# THE IMPACT OF SINGLE EXPOSURE ADVERTISING AND SOCIOECONOMIC STATUS ON PARENTING BEHAVIOR AND CHILDREN'S FOOD CHOICE

By

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# Abstract

**Background:** Childhood obesity represents a major public health problem. Increasing public and political attention has been directed towards the role of child-directed food advertising in the growth of childhood obesity. As a potential solution, scientists have begun to focus on children's responses to advertising and on how parents can potentially modify or reduce advertising effects. This study explored the impact of food advertising on parent behavior and children's food choice and how these potential effects are moderated by household socioeconomic status (SES).

**Methods:** Fifty-eight parent-child dyads (ages of 4-6) participated in a true experimental design where half the sample was randomized to be exposed to advertising and categorized as low income or higher income (qualified for free and reduced lunch, n = 11; paid, n = 18) and half was randomized into a control condition (qualified for free and reduced lunch, n = 12; paid, n = 17). Parents completed a questionnaire, viewed a cartoon with energy dense (ED) food commercials or control commercials with their children, and children subsequently choose either an energy dense food or a fruit or vegetable. Throughout the experiment parent and child behavior was videotaped. Binary logistic regression was conducted to examine the impact of advertising and household SES on parent behaviors and children's food choice.

**Results:** Advertisements had no effect on food choice. More low-income children chose a fruit or vegetable over an energy dense food (OR = 5.8), regardless of whether or not they were exposed to advertising ($p<.05$). Parents were more likely to be uninvolved in mediating children's food choice when they were not exposed to advertising. Parents were also less likely to agree to energy dense foods after being exposed to energy dense food advertising compared to control advertising.

However, SES moderated the advertising-parental practice effect for parental agreement to an ED food. After exposure to food advertising, more low-income parents agreed to an energy dense food compared to higher income parents. ($p<.05$).

**Conclusion:** This study has demonstrated a link between advertising exposure and parenting behavior. Results suggest that this relationship may be moderated by socioeconomic status. This encouraging result may indicate that low-income parents are unaware of the various ways advertising could influence their children. Thus, future attempts should be made to investigate whether interventions that target parent-child communication strategies may empower parents to effectively curb unwanted advertising effects in children.

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# Chapter 1 - Introduction

Childhood obesity is a major public health concern. In the United States, childhood obesity has more than tripled over the past thirty years and now represents a major health threat in almost every state. (Ogden et al. 2010). Using nationally representative data derived from the National Health and Nutrition Examination Study, Ogden and colleagues reported that 16.9% of U.S. children and adolescents ages 2-19 were overweight or obese in 2008 (Ogden et al. 2010).

Contrary to popular belief, childhood obesity is not solely isolated to the U.S. and other industrialized countries. The World Health Organization declared obesity a global epidemic, and although U.S. prevalence rates have remained relatively stable over the past few years, global trends point to an increasing prevalence of childhood obesity in almost every country (World Health Organization, 2004). Overnutrition now surpasses undernutrition as the primary food-related problem in global health (WHO, 2004). Obesity poses a significant impact on a multitude of biological systems. Scientists estimate that due to the health risks associated with obesity, which include cardiovascular disease, non-alcoholic fatty liver disease, cancer, hypertension, diabetes mellitus and asthma (Kopelman, 2007, Wang et al., 2008), this generation of children may have a shorter life expectancy then their parents (Olshansky et al., 2005). The CDC estimates that by 2030, one third of all Americans will be inflicted with type II diabetes resulting primarily from poor diet, inactivity, and obesity (Centers for Disease Control and Prevention, 2010).

Because childhood obesity has increasingly been identified as a forefront issue in dire need of addressing by both governments and public health officials (Whitehouse Task Force on Childhood Obesity, 2010), public health scientists have sought to identify the key risk factors influencing child weight gain. An energy balance approach to the prevention of obesity proposes that excess body fat is the result of excessive energy intake compared to energy expenditure.

Examining both the individual and environmental factors that influence physical activity and eating behaviors in children will help to give government, researchers, health professionals, and families a better understanding of how to best direct their efforts in order to help prevent the further rise of childhood obesity (Gantz et al., 2007; Livingstone & Helsper, 2006; Buijzen, 2007). .

*Food Environment*

Within the U.S., shifting sociological elements impacting family eating patterns have combined with the increased availability of convenience foods of minimal nutritional value to create a food landscape that promotes overconsumption of easily accessible, energy dense foods. Over the last thirty years, for example, fast food has become a prominent feature of the diet of American children and, increasingly, children throughout the world. The number of fast food restaurants in the United States, more than doubled between 1972 and 1995 (Harris et al., 2010a). In 2009, an estimated one third of children and adolescents were reported to eat fast food every day (Harris et al., 2010a). Closely paralleling the rising prevalence of easily accessible energy dense food and beverages, is the aggressive promotion of these energy dense food and beverage products to children

*Food Advertising*

In recent years, increasing public and political attention has been drawn towards the role of food advertising in the growth of childhood obesity. Children today are exposed to dozens of advertisements through various media platforms on a daily basis. Despite the proliferation of new media platforms, television still remains the greatest contributor to children's advertising exposure (Kaiser Family Foundation, 2004). In 2004, children between the ages of 2 and 5 were reported to view approximately two hours of television daily (Story & French, 2004). Since then, children's use of every type media has increased, with the exception of reading (Kaiser Family Foundation, 2008). Reported increases in children's media use range from 24 minutes a day for

videogames, to 27 minutes a day for computers, and 38 minutes for TV content (Kaiser Family Foundation, 2008). As a result, young children in the U.S. today are exposed to thousands of food and beverage advertisements per year (Borzekowski, 2001), 98% of which are for energy dense foods of minimal nutritional value (Harris, 2010b). Furthermore, additional findings suggest children from low-income households, in addition to suffering from disproportionately higher rates of obesity, are also exposed to higher frequencies of advertisements for low-nutrient, high energy food and beverage products (Grier, & Kumanyika, 2008). Children from low income households tend to watch more television and are thus exposed to a greater amount of advertisements (Nicklas, 2011). Reviews of the scientific literature have repeatedly demonstrated that children's exposure to television advertising for non-nutritious food products is a significant risk factor contributing to childhood obesity (Institute of Medicine, 2006; Kaiser Family Foundation, 2004). Evidential findings from child marketing and psychology literature suggest that food advertising leads to greater preferences and purchases of the products advertised (Boyland et al., 2011). The Institute of Medicine in the most comprehensive review on food marketing to date concluded that television advertising significantly influences children's food preferences, short-term consumption patterns, and purchase requests to parents (Institute of Medicine, 2005).

Billions of dollars are spent by the food industry each year to promote the consumption of energy dense food and beverages that are often high in sugar, salt and fat (IOM, 2005). In defense of its current marketing practices, which are perceived by many to be detrimental to health, the food industry, historically similar to the tobacco industry, has been quick to place the blame on the individual consuming the product (Brownell, 2010). However, the individual responsibility position is founded on the idea that the rising obesity prevalence is solely a result of a global lapse in personal responsibility due to changes in genetics do not hold sway after being analyzed scientifically (Brownell, 2011). The rising public awareness about the role of

food marketing in the epidemic of childhood obesity has strengthened the call for stricter regulations of advertising practices (FTC, 2006). In an effort to help improve the marketing landscape, major food corporations have put forth a wide variety of self-regulatory pledges and measures. However, recent history suggests that many of the recommendations put forth by the food industry have undermined recommendations made by Congress and federal health agencies (Brownell et al., 2011). Consequently, the marketing of energy dense food and beverages to children still remains highly prevalent in the U.S. (Harris et al., 2011). Thus, faced with the challenge of overcoming legislative barriers in regulating the food industry's marketing practices, government and public health officials have increasingly begun to emphasize the role of parents and caregivers in mitigating or softening the effects of food advertising towards children (Buijzen, 2007; Ferguson, Munoz, & Medrano 2011).

*The Home Environment*

Family habits have been shown to greatly impact the development children's food preferences, patterns of intake, and eating styles (Rosenkranz & Dzewaltowski, 2008; Story & French, 2004). Parents exist as the primary gatekeepers to the home environment, exert a tremendous amount of influence over young children, and often act as the final determinant regarding which products enter the home (Andreyeva et al., 2011). The role of parents in shaping their children's food preferences, dietary habits, and their consequences for child weight status, has especially become both an important, and relevant topic in the obesogenic food landscape (Austin et al., 2000).

Parenting practices are actions defined by specific content and socialization goals and have a direct effect on the development of specific child characteristics, whereas parent style is theoretically independent of specific socialization content and influences child development indirectly by changing the effectiveness of the parenting practice (Young et al, 1998). Specific media-related verbal communication practices that occur between parents and children are

commonly referred to as parental mediation. Buijzen and Valkenburg (2003), describe advertising mediation as being comprised of two different types: restrictive mediation, and active mediation. Restrictive mediation is defined as the occurrence of rules or restrictions surrounding children's television exposure within the home environment, whereas active mediation is defined by Austin (1993), as the discussion of content that is being presented on television. Evidence suggests that parental employment of advertising mediation can positively influence children's attitudes and perceptions of advertising (Buijzen, 2007). Consequently, researchers have begun to pose the question of whether parental advertising mediation practices can be used to avoid the unintended effects of advertising (Buijzen, 2007). In identifying ways for parents to mitigate the unintended effects of child advertising, researchers have examined the role of specific parental mediation strategies. However, literature focusing on advertising and parenting behaviors is relatively new and somewhat limited. The dynamics within the parent-child relationship are often complex, and few studies have attempted to examine the effect of parenting on children's responses to food advertising.

The overall majority of previous advertising research has focused on children's cognitive perceptions and understanding of promotional messages rather than mitigating the potential effects of advertising. The few studies that have examined the role of advertising mediation in mitigating advertising effects have shown promising results (Robinson, 2007; Nathanson,1999; Buijzen & Valkenburg, 2005). Understanding how parents interact and communicate with their children in regards to advertising is critical for identifying effective strategies to reduce the potentially harmful effects of advertising. Information from studies investigating the role of parent-employed advertising mediation may be useful in formulating theoretical models to inform the design of advertising interventions.

Furthermore, developing evidence-based strategies requires determining what the exact content of advertising mediation messages should entail. Developmentally appropriate methods

should be designed in a way that can be tailored to age groups that have been shown to be most vulnerable to advertising (Buijzen, 2007). Therefore, further research should focus on the empirical testing of mediation strategies designed for younger children. Parental communication is considered by many to be the most effective tool for managing television's influence on children (Buijzen, 2009). Parental mediation of unwanted advertising effects may prove to be advantageous for intervention studies, because parents more than anyone else, have been shown to exert the highest level of social influence over young children (Adreyeva, 2011).

*Specific Aims and Objectives*

The primary objective of this study is to examine the impact of food advertising on children's food choice, children's influence attempts directed towards parents, and parenting behaviors and to determine if this impact is moderated by household socioeconomic status. Examining how socioeconomically diverse parents' behaviors are influenced by the presence or absence of food advertising, will help to inform future parent-based intervention studies by helping to identify the most effective strategies that parents might employ to positively influence children's food choices and requests. Chapter two begins with a discussion of the theoretical issues related to advertising and children, followed by an closer examination of the research conducted on several of these key issues. Next, in order to gather a comprehensive understanding regarding the strategies commonly used in studies to mitigate the impact of advertising on children, consumer communication and parental mediation will be discussed, followed by a thorough review of the literature regarding the various types and effectiveness of advertising mediation strategies.

