, who did not regularly eat breakfast and whose child ate breakfast 4 to 6 times a week, wrote on the survey “we are not big breakfast eaters,” illustrating consistency between parent and child breakfast consumption behaviors.

Availability of resources may also explain this association. Preschoolers are at an age where they depend on their caregiver for meals. Therefore, if parents have the time and resources to prepare a high-quality breakfast for their child, then it follows that they have the time and resources to prepare a high-quality breakfast for themselves. In some cases, parents and children may even eat the same meal. A few responses to the 24-hour recall validated this point and indicated that the parent and child ate the same meal (and therefore received the same quality score) for breakfast.

**Family Newsletters and Breakfast Consumption**

To my knowledge, this was the first study that evaluated the efficacy of family newsletters related to breakfast consumption as an educational tool for parents of preschoolers. This study explored whether reading family newsletters was associated with a change in the frequency and/or quality of breakfast consumption for preschool children and families. Among the control group, parents’ protein consumption frequency significantly increased after reading the newsletters. Given that there is no apparent explanation for this change, it may be attributed to chance. Aside from that change, results showed that there was not a statistically significant
association between reading the newsletters and breakfast consumption behaviors for either the control or experimental group. There are many possible explanations for these findings.

First, there is a possibility that although newsletters have been components of effective interventions in the past, they are not effective as the sole intervention. In previous studies, newsletters have been shown to be a useful tool in increasing parent knowledge, confidence, and skills (Brotherson, Holmes, & Bouwhuis, 2012; Walker, 2005). These findings support the idea that newsletters may have a purpose and a place in child obesity prevention and intervention efforts, but they may function best as a way to reiterate and expand on health concepts learned in the classroom versus introducing new concepts. It is possible that it is not effective for parents to read the information presented in the newsletters without reinforcement from another source. Perhaps a more effective intervention would include classroom activities for the children that corresponded with the family newsletters being sent home each week. This underscores the importance of family-school collaboration in child obesity prevention.

It is also possible that these newsletters simply were not effective for this sample. There are several key points that would explain this possibility. To start, the study had a small sample size and short duration; it is possible that the newsletters could have had more of an impact with a larger sample and longer time frame. Both of these issues are discussed in more detail in the limitations section. Another important consideration is the fact that there was low parent participation. Of 36 total participants, 13 (36.1%) reported reading all 4 newsletters; among the experimental group, only 6 parents (40%) read all 4 newsletters. Within the experimental group, of those who read all 4 newsletters, 3 parents tried 1 family fun activity, 2 tried 0 activities, and 1 tried all 4 activities. Clearly, the newsletters cannot be effective if participants are not reading them and interacting with the content.
This low participation could be a result of the way the newsletters were administered. The newsletters were sent home through children’s cubbies or family communication folders. One of the preschool directors expressed her frustration with how infrequently parents checked the family communication folders, regardless of their contents. It may also have to do with the formatting of the newsletters (e.g., overall aesthetic, clarity), although that seems less likely based on participants’ evaluations of the newsletters. One possibility is that there was a mismatch between the content level of the newsletters and the education level of the participants. The sample in this study was highly educated; among the experimental group, 53.3% of the parents had a Master’s degree or Ph.D. One participant expressed that although the newsletters did not provide new information for her family, they would be beneficial for lower SES families or less educated individuals. It seems likely that many of the parents in the sample already knew the information that was provided in the newsletters, which would decrease their level of interest and participation.

**Evaluation of the Family Newsletters**

The final component of this study was an evaluation of the family newsletters. Overall, parents rated the newsletters positively and felt that they were beneficial. The majority of participants agreed with statements that indicated the newsletters were informational, as well as useful and practical. The majority also agreed that the newsletters were clear and easy to read, and the design was appealing.

There were a few participants who disagreed or strongly disagreed with these statements. Based on their narrative feedback, the negative ratings may reflect the mismatch between the parent’s education level and newsletter content that was previously discussed. One of the parents who felt the newsletters were not useful or informational was the same parent who made the
comment about the newsletters not applying to her family. A little over half of the parents agreed that the family fun activities were fun and interesting and that the instructions for the activities were clear and easy to understand. There were also a few participants who disagreed or strongly disagreed with these statements. Both participants who disagreed or strongly disagreed did not try any of the activities. Even among families who rated the family fun activities positively, most did not try more than 1 or 2 of the activities. Participant responses did not provide a clear explanation for this low participation. It could be that parents were not interested in the activities, felt that they did not have time for the activities, or did not have the necessary materials and supplies to complete the activities. Finally, the majority of the parents agreed that they would recommend the newsletters to other parents of preschoolers. These results show that generally speaking, the newsletters were well received. Based on participant feedback, it does not appear that the newsletters are in need of any major changes to content or design. The challenge seems to be in getting parents to read the newsletters. Offering incentives (e.g., being entered for a raffle, receiving a children’s book) is one potential strategy that may encourage parent participation.