# Chapter 2 - Literature Review

## Food Advertising Overview

There is a general consensus among psychologists and public health scientists that food marketing is a major contributor to childhood obesity. Food and beverage companies spend more than $1.5 billion per year to promote their products to American children and adolescents (Federal Trade Commission, 2006). These companies employ a variety of marketing techniques, the most common of which, is television advertising. More than half of all money spent on child marketing is allocated to traditional television, print, and radio advertisements, and foods advertised on television are especially likely to be high in fat, high in sugar, or of low nutritional value (Batada et al. 2008). Several comprehensive reports on food marketing to children have been undertaken in the past five years (IOM, 2005; Academy of Pediatrics, 2006). Among the findings of these reports were that advertisements influence children's requests that their parents purchase particular food products, that a large proportion of such requests are successful, that exposure to advertisements is associated with children's caloric intake and specific food choices, and that advertisements contribute to children's misperceptions about the healthfulness of certain foods. In one of the most highly distinguished reports on food marketing to date, the institute of medicine documented that, "after reviewing the evidence, the committee has concluded that the effects of advertising aimed at children are unlikely to be limited to brand choice. Additional impacts of food marketing include the increased consumption of energy-dense foods and beverages and greater engagement in sedentary behaviors, both of which contribute to energy imbalance and obesity (IOM, 2005)." The American Academy of Pediatrics, in 2006, documented findings from several studies linking young children's television advertisement

exposure to requests for junk food and to actual caloric intake. Consequently, the Academy of Pediatrics characterized young children as "psychologically defenseless against advertising" because of their limited cognitive development (Academy of Pediatrics, 2006). Together, these findings provide evidence that that mitigating the effects of food marketing to children would address an important contributing factor to childhood obesity.

*Advertising Prevalence and Trends*

Since the early 1970's, television advertising has been and still remains the dominating marketing technique used to promote food and beverages to children (Kelly et al., 2010). Social and political concerns surrounding the potentially harmful effects of food promotion on children began in the early 1970's, and were further expanded upon in the 1980's (Schor, 2008). Most of the scientific literature published during these two decades primarily focused on the content of child directed advertising. Early researchers shared a common goal of identifying the common features contained in televised marketing messages directed at children. Concerns about food-related advertising first emerged when Barcus (1980), published a study exposing the fact that over 80% of all child advertisements featured toys, cereal, candy, or fast food restaurants. The same study also concluded that other than during the holiday season, breakfast cereals and candy existed as the predominate products promoted to children (Barcus, 1980). In their quest to identify the common themes employed by companies to deliver marketing messages children, researchers began to document that child-directed advertising commonly focused on immediate sensory gratification (Schor, 2008). Marketers were commonly observed to utilize promotional strategies that involved depicting positive experiences and outcomes, which resulted from a child using the products being promoted (Kunkel et al, 2001). Kunkel and Gantz (1992), found that most commercials emphasized fun or happiness that could be provided by the product, rather than placing emphasis on the features of the products being advertised. Another frequently occurring component of television advertisements identified by researchers were marketers

attempts to calm rising social concerns about potentially deceptive advertising practice through verbalized product disclaimers. An example of a common type of disclaimer first used by food marketers is the statement, "this product is part of a balanced diet (Liebert et al., 2001)." Scientists studying marketing at this time found that these types of disclaimers were incomprehensible to children under the age of 7 (Palmer & Mcdowell, 1981). Children in the United States consume a total of 10 hours and 45 minutes worth of media content each day (KFF, 2008). This figure represents an increase of almost 2¼ hours of media exposure per day over the past five years. Despite the widespread availability of new media platforms, television still remains the primary source of children's exposure to advertising (KFF, 2008). The proliferation of new ways to consume television content has led to an average increase of 38 minutes of daily television consumption since 2004. Consequently, today's youth are exposed to approximately 4.5 hours of television per day, and thousands of food and beverage advertisements per year (Kelly et al., 2010) In a recent study, Kelly and colleagues (2010), concluded that if children watch only two hours of television per day (approximately half the national average) during the most popular broadcast times, children are exposed to anywhere between 56 and 126 food advertisements per week. Children's exposure to television food advertising has been closely examined internationally (Mellow, 2010). Findings from these studies have demonstrated that in United States, the United Kingdom, Australia, and across Europe in 2003, children aged 2 to 5, 6 to 11, and 12 to 17 years are exposed to 13.3, 13.6, and 13.1 advertisements per day, respectively (Powell et al., 2010). Recent research has demonstrated that on average, in the United State, children view approximately 15 television food advertisements every day, or nearly 5500 messages per year (Kelly et al., 2011). This is concerning due to the fact that over half of all television advertisements directed to children under 12, are for food and beverages products (Pomeranz, 2011).

Children today, represent an easily accessible, highly influential target for food and beverage marketers (Brownell, 2010). A number of the top U.S. food companies have reported performing marketing research on child and adolescent audiences (Harris et al., 2009). Common methods used by companies to conduct market research amongst youth demographics include focus groups, online surveys, and in-depth interviews to ascertain what is important and socially relevant to various age groups (Kelly et al., 2010). Consequently, the marketing of food and beverage products to children has become more and more pervasive in recent years. In the United States, the overall majority of television advertisements are for products high in fat, sugar, and/or sodium (Story & French, 2004). In a 2006 report to congress, the Federal Trade Commission concluded that three food categories (breakfast cereal, restaurant foods, and snack foods) represented approximately 70% of food marketing expenditures directed to children under 12 (FTC, 2006). In the U.S. the food industries top 44 companies spend approximately $1,618,600,000 per year to promote food and beverages to children and adolescents, $745 million of which is spent television advertising (Pomeranz, 2011). Breakfast cereals account for more than 31% of food marketing expenditures, or $142 million, and restaurant food accounted for 20%, or $91 million. Other food categories with child-directed television advertising include snacks; $69 million, prepared foods; $42 million, baked goods; $37 million, and candy/frozen desserts; $33 million (FTC, 2006).

Recent data has demonstrated that children's exposure to sugar sweetened beverage advertising has decreased by as much as 67% as result of self-regulatory pledges by the food industry (Harris et al., 2010; Kunkel et al., 2005), however these studies have also identified a significant increase in children's exposure to fast food advertising (Powell et al., 2010). The 2006, Institute of Medicine's report on food marketing to children concluded that food advertising influences children's short term consumption patterns, purchase requests to parents as well as food preferences and their ability to recall advertised brands. Concerns over the topic

of food marketing to children have been elevated in recent years due to the fact that younger children have been shown to be more vulnerable to the potential effects of advertising messages because they do not yet possess the cognitive processing abilities needed to comprehend the persuasiveness of advertising messages, and thus cannot properly guard themselves against the effects of advertising (Donohue et al., 1993).

*Advertising and Psychological Development*

Children's comprehension of advertising has been an increasingly important area of focus in child psychology literature, and has according to Rozendaal and colleagues (2009), "significantly shaped the agenda of the societal debate." In the case of young children, experts agree that the practice of food marketing to children is inherently unfair and takes advantage of children's limited cognitive skills (Rozendaal et al., 2009). Many researchers have cited the fact that younger children are more vulnerable to advertising messages due to the fact that they have difficulty distinguishing fantasy from reality and therefore do not comprehend the persuasive intent of advertising messages (Calvert, 2008; Kaiser Family Foundation, 2004). These studies have often emphasized the developmental level of children and how stage of development determines the availability of cognitive skills needed to understand advertising messages (Piaget, 1954). Distinguishing between an advertisement and a television program is especially difficult for young children who naturally are cognitively immature at during the early stages of life (Ward, Reale, Levinson 1972).

Marketers are required by law to insert time buffers between television programming and advertising called advertising bumpers. Advertising bumpers are designed to help children know when a program has stopped and when a commercial is about to begin (Schor, 2008). However, researchers have demonstrated that programming bumpers do not fulfill their intended purpose because children have difficulty discerning between programming bumpers, advertising, and programming content (Palmer & McDowell, 1979). One of the reasons advertising bumpers do

not contribute to children's understanding that programming has stopped and an advertising is about to begin is that marketers often use a technique called cross promotion in which prominent characters of television programs or movies are used to deliver programming bumper messages, such as "we'll be right back." Researchers have demonstrated that the cross-promotional use of popular characters to deliver bumper phrases such as these only further increases young children's difficulty in distinguishing between program content and advertising (Messaris & Kerr, 1984).

Understanding the persuasive intent of advertisements as well as the perspective of advertisers themselves, is another factor thought to be critical for determining whether or not a child is able to fully comprehend the advertisement (IOM, 2005). A child's understanding of the persuasive intent of advertising is defined as knowing that the advertiser is trying to sell them something (Kunkel et al., 1988). Evidence suggests that between the ages of 3-7, children's advertising-related knowledge and understanding, are immature, and therefore young children are less capable of defending themselves against the persuasiveness of advertizing messages (Rozendaal et al., 2009). Based on Piaget's stages of cognitive development theory, researchers have been quick to point out that children under seven, i.e. children in the pre-operational phase, have difficulty taking the perspective of another person (Piaget, 1954). Children categorized as preoperational are thought to be egocentric (Gantz et al., 2007). Egocentrism is characterized in research as perceptual boundness, meaning that when young children receive information, they tend to focus on visually salient images and concrete examples (Strayer, 1993). Because children are perceptually bound to one stimulus at a time, they are able to recognize brands at an early age. This is due to the fact that brands are visual cues that require no interpretation (Macklin, 1996). Additionally, the egocentric nature of children in the pre-operational phase causes them to process information solely in terms of how it may be useful to them. Because of this cognitive limitation, young children lack a fundamental understanding of the persuasive intent of

advertisements, and are unable to take the perspective of the advertiser (Macklin, 1996). There is a general consensus within the developmental psychology literature, that lack of cognitive ability results in greater difficulty recognizing the underlying goal of the advertiser (Rozendaal et al, 2009).

*Limitations in Cognitive Processing*

The overall cognitive limitation of young children in understanding the persuasive intent of advertising is reportedly viewed as a limitation in the first line of psychological defense against advertising (Grube & Wallack, 1994). Consequently, it is often assumed that children who possess the knowledge and understanding to identify the persuasive intent of advertising should be less susceptible to the effects of advertising (Kaiser Family Foundation, 2004). However, children's comprehension over the persuasive intent of advertising is not synonymous with the recognition of the selling intent of advertising. An additional consideration is that researchers have yet to identify whether or not children are able to understand the product-bias that occurs in advertising (Young, 1990). So although some children may potentially understand the intention of an advertisement as attempt to sell them a product, they may not comprehend that the presentation may be skewed to make the product more appealing (Schor, 2008). Therefore, it is reasonable to conclude that, children should be able to understand both the persuasive and selling intent, and inherent biases of television advertising. Children's comprehension and knowledge about the intentions of marketers are referred to in the literature as children's cognitive defenses against advertising (Livingstone & Helsper, 2006). Increasing children's cognitive defenses is a critical step in affectively increasing children's skepticism, and modify the overall impact the undesired consequences of advertising in terms of product requests, parent-child conflict, and childhood obesity (IOM, 2005).

Children's ability to comprehend multiple perspectives and features of advertised products closely parallels an increase in cognitive development that occurs as children reach the age 9 (Bijmolt et al., 1989). This increase in cognitive ability allows children to better recognize how and why advertising messages are formulated, which then leads to an overall understanding of why advertising exists (Pomeranz, 2010). Valkenburg and Cantor (2001), have reported that children around this age are now able to understand the social significance of material goods. Consequently, children at this age are not only able recognize brands, but understand the status associated with these brands as well. Based off of this newfound perceptual information, children can now form meaningful impressions of commercials and advertised products based on social norms (Valkenburg and Cantor, 2001.)

*Consumer Socialization*

Analyzing the fundamental understanding of the developmental differences of children in terms of processing advertising has been a key area of emphasis in child psychology literature. However, researchers have also noted the importance of accounting for how children are socialized in to consumers in developing a fundamental understanding of when children may be vulnerable to the negative effects of advertising (Calvert, 2008). Valkenburg and Cantor (2001), point out that before children reach the age of two, they are merely developing their own wants and preferences based on cognitive awareness of environmental stimuli. Advertising has been shown to exacerbate this awareness in very young children. Research findings have demonstrated that branding occurs in children as young as two years old (IOM, 2005). As children enter their toddler years, they begin to employ specific product requests. Children gradually start to become independent consumers as they reach elementary age (Schor, 2008). Researchers have demonstrated that around the age of four is about the time children begin making independent purchases, and that the majority of children have made such purchases by time they have reached the age of five (Calvert, 2008). Upon reaching late elementary school,

children's consumer development shifts from being primarily egocentric to more highly influenced by increasing social pressures. The primary emphasis of children's consumer development at this time is conformity to social norms (Valkenburg and Cantor 2001). Because of this shifting paradigm in consumer development in which material goods are perceived as having social value, children in this stage of development begin to prefer products which they believe will increase social status, or lead to social interaction (Buijzen & Valkenburg, 2000). It is because of these desired outcomes that children's perceptions of advertised products may not only be shaped by personal preferences, but also by how they feel highly valued individuals within their micro-social environment perceive the products being advertised (Schor, 2008). In summary, findings from multiple studies have concluded that food advertising and promotion have a causal and direct effect on children's food decisions, and also that food advertising interacts with other marketing factors to influence obesity and obesity related behaviors.

## Advertising Effects

Advertising effects are described as children's product and brand awareness, product preferences, and the extent to which children are persuaded to purchase or request advertised products in response to advertising exposure (Buijzen, 2007). Using various targeted marketing strategies, advertisers seek to build brand recognition and loyalty at an early age, when children are just forming their food attitudes and preferences (Buijzen, 2007). Halford and colleagues reported that even children as young as 2-3 years display capabilities of brand recognition as a result of marketing (2003).

*Consumer Preferences & Purchase Requests*

Unlike previous generations, children today are uniquely recognized as possessing a tremendous amount of influence over family consumer behavior (Robinson, 2001). Researchers have reported positive correlations between reported exposure to advertising and product preferences and purchase requests (Buijzen, 2007; Robertson & Rossiter, 1977). A recent nationally representative study by Andreyeva and colleagues (2011), examined the relationship between food and beverage advertising and overall consumption of advertised foods among elementary age children. The authors reported a 9.4% increase in soda consumption and 1.1% rise in fast food consumption as incremental exposure to food and beverage advertising increased by 100 ads (Andreyeva et al., 2011). Flurry & Burns (2005), surveyed a population of mother-child dyads to investigate the factors influencing purchase request frequency, and found that a positive correlation between times spent watching television and the frequency of requests for toys. Experimental studies conducted by Goldberg & Gorn (1978,1987 & 2003), and Stoneman & Brody (2004), have further reinforced the positive relationship between advertising exposure and purchase requests. In one randomized case-control study, the authors recruited mother-child

dyads and assigned them to either a television viewing condition with food advertisements, or an advertising viewing condition without food advertisements. Results showed that children who were exposed to the food commercials made more requests for the advertized product compared to children in the control condition ($p<.025$) (Stoneman & Brody, 2004).

There are a variety of environmental and personal factors thought to impact the success of children's purchase requests. One 2008 study analyzed the impact of environmental and personal factors influencing children's purchase requests in grocery retail settings, and found that over 50% of purchase requests were successful, and that the successful attainment of products requested was significantly and positively influenced by children's developmental stage (i.e. children ages 3-5 were more successful), and the number of products that were placed at eye level (Ebster et al, 2008). Wilson & Wood (2004), conducted weekly focus groups with a small sample of parent-child dyads in Scotland, to investigate the product features considered by young consumers in evaluating and choosing food products, and the extent to which their choices were translated in to actual purchases by the parents. The authors found that successful product attainment was influenced by whether or not children exerted knowledge about the product to their parents (i.e. identified a product by brand name), whether or not they used parental pestering as a request strategy, and whether or not the product requested was intended for the child's use (Wilson & Wood, 2004).

Furthermore, unintentional outcomes or effects of advertising in children have been shown to parallel high levels of television exposure (Harris et al., 2009a). Unintentional effects of advertising increased purchase requests or child pestering, poor feeding habits and parent-child conflict (Buijzen, 2008). In a follow up to an earlier study investigating the unintentional outcomes of advertizing to children, Flurry (2007), surveyed a sample of parents in order to determine the factors that influenced the success of purchase requests of fourth grade children. Results from the study showed that success rates of purchase requests were higher if children had

personal funds to contribute, if the child was first in birth order, and if parents exerted a lower level of control (Flurry, 2007).

*Dietary Patterns*

Poor feeding habits are often the result of snacking while watching television. Research has demonstrated that children are inclined to eat as much as 30% more food when watching television than when eating while not watching television (Boyland et al., 2007). This is concerning due to the fact that dietary habits established early in life often carry over in to adulthood. Furthermore, data has indicated that there is a positive relationship between the level of children's television exposure and the overall likelihood of being overweight (Story & French, 2004). In one study, Atkin and colleagues (1980), using self-report methods, demonstrated that children who reported more frequent television viewing also reported higher consumption of candy, sugared cereal, and advertised foods (Atkin, 1980). In another study conducted by Atkin and Gibson (1978), the authors used an experimental design in which children were assigned to either an advertising viewing condition in which they were exposed to an advertisement for cereal, or a non-advertising viewing condition. Results from the study re-affirmed the positive relationship between commercial viewing and poor eating habits. Ninety percent of the experimental group reported intentions to request the cereal, compared to 67% of the control group. In a similarly designed study, Gorn and Goldberg (1982) exposed one group of children to commercials for candy and kool-aid, and another group to commercials for fruit and fruit juice. The authors found that children's dietary preferences at the day camp at which the study took place, were significantly influenced by the advertisements they viewed.

*Parent-Child Conflict & Materialism*

Parent-child conflict is defined in the literature as any disagreement or arguing that takes place between the parent and the child (Nathanson & Yang, 2003). Situations that involve parent-child conflict often arise out of parental denial of a child's purchase request. A number of cross-sectional studies have demonstrated the correlative relationship that exists between reported purchase requests, denial of that request, and subsequent parent-child conflict after denial of purchases requests (Robertson, Ward, Gatignon, and Klees, 1989). In one study that analyzed consumer behavior and parent-child conflict, Valkenburg and Cantor (2001) found that 70% of parents with five year old children have experienced a purchase-related conflict in a store with their child. Sixty three percent of parents of six year olds in the study reported experiencing in store conflict regarding consumer decisions. Materialism is another unwanted consequence of child advertising that has been cited by researchers.

Materialism is commonly defined as possessing a continuous fixation on possessions. The focalization of belongings and money in an individual's life, as a result of materialistic attitudes, creates a situation in which possessions dictate whether or not a person is satisfied or dissatisfied (Schroeder and Dugal, 1995). Materialism causes individuals to focus their concerns and awareness only on the things which they believe will give them status in society (Schroeder and Dugal, 1995). Schroeder and Dugal, have documented that materialistic individuals are highly motivated by external sources such as social groups and advertising. Materialism may express itself in children through various developmentally dependent mechanisms. For example, virtually children of all ages possess the capability of brand recognition, however desires will be expressed differently in children depending on their developmental level (Schor, 1998). Younger children who are more egocentric tend to focus on the quantity of money or possessions, where as older children may direct their focus towards the social value of possessions. Advertising is thought to enhance and potentially create the effects

of materialism, due to the fact that advertising images are often composed of visual concepts that mediate images of rewards and consequences which can indicate social expectations and acceptance (Bandura, 1986). Furthermore, parents themselves perceive advertising as being a strong contributor to children's materialistic attitudes. In a 1975 survey conducted by Atkin, 64% of mother's interviewed felt that television commercials contributed to their child's materialistic attitudes. Although some experimental research has supported the claim that materialistic attitudes are in part caused by exposure to television advertising (Goldbert & Gorn, 1978), long term studies are still needed to make causal associations between advertising and materialism.

## Mediating the Effects of Food Advertising

In examining ways to mitigate the impact of advertising on children, public health scientists have emphasized the role of government, schools, and parents as a potential solution to the problem. In looking towards government intervention as a potential mediator of the unwanted effects of food advertising, the institute of medicine recommended that the food industry develop and strictly adhere to advertising guidelines aimed at minimizing the risk that advertising would contribute to childhood obesity and that the Federal Trade Commission (FTC) be vested with the authority and resources to monitor and enforce compliance with these guidelines (IOM, 2005). In 2001, literacy educators, scholars and teachers had begun to start writing and thinking about the implications of using popular culture, mass media, news and current events, advertising and the Internet in the K-12 curriculum (Kunkel, 2011). Media literacy curricula are designed to change the way children experience and perceive advertising by cultivating in students a comprehensive understanding of the constructs of advertising messages and digital technologies (Kunkel, 2011). There has also been an extensive amount of research on the role of parental mediation in

modifying children's responses to television, including media-induced aggression, fear responses, and alcohol use. Thus, researchers have begun to look at the role of parental mediation in modifying children's response to food advertising through helping their children to understand advertising and through educating and exhorting their children to make healthful choices.

*Industry Regulation*

Many social and public health advocates have called for stronger federal regulation of child directed marketing practices (Brownell, 2009). Formerly, food commerce and food marketing in the United States was highly regulated from the time of the New Deal in the 1930's until 1974 when the Supreme Court created the Commercial Speech Doctrine, which extended limited protection to certain commercial activities of the pharmaceutical industry on the basis that truth should not be kept from consumers, because consumers know what is best for themselves (Mello, 2011). Over the years, the commercial speech doctrine has morphed to be much more protective over free speech rights on the basis that regulation of marketing practices can be considered discrimination of companies' free speech rights. Similar to the Tobacco industry, the food industry has made it difficult for the federal government to regulate marketing practices by framing the debate in way that makes the industry look like a victim of federal paternalization or discrimination. The Federal Trade Commission first attempted to regulate advertising directed at children in the 1970s as a response to rising social concerns. However, industry and advocates could not agree on a set of standards at the time, so the legislation fell apart under the argument of free-speech protection (IOM, 2005). The Children's Television Act of 1990 was successful in restricting the amount of advertisements that could be broadcast per hour of programming, but did little to address the content of children's advertisements (Story & French, 2004). The food industries' "discrimination of free speech argument," has since been

strengthened by the passing of the Citizens United, a recent act granting corporations the right of personhood.

Consequently, the U.S. to date has primarily relied on industry self regulation to guide the components of child advertising. Beyond basic principles that entail avoiding deceptive marketing practices, industry representatives and child advocates differ on the amount of protection children should receive. Regarding federal bans on what kinds of food and toys can be advertised to children, Industry representatives often claim impingements on free-speech rights (Brownell, 2009). An additional barrier to reducing children's exposure to energy dense food advertising is that major fast food companies and food corporations have vast economic resources which they use to reach children through stealth, viral, and guerilla, marketing techniques embedded in a multitude of media platforms. The extent to which advertisements, as an extension of commercial activity, fall under free speech protection is a matter of constitutional debate (Livingstone & Helsper, 2006).

However, clear examples exist where the interest in protecting public health has successfully brought about limitations on the marketing of goods considered harmful like tobacco and alcohol (Brownell, 2009). Many companies, such as Pepsi and Kellogg, have voluntarily developed nutrition standards about what kinds of foods can be marketed to children, although the industry remains largely unregulated (Kaiser Family Foundation, 2008). An additional obstacle regarding the banning of advertisements directed at children include lack of agreement and evidence-based definitions regarding how energy dense food products commonly advertised to children lead to adverse health effects.