**Limitations**

This study had several limitations. First, the sample size was very small (N=36), making it difficult to generalize the results to a larger population. Having such a small sample size was problematic because it made it difficult to identify patterns of breakfast consumption habits and to detect differences between the groups. Although a larger number of participants were recruited, there were many dropouts who did not complete all parts of the study. Among the control group, 21 participants out of 28 completed all parts of the study and among the experimental group, 15 out of 27 completed all parts of the study. This may be because parents
of young children are extremely busy and often inundated with other paperwork to complete for their child’s school, extracurricular activities, etc. They could have felt that completing all parts of the study was unnecessary; one parent expressed to the director of their child’s preschool that he/she did not complete the post-survey because he/she had already completed the pre-survey. To this end, future studies should include clear instructions that, although they look the same, the post-survey is different from the pre-survey.

Because of the high dropout rate and small sample size, the interaction of selection and treatment is an external threat to validity that is particularly relevant to this study. This threat refers to the idea that because the participants in the study have a certain set of characteristics, the results of the study cannot be generalized to individuals without these same characteristics (Creswell, 2009). The demographics of the participants (e.g., education level, age) limit the generalizability of the results. For instance, the average education level of the participants in this study was much higher than the average education level of adults in the United States. The unusually high education level of the participants may explain why no statistically significant changes in breakfast frequency or quality were observed. If parents and children are frequently eating high-quality breakfast at baseline, then it is logical that reading the newsletters did not influence their breakfast-eating habits. With a less educated sample, participants may have learned brand new information from the newsletters, and consequently, the newsletters might have had more influence on their breakfast consumption habits. The majority of respondents were mothers, so a father’s perspective was not well represented. In general, the results of the study may have been different with a more heterogeneous sample. The results cannot be generalized to different populations without additional research.
Furthermore, because the data were based on parent self-report measures, there is a chance that participants’ answers did not reflect their true experience due to the social desirability bias. Parents may have felt the need to answer questions about their own breakfast consumption in a certain way to appear healthy. Although I purposely did not include descriptive terms in the survey to keep the questions as objective as possible, food and eating are sensitive topics for many individuals. Parents may have felt that they would be judged for their answers. For instance, an individual may have been hesitant to report that he or she frequently eat sweets and rarely eat fruits and vegetables. It is also possible that they answered questions about their child’s breakfast frequency and quality a certain way (e.g., “over the last week, my child ate sweets 0 times”) because they felt that reporting feeding their child sweets reflected poorly on their skills as a parent. This may explain why several of the respondents skipped the questions “what did you eat for breakfast yesterday?” and “what did your child eat for breakfast yesterday?” This lack of participation was problematic because these questions were used to calculate a breakfast quality score. Because 6 participants skipped the questions, they were not assigned a score and their changes in breakfast quality could not be analyzed. There is a need for more objective, valid, and reliable measures for assessing breakfast consumption for children and adults.

Another consideration is the short duration of the study. This study assessed changes in breakfast frequency and quality over two months. Parents received family newsletters for one month. A longer intervention in which parents received newsletters for six months, for example, might provoke greater changes in behavior. A longer study would also allow more time for families to modify old eating habits and/or pick up new ones, especially those with lower baseline consumption of high-quality breakfast.
Finally, there are many factors that contribute to nutrition. By focusing specifically on breakfast, I am unable to account for other aspects of a healthy diet. An individual might eat a healthy breakfast but an unhealthy lunch and dinner, or vice versa. Additionally, breakfast quality in this study referred to the idea that an individual ate a variety of food groups throughout the week. However, food allergies and diet preferences may contribute to an individual’s food choices and limit the variety of food groups in their diet. For instance, one parent indicated that his or her child ate dairy 0 times a week because the child was lactose intolerant; another parent noted that she and her family are vegan and therefore, do not eat meat or dairy. In these instances, eating dairy 0 times a week was not indicative of a poor quality diet or lack of health education, but of special circumstances specific to that child or family.