Internationally, the concepts that comprise most advertising regulations are primarily derived from the International Chamber of Commerce's International Code of Advertising Practices (Kelly et al, 2007). The code serves as a basis for most self-regulatory systems. Its

main emphasis is that advertisements should be permitted so long as they are not misleading or dishonest and they can be clearly distinguished from the medium in which they are used. Regarding child advertisements specifically, guidelines emphasize that advertisements should not exploit children's natural credulity; they should avoid harming children emotionally, morally, or physically; they should not insinuate that children possessing the product would have advantages over others; and they should not undermine adult authority (WHO, 2004). Quebec, Canada, Sweden, Australia and Great Britain have banned advertising directed at children under twelve years of age, although bans do not necessarily stop cross-border advertising (Kunkel et al., 2004).

*Advertising Literacy in Schools*

Public health advocates have also directed their attention towards utilizing schools as consumer socialization agents through the promotion of educational curriculums on advertising literacy. Advertising literacy has been defined in various ways throughout the literature. According to Young (2000), advertising literacy refers to one's ability to understand advertising. Bijmolt (1998) describes the roll of advertising literacy as empowering young consumers by alerting them to the persuasive intent of advertising, which subsequently facilitates them with the abilities & skills to resist advertising messages. A primary disadvantage surrounding the promotion of advertising literacy in schools is that there is no clear consensus among researchers on the specific parameters that define literacy. (Irving & Berel, 2007). Consequently, lack of a standardized definition of literacy has somewhat impeded the implementation of validated interventions involving children's literary comprehension of media and advertising. Potter (1998), defines advertising literacy as the critical viewing perspective through which one approaches the media. However, vague definitions of advertising literacy have become common throughout the advertising literature. This disconnect has left room for interpretation and has consequently lead to much debate amongst advocates of advertising literacy (Robinson et al.

2001). According to Irving & Berel (2007), advertising literacy should be viewed as multidimensional. A primary indicator of advertising literacy would include a situation in which a child is able to understand the commercial intent of advertising, the vested interests of an advertiser, and that advertising is a separate entity from the program in which the ad is featured (Irving & Berel, 2007). A second dimension of advertising literacy is thought to occur when a child is able to adapt an appreciation for the strategies, techniques, and production values (Irving & Berel, 2007). A third indicator thought to encompass advertising literacy includes situations where an individuals understanding of advertising can be used in a variety of contextual situations, such as social interaction or consumer decision-making (Irving & Berel, 2007).

Despite lack of consensus amongst researchers, schools have begun to encourage the integration of advertising literacy into their curriculums (Hastmann, 2011; Young, 2000). A 2001 study conducted by Robinson et al. (2001), tested the effects of an advertising literacy curriculum on a group of third and fourth grade children in an attempt to reduce weekly television exposure. The curriculum was implemented over a six month period, and involved the promotion of non-sedentary activities and encouraging children to reduce the amount of time invested in media use. Results indicated that children who received the curriculum were less likely to make product requests than those children who did not receive the curriculum. Additional studies have demonstrated that media literacy curriculums that emphasize critical viewing skills, when tested on children eight years and older, can aid in increasing children's recognition of the persuasive intent of advertising (Brucks, Armstrong, & Goldbert, 1988). Feshbach & colleagues (1982), demonstrated that second and fourth grade children's perceptions of product desirability for advertised products was significantly decreased through a media literacy curriculum designed to increase children's understanding of advertising processes and techniques, that children's desires for advertised products can be altered with the implementation of such a curriculum.

*Parent-Child Interaction*

Because legislators and industry representatives face growing challenges in the battle over regulating marketing practices that might potentially reduce or eliminate unhealthy food advertising to children, it is in the mean time, important to look at the role that parents can play in reducing the effects of advertising on children. Families are the focal point of socio-environmental influences on young children and have a direct, mediating, and moderating role on children's health and development (Desmond et al., 1985). Rideout (2007), argues that the greatest influence on the consumer socialization of children are media and the family. Parents not only act as the direct gatekeepers to the home and directly determine their children's physical and social environments, but also indirectly influence their behaviors, habits, and attitudes (Ritchie et al., 2005).

Health-related behaviors and patterns are established during childhood and adolescence and evolve within the context of the family (Andreyeva et al., 2011). Parental influence can be either direct or indirect. Parenting practices and daily routines are important influences on a child's social, physical and cognitive development (Buijzen, 2007). Parenting practices are actions defined by specific content and socialization goals and have a direct effect on the development of specific child characteristics, where as parent style is theoretically independent of specific socialization content and influences child development indirectly by changing the effectiveness of the parenting practice (Young et al, 1998).

*Consumer Communication*

Parent-child interaction in regards to consumer communication has been demonstrated to impact children's overall interpretations and perceptions of advertising. Research analyzing how consumer communication within the home environment impacts children's interpretations and reactions to advertising, has also demonstrated that family consumer communication is generally

bi-dimensional (Schor, 2008). Researchers have categorized the two dimensions of family consumer communication as concept-oriented, and socio-oriented. Socio-oriented consumer communication emphasizes obedience and adaption to socially defined roles and norms (McLeod & Atkin, 1971).

Parenting style describes the emotional climate of general parenting interactions (Baumrind, 1971). Parenting Style is based on the idea that parents attitudes and the beliefs they hold about how they should rear their children result in a two way interaction that defines the emotional climate of the parenting environment. The resulting dynamic process alters how perceptive they are to their parents' demands. Baumrind classified parents in to four types: authoritative, authoritarian, disengaged and permissive by using the dimensions of responsiveness/warmth and control/demandingness (Baumrind, 1991). Authoritative parents are high in control and responsiveness, whereas authoritarian parents are high in control but low in responsiveness. Permissive parents are low in control but high in responsiveness, and neglectful parents are low on both dimensions (Baumrind, 1991). Literature that has analyzed the four distinct dimensions that underline specific parenting styles, deems parents that utilize practices specific to socio-oriented consumer communication, as authoritative. On the other hand, concept-oriented family consumer communication emphasizes open dialogue between family members in which children are encouraged to express their own ideas and opinions (Moschis & Moore, 1979). Evidence suggests that families that possess a stronger concept-oriented communication style, have children who are better able to understand the underlying techniques of commercial advertising, and demonstrate fewer purchase requests than children who come from families possessing a more socio-oriented consumer communication style. (Buijzen & Valkenburg, 2005). However, additional research is needed to analyze the impact of family consumer communication styles on children.

*Advertising Mediation*

Although family consumer communication has been shown to impact children's overall interpretations and perceptions of advertising, additional parenting practices have shown to be more effective in mitigating the unwanted effects of advertising in children. Evidence suggests that parental employment of advertising mediation can positively decrease child aggression and impact the way children view stereotypical, socially-defined gender-roles (Buijzen, 2007). Buijzen and Valkenburg (2003), describe advertising mediation as being comprised of two different types: restrictive mediation and active mediation. Restrictive mediation is defined as the occurrence of rules or restrictions surrounding children's television exposure within the home environment. Restrictive mediation involves parental placement of restrictions on the amount and type of televised content that children are permitted to view (Buijzen, 2007). Researchers have assessed restrictive mediation by surveying parents & children about whether or not there are rules within the home environment, regarding television.

Active mediation is defined by Austin (1993), as the discussion of content that is being presented on television. Active mediation can involve discussions that range from issues and themes specific to both television programs and television advertisement. The comments parents use within the constructs of active mediation can be supplemental, validating or they can be categorical (Warren, 2003). Buijzen (2007), describes active mediation as being comprised of two additional subcategories which include evaluative active mediation and factual active mediation. Evaluative active mediation relates to children's affective responses to commercials and provides children with evaluative comments about the message to inhibit the production of favorable thoughts toward the message. Categorical comments are used within the construct of evaluative active mediation, in order to explain the reflective relationship between television and reality. Whereas, in the construct of factual mediation comments used to validate advertising, or

to promote or condemn the accuracy or representativeness of advertisements. Thus, factual mediation, in turn, is employed to provide children with information about the media content in order to enhance their cognitive defenses. Additionally, comments used in parental employment of active mediation can effectively supplement television content with additional information in order to explain the relationship between reality and television (Livingstone & Helper, 2006).

Work involving parental mediation of television content has, in previous years, traditionally focused on the content of television programming. These studies have used meditative intervention strategies to investigate the relationship between television programming, violence and substance abuse (Austin, 1993).

Despite an increasing focus on advertising mediation in recent years, there has been very little research on advertising mediation that has focused on younger children. In order to increase the effectiveness and success of parent-child interventions, further research is needed to determine the effective content of advertising mediation messages (Livingston & Helsper, 2006). Furthermore, researchers should consider both the cognitive and affective aspects of persuasion when looking to inhibit the negative effects of advertising. Recent studies have begun to investigate the persuasive advertising factors that underlie young children's product preferences, including the use of licensed characters on food packaging and the overall entertainment value of child directed commercials and advergaming (Harris et al., 2011). Results from studies such as these should be used to inform the content of advertising mediation messages used in future intervention studies.

*Summary*

In summary, with the dramatic increase in childhood obesity over the past few decades, increasing public and political attention has been directed toward the social-environmental

factors that influence obesity-related health behaviors in children (Harris, 2010). There is general consensus within the scientific community that food and beverage marketing plays a significant role in the growth of childhood obesity (American Academy of Pediatrics, 2006). Children have become an increasingly prominent target for marketers in recent years due to generational differences in the amount of influence children have on family purchase decisions, the widespread availability of advertising platforms, and increases in media and technology use especially amongst low-income children (FTC, 2006). Young children are cognitively limited in their ability to view advertisements critically and to weigh the outcomes of different types of food choices. There is strong evidence that television advertising directly influences the food preferences and purchase requests of children aged two to eleven, and children and youth engage in a substantial amount of food purchasing, both directly and indirectly by influencing their parents' decisions (Institute of Medicine, 2005). There is also evidence that television advertising affects children's short term consumption patterns as well as the beliefs of children aged two to eleven about the healthfulness of particular foods (Institute of Medicine, 2005). Children aged eight and younger do not effectively understand the persuasive intent of advertising, and children aged four and younger cannot consistently discriminate television programming from advertisements, which thus makes it inherently unfair to target this age group (American Academy of Pediatrics, 2006). Because, young children are more susceptible to the influence of food advertising, the ethics of child-directed advertising and its influence on children's purchase requests, snacking frequency, and taste preferences have become key issues of societal debate. As a result, researchers have begun to examine the role of government, educators, and parents to mediate the effects of advertising (Brownell, 2009; Kunkel, 2011; Buijzen, 2007). A number of these studies have focused specifically on children's response to advertising and on how parents can potentially modify or reduce children's advertising response. (Buijzen, 2007, Kunkel et al., 2004). The purpose of this study was to explore the interactive effects of food advertising and

socioeconomic status on children's food choice, parental influence attempts, and the behaviors of parents.

# Chapter 3 - Research Study

## The Impact of Single Exposure Advertising and Socioeconomic Status on Parenting Behaviors and Children's Food Choice

### Introduction

The prevalence of childhood obesity has risen dramatically in recent decades, and now represents a major public health problem in the United States and throughout the world. Ogden and colleagues, using nationally representative data, reported that in 2007-2008, 16.9% of US children and adolescents were obese (Ogden, 2010). It is estimated that due to the health risks associated with obesity, which include cardiovascular disease, non-alcoholic fatty liver disease, cancer, hypertension, diabetes mellitus and asthma (Kopelman, 2007, Wang et al., 2008), this generation of children may have a shorter life expectancy then their parents (Olshansky et al., 2005). Contrary to popular belief, the rising prevalence in childhood obesity is not solely isolated to the US and other industrialized countries. The World Health Organization has declared obesity a global epidemic, and global trends point to an increasing obesity prevalence in almost every country (World Health Organization, 2004). The global rise in childhood obesity has led to an urgent need to investigate the social-ecological factors underlying this alarming trend.