**Implications and Directions for Future Research**

Research has shown the benefits of regular, healthy breakfast consumption in protecting against child obesity. Although parents felt that the family newsletters were beneficial, results indicated that they were not an effective tool by themselves in changing breakfast consumption frequency and/or quality. It should be noted that this was the first study of its kind. In the future, the influence of family newsletters on dietary behaviors for parents and young children should be reevaluated in large scale, long-term studies with a more heterogeneous population. These studies might also measure breakfast consumption habits at multiple time points (e.g., prior to receiving the newsletters, one month after receiving the newsletters, and six months after receiving the newsletters). Additional research would help answer the question of whether newsletters are effective on their own.

A study with a higher participation rate and more diverse participants is needed to better determine the effectiveness of family newsletters for preschoolers and their families. It would
also be interesting to replicate this study with elementary school children and families. In this case, newsletter content would have to be adapted to the appropriate developmental level. It is also possible that similar newsletters related to different health topics would have more of an impact. Perhaps newsletters related to the importance of drinking water or eating fruits and vegetables would teach new information about nutrition, and would therefore have a bigger impact on parents and children.

There is a need for better instruments for assessing breakfast consumption behaviors of preschoolers and their parents. In the future, it may be useful to measure breakfast frequency using a 7-point Likert scale (0-7 times a week) as opposed to a 4-point Likert scale (0 times a week, 1-3 times a week, 4-6 times a week, 7 times a week). This would illuminate any minor changes (e.g., an increase from 4 times a week to 6 times a week) that may not be apparent using the 4-point scale. Additionally, although 24-hour recalls are frequently used with this population, this study had no way of ensuring that parents would respond to the 24-hour recall questions.

Using in-person or phone interviews to collect 24-hour recall information might help increase respondent participation and would ensure that the researcher is getting the information needed to evaluate breakfast quality. Interviews would also help the researcher instantly recognize the role of food allergies and diet preferences because these would become clear while talking to the participant. In addition to assessing what parents and children ate, it would also be useful to directly evaluate parent nutritional knowledge, attitudes, and beliefs and child nutritional knowledge, attitudes, and beliefs. It would be interesting to see whether the newsletters had an impact on nutritional knowledge, but not on actual diet. There is a need for valid and reliable measures for these constructs.
Conclusions

Child obesity is an important heath issue that can have long-lasting detrimental effects for children and families. The preschool years are an important time to teach and reinforce concepts of healthy eating because preschoolers are establishing lifelong eating habits. Parents and early childhood teachers need to work together to promote the importance of healthy eating. Eating a healthy breakfast is one component of good nutrition that may help decrease a child’s likelihood of becoming obese. This study measured the effectiveness of family newsletters as a tool to increase the regular consumption of a high-quality breakfast. Although results indicated that simply reading the newsletters did not lead to significant changes in breakfast frequency and/or quality, additional research is needed to more fully evaluate family newsletter impact in the context of a larger intervention. This type of research is important because it helps further knowledge of a relatively understudied population (preschool children and families), and provides information that can be applied to help prevent child obesity and facilitate positive health outcomes for young children.
REFERENCES


NHANES data on the prevalence of overweight among children and adolescents:


APPENDICES

Appendix A: Parent Consent Form
Dear Family:

You are invited to participate in a research study. Before you decide to participate in this study, it is important that you understand why the research is being done and what it will involve. This form is designed to give you the information about the study so you can decide whether to be in the study or not. Please take the time to read the following information carefully. Please ask the researcher if there is anything that is not clear or if you need more information. When all your questions have been answered, you can decide if you want to be in the study or not. This process is called “informed consent.” You will have a copy of this form to keep.

The purpose of this study is to evaluate the effectiveness of family newsletters as a way to encourage preschool children and their families to learn about good health together. Your child’s class has been chosen because this study is focused on preschool children between the ages of 3 and 5. The information you provide during this study will help us learn how families use newsletters, which will help us create more effective newsletters in the future. Results of this project will be shared through Master’s thesis research, as well as professional publications and presentations.

What Will Happen During the Study
If you agree to participate, you will receive a family newsletter once a week for four weeks. The newsletter will provide information related to a specific topic and will include a family fun activity that you and your child can do together.

At the start of the study, you will be asked to fill out a pre-survey. Once you return the pre-survey, you will begin receiving the family newsletters. Two weeks after the last newsletter, you will receive a post-survey to complete. Each survey is short and can be completed in 5 to 10 minutes.

What You and Your Child Will Do
When you receive each newsletter, feel free to look it over and read the information provided. The newsletters are short and should take no longer than 10 to 15 minutes to read. You are encouraged, but not required, to complete the family fun activities. You and your child are not expected to experience any disincomforts, stresses or risks by participating in this project.