#### *Food Advertising*

In recent years, increasing public and political attention has been directed towards the role of child-directed food advertising in the growth of childhood obesity (Harris, 2010). In 2005, the Institute of Medicine (IOM), in the most comprehensive report on food marketing to date concluded that food marketing influences children's food preferences and short-term consumption patterns (IOM, 2005). Recent findings suggest that in addition to influencing

children's short-term consumption patterns, food marketing may also have a significant impact on children's adiposity levels (Chou et al., 2008). The World Health Organization and the Food and Agriculture organization have both concluded that marketing of energy dense food and beverage products is a probable cause of increasing childhood obesity (Robinson et al., 2007).

Major food companies today employ a variety of marketing strategies, including broadcast, print, internet advertisements, and transmissions to personal digital devices (Mello, 2010). Children in the US consume a total of 10 hours and 45 minutes worth of media content each day (KFF, 2008). This figure represents an increase of almost 2¼ hours of media exposure per day over the past five years. Despite the widespread availability of new media platforms, television still remains the primary source of children's exposure to advertising (KFF, 2008). The proliferation in new ways in which children are able to consume television content has led to an increased average of 38 minutes of daily television consumption since 2004. Consequently, today's youth are exposed to approximately 4.5 hours of television per day, and thousands of food and beverage advertisements per year (Kelly et al., 2010). In a recent study, Kelly and colleagues (2010), concluded that if children watch only two hours of television per day (approximately half the national average) during the most popular broadcast times, children are exposed to anywhere between 56 and 126 food advertisements per week. As a result, young children in the US are exposed to thousands of televised food and beverage advertisements per year, 98% of which are for energy dense foods of minimal nutritional value (Borzekowski, 2001; Powell et al, 2010).

### *Food Advertising Effects*

The 2005 Institute of Medicine report on food marketing to children concluded that food advertising influences children's food preferences, ability to recall advertised brands, as well as

their purchase requests to parents. For example, results from a 2007 study investigating the impact of fast food branding on children's food preferences demonstrated that children between the ages of 3 to 5 rated foods as better tasting when they were wrapped in a package with a McDonalds logo (Robinson et al., 2007). Furthermore, unlike previous generations, many parents enable children with a greater ability to indirectly control a large proportion of family spending through attempts at influencing parent purchase decisions toward frequently advertised food and beverages of minimal nutritional value (Calvert, 2008). Over the past several decades, a broad collection of academic research has addressed developmental differences in how children recognize and defend against commercial persuasion. There is a broad consensus within the scientific community that young children are especially sensitive to the influence of advertisting (American Academy of Pediatrics, 2006). Research has demonstrated that children under the age of 8 are cognitively and psychologically defenseless against advertising (Kunkel et al., 2004; IOM, 2005). Two information-processing skills are required for children to attain a mature comprehension of advertising messages (Kunkel et al., 2004). First, they must be able to perceptually discern between commercial and non-commercial content. Second, children must be able to deduce the persuasive intent of advertising in order to become skeptical interpreters of advertising messages (Kunkel et al., 2004). The ability to perform these essential cognitive functions is something that develops over time as children intellectually develop. Thus, children below 4–5 years of age do not consistently discriminate between television program and commercial content, and children below the age of approximately 7–8 years, as a result of their limited cognitive development, typically lack the ability to apply such considerations to their understanding of television advertising (IOM, 2005).

### *Food Advertising and Socioeconomic Status*

Research demonstrates that in general, the food environment and food marketing in particular are major contributors to childhood obesity (Kunkel et al., 2004). Young children from

low-income households may be at greater risk for obesity because they are exposed to higher frequencies of advertisements for low-nutrient, high energy food and beverage products (Grier, & Kumanyika, 2008). Children from ethnic minority families are likely to see even greater numbers of ads, given that these groups tend to have heavier exposure to television than White families (Huston & Wright, 1998). Low-income neighborhoods typically have greater numbers of fast-food restaurants and fewer vendors of healthful foods than do wealthier neighborhoods. Consequently, low-income neighborhoods are exposed to disproportionately higher levels of advertisements that encourage the consumption of energy dense food and beverage products (Nicklas, 2011). The Institute of Medicine concluded that there is moderate evidence that television advertising affects the beliefs of children aged two to eleven about the healthfulness of particular foods. Poor dietary habits in low-SES children are shown to be positively associated with inadequate nutritional knowledge of parents (Damann & Smith, 2009). Evidential findings have demonstrated that low-income children in addition to spending more time watching television have higher intakes of dietary cholesterol, lower intakes of fruits and vegetables and higher overall rates of fast food consumption (Casey et al., 2001; Burdette, 2004; Powell, Chaloupka & Bao, 2007). It may be that this increased exposure to food advertising, when combined with the high prevalence of energy-dense food availability in low-SES environments, positively contributes to the disproportionately higher rates of obesity seen in low-income children.

### *Mitigating the Effects of Food Advertising*

Concerns about child-directed food advertising, has prompted government officials to make stronger attempts at limiting children's advertising exposure through regulation. In response to the IOM report and other preliminary investigations conducted by state and federal health agencies, the White House, in 2010, established a political task force on childhood obesity for the direct purpose of developing an interagency action plan to solve the problem of obesity

among our nation's children within a generation (Whitehouse Taskforce on Childhood Obesity, 2010). Central to the goals of the Taskforce's plan in addressing the childhood obesity epidemic, is a call to implement stronger regulatory measures to limit the food industry's ability to directly market to children. In an effort to help improve the marketing landscape, major food corporations have put forth a wide variety of self-regulatory pledges and measures. However, recent history suggests that many of the recommendations put forth by the food industry have undermined recommendations made by Congress and federal health agencies (Brownell et al., 2011). Consequently, the marketing of energy dense food and beverages to children still remains highly prevalent in the U.S. (Harris et al., 2011).

Another route to limiting the negative effects of advertising on children may be to have parents and teachers, or home care providers attempt to potentially modify or reduce children's advertising response through adult mediation (Buijzen, 2007, Kunkel et al., 2004). Buijzen & Valkenburg (2003), describe advertising mediation as being comprised of two different types: restrictive mediation, and active mediation. Restrictive mediation is defined as the occurrence of rules or restrictions surrounding children's television exposure within the home environment. Restrictive mediation involves parental placement of restrictions on the amount and type of televised content that children are permitted to view (Buijzen, 2007). Another method of mediation is active mediation. Active mediation is the discussion of content that is being presented on television (Austin, 1993). Many researchers have proposed that younger children are more vulnerable to advertising messages because they have difficulty distinguishing fantasy from reality and therefore do not comprehend the persuasive intent of advertising messages (Calvert, 2008; Gunter, Oates, & Blades, 2005; Kunkel, 2005). For example, studies which have investigated the promotion of advertising literacy have suggested that instilling advertising literacy in children at an early age may be useful for empowering them with the cognitive tools required to guard themselves against advertising effects, and ultimately reduce their affinity for

advertised products (Young, 1992). Evidential findings have demonstrated that children's level of cognitive defense and overall comprehension of advertising are important predictors of product attitudes, product preferences and frequency of purchase requests to parents (Buijzen, 2009).

In summary, because child-directed food and beverage marketing remains highly prevalent in the US, and because the food industry continues to develop new and innovative ways to expose children to food and beverage advertising through strategies such as viral, stealth, and guerilla marketing techniques, public health advocates recommend that additional work be conducted to examine ways that parents and adults can protect their children from the effects of advertising. Furthermore, a gap in the literature exists as to what parents from diverse socioeconomic backgrounds are currently doing to mediate advertising effects in response to advertising. This study is unique from other studies for several reasons. First, this study directly examines the outcomes of children's food choice, children's influence attempts to parents, and parenting behaviors in response to single exposure advertising within a true experimental design setting. Only very recently has a study utilized similar methods to directly examine children's food choice and parenting behaviors in response to single exposure advertising using a small, ethnic minority sample (Ferguson et al., 2011). Most advertising studies thus far have employed the use of survey methods to assess the effects of advertising on children and parents (Buijzen, 2008). Furthermore, real-life, observational studies that have examined the specific outcome variables examined in this study have done so without directly assessing children's advertising exposure (Flurry & Burns, 2005; Gaumer, 2008). An additional reason that this study is unique from other studies is that it specifically seeks to examine how socioeconomic status moderates the relationship between advertising and the potential effects of single exposure advertising on children and parents.

*Study Aims*

The primary aim of the present study was to investigate the impact of advertising on parent behaviors, children's influence attempts to parents, and children's food choices. The secondary aim was to examine if the impact of advertising on parent behaviors, parental influence attempts and children's food choices was moderated by household socioeconomic status. We hypothesized the following: (1) More children exposed to food advertising will choose energy dense, advertised foods compared to children who are not exposed to food advertising. (2) More children residing in low SES households exposed to food advertising will choose energy dense, advertised foods compared to children residing in households with greater SES exposed to food advertising; (3) More children exposed to food advertising will exhibit parental influence attempts compared to children not exposed to food advertising: (4) More parents of children exposed to food advertising will exhibit parenting behaviors that encourage selection of a fruit or vegetables or discourage selection of an energy dense foods compared to parents of children not exposed to food advertising; and (5) Fewer parents with low SES status who are exposed to food advertising will exhibit parenting behaviors that encourage selection of a fruit or vegetable or discourage selection of an energy dense food compared to parents with greater SES who are exposed to food advertising, whereas no differences in parenting behaviors will be observed in parents who are not exposed to food advertising .

## *Methods*

*Participants & Design*

A voluntary sample of parent-child dyads (n = 58) consisting of children ranging between the ages of 4-6, were recruited from childcare settings, including Head Start, a federally sponsored preschool program for low income families; Women Infants and Children (WIC), a

supplemental nutrition aid program for low-income woman and children; local home-care providers; and local community recreation programs. Participants were recruited via promotional fliers, which were provided to the aforementioned recruitment locations. The flier asked if they would like to volunteer for a study involving children's media use in the home environment. Participants responded to fliers by telephone, e-mail, or in person to a trained research assistant. Participants received a $10 gift card for their participation in the study.

The parent-child dyads participated in a true experimental design where half the sample were randomized to be exposed to advertising and categorized as low SES or higher SES (qualified for free and reduced lunch, n = 11; paid, n = 18) and half were randomized into a control condition (qualified for free and reduced lunch, n = 12; paid, n = 17). Parents were assigned to either the experimental or control condition based on the order in which they participated in the study using a randomized list of numbers (0=no advertising, 1=advertising) that was generated using SPSS version 16 random number generator.

*Procedures*

Upon arriving at a pre-selected study location, a trained research assistant asked parents to sign an informed consent form and fill out a short a survey. To eliminate various forms of subject bias, parents participated under the impression that the overall purpose of the study was to examine parent-child interaction during television co-viewing. Food and food advertising was not mentioned at any point during the recruitment process. The parent survey assessed family socio-economic-status and parenting practices around household television rules and consumer behavior. After finishing the survey, each parent-child dyad was lead to a private viewing room where they were video-taped while watching a seven-minute cartoon. The cartoon itself was made in Canada and had not been previously broadcast in the U.S. The research assistant was not present during the viewing.