Your Rights as a Participant
Participating in this project is voluntary. You are not required to sign the consent form, and will not be forced or pressured to participate. You may withdraw from the study at any time. If you decide to withdraw, researchers will destroy all information you shared with us.
You will be assigned an identifying code number during the project. All data sheets with information about you and your child will be stored in a locked office at the University of Georgia, and only the members of the research team will have access to them. Researchers will keep the sheets for one year, during which time the data will be entered into a computer data set. All information that could identify you individually will be destroyed as soon as all data collection is complete, or no later than one year after you participate in the study.

All data will be analyzed and reported as group averages. No individually identifiable information about you and your child will be shared with anyone (not even the preschool staff) without your prior consent, except as required by law.

This project is being conducted by Dr. Diane Bales (706-542-7566; dbales@uga.edu) and Sienna VanGelder (480-242-9717; svangelder@uga.edu) in the Human Development and Family Science Department, Dawson Hall, University of Georgia, Athens, GA 30602. If you have any questions about this project, don’t hesitate to contact either of the researchers at any time.

Parent Consent

I, ________________________________, agree to participate in a research study titled “A Pilot Study of Family Newsletters” conducted by Sienna VanGelder from the Human Development and Family Science Department at the University of Georgia under the direction of Dr. Diane Bales, Human Development and Family Science Department, University of Georgia. I understand that my participation is voluntary and my decision about participation will have no effect on my relationship with the University of Georgia or my child’s preschool. I can refuse to participate or stop taking part at any time without giving any reason, and without penalty or loss of benefits to which I am otherwise entitled. If I decide to withdraw, researchers will destroy all information I shared. I understand the procedures described above. My questions have been answered to my satisfaction. I have been given a copy of this form.

Name of Participant ___________________________ Signature ___________________________ Date __________

Name of Researcher ___________________________ Signature ___________________________ Date __________

Name of Researcher ___________________________ Signature ___________________________ Date __________

Please sign both copies of this form.

Keep one and return one to the designated folder in your child’s classroom.

Additional questions or problems regarding your rights as a research participant should be addressed to The Chairperson, Institutional Review Board, University of Georgia, 629 Boyd Graduate Studies Research Center, Athens, Georgia 30602; Telephone (706) 542-3195; E-Mail Address IRB@uga.edu.
Appendix B: Parent Pre-Survey
Name: 

This survey is designed to collect information before you receive the family newsletters. Please have the person who knows the most about your child’s eating habits and oral hygiene fill out the survey. **Check or fill in the best response to each question.** Return your completed survey to the “Family Newsletter” folder in your child’s classroom.

The following questions ask information about what you and your child eat and/or drink for breakfast. Breakfast is defined as the first meal of the day, typically consumed in the morning.

Please answer the following questions about **your child**:

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Does your child eat breakfast (not including morning snack) at school?</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Over the last week, how often did your child eat breakfast?</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Over the last week, how often did your child have something from the grains group (e.g., oatmeal, pasta, bread, crackers, grits, cereal) for breakfast?</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Over the last week, how often did your child have something from the vegetables group (e.g., tomatoes, avocado, peppers) for breakfast?</strong></td>
<td></td>
<td>1-3 times</td>
</tr>
<tr>
<td><strong>Over the last week, how often did your child have something from the fruits group (e.g., berries, melon, bananas, oranges, apples) for breakfast?</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Over the last week, how often did your child have something from the protein group (e.g., eggs, meat, beans, fish, nuts, seeds) for breakfast?</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Over the last week, how often did your child have something from the dairy group (e.g., milk, cheese, yogurt) for breakfast?</strong></td>
<td>0 times</td>
<td>1-3 times</td>
</tr>
<tr>
<td><strong>Over the last week, how often did your child have something sweet (e.g., donut, soft drink, toaster pastry, candy) for breakfast?</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Name: 

Please answer the following questions about yourself:

<table>
<thead>
<tr>
<th></th>
<th>0 times</th>
<th>1-3 times</th>
<th>4-6 times</th>
<th>7 times</th>
</tr>
</thead>
<tbody>
<tr>
<td>Over the last week, how often did you eat breakfast?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Over the last week, how often did you have something from the grains group (e.g., oatmeal, pasta, bread, crackers, grits, cereal) for breakfast?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Over the last week, how often did you have something from the vegetables group (e.g., tomatoes, avocado, peppers) for breakfast?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Over the last week, how often did you have something from the fruits group (e.g., berries, melon, bananas, oranges, apples) for breakfast?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Over the last week, how often did you have something from the protein group (e.g., eggs, meat, beans, fish, nuts, seeds) for breakfast?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Over the last week, how often did you have something from the dairy group (e.g., milk, cheese, yogurt) for breakfast?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Over the last week, how often did you have something sweet (e.g., donut, soft drink, toaster pastry, candy) for breakfast?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

What did your child have for breakfast yesterday?