During the cartoon, parents and children in the advertising condition were exposed to two commercials featuring advertising for energy dense (ED) foods that had not been televised in the local viewing area. Children in the control condition watched two non-food commercials, which were superimposed in to the same cartoon. Advertisements were intentionally selected on the basis of appeal, and were developed to target both the child and parent demographic. Immediately following the cartoon-viewing segment, the research assistant re-entered the room and offered parents the opportunity to allow their child to select one of four food products. The four foods were presented in single-serving, ready to eat packaging. Two of the food options were energy dense (ED) foods that were featured in the food advertising viewing condition (English biscuit cookies, and Maynard's Fuzzy Peach Candies). The other two food options consisted of a ready to eat fruit or vegetable (FV: apple slices and baby carrots). The research assistant placed the four food options in an equidistant, alternating manner (ED, FV, ED, FV) on a 4'x6' table, so that the foods were displayed side by side out of the child's reach, allowing for the parent to participate in the process of choosing a food. All parent-child interaction during the decision making process was digitally recorded on a Panasonic-HD-TM90 video camera. After the completion of the food choice, children were led by a trained research assistant to a separate area to have their height and weight measured in order to assess BMI-for-age. After the study, parents were given a debriefing statement, which disclosed the true purpose of the study. All video recordings were kept confidential, and later observed and coded for child and parent behaviors by a research assistant who was blinded to the experimental condition of each subject. All procedures were approved by the university institutional review board committee on research involving human subjects.

*Measures*

Family Socioeconomic Status - Parents reported whether or not they had a child that qualified for free or reduced cost school lunch living in the household. Responses were used to

create a dichotomous measure of family socioeconomic status (low income or higher income), based on whether their child was eligible for free or reduced cost school lunch. Student eligibility for reduced cost lunch is based on family size and annual household income in relation to the federal poverty line (i.e. eligibility for a family of four is an annual household income of 180% below the federal poverty line).

Advertising Mediation- To measure parent behaviors for mediation of advertising content, Buijzen and Valkenburg's (2005) adapted version of Valkenburg, Krcmar, and Peeter's (1999) original mediation scale was used. The Buijzen and Valkenburg (2005) scale was altered to fit the context of commercials. Parents responded to the 10 items, which asked them to report how frequently they use active and restrictive mediation. Response options ranged from "never"=0 to "often"=4 on a four point Likert scale. Both forms of mediation (active and restrictive), were measured in order to determine how parents generally managed commercials in their home. The responses to each of the five items were averaged to create an active mediation score and a restrictive mediation score. In addition to these items, an additional three items were adapted from Buijzen (2009), to measure cognitive and affective forms of mediation. The responses to each of the five items were also averaged to create an evaluative mediation scale and factual, active mediation score yielding Chronbach alpha coefficients of .84, .87, and . 79, respectively.

Parent Behaviors and Children's Influence Attempts to parents - A behavior frequency table was created to measure parent behaviors and children's influence attempts to parents during the food selection phase of the study. Behaviors were defined using the influence attempt strategies and parental response patterns adapted from the seven and three item consumer-behavior scales by Flurry & Burns (2005), and Gaumer (2008). Behavioral definitions can be found in Table 1. Child influence attempts included: showing affection, bargaining, asking, begging, demanding, and displaying anger. Parent behaviors were defined for each food category

(FV or ED), and included food promotion, food restriction, agreement to food choice, disagreement to food choice, discuss food choice, and uninvolved in food choice. A trained research assistant blinded to the viewing conditions, was given copies of the video recordings, which had been cut and edited to start at the point in which the research assistant re-entered the room with the food options and end once the parent-child food selection process was completed. Videos of the food selection process of the study lasted approximately three minutes in length. The videos were viewed by the research assistant who documented whether or not each parent-child behavior occurred on the behavioral frequency table and if so, how many times per minute they occurred. None of the behaviors were found to occur more than one time during the food selection phase for any of the participants. After the initial coding, parent-child behaviors were then coded by a second research assistant, and inter-rater reliability was assessed and determined to be high (98%). Since all subjects exhibited the defined behaviors either once or not at all, the occurrence of each behavior, "Yes" or "No," was used to create a dichotomous measure for each parent mediation and child consumer behavior.

Child Body Mass Index Z Scores (BMIz) - In addition to primary independent and dependent measures, data was collected to examine children's BMIz. Height was measured in centimeters using a portable stadiometer (Seca 214 Hamburg Germany), which measured to the nearest 1 mm. Weight was measured in kilograms using a regularly calibrated digital scale (Seca Corp, Model 770, Hamburg Germany), which was shown to be accurate to 20 grams. Height and weight were both measured twice and a third time if a discrepancy was noted. The average height and weight measurements were used in the final BMI analyses. BMI measures were related to Centers for Disease Control and Prevention norm reference standards for growth by age and gender to obtain a z-score for each value. BMIz scores and gender specific percentiles were used to create a dichotomous measure of normal or overweight/obesity. The

overweight/obesity category was defined by the age and sex specific 85th percentile of body mass index (Mei et al., 2002).

*Data analysis*

Because the dependent variables were binary in nature, logistic regression was conducted to examine the effect of advertising on food choice, parental influence attempts, and parent behaviors. Behavioral outcomes were dichotomized in to no, or yes based on whether or not the behavior occurred. Food choice was dichotomized as either an energy dense food or fruit or vegetable. The predictors were condition (no food advertising, food advertising) and SES (paid Lunch/higher income; free or reduced cost lunch/low-income) and their interaction. Adjusted odds ratios (OR) and 95% confidence intervals (CI's) are presented for all subjects by advertising condition and SES.

## Results

*Food Choice*

Children in the advertising conditions had the option of choosing either an energy dense food, or a fruit or vegetable. The overall model for food choice was statistically significant with chi-square = 10.05, 1 df, p =.018. An examination of the impact of advertising on food choice was not significant. Socioeconomic status did not moderate this effect. However, it was found that more low-income children chose a fruit or vegetable over an energy dense food (OR = 5.8), regardless of whether or not they were exposed to advertising ($p<.05$). Out of the 23 child subjects that qualified for free or reduce cost lunch, 52% chose an energy dense food, compared with 82.9% of the 35 children that did not qualify for free or reduced cost school lunch (See Table 3).

*Influence Attempts*

Children's influence attempts included the use of begging, bargaining, anger, showing affection, or just asking to attain either a fruit or vegetable, or an energy dense food. The overall

majority of influence attempts were observed less than two times except for the most frequently observed influence attempt employed by children, which was just ask. However, an examination of the impact of advertising and SES on child influence attempts revealed no effects.

*Parenting Behaviors*

Defined parenting behaviors included, promote attention towards a food category (ED or FV), restrict to one or two types of foods (ED or FV), discuss a food category (ED or FV), and uninvolved. Three out of five parenting behaviors yielded significant results. An examination of the impact of advertising on two parent behaviors was significant. Seventy-two percent of parents who were not exposed to advertising displayed no acts of communication or involvement in the food selection process compared to forty-five percent of parents exposed to advertising ($p<.05$). (The overall model for the ads/no ads difference in parental uninolvement approached statistical significance with chi-square = 7.22, 3 df, p =.06). No interaction effect was found between socioeconomic status and advertising on the outcome of the parent behavior, uninvolved.

Eighty-six percent of parents who were not exposed to advertising compared to 55 percent of parents exposed to advertising agreed to children's request for an energy dense food (Figure 1). However, this effect was moderated by household socioeconomic status After exposure to advertising, more low income parents agreed to an energy dense food compared to low-income parents ($p<.05$) (Figure 1). However, no difference was found between higher income and low-income parents in agreement to the energy dense food when parents and children were not exposed to advertising (Figure 1). (The overall model for the ads/no ads difference in parental agreement to an energy dense food was statistically significant with chi-square = 11.45, 3 df, p =.01).

An examination of the impact of socioeconomic status on one parent behavior was significant independent of whether parents were exposed to advertising. Twenty six percent of

higher income parents discussed an energy dense food compared to only 5.1% of higher income parents. (The overall model for the low income/higher income difference in parental discussion of an energy dense food was statistically significant with chi-square = 9.165, 1 df, sig.=.027).

## Discussion

This study explored the impact of food advertising on children's food choice, influence attempts to parents, and parenting behaviors, and then examined how the impact of food advertising each of these outcomes was moderated by household socioeconomic status (SES). In regard to children's food choice, we first hypothesized that more children exposed to food advertising would choose energy dense foods over fruits and vegetables compared to children in the control advertising condition. No effect of single exposure advertising on children's food choice was found in this study (Table 3). The literature suggests that there is a positive association between T.V. viewing, exposure to advertising and consumption of energy dense foods (IOM, 2005). Furthermore, findings from previous studies have documented that parent-child co-viewing of advertising alone is not sufficient enough to mediate the effects of advertising (Austin, 1999). Additionally, to control for the effect of brand recall on children's food choice, the food advertising condition featured food advertisements for food products that children had not been exposed to before. Branding plays a significant role in shaping children's food choices (IOM, 2005). Thus, due to brand unfamiliarity, children may have been less inclined to choose energy dense, advertised foods after being exposed to the advertised foods only one time.

Our second hypothesis regarding children's food choice was that low income children, when exposed to food advertising would be more likely to choose energy dense foods compared to higher income children exposed to food advertising. Contrary to previous findings on fruit and vegetable consumption in low-income populations, low SES children in this study, appeared to be more likely to choose fruits and vegetables over energy dense food options when given the

option regardless of whether they were exposed to advertising or not. It may that these low income children were not provided with fruits and vegetables at home so they had a greater preexisting value for fruits and vegetables than the children residing in households with greater incomes. However, we have no data to closely examine this speculation.

In regard to children's influence attempts to parents, we hypothesized that exposure to food advertising would elicit greater child parental influence attempts compared to children exposed to non-food advertising. As with food choice, no effect of advertising on children's influence attempts to parents was found. This is consistent with a number of authoritative studies which suggest that children's purchase-influence attempts to parents are more likely to result from repeated exposure (IOM, 2005; Kunkel; 2004). Evidence suggests that young children's repeated exposure to television advertising and branding specifically, is important in order for children to recognize and recall brands during consumer decision-making situations in which a purchase request is elicited (Macklin, 1994). Keller (1987), demonstrated that advertising retrieval cues are necessary to facilitate a child's access to elements from the advertising memory trace (i.e. ability to recall advertised products), and that repeated exposure to advertising and advertising cues at point of purchase might assist young consumers in accessing the advertising memory trace and in influencing brand consideration.

In regard to parenting behaviors, our fourth and fifth hypotheses predicted that parents of children exposed to food advertising would exhibit parenting behaviors that encouraged selection of a fruit or vegetables or discouraged selection of an energy dense food compared to parents of children not exposed to food advertising, and that fewer parents with lower SES status who were exposed to food advertising would exhibit parenting behaviors that encouraged selection of a fruit or vegetable or discouraged selection of an energy dense food compared to parents with greater SES who were exposed to food advertising, whereas no differences in parenting behaviors will be observed in parents who were not exposed to food advertising . Both

of these hypotheses were supported ($p<.05$). The odds of parental uninvolvement were lower for parents in the non-food advertising condition than that of parents in the food advertising condition (Table 3). Thus, parental activity was greater for parents of children who were exposed to food advertising. Furthermore, the odds of parental agreement to an energy dense food were lower for parents in the food advertising condition compared to parents in the control advertising condition ($p<.05$). However, the effect of advertising on parental behavior was only significant for higher income parents (Figure 1). Parents with higher incomes in the food advertising condition were less permissible to their children's selection of an energy dense food compared to parents with higher incomes in the non-food advertising condition. According to Grossbart (1984), parents who are concerned about the effects of television advertising, and who have positive nutritional tendencies and exhibit less nutritional permissiveness are more likely to employ advertising mediation strategies. For example, mothers who view ads more negatively, yield less to their children's purchase requests (Ward and Wackman, 1971). Only higher income parents agreed less frequently to an energy dense food after exposure to energy-dense food commercials. Low income parents' behavior did not differ due to exposure to commercials. It may be that the energy dense food commercials provided a cue for higher income parents and reminded them to parent whereas low income parents were not as attentive to the importance of mediating the commercial effects on their children's behavior. This finding is consistent with previous literature demonstrating that mothers of lower SES believe intrinsic factors like genetics and heredity, and not parenting, are the overriding determinants of a child's weight, and preschoolers of mothers with indulgent, as compared with authoritarian, styles, have higher body mass index (BMI) (Rhee et al, 2006; Jain et al, 2001). Another interesting observation was that more low-income parents discussed an energy dense food choice with their child compared to higher income parents regardless of whether or not they were exposed to advertising ($p<.05$). This result may indicate that when low-income parents are involved in the food decision-making

processes, they may be more inclined to encourage their children to choose energy dense foods more often than higher income parents. Evidence also suggests that parents of low SES children are less likely to exhibit positive nutritional tendencies in regards to parental feeding practices. For example, low-income mothers are more likely to express preferences for larger infants, are more likely to use food as a reward, and are less likely to set limits for their children's eating (Johnson, Pratt & Wardall, 2007). In one recent study, researchers examined the role of parenting in feeding and childhood obesity and documented that low-income mothers indicated feeling successful and cherished as parents after feeding their own child in a manner that pleased the child (Kalinowski et al., 2011). Thus, low-income parents may be less likely to intervene in decision-making processes involving children's food choices in a restrictive manner due to the lack of a perceived threat. Consequently, it may be that low-income parents would benefit from media literacy education incorporated through nutrition based public health programs such as EFNEP or WIC.

Recent data has demonstrated that children's exposure to sugar sweetened beverage advertising has decreased by as much as 67% as result of self-regulatory pledges by the food industry (Harris et al., 2010; Kunkel et al., 2009), however these studies have also identified a significant increase in children's exposure to fast food advertising (Powell et al., 2010). Results from the current study support the claim that parents may play a role in reducing children's accessibility to energy dense foods in response to advertising cues. Higher income parents' agreement to energy dense foods decreased in response to advertising exposure. This encouraging result may indicate that parents are aware of the various ways advertising could influence their children. It also provides an indication that low-income children may be more vulnerable to the effects of advertising as a result of parental inaction. Previous research has demonstrated that parents are concerned about the impact of advertising on children (Buijzen, 2003). Results indicate that there may be a disparity in advertising concerns between income

groups. However, it may be the case that despite parents' awareness and concern about advertising, they are unaware of what they should say to effectively mitigate advertising effects. Thus, future attempts should be made to empirically investigate both the explicit and non-explicit communication strategies that parents might employ to curb unwanted advertising effects.

This study is not without limitations. First, in order to maintain tight control over experimental variables and keep internal validity high, this study was conducted in a laboratory setting. We do not know if the child and parent behaviors that occurred in the laboratory setting represent the behaviors that occur on a daily basis in the home.

In addition, we assume that the randomization between groups controlled for any preexisting differences in children. However, no survey consumption measures were used to assess home food availability, food preferences and food consumption patterns, food availability, and food preferences of study participants. It may be that there were confounding variables that had an impact on food choice.

An additional issue may have been the impact of Hawthorne effect on parenting behaviors. Adult participants in this study knew they were being video-taped which may have caused subjects to improve or modify an aspect of their behavior during the experiment. On the other hand, children were most likely much less aware of the evaluative nature of the experiment, so Hawthorne effect probably had no impact on child behaviors or food choice.

Finally, evidence suggests that a dose response relationship exists between exposure to food advertising and advertising effects in children (IOM, 2005). The child-subjects in this study were exposed only two commercial advertisements for products they had not previously been exposed to beforehand. Thus it is difficult to derive any meaningful conclusions about the long-term effects of advertising from the methods used in this study. In order to obtain a more concise understanding about the effects of children's average advertising exposure, it may be beneficial to assess children's advertising exposure in a more longitudinal manner.

With today's advertising landscape is nearly impossible to completely restrict children's exposure to advertising. Thus, future attempts should be made to investigate ways to target elements within the home environment in order to modify and shape children's response to advertising in a way that encourages positive eating behaviors. It is well documented that children are cognitively defenseless against advertising, and that parents can play a significant role in lessening children's vulnerability to food advertising (Buijzen et al., 2008). Parents act as the gatekeepers to the home environment, and retain primary control over a family's diet. Moreover, cross sectional surveys demonstrate that parents are concerned about advertising to children. Efforts should be made to capitalize on the concerns of parents by developing interventions that involve both nutrition and media education targeting both parents and children.

In conclusion, this study has demonstrated a link between advertising exposure and parenting behavior. Results suggest that this relationship may be moderated by socioeconomic status. This specific result may indicate that low income parents are unaware of the various ways advertising could influence their children. Thus, future attempts should be made to investigate whether interventions that target parent-child communication strategies may empower parents to effectively curb unwanted advertising effects in children. Public health interventions targeting low-income parents should consider incorporating media literacy components in to their respected programs for the purpose of increasing the awareness of low-income parents about the potentially harmful effects of food marketing. In light of the fact that the overwhelmingly majority of food commercials viewed by children are for energy-dense nutrient-poor food, and because excessive intake of advertised food may ultimately present risk for obesity, the issue of parents role in mitigating the effects of child-directed advertising remains an important public health topic in need of further exploration.

**Table 1. Definitions of Observed Behaviors**

| | |
|---|---|
| **Parental Influence Attempts** | |
| Bargain (FV/ED) | Influence strategies used to create agreement among family members for mutual gain. ("If you do let me have a FV or an ED food, I'll do that.") –(Spiro, 1983) |
| Beg (FV/ED) | Asking over and over for a FV or an ED food, through the use of cajoling, nagging, and pestering until resolution is reached in favor of the persuader (Davis, 1976) |
| Anger (FV/ED) | Child displays anger (i.e. gets mad) to attain either a FV or an ED food. (Flurry & Burns, 2005) |
| Just Ask (FV/ED) | Direct and purposeful asking for either a FV or an ED food, i.e. "Can I have this?" (Ward, 1990). |
| Show Affection (FV/ED) | Affectionate statements (i.e. Saying that parent is "the best mom in the whole world.") |
| **Parent Behaviors** | |
| Promote | |
| FV Attention | Parent uses verbal or non-verbal communication to direct attention toward a fruit or vegetable |
| ED Attention | Parent uses verbal or non-verbal communication to direct attention toward an energy dense food. |
| Restrict | |
| One FV choice | Parent uses verbal or non-verbal communication to restrict choice to only one FV. |
| Two FV choice | Parent uses verbal or non-verbal communication to restrict choice to only FV. |
| One ED choice | Parent uses verbal or non-verbal communication to restrict choice to only one ED food. |
| Two ED choice | Parent uses verbal or non-verbal communication to restrict choice to only ED foods. |

| | |
|---|---|
| Discuss | |
| FV Choice | Parent uses verbal communication to encourage selection of a fruit or vegetable without limiting the selection to FV alone. |
| ED Choice | Parent uses verbal communication to encourage selection of energy dense foods without limiting the selection to energy dense foods alone. |
| Uninvolved | Parent displays no acts of communication or involvement in the food selection process. |
| Agree | |
| FV choice | Parent uses verbal or non-verbal communication to indicate approval towards child's selection of a fruit or vegetable |
| ED choice | Parent uses verbal or non-verbal communication to indicate approval towards child's selection of an energy dense food |
| Disagree | |
| FV choice | Parent uses verbal or non-verbal communication to indicate disapproval toward child's selection of a FV |
| ED Choice | Parent uses verbal or non-verbal communication to indicate disapproval toward child's selection of an ED food |

ED: Energy Dense Food, FV: Fruit or Vegetable

**Table 2. Participant Characteristics**

| **Child Characteristics** | Ads | No Ads |
|---|---|---|
| Subject Number | n=29 | n = 29 |
| Age, y (SD) | 4.88 (.86) | 5.13 (.78) |
| Height, cm (SD) | 109.43 (9.3) | 111.57 (8.0) |
| Weight, Kg (SD) | 19.11 (3.72) | 19.76 (3.77) |
| BMI, mean, (SD) | 15.82 (1.1) | 15.76 (1.58) |
| Female, % (n) | 65.5% (19) | 34.5% (10) |
| Race/Ethnicity, % (n) | | |
| Latino/Hispanic | 6.9% (2) | 6.9% (2) |
| White | 93.1% (27) | 92% (27) |
| Overweight/Obese, % (n) | 13.8 (4) | 20.7% (6) |
| Free or Reduced Cost Lunch Eligibility, % | | |
| Yes | 37.9% (11) | 41.4% (12) |
| No | 62.1% (18) | 58.6% (17) |
| Daily Television Exposure During the Week %, (n) | | |
| None | 13.8% (4) | 10.3% (3) |
| <15 minutes | 10.3% (3) | 3.4% (1) |
| 30 minutes or less | 6.9% (2) | 13.8% (4) |
| 1 hours | 27.6% (8) | 27.6% (8) |
| 2 hours | 20.7% (6) | 37.9% (11) |
| 3 or more hours | 20.6% (6) | 6.4% (2) |

| | Ads | No Ads |
|---|---|---|
| Weekend TV Exposure %, (n) | | |
| None | 3.8% (1) | 8% (2) |
| < 15 minutes | 19.2% (5) | 4% (1) |
| 30 minutes or less | 11.5% (3) | 4% (1) |
| 1 hours | 19.2% (5) | 8% (2) |
| 2 hours | 26.9% (7) | 36% (9) |
| 3 or more | 19.2% (1) | 30% (15) |
| **Parent Characteristics** | | |
| Female, % (N) | 89.7%, (26) | 69%, (20) |
| Age y, (SD) | 33.68 (5.4) | 34.2 (5.5) |
| Number of Adults Living in Household %, (N) | | |
| 1 | 20.7% (6) | 10.3% (3) |
| 2 | 79.3% (23) | 89.7% (26) |
| Annual Household Income (Freq) | | |
| < $15,000 | 1 | 4 |
| $15,000-$25,000 | 5 | 2 |
| $25,000-$35,000 | 5 | 8 |
| $35,000-$50,000 | 5 | 3 |
| > $50,000 | 13 | 12 |

| | Ads | No Ads |
|---|---|---|
| Highest Level of Education (N) | | |
| < Highschool | 1 | 1 |
| Highschool | 2 | 2 |
| Some college or associates | 9 | 4 |
| Graduated college | 13 | 13 |
| Masters degree or above | 3 | 9 |
| Does not apply | 1 | 0 |
| Self Reported Mediation Score, y (SD) | | |
| Active Mediation | 2.75 (.75) | 2.61 (.75) |
| Restrictive Mediation | 2.0 (.94) | 1.55 (.69) |
| Evaluative Mediation | 1.85 ( .79) | 1.71 (.85) |
| Factual Mediation | 2.48 (.69) | 2.27 (.84) |
| Self Reported Consumer Communication Score, y (SD) | 2.88 ±( .76) | 2.60 ± (.81) |
| Concept-Oriented | 2.73 ± (.63) | 2.57 ± (.70) |
| Socio-Oriented | | |