What did you have for breakfast yesterday?
The following questions ask information about you and your child's dental habits. Please answer the following questions about yourself and your child:

<table>
<thead>
<tr>
<th>Question</th>
<th>0-1 year</th>
<th>2-3 years</th>
<th>4-5 years</th>
<th>Has not visited</th>
</tr>
</thead>
<tbody>
<tr>
<td>How old was your child at his or her first dental visit?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0 times</td>
<td>1 time</td>
<td>2 times</td>
<td>3+ times</td>
</tr>
<tr>
<td>Over the last year, how many times did your child go to the dentist?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Over the last year, how many times did you go to the dentist?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0 times</td>
<td>1 time a day</td>
<td>2 times a day</td>
<td>3+ times a day</td>
</tr>
<tr>
<td>On average, how many times a day does your child brush his or her own teeth without assistance?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>On average, how many times a day do you brush your child's teeth?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>On average, how many times a day do you brush your teeth?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0 cavities</td>
<td>1-2 cavities</td>
<td>3-4 cavities</td>
<td>5+ cavities</td>
</tr>
<tr>
<td>How many cavities has your child had?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How many cavities have you had?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does your child currently suck his or her thumb?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Did your child previously suck his or her thumb?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does your child currently use a pacifier?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Did your child previously use a pacifier?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Name: 

The following questions ask general information about your background. **Please check the best answer for each question.**

1) What is your age?  
   - ___ 18-24  
   - ___ 25-34  
   - ___ 35-44  
   - ___ 45-54  
   - ___ 55+  

2) What is your gender?  
   - ___ Male  
   - ___ Female  

3) What is your child’s age?  
   - ___ 2  
   - ___ 3  
   - ___ 4  
   - ___ 5  

4) What is your child’s gender?  
   - ___ Male  
   - ___ Female  

5) How many adults live in your household?  
   - ___ 1  
   - ___ 2  
   - ___ 3  
   - ___ 4+  

6) What is the highest level of education you have completed?  
   - ___ Did not attend school  
   - ___ High school  
   - ___ Associate degree/2 year degree  
   - ___ Bachelor’s degree/4 year degree  
   - ___ Master’s degree/Ph.D.  
   - ___ Some college work/No degree  

7) How many children live in your household?  
   - ___ 1  
   - ___ 2  
   - ___ 3  
   - ___ 4+  

Thank you so much for taking the time to complete this survey. We appreciate your help!
Appendix C: Parent Post-Survey
Name: ________________________________

This survey is designed to collect information after you receive the family newsletters. Please have the person who knows the most about your child’s eating habits and oral hygiene fill out the survey. **Check or fill in the best response to each question.** Return your completed survey to the “Family Newsletter” folder in your child’s classroom.

The following questions ask information about what you and your child eat and/or drink for breakfast. Breakfast is defined as the first meal of the day, typically consumed in the morning.

Please answer the following questions about your child:

<table>
<thead>
<tr>
<th>Does your child eat breakfast (not including morning snack) at school?</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Over the last week, how often did your child eat breakfast?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Over the last week, how often did your child have something from the grains group (e.g., oatmeal, pasta, bread, crackers, grits, cereal) for breakfast?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Over the last week, how often did your child have something from the vegetables group (e.g., tomatoes, avocado, peppers) for breakfast?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Over the last week, how often did your child have something from the fruits group (e.g., berries, melon, bananas, oranges, apples) for breakfast?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Over the last week, how often did your child have something from the protein group (e.g., eggs, meat, beans, fish, nuts, seeds) for breakfast?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Over the last week, how often did your child have something from the dairy group (e.g., milk, cheese, yogurt) for breakfast?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Over the last week, how often did your child have something sweet (e.g., donut, soft drink, toaster pastry, candy) for breakfast?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>0 times</th>
<th>1-3 times</th>
<th>4-6 times</th>
<th>7 times</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does your child eat breakfast (not including morning snack) at school?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Over the last week, how often did your child eat breakfast?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Over the last week, how often did your child have something from the grains group (e.g., oatmeal, pasta, bread, crackers, grits, cereal) for breakfast?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Over the last week, how often did your child have something from the vegetables group (e.g., tomatoes, avocado, peppers) for breakfast?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Over the last week, how often did your child have something from the fruits group (e.g., berries, melon, bananas, oranges, apples) for breakfast?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Over the last week, how often did your child have something from the protein group (e.g., eggs, meat, beans, fish, nuts, seeds) for breakfast?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Over the last week, how often did your child have something from the dairy group (e.g., milk, cheese, yogurt) for breakfast?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Over the last week, how often did your child have something sweet (e.g., donut, soft drink, toaster pastry, candy) for breakfast?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Name: 

Please answer the following questions about yourself:

<table>
<thead>
<tr>
<th></th>
<th>0 times</th>
<th>1-3 times</th>
<th>4-6 times</th>
<th>7 times</th>
</tr>
</thead>
<tbody>
<tr>
<td>Over the last week, how often did you eat breakfast?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Over the last week, how often did you have something from the grains group (e.g., oatmeal, pasta, bread, crackers, grits, cereal) for breakfast?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Over the last week, how often did you have something from the vegetables group (e.g., tomatoes, avocado, peppers) for breakfast?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Over the last week, how often did you have something from the fruits group (e.g., berries, melon, bananas, oranges, apples) for breakfast?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Over the last week, how often did you have something from the protein group (e.g., eggs, meat, beans, fish, nuts, seeds) for breakfast?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Over the last week, how often did you have something from the dairy group (e.g., milk, cheese, yogurt) for breakfast?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Over the last week, how often did you have something sweet (e.g., donut, soft drink, toaster pastry, candy) for breakfast?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

What did your child have for breakfast yesterday?

What did you have for breakfast yesterday?
Name: 

The following questions ask information about you and your child's dental habits. Please answer the following questions about yourself and your child:

<table>
<thead>
<tr>
<th></th>
<th>0-1 year</th>
<th>2-3 years</th>
<th>4-5 years</th>
<th>Has not visited</th>
</tr>
</thead>
<tbody>
<tr>
<td>How old was your child at his or her first dental visit?</td>
<td></td>
<td></td>
<td></td>
<td>0 times</td>
</tr>
<tr>
<td>Over the last year, how many times did your child go to the dentist?</td>
<td></td>
<td></td>
<td></td>
<td>1 time</td>
</tr>
<tr>
<td>Over the last year, how many times did you go to the dentist?</td>
<td></td>
<td></td>
<td></td>
<td>2 times</td>
</tr>
<tr>
<td>On average, how many times a day does your child brush his or her own teeth without assistance?</td>
<td></td>
<td></td>
<td></td>
<td>3+ times</td>
</tr>
<tr>
<td>On average, how many times a day do you brush your child's teeth?</td>
<td></td>
<td></td>
<td></td>
<td>0 times a day</td>
</tr>
<tr>
<td>On average, how many times a day do you brush your teeth?</td>
<td></td>
<td></td>
<td></td>
<td>1 time a day</td>
</tr>
<tr>
<td>How many cavities has your child had?</td>
<td></td>
<td></td>
<td></td>
<td>2 times a day</td>
</tr>
<tr>
<td>How many cavities have you had?</td>
<td></td>
<td></td>
<td></td>
<td>3+ times</td>
</tr>
<tr>
<td>Does your child currently suck his or her thumb?</td>
<td></td>
<td></td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Did your child previously suck his or her thumb?</td>
<td></td>
<td></td>
<td></td>
<td>No</td>
</tr>
<tr>
<td>Does your child currently use a pacifier?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Did your child previously use a pacifier?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Name: __________________________

The following are questions about the family newsletters. *Please check the best answer for each question.*

<table>
<thead>
<tr>
<th>How many of the family newsletters did you read?</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>How many of the family fun activities did you try?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The following are statements about the family newsletters. *Please indicate how much you agree or disagree with each of the following statements.*

<table>
<thead>
<tr>
<th>The family newsletters were informational.</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Not Sure</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>The family newsletters were clear and easy to read.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The family newsletters were useful and practical.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The design of the family newsletters was appealing.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The family fun activities were fun and interesting.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The instructions for the family fun activities were clear and easy to understand.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I would recommend the newsletters to other parents of preschoolers.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Name: ______________________________

What did you like best about the newsletters?

What changes would you make to improve the newsletters?

Thank you so much for taking the time to complete this survey. We appreciate your help!
Appendix D: Family Newsletters for Experimental Group
EAT HEALTHY, BE ACTIVE
a bi-monthly newsletter connecting the home to the classroom

EAT BREAKFAST
Eating breakfast helps your family start the day in a healthy way

Breakfast fuels your day

Breakfast is a crucial part of the day. After going without food for several hours while sleeping, the body needs a healthy meal in the morning to refuel. According to the American Academy of Pediatrics, up to 12% of children regularly skip breakfast before school for either financial reasons or a lack of time in the morning. Children who do eat breakfast have improved attention and better school scores.

If you and your children skip breakfast, you may feel tired, irritable, or restless. Your energy level may also drop early in the day without a healthy breakfast. Eating breakfast can also help your family stay healthy. When you eat a healthy meal in the morning, the body is better able to transform the food into energy for the day. The process of creating energy also allows the body to start burning calories. Encourage your family to eat a variety of foods for breakfast, including fruit, grains, protein, and dairy. This may include berries, whole grain toast, eggs, and milk.

What you need:
- Bowl of Hot or Cold Cereal
- Variety of Toppings, such as:
  - Fruit
  - Yogurt
  - Granola
  - Peanut Butter
  - Raisins
  - Sliced Almonds

What to do:
- Invite your child to help you create a new cereal taste by choosing interesting toppings.
- Try some of these ideas:

  Apple Berry Crunch
  - Apples, Strawberries, Granola

  Strawberry Banana
  - Strawberries, Bananas, Yogurt

  PB&J
  - Peanut Butter, Bananas, Raisins

  Nutty
  - Nuts and Strawberries

  Tropical Blast
  - Strawberries, Blueberries, Bananas


**http://www.quakerrecipes.com/cooking-and-recipes/content/quakers-instant-oats.aspx

The University of Georgia
EAT HEALTHY, BE ACTIVE
a bi-monthly newsletter connecting the home to the classroom

Eat Breakfast
Eating breakfast helps your family start the day in a healthy way

A Healthy Breakfast Feeds the Brain

Eating a healthy breakfast gets you and your family ready for the day. Breakfast helps keep your family healthy and can also aid in your child's success. Children who eat breakfast have improved attention, concentration, and memory. These children also have more energy and fewer absences.

It is important to think about what you and your family eat for breakfast each day. A healthy meal in the morning provides important nutrients such as calcium and fiber to keep you full longer. Breakfast foods should be high in whole grains, fiber, and protein, but low in sugar.

To help your family make time for breakfast, it can be helpful to plan the meal the night before. Prepare as much as possible by cutting fruit, setting out dishes, and collecting ingredients. Some meals can even be made the day before, refrigerated, and heated when you're ready to serve breakfast for your family.

What You Need:
- Blender
- Frozen or Fresh Fruit
- Berries
- Bananas
- Etc.
- Plain Yogurt
- Milk

What To Do:
- Combine fruit, yogurt, and milk in a blender
- If you use fresh fruit, add ice to make the smoothie thicker
- Cover and blend until smooth
- If needed, add more milk to make the smoothie thinner
- Serve in cups or glasses and enjoy with your child

The University of Georgia

Family Fun
Fruit Smoothies

Use these fun activities to help your child learn

EAT HEALTHY, BE ACTIVE
a bi-monthly newsletter connecting the home to the classroom

EAT BREAKFAST

Eating breakfast helps your family start the day in a healthy way

WHAT TO EAT FOR BREAKFAST?

Breakfast can provide your family with energy for the day. A balanced breakfast includes carbohydrates, protein and fiber. Carbohydrates provide immediate energy, while protein continues the energy throughout the day. Fiber helps the body properly digest food and feel full.

Keep breakfast interesting by trying a variety of foods. It is important for you and your family to eat different fruits, vegetables, grains, protein, and dairy products throughout the day.

Here are some breakfast ideas that include items from several food groups:

- Eggs with vegetables and cheese
- Cereal with fruit and milk
- Oatmeal with fruit
- Whole grain toast with cheese
- Yogurt with fruit
- Fruit smoothie and whole wheat bagel
- Peanut butter and banana sandwich

---

The University of Georgia

---

USE THESE FUN ACTIVITIES TO HELP YOUR CHILD LEARN

Family Fun

Breakfast Favorites

What You Need:
- Paper
- Crayons or Markers

What To Do:
- Encourage your child to think of his or her favorite breakfast food
- Allow your child to draw a picture of his or her favorite breakfast
- Challenge your child to then draw the favorite breakfast foods of each member of your family
- Talk to your child about making healthy choices when choosing breakfast foods
  - Eating breakfast will help you have the energy to play outside today
  - This whole grain toast will help you stay full today
EAT BREAKFAST

Eating breakfast helps your family start the day in a healthy way

Making Breakfast can be Fun

Some children do not want to eat in the morning, but breakfast is an essential meal of the day. Breakfast helps fuel the body with energy to start the day, keeps you full longer, and provides many needed nutrients. Eating breakfast often leads to improved concentration and moods. It also provides an opportunity to spend time with your family.

One way to help your child enjoy breakfast is to make your healthy meal fun! Allow your child to be safely involved in the preparation when possible, letting him or her mix ingredients, pour batter, or decorate places.

Here are some ideas to help make breakfast fun for your family:

Mouse Pancakes
Transform this classic breakfast by connecting two small circles of pancake batter to one larger circle. Add apples, blueberries, or raisins to the pancakes for variety.

Heart Waffles
Use a heart-shaped cookie cutter to create a fun, healthy breakfast. Make whole grain waffles into fun shapes.

Fruit Parfait

What You Need:
- Fruit of any kind, such as:
  - Berries
  - Oranges
  - Bananas
  - Yogurt
  - Granola or Crunchy Cereal
  - Glass

What To Do:
- Help your child make a healthy breakfast.
- Provide a glass for a fruit parfait.
- Teach your child how to layer spoonfuls of the ingredients into the glass.
- Give your child options of what to include in the parfait.
- Talk to your child about the different colors and tastes of the food choices.
- As you and your child enjoy your parfaits, talk about the importance of eating breakfast.

Family Fun
Appendix E: Family Newsletters for Control Group
Regular Dental Visits

Regular dental visits are an important part of children's health. The American Academy of Pediatric Dentistry (AAPD) suggests that children go to the dentist by age 1 or within six months after their first tooth. When you go to the dentist, professionals have the chance to ask questions about your child's dental health. For example, they may ask if your child drinks anything other than water from a bottle at bedtime. The answers to their questions help them give your family the best possible care.

Taking your child to the dentist at a young age can help them learn how to take care of their teeth and mouth. A child who goes to the dentist early on is more likely to visit a dentist on a regular basis and get more preventative care. They are also more likely to have fewer fillings and emergency dental visits. Children who first visit the dentist when they are young also tend to have a positive attitude about their dentist visits later on.

Image Source: Foreboding Photos, photos by Claire Branfield and Grant Goodwine

Sources: Knack Up Your Oral Health Newsletters, TVACOF, BENNETT, and the National Institute of Dental and Craniofacial Research (NIDCR)
Early on, it is recommended that you brush your child's teeth twice a day using a small amount of toothpaste. Once they are able to hold the toothbrush on their own, you can supervise to make sure they are doing a good job and not using too much toothpaste. By age four, most children are able to brush their own teeth.

These self-help skills are important to a child's sense of independence. Young children love to say "I did it" and feel a great sense of pride when they are able to accomplish these types of tasks on their own.

Keep in mind that some children do things earlier or later than others. Some children may have the skills to handle the toothbrush by age three, while others may not get the hang of it until they are five. These differences are normal. No matter when they start brushing their own teeth, encouraging and supporting them will help establish good habits early on.

Routines help children feel safe, secure, and comfortable. Doing the same thing, in the same order, every day helps your child know what to expect and what's coming next. One routine you can teach your child is to brush his or her teeth after breakfast, lunch, and dinner.

To begin, try to get your child excited about brushing his or her teeth. Have your child use a small-headed toothbrush in small circular motions covering each tooth (including the back). Choose toothpaste that includes fluoride to decrease decay, but only use a pea-sized amount. Ideally, we would all brush our teeth after every meal, but twice a day may be a more realistic goal. Encourage brushing after breakfast and after the last meal of the day so your child's teeth are clean overnight.
Thumb Sucking

Thumb sucking is very common for young children, especially three-year-olds. Sometimes children suck their thumb to help them fall asleep or calm down during stressful situations. Most children will stop this habit on their own. Many doctors recommend that parents ignore the behavior because putting extra pressure on a child to stop may do more harm than good.

The American Dental Association says that children can suck their thumbs until age 4 or 5 without affecting their teeth or jaw. A permanent problem is highly unlikely until a child’s permanent teeth arrive around age 5 or 6. Even then, don’t worry if your child sucks his or her thumb once in a while. However, if you notice a change in your child’s teeth or mouth, be sure to speak with a pediatrician or dentist.