**Table 3. Impact of advertising on child food choice parental influence attempts and parent behaviors (OR and 95% CI)**

| | Randomization | | | |
|---|---|---|---|---|
| | **No Ads (n=29)** | **Ads (n=29)** | **OR (95% CI)** | **P-value** |
| **Variable** | % | % | | |
| **Food choice** | | | | |
| FV | 20.7% | 37.9% | .34 (.085-1.39) | .134 |
| **Influence Attempts** | | | | |
| Ask | | | | |
| FV | 3.4% | 17.2% | 5.8 (.64-33.45) | .121 |
| ED | 58.7% | 55.2% | .86 (.30 - 2.45) | .791 |
| Show Affection | | | | |
| FV | 0% | 0% | | |
| ED | 10.4% | 0 0% | 2.2 (.18 - 26.20) | .535 |
| Bargain | | | | |
| FV | 0% | 0% | | |
| ED | 0% | 0% | | |
| Beg | | | | |
| FV | 0% | 0% | | |
| ED | 0% | 0% | | |

| | | | | |
|---|---|---|---|---|
| Anger | | | | |
| FV | 0% | 0% | | |
| ED | 0% | 0% | | |
| **Parenting Behaviors** | | | | |
| Promote Attention | | | . | |
| FV | 13.8% | 13.8% | 1.0 (.225-4.45) | 1.0 |
| ED | 0% | 0% | | |
| Discuss | | | | |
| FV | 0% | 0% | | |
| ED | 6.9% | 20.7% | 3.5 (.64-19.1) | .145 |
| Restrict | | | | |
| One FV Choice | 0% | 0% | | |
| Two FV Choice | 0% | 0% | | |
| One ED Choice | 0% | 0% | | |
| Two ED choice | 0% | 0% | | |
| Uninvolved | 72.4% | 44.8% | .29 (.09-.88) | .030* |
| Agree | | | | |
| FV | 20.7% | 44.8% | 2.3 (.73-7.55) | .154 |
| ED | 86.2% | 55.2% | .21 ( .05-.89) | .035* |
| Disagree | | | | |
| FV | 0% | 0% | | |
| ED | 0% | 0% | | |

* p<.05; Paid: Ineligible for free or reduced cost school lunch; Free/Reduced: Financially eligible for free or reduced cost school lunch; Ads: Cartoon with ED food advertisements;
No Ads: Cartoon with non-food advertisements; OR: Odds Ratio; CI: Confidence Interval; n: Sample Size
[A] Significant interaction between free/reduced cost lunch eligibility & randomization; [b]Reference value = 1

**Table 4. Impact of SES on child food choice parental influence attempts and parent behaviors (OR and 95% CI)**

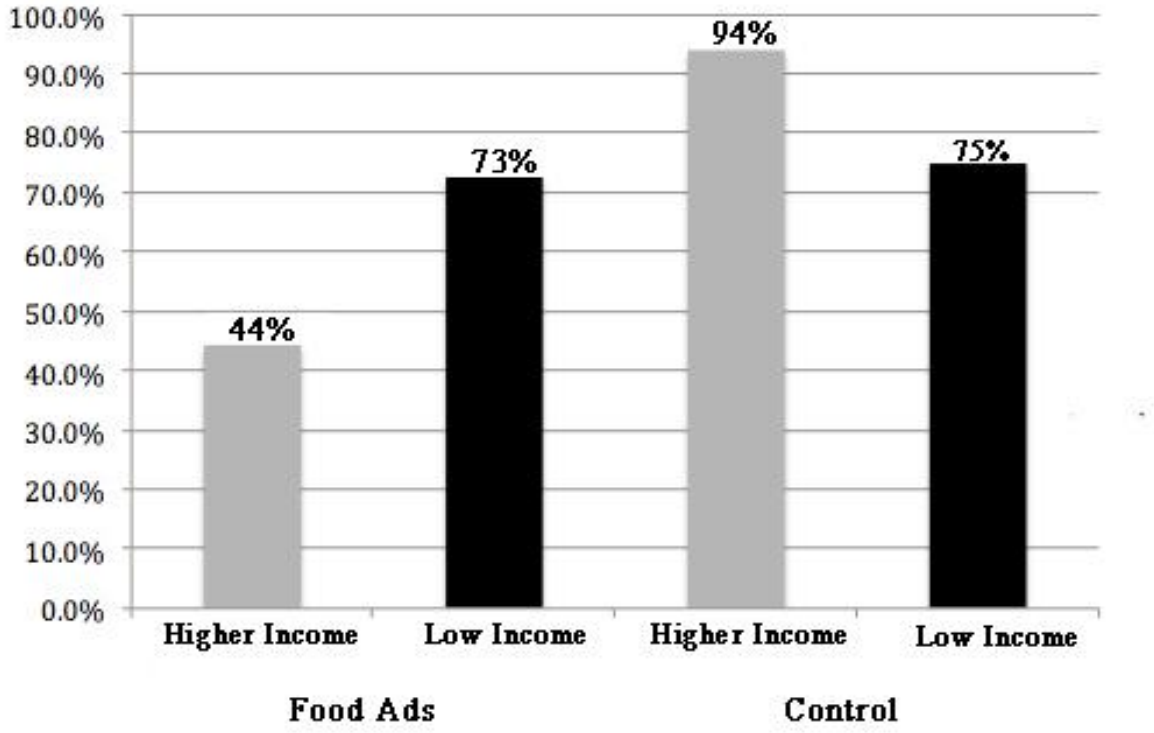
| | SES | | | |
|---|---|---|---|---|
| **Variable** | **Higher income (n=23)** % | **Low income (n=35)** % | **OR (95% CI)** | **P-value** |
| **Food choice** | | | | |
| FV | 17.1% | 47.8% | 5.8 (1.43-23.65) | .014* |
| **Influence Attempts** | | | | |
| Ask | | | | |
| FV | 14.3% | 4.3% | .27 (.029 - 2.59) | .258 |
| ED | 57.1% | 56.5% | .97 (.34 - 2.80) | .952 |
| Show Affection | | | | |
| FV | 0% | 0% | | |
| ED | 2.9% | 8.7% | 3.4 (.28 - 40) | .337 |
| Bargain | | | | |
| FV | 0% | 0% | | |
| ED | 0% | 0% | | |

| | | | | |
|---|---|---|---|---|
| Beg | | | | |
| FV | 0% | 0% | | |
| ED | 0% | 0% | | |
| Anger | | | | |
| FV | 0% | 0% | | |
| ED | 0% | 0% | | |
| **Parent Behaviors** | | | | |
| Promote Attention | | | . | |
| FV | 11.4% | 17.4% | 1.6 (.36-7.31) | .522 |
| ED | 0% | 0% | | |
| Discuss | | | | |
| FV | 0% | 0% | | |
| ED | 5.7% | 26.1% | 6.72 (1.1-39) | .034* |
| Restrict | | | | |
| One FV | 0% | 0% | | |
| Two FV | 0% | 0% | | |
| One ED | 0% | 0% | | |
| Two ED | 0% | 0% | | |
| Uninvolved | 65.7% | 47.8% | .47 (.16-1.4) | .179 |
| Agree | | | | |
| FV | 34.3% | 21.7% | .53 (.15-1.8) | .308 |
| ED | 68.6% | 73.9% | .79 ( .18-.3.37) | .751 |

| | | |
|---|---|---|
| Disagree | | |
| FV | 0% | 0% |
| ED | 0% | 0% |

* p<.05; Paid: Ineligible for free or reduced cost school lunch; Free/Reduced: Financially eligible for free or reduced cost school lunch; Ads: Cartoon with ED food advertisements;
No Ads: Cartoon with non-food advertisements; OR: Odds Ratio; CI: Confidence Interval; n: Sample Size
[A] Significant interaction between free/reduced cost lunch eligibility & randomization; [b]Reference value = 1

**Figure 1 Frequency of parent agreement to ED food by randomization (food ads/control) and SES (low income, higher income)**



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# Appendix A - Parent Survey

# Kansas State Food Media Study Parent Survey

**Child Name:** _____

(Last Name) (First Name)

**Parent (Caregiver) Name:** _____

(Last Name) (First Name)

This cover sheet will be torn off by the researchers so that your name will NOT be on the questionnaire.

**INSTRUCTIONS:**

- Please read all of the instructions and questions carefully
- Do not put your name on any part of the survey on the following pages.
- There are no right or wrong answers to the following questions or statements.
- The more honest you can be, the more likely we will be able to get a better understanding of these types of parent-child interactions. Also, remember that your answers will not be shared with anyone. Thank you for your participation.

## Parent Survey

ID#

**Please respond to the following questions about the types of things you may or may not discuss with your child.**

**How often do you tell your child...**

| | | Never | Rarely | Sometimes | Often |
|---|---|---|---|---|---|
| Q1 | That advertising depicts products as better than they really are? | ☐ | ☐ | ☐ | ☐ |
| Q2 | That advertising does not always tell the truth? | ☐ | ☐ | ☐ | ☐ |
| Q3 | That the purpose of advertising is to sell products? | ☐ | ☐ | ☐ | ☐ |
| Q4 | That not all advertised products are of good quality? | ☐ | ☐ | ☐ | ☐ |
| Q5 | That some advertised products are not good for children? | ☐ | ☐ | ☐ | ☐ |
| Q6 | To turn off the television when s/he is watching commercials? | ☐ | ☐ | ☐ | ☐ |
| Q7 | That s/he should not watch commercial networks because they broadcast too many commercials? | ☐ | ☐ | ☐ | ☐ |
| Q8 | To switch to a channel that broadcasts fewer commercials? | ☐ | ☐ | ☐ | ☐ |
| Q9 | That s/he should not watch television advertising at all? | ☐ | ☐ | ☐ | ☐ |
| Q10 | To watch specific networks that broadcast relatively few commercials? | ☐ | ☐ | ☐ | ☐ |
| Q11 | How products sometimes do not do everything they claim to do in a commercial? | ☐ | ☐ | ☐ | ☐ |
| Q12 | That TV commercials only point out the good things in a product? | ☐ | ☐ | ☐ | ☐ |
| Q13 | The people in commercials are not like people in real life? | ☐ | ☐ | ☐ | ☐ |
| Q14 | That the people in commercials are not that cool because of the product? | ☐ | ☐ | ☐ | ☐ |
| Q15 | That the people in commercials are not having that much fun because of the product? | ☐ | ☐ | ☐ | ☐ |
| Q16 | That people in the commercials are not that popular because of the product? | ☐ | ☐ | ☐ | ☐ |

**How often do you tell your child...**

| | | Never | Rarely | Sometimes | Often |
|---|---|---|---|---|---|
| Q17 | That every member of your family should have some say in family purchase decisions? | ☐ | ☐ | ☐ | ☐ |
| Q18 | To give his/her opinion when discussing family purchases? | ☐ | ☐ | ☐ | ☐ |
| Q19 | To give his/her opinion about products and brands? | ☐ | ☐ | ☐ | ☐ |
| Q20 | That you respect his/her expertise on certain products and brands? | ☐ | ☐ | ☐ | ☐ |
| Q21 | That you consider his/her preferences when making a purchase? | ☐ | ☐ | ☐ | ☐ |
| Q22 | To consider the advantages and disadvantages of products and brands? | ☐ | ☐ | ☐ | ☐ |
| Q23 | That s/he can help make the purchasing decisions when the product is for him or her? | ☐ | ☐ | ☐ | ☐ |
| Q24 | That you know which products are best for him/her? | ☐ | ☐ | ☐ | ☐ |
| Q25 | Not to argue with you when you say no to their product requests? | ☐ | ☐ | ☐ | ☐ |
| Q26 | That you expect him/her to accept your decisions about product purchases? | ☐ | ☐ | ☐ | ☐ |
| Q27 | Which products are or are not purchased for the family? | ☐ | ☐ | ☐ | ☐ |
| Q28 | Which products s/he should or should not buy? | ☐ | ☐ | ☐ | ☐ |
| Q29 | That you have strict and clear rules when it comes to product purchases? | ☐ | ☐ | ☐ | ☐ |
| Q30 | That s/he is not allowed to ask for products? | ☐ | ☐ | ☐ | ☐ |

**Finally, we would like to ask you some basic questions about your family.**

| | | Minutes | | | Hours | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | *none* | *15 or more* | *30 or more* | *1* | *2* | *3* | *4* | *5* | *6 or more* |
| Q31 | On a typical week day, how much time does your child spend watching television? | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Q32 | On a typical weekend day, how much time does your child spend watching television? | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |