CULTURE, MEDIA & FILM | RESEARCH ARTICLE

Televised food advertising targeting children: An updated content analysis considering age & USDHHS nutritional guidelines

Merve Erten¹, Hojoon Choi² and Temple Northup³*

Abstract: Responding to the public concern about the prevalence of televised food advertising affecting childhood obesity, government agencies and public institutions have made several efforts that include industry self-regulation and launching new nutritional guides (We Can!). To determine whether these efforts are empirically effective, this content analytic study analyzed 1,762 food advertisements from three cable networks primarily targeting children (Cartoon Network, Nickelodeon, and Disney Channel). Results show that a substantial number of unhealthy food advertisements targeting children remain and have not decreased compared to previous studies, meaning that advertisers are unlikely to follow industry self-regulations and government nutritional guidelines. These findings offer several theoretical and practical implications. Recommendations for future research are also discussed.

Subjects: Media Communication; Broadcast Media; Advertising Studies; Mass Media & Communication

Keywords: advertising; health; food; television; marketing; children; school-aged

1. Introduction

Although individuals have access to many media outlets and platforms, television continues to be one of the most popular media sources for children and adults (Abbatangelo-Gray et al., 2008; Rideout, 2017; Rideout & Robb, 2019). According to a study conducted by Common Sense Media in 2017, children aged 8 or under in the U.S. spent 72% of their daily screen time by watching television, with children five to eight years old spending a little more than one hour in front of a television per day. Furthermore, 29% of children aged 8 or under had a television in their bedrooms, with most parents not believing that watching television had any negative effects on their children (Rideout, 2017). Similarly, children aged 8 to 12 years old spent 62% of daily screen time by watching television, averaging nearly two and a half hours of television viewing each day. In that age group (8–12), 47% had a television in their own bedrooms (Rideout & Robb, 2019). It is clear, then, that children watch television for a considerable amount of time, much of which may be unsupervised by adults.

This abundance of television viewing suggests that children are exposed to many advertisements. In 2019, the U.S. was leading the market in advertising in the world by spending 243 billion dollars (Guttmann, 2019), with children being considered a significant market by advertisers (Linn, 2004). Several studies have shown that children under seven do not, in fact, understand the intent of advertisements (i.e., selling their products), and children assume that these advertisements are
reliable and accurate (see, Graff et al., 2012). Thus, it is important to understand what advertisements are being shown to children in order to begin to understand any possible effects on them.

One particular area of concern is food advertising as it could be providing children with repeated exposure to unhealthy foods. This concern is particularly justified in the context of the increasing rates of obesity among children particularly in the United States. The purpose of this research is to examine what food-related persuasive messages children are receiving while watching television programming. There is a lack of recent content analytic work in this area, so this research will update the literature and evaluate the extent to which the prevalence of unhealthy foods has changed over time.

2. Literature review

2.1. TV advertising and childhood obesity

While the prevalence of childhood obesity is nearly 20% among US children and adolescents aged 2–19 years (Centers for Disease Control and Prevention (CDC), 2021), the rise of childhood obesity rate is closely related to increased television viewing (Crespo et al., 2001; Dietz & Gortmaker, 1985; Mcnutt et al., 1997). According to previous studies, this correlation is, in part, because US children were mostly exposed to advertisements that included foods that had no or little nutritional value (foods high in salt, sugar, and fat), while vegetables and fruits were almost never used in the food advertisements (Brown, 1977; Castonguay et al., 2013; Condry et al., 1988; Gamble & Cotugna, 1999; Gantz et al., 2007; Kunkel & Gantz, 1992; Powell et al., 2007; Stitt & Kunkel, 2008; Taras & Gage, 1995).

Therefore, US food advertising has been regarded as one of the most important factors that negatively affect children's development and well-being. Numerous studies have documented that the more children saw food advertisements, the more likely they were to consume energy-dense and nutritionally-poor foods, thereby increasing their potential for becoming overweight or obese (Andreyeva et al., 2011; J. C. Halford et al., 2008; Crespo et al., 2001; Dibb, 1996; Dietz & Gortmaker, 1985; Harris et al., 2009; Reisch et al., 2013; Robinson, 2001; Taras & Gage, 1995).

For example, Crespo et al. (2001) and Mcnutt et al. (1997) reported the positive association between television viewing and obesity among children. An experiment by Harris et al. (2009) found that elementary school-age children exposed to food advertisements ate 45% more snacks than the same age children in the control group, although they did not feel hungry during the experiment. Moreover, Goris et al. (2010) conducted a cross-sectional study to understand the relationship between television food advertisements and obesity among children in Australia, Great Britain (England and Scotland), Italy, Netherlands, Sweden, and the U.S. The researchers found that the influence of television food advertisements on obesity was highest in the U.S., with the analysis suggesting that if there were fewer food advertisements, there would be a smaller percent of overweight children. Similarly, Veerman et al. (2009) developed a mathematical simulation model to understand whether reducing exposure to food advertisements on television would decrease the rate of obesity. They concluded that if children in the U.S. were not exposed to food advertisements on television, the prevalence of obesity in the U.S. would have been decreased from 17.8% to 15.2% for boys and from 15.9% to 13.5% for girls. Thus, these findings reinforce the importance of understanding what advertisements are being directed toward children because children are vulnerable to unhealthy food products presented in those advertisements (Hastings et al., 2003).

2.2. National efforts and need for research update

To improve the negative impact of food advertisements on childhood obesity, US government agencies and public institutions have made several regulatory and educational efforts over the past few decades (see, Nestle & Jacobson, 2000). Particularly, since the 2000s, the Federal Trade Commission (FTC) and the Department of Health and Human Services (HHS) launched a workshop
about food advertising and childhood obesity with two states goals: a) that the food ads targeting children should focus on healthier foods, and b) that there should be more public education campaigns presenting simple and understandable messages about healthy foods (“Perspectives on Marketing, Self-Regulation & Childhood Obesity | Federal Trade Commission, 2006).

Following the presentations, the Council of Better Business Bureaus (CBBB) initiated the Children’s Food and Beverage Advertising Initiative (CFBAI) in 2006. CFBAI started a campaign advocating that food or beverage advertisers should not directly target children under 12 years in their advertisements. Moreover, CFBAI further provided a guideline on the limits of calories, saturated fat, and sugar in food advertising targeted to children in 2013 (“CFBAI’s Uniform Nutrition Criteria | BBB National Programs, Inc, n.d.). Ten food companies initially joined in the CFBAI and accepted the new policies in 2006, and currently 18 leading US food, beverage, and restaurant companies (i.e., Burger King Corporation, the Coca-Cola Company, the Hershey Company, McDonald’s USA, and etc.) are participating in the CFBAI. This means that they voluntarily do not advertise their food products to children under age 12 or only advertise the food products that meet CFBAI’s guideline (BBB National Programs, 2021).

Furthermore, the U.S. Department of Health & Human Services (HHS) published a new nutrition guide “Ways to Enhance Children’s Activity & Nutrition (We Can!”) (see, Welcome to We Can!, 2013). To help families make healthier food choices, “We Can!” divides food products into three categories: GO, SLOW, and WHOA (Eat Right, 2013). GO foods are highly nutritious and wholesome (e.g., fresh vegetables whole-grain breads, lean beef), so children are told that they can eat those without almost any restrictions. Conversely, WHOA foods are nutritionally poor and energy-dense (e.g., French fries, fried chicken, cookies, chocolates), so those foods should only be eaten occasionally. SLOW foods are between GO and WHOA foods (e.g., vegetables with fat and sauces, broiled ham, fruit juice) and children are recommended to eat them more frequently than WHOA foods, but not as freely as GO. The health campaign employing the “We Can!” guidelines was launched in 2005 by the National Institutes of Health and the nutritional guide has been widespread in the U.S. since that time (see, About We Can!, 2014).

Theoretically, the effects of advertisement exposure can be explained using social cognitive theory (Bandura, 1969). The theory postulates that people can engage in learning indirectly by observing content mediated through vicarious contact, and that people influenced by the content can eventually change their behavior accordingly (Bandura, 2001). When the theory is applied to television advertisements targeting youth, the argument is that when children only see advertisements for unhealthy foods, those are the foods that they want to consume. Thus, the rise in childhood obesity can be explained in part by the unhealthy food advertisements teaching children what foods are “best” to eat. A solution would be a decrease of unhealthy food advertisements or an increase in the portion of healthy foods in ads (see; Harker et al., 2007; Hoek & Gendall, 2006).

However, there is currently insufficient empirical research as to whether these national efforts are reflected in current food advertisements to show any positive social cognitive effects. Although many leading US food advertising companies participate in and follow the CFBAI’s guideline, not all food companies participate. Similarly, even though the “We Can!” movement distributed its nutrition guide among health and media professionals (About We Can!, 2014), the movement is not legally binding.

The purpose of this research is to update the content analysis of US food advertising targeting children. Specifically, the following research questions are posed:

RQ1: What is the proportion of food advertisements targeting children within all advertisements in television?
RQ2a: What are the most common product categories that appear in food advertisements targeting children?

RQ2b: To what extent has food advertisements changed since the last content analysis was done?

RQ3: What is the nutritional quality of foods promoted in the advertisements targeting children?

RQ4: How do product types and their nutritional quality in food advertisements change when they target children at different ages?

3. Method

3.1. Sample
To answer the research questions, a content analysis was conducted of three cable networks: Cartoon Network, Disney Channel, and Nickelodeon. These networks were chosen because they are the most popular television networks in the U.S. for both younger and adolescent children (Gantz et al., 2007; Hentges & Case, 2013).

For each network, programming was recorded from 6:00 a.m. to 7:00 p.m. from July 13 through 17 July 2020 (Monday through Friday). The reason for stopping at 7:00 p.m. is that the Cartoon Network switches to Adult Swim at that point and the channel starts to broadcast programming targeting adults and individuals older than 14 years. The weekends were not coded and analyzed because there were fewer children’s programming targeting preschoolers compared to weekdays. Furthermore, as cited in Powell et al. (2007), according to Nielsen Media Research, only 6% of total weekly viewing time of children aged 2 to 11 years occurred on Saturdays. July was chosen for this study because according to an Adweek/Harris Poll survey, as children do not go to school during summer, they have more free time and consequently spend more time watching television (“Most Parents Loosen Rules for Children’s Media Consumption During the Summer, 2011”).

After finishing recording and downloading the programs, a few had technical problems (e.g., the cable had gone out) and were excluded. After those programs were dropped, we were left with a total of 60 hours of 29 different programs. The list of children programming which was analyzed in this study is provided in Appendix A.

Importantly, duplicate advertisements were all considered during the data analysis by adapting Turner’s (2011) strategy to count each food product advertisement regardless of the similarity to previous advertisements or brands. They were counted this way as previous research has found that the repetition of messages increases the extent to which individuals remember the messages and are therefore influenced by them (e.g., Albert Bandura, 2001; Turner, 2011). Thus, capturing the total number of food advertisements shown, rather than the number of unique advertisements, was the approach taken.

4. Variables
The advertisements were coded using the following categories (the full coding guide is available from the authors).

4.1. Food product types
The coding scheme for food product types was adapted from previous content analyses performed by Gantz et al. (2007) and Powel et al. (2007). In addition to these previous analyses, this study added vitamins and medicines to the coding scheme.

The food categories were: cereal (hot and cold cereal and oatmeal); sweets/snacks (breath mints candy, candy bar, chewing gum, cookie dough, cookies, cupcakes, frozen novelties, prepared gelatin, gelatin mix, ice cream, ice cream novelties, pastry, and snack cakes); salted snacks (crackers, nuts,
popping corn, potato chips, and tortilla chips; beverages (bottled water, cocoa mix, coffee, 100% fruit juices, regular and diet soft drinks, drink mix, isotonic drinks, noncarbonated drinks, fruit drinks, fruit juices, iced coffee and tea, and vegetable juice); dairy products and substitutes (milk, cheese, yogurt); breads, pastries, and pastas; meat, poultry, and fish; prepared foods (soups, jellies and jams, peanut butter); fruits and vegetables; vitamins and medicine; fast food restaurants; non-fast food restaurants; combination foods; and other (baby foods, baking mix, beans, entrees (prepared), entrees (frozen), French toast (frozen), hot dogs, infant formula, mayonnaise, mustard, pasta sauce, pickles, preserves, rice mix, salad dressings (bottled and mixed), salsa sauce, barbeque sauce, steak sauce, Worcestershire sauce, sour cream, syrup, waffles (frozen), whipped topping, etc.).

In addition to this coding scheme, cereals, sweets/snacks, and beverages in the advertisements were determined if they were sugared. Sugared cereals or sugared sweets/snacks were identified if sugar was one of the first three in their ingredients lists and the beverages were considered sugared if they contained added sugar, similar to Castonguay et al. (2013) and Stitt and Kunkel (2008). The ingredients and nutritional facts of the applicable products was obtained from manufacturers’ websites. If this information was not available online, the nutritional information was obtained from product packaging.

This study also classified the foods shown in advertisements into GO, SLOW, and WHOA types based on the “We Can!” nutrition guide prepared by U.S. Department of Health & Human Services (HHS). As explained in the literature review, a) GO foods can be eaten almost anytime and contains high nutritional foods, b) SLOW foods can be eaten “sometimes or less often”, and c) WHOA foods can be eaten “only once in a while or on special occasions” (see, About We Can!, 2014). Detailed food list for coding was employed from the tip sheet provided by National Heart, Lung, and Blood Institute of HHS (see “We Can! Go, SLOW, and WHOA Foods”, n.d.). Moreover, for the case of a food product that included more than one food categories, the product was coded by categorizing the individual products in the box and coding the average (Castonguay et al., 2013). For instance, in a Lunchables box, lean Turkey was Slow food (coded as 2), crackers were Whoa (coded as 1), reduced fat cheddar was Slow (coded as 2), fruit juice was Slow (coded as 2), and gummy worms was Whoa (coded as 1). The product was then coded as a Slow product because 8/5 = 1.6 (the average of the individual items).

4.2. Advertisements and children’s age
The recorded television programming was grouped depending on their target age group and their broadcast time blocks during the day. This helped determine if product types in the food advertisements varied for children’s different age groups. In order to do this, the methodology by Hentges et al. (2007) was adapted and children programming was coded following one or more of the criteria listed below:

(i) TV rating guidelines (TV-Y for preschool, TV-Y7 for school-aged, TV-G or TV-PG for adolescent),
(ii) Scheduled time slot (i.e., programs early in the morning mostly targeted preschoolers),
(iii) Television network’s own descriptions.

For example, Paw Patrol (Nickelodeon) and Puppy Dog Pals (Disney Channel) target preschool-aged children (TV-Y) and these programs are mostly broadcast early in the morning (6 a.m.—11 a.m.). The Loud House (Nickelodeon), Big City Greens (Disney Channel), and The Amazing World of Gumball (Cartoon Network) target school-aged children (TV-Y7) and these programs are mostly broadcast in the afternoon. In addition, Cake My Day (Nickelodeon), Bunk’d (Disney Channel), Teen Titans Go (Cartoon Network) target adolescents (TV-G or TV-PG) and broadcast during various times of the day.

4.3. Intercoder reliability
Prior to coding the main study data, two coders trained together and discussed the guide and the categories. They then independently coded approximately 10% of the number of advertisements
that would equate the entire sample. The Cohen's Kappa intercoder reliabilities were: .99 for the food category, .94 for the “We Can!” nutrition guide, .97 for the sugared cereals, snacks, and beverages, and 1 for ad's and show’s target age. All reliability coefficients were therefore acceptable (Rust & Cool, 1994).

5. Results
The first research question of the study examined the proportion of food advertisements targeting children within all advertisements in television. In order to answer this, frequency analyses were conducted. There was a total of 4,628 advertisements coded and analyzed in the study. Of those, 38.1% were related to food advertisements (N = 1,762) and 61.9% of these advertisements related to non-food advertisements (N = 2,866), which included 11.2% for shopping (N = 519), 9.1% for household cleaners (N = 419), 9% for toys (N = 417), 8% for toiletries (N = 369), 7% for movies and video games (N = 323), 5.7% for education (N = 264), 2.7% for school utilities (N = 125), 1.4% for public service announcements (PSA) (N = 63), and 7.9% that were for others categories (N = 367). Worth noting, food advertisements represented the single most advertised type of product.

The second research question had two parts. RQ 2a asked the most common product categories that appeared in food advertisements targeting children. Frequency analyses determined that sweets/snacks were the most dominant food category (30.1%), followed by cereals (22.4%), salted snacks (15.3%), then beverages (10.3%). Advertisements for fast food restaurants also had an important share of food advertising targeting children (6.1%). In addition, 4.6% of food advertisements targeting children were combination foods, 3.8% were for dairy products and substitutes, and 3.1% were for non-fast-food restaurants. Only 0.4% of food advertisements were for vitamins and medicine and 0.2% were for breads, pastries, and pastas. There were no advertisements for meat, poultry, fish, prepared foods, or fruits and vegetables. Additionally, this study also examined whether cereals, sweets/snacks, and beverages in the advertisements were sugared. All sweets/snacks and cereals were sugared. For the beverages, while 71.4% of beverages were sugared, 28.6% of beverages were not sugared.

RQ 2b asked to what extent food advertisements have changed since the last content analyses were done. Table 1 presents an overview of previous and current results.

As can be seen, there is considerable variability found over time in terms of the specific number of commercials as well as what dominates those commercials. However, the current numbers for nearly all categories suggest that food advertisements as a whole have not slowed down in recent years. They are still the largest category, with cereal and snack foods making up the majority of the ads exposed to children. Although the number of advertisements for fast food restaurants is at a low point, this has not led to an overall decrease in advertisements for food.

The third research question of the study (RQ3) asked about the nutritional quality of the food products in the food-related advertisements targeting children by categorizing them according to nutrition guide “We Can!” suggested by HHS. There were 1,594 food advertisements which were measured according to the nutrition guide. Another 168 food advertisements were excluded as they were for restaurants. These were excluded because while some of them included foods (i.e., pizza, burger, and chicken), most of them were promoting their take-out and drive-through options without presenting the actual food items. Of the coded ads, more than half promoted WHOA foods (66.3%), with the rest promoting SLOW foods (33.7%). There were no food advertisements that promoted GO foods. Specifically, all sweets/snacks, cereals, dairy products and substitutes, and food products in the “other” category promoted WHOA foods. All salted snacks, beverages, combination foods, and bread, pastries, and pastas promoted SLOW foods.

The fourth research question (RQ4) asked whether product types and their nutritional quality in food advertisements changed when they targeted children at different ages. In order to answer this research question, two chi-square tests were conducted (see, Tables 2 and 3). As can be seen,
by and large, advertisers did not advertise many products to preschoolers, instead focusing primarily on school-aged children and secondarily on adolescents. Among categories of food products, cereals and sweets/snacks were predominantly advertised to school-aged children, whereas salted snacks, dairy products, and beverages were disproportionately targeting adolescents.

Next, differences in the frequencies of food products according to the “We Can!” nutrition guide were examined (Table 3). As can be seen, the majority of food ads in WHOA food category targeted school-aged children. Similarly, the majority of food ads in SLOW food category targeted school-aged children. There were not any food advertisements that fit the GO food category of the “We Can!” nutrition guide.

### Table 1. Content analyses of food advertising to children on television

| Source                        | Food ads of total advertising (%) | Cereal Ads of total food ads (%) | Sweet/snacks of total food ads (%) | Restaurant ads of total food ads (%) |
|-------------------------------|-----------------------------------|----------------------------------|-----------------------------------|--------------------------------------|
| Brown ( )                     | 69%                               | 41%                              | 37%                               | N/A                                  |
| Condy et al. ( )              | N/A                               | 31.8% in 1983                    | 19.6% in 1983                     | 15% in 1983                          |
| Cotugna ( )                   | 71%                               | 31%                              | 34%                               | N/A                                  |
| Kunkel and Gantz ( )          | 49.3%                             | 22.4%                            | 18.4%                             | 5.7%*                                |
| Kotz and Story ( )            | 56.5%                             | 37.5%                            | N/A                               | 11%*                                 |
| Taras and Gage ( )            | 47.8%                             | 34.1%                            | 29%                               | 15.6%                                |
| Gamble and Cotugna ( )        | 62.8%                             | 37.8%                            | 21.6%                             | 27.4%*                               |
| Harrison and Marske ( )       | 29.9%                             | 14.9%#                           | 43.8%&                            | 34.2%                                |
| Powell et al. ( )             | 27.2%                             | 27.6%                            | 29.9%                             | 12%*                                 |
| Gantz et al. ( )              | 50%                               | 29%                              | 34%                               | 17%                                  |
| Stitt and Kunkel ( )          | 46%                               | 26%                              | 20.8%                             | 20.8%                                |
| Castonguay et al. ( )         | N/A                               | 24%                              | 15%                               | 40%                                  |
| Harris et al. ( )             | N/A                               | 16.7%                            | 14.5%                             | N/A                                  |
| Hingle et al. ( )             | N/A                               | 36.2%                            | 19%                               | 26.8%                                |
| Current Study                 | 38.1%                             | 22.4%                            | 30.1%                             | 9.2%                                 |

Note: * Only fast-food restaurants were reported.
# The study combined cereals and breads.
& The study combined sweets and snacks with soft drinks. N/A not available.

6. Discussion
This study explored the food product categories of advertisements targeting children and compared the findings to the previous content analyses of food advertising in order to understand to what extent food advertisements targeting children has changed over time. In addition, using the “We Can!” nutrition guide prepared by HHS, the study examined the nutritional quality of the food products in the advertisements. Finally, this study investigated how food product types and their nutritional quality varied depending on the age of the target audience by grouping the advertisements targeting preschoolers, school-aged children, and adolescents.
Overall, we found that food advertisements (38.1%) were the most frequent commercial type to have appeared in the children's programming analyzed here. In the context of food product types, this study confirmed several previous content analyses' findings that sweets and snacks (30.1%) were the most frequently advertised food products (Cotugna, 1988; Gantz et al., 2007; Harrison & Marske, 2005; Powell et al., 2007). Even though other previous content analyses found that cereals

### Table 2. Distribution of different food product categories targeting children at different age groups

| Ad's Target Age | Preschoolers | School-aged Children | Adolescent | Total |
|-----------------|--------------|----------------------|------------|-------|
| Cereals         | 0            | 327                  | 68         | 395   |
| Sweets/Snacks   | 3            | 418                  | 110        | 531   |
| Salted Snacks   | 0            | 163                  | 107        | 270   |
| Beverages       | 0            | 110                  | 72         | 182   |
| Dairy Products and Substitutes | 8 | 22 | 37 | 67 |
| Breads, Pastries, and Pastas | 4 | 0 | 0 | 4 |
| Vitamins and Medicine | 6 | 0 | 1 | 7 |
| Fast Food Restaurants | 0 | 72 | 35 | 107 |
| Non-Fast Food Restaurants | 30 | 18 | 6 | 54 |
| Combination Foods | 0 | 58 | 23 | 81 |
| Other           | 40           | 22                   | 2          | 64    |
| Total           | 91           | 1210                 | 461        | 1762  |

χ² (20, N = 1,762) = 1068.32, P < .01.

### Table 3. Distribution of USDHHS nutrition guide by target age

| Ad's Target Age | Preschoolers | School-aged Children | Adolescent | Total |
|-----------------|--------------|----------------------|------------|-------|
| WHOA Foods      | 51           | 789                  | 217        | 1057  |
| SLOW Foods      | 4            | 331                  | 202        | 537   |
| Total           | 55           | 1120                 | 419        | 1594  |

χ² (2, N = 1,594) = 65.30, P < .01.
were appearing more frequently than sweets and snacks, the proportion of cereals (22.4%) that appeared in the current study was quite similar to some of these previous studies (for instance, Condry et al. (1988) found 20.5% in 1985 and 22.8% in 1988; Kunkel and Gantz (1992) found 22.4%, and Castonguay et al. (2013) found 24% cereal advertisements in their study), and all the cereal products were sugar-coated in our study. In addition, similar to the previous content analyses, fruits and vegetables were not found in any food advertising (Brown, 1977; Gamble & Cotugna, 1999; Gantz et al., 2007; Kotz & Story, 1994; Powell et al., 2007).

In terms of nutritional quality, the majority of the food advertisements promoted WHOA foods (66.3%), which are recommended for children to stay away from and only eat on special occasions (Castonguay et al., 2013; D. L. Kunkel et al., 2015; Stitt & Kunkel, 2008). Moreover, there were not any food advertisements that promoted GO foods, which are considered healthy foods that children can consume at any time. In addition, the study found that all advertised cereals and snacks were sugared. On the other hand, all beverages promoted SLOW foods, with 71.4% of them being sugared. This suggests that the widely spread “We Can!” movement has not been successfully reflected among US food advertisers targeting children.

Moreover, most of the food advertisements (68.7%) appeared in children programs targeting school-aged children, with the food product type and its nutritional quality varying when they targeted children at different ages. Specifically, the majority of food ads in the WHOA food category (74.6%), sugared cereals (82.8%), sweets/snacks (78.7%), and sugared beverages (56.9%) appeared during programs targeting school-aged children.

Targeting school-aged children may not be surprising considering their market value. Previous studies have shown that school-aged children in the U.S. spent their own money while shopping. They also influence their parents’ shopping choices. For instance, in 2002, children affected around $650 billion worth of their parents’ shopping choices (Schor & Ford, 2007). In the context of advertising, given that their fundamental goal is to sell products, it seems to be a strategic choice to target school-aged children. However, considering CFBAI’s guideline that recommend not advertising food to those under 12, our results imply that many US food advertisers still do not follow the agenda of the FTC and HHS.

At the same time, the promotion to children of high-sugared foods and foods with low nutritional value focused can be seen as unethical as children do not have the full capacity to understand the advertising (Kotz & Story, 1994). Moreover, nutritional claims, including “1% low-fat,” “2% low-fat,” and “100% fruit juice,” were prevalent in food advertising targeting children. Such inappropriate nutrient-content claims have been criticized for misleading adult consumers into perceiving unhealthy food as healthy (Choi et al., 2021, 2013), so it follows that children would be similarly, if not more, misled. Indeed, because of the lack of ability of younger children to comprehend advertisements and their claims, it has been argued that advertisers should be much more cautious when targeting children (D. Kunkel et al., 2004).

7. Limitations

This study has a few limitations that should be noted. First, the content analysis sample was limited to food advertisements targeting children from July 13 to 17 July 2020. Hence, the generalizability of the results is limited. Future studies need to examine product types in food advertisements from other time periods and other media including social media and video games.

The second limitation is that this study adopted the “We can!” nutrition guide prepared by USDHHS. Future studies can adopt other nutrition guides. For example, Powell et al. (2013) used Interagency Working Group (IWG) nutrition recommendations to guide their study. Future studies can also examine more specifically the ingredients of food products (i.e., sodium, fat and calorie intake) that appeared in the advertisements targeting children.
Third, while content analysis offers an overview of the frequencies of food product types and shows us what is currently being aired, it cannot demonstrate the effects of advertisements on their audiences. Future studies can test how food advertising influences audience perceptions and behaviors towards products they have seen in the advertisement.

8. Conclusion
This research adds to the literature by providing an updated analysis of what food advertisements children are currently watching on TV, and it demonstrates that the product types and their nutritional quality have not shown changes in the past 40 years. Scientific and governmental agencies, including the FTC, HHS, and CFBAI, suggested that there should be industry self-regulation of food advertising targeting children. However, our findings indicate that food companies continue to advertise many foods that are nutritionally poor and energy-dense, and that their primary target for those products include vulnerable age groups. Thus, to produce a positive social cognitive change that may improve the childhood obesity problem, this research supports the view that government agencies need more legal regulations and actions to protect children from potentially eating unhealthy food products because of their observational learning of food advertising. Policy makers should also increase PSAs to promote healthy eating as a potential mechanism to develop children’s perceptions of nutrition, food consumption patterns, and weight outcomes (Powell et al., 2007).

Funding
The authors received no direct funding for this research.

Author details
Merve Erten1
Hojoon Choi2
Temple Northup3
E-mail: tnorthup@sdsu.edu

ORCID ID: http://orcid.org/0000-0002-6359-0584
1 Gay School of Nursing, UT Health Houston, Houston, TX, USA.
2 Jack J. Valenti School of Communication, College of Liberal Arts and Social Sciences, University of Houston, Houston, TX, USA.
3 School of Journalism & Media Studies, College of Professional Studies and Fine Arts, San Diego State University, San Diego, CA, USA.

Disclosure statement
No potential conflict of interest was reported by the author(s).

Citation information
Cite this article as: Televised food advertising targeting children: An updated content analysis considering age & USDHHS nutritional guidelines, Merve Erten, Hojoon Choi & Temple Northup, Cogent Arts & Humanities (2022), 9: 2134631.

References
Abbatangelo-Gray, J., Byrd-Bredbenner, C., & Austin, S. B. (2008). Health and nutrient content claims in food advertisements on Hispanic and mainstream prime-time television. Journal of Nutrition Education and Behavior, 40(6), 348–354. https://doi.org/10.1016/j.jneb.2008.01.003
About We Can! (2014). U.S. Department of Health & Human Services. Retrieved September 21, 2020, from https://www.nhlbi.nih.gov/health/educational/wecan/about-wecan/index.htm
Andreyeva, T., Kelly, J. R., & Harris, J. L. (2011). Exposure to food advertising on television: Associations with children’s fast food and soft drink consumption and obesity. Economics and Human Biology, 9(3), 221–233. https://doi.org/10.1016/j.ehbe.2011.02.004
Bandura, A. (1969). Social-learning theory of identificatory processes. In D. A. Goslin (Ed.), Handbook of Socialization Theory and Research (pp. 213–262). Chicago, IL: Rand McNally & Company.
Bandura, A. (2001). Social cognitive theory: An agentic perspective. Annual Review of Psychology, 52(1), 1–26. https://doi.org/10.1146/annurev.psych.52.1.1
Albert Bandura (2001) Social Cognitive Theory of Mass Communication, Media Psychology, 3(3), 265–299. https://doi.org/10.1207/S1532786XMEP0303_03.
BBB National Programs (2021). 18 leading food, beverage, and restaurant companies adapt revised, stronger uniform nutrition criteria for foods advertised to children. Retrieved September 17, 2021, from. https://bbbprograms.org/programs/all-programs/cfba
Brown, J. (1977). Graduate students examine TV ads for food. Journal of Nutrition Education, 9(3), 120–122. https://doi.org/10.1016/S0022-3182(77)80043-5
Castonguay, J., Kunkel, D., Wright, P., & Duff, C. (2013). Healthy characters? An investigation of marketing practices in children’s food advertising. Journal of Nutrition Education and Behavior, 45(6), 571–577. https://doi.org/10.1016/j.jneb.2013.03.007
Centers for Disease Control and Prevention (CDC). (2021, April 5). Childhood obesity facts. Centers for Disease Control and Prevention. Retrieved September 11, 2021, from https://www.cdc.gov/obesity/data/childhood.html
CFBAI’s Uniform Nutrition Criteria | BBB National Programs, Inc. (n.d.). Retrieved February 28, 2020, from https://bbbprograms.org/programs/cfba/cfba-uniform-nutrition-criteria-product-list
Choi, H., Northup, T., & Reid, L. N. (2021). How health consciousness and health literacy influence evaluative responses to nutrient-content claimed messaging for an unhealthy food. Journal of Health Communication, 26(5), 350–359. https://doi.org/10.1080/10810730.2021.1946217
Choi, H., Yao, K., Baek, T., Reid, L., & Macias, W. (2013). Presence and effects of Health- and Nutrition-Related (HNR) claims with benefit-seeking and risk-Avoidance appeals in female-Oriented magazine food advertisements. International Journal of Advertising, 32(4), 587–616. https://doi.org/10.2501/IJA-32-4-587-616
Condry, J., Bence, P., & Scheibe, C. (1988). Nonprogram content of children's television. Journal of Broadcasting & Electronic Media, 32(3), 255–270. https://doi.org/10.1080/08838158809386701

Cotugno, N. (1988). TV ads on Saturday morning children's programming—what's new? Journal of Nutrition Education, 20(3), 125–127. https://doi.org/10.1016/S0022-3182(88)80231-0

Crespo, C. J., Smit, E., Troiano, R. P., Bartlett, S. J., Macera, C. A., & Andersen, R. E. (2001). Television watching, energy intake, and obesity in US children: Results from the third national health and nutrition examination survey, 1988-1994. Archives of Pediatrics & Adolescent Medicine, 155(3), 360–365. https://doi.org/10.1001/archpedi.155.3.360

Dibb, S. (1996). A spoonful of sugar: television food advertising aimed at children: an international comparative survey. Dietz, W. H., & Gottmacher, S. L. (1985). Do we fatten our children at the television set? Obesity and television viewing in children and adolescents. Pediatrics, 75(5), 807–812. https://doi.org/10.1542/peds.75.5.807

Eat Right. (2013). U.S. Department of Health & Human Services. Retrieved April 3, 2020 from https://www.nhpih.nih.gov/health/educational/wecan/eat-right/index.htm

Gamble, M., & Cotugno, N. (1999). A quarter century of TV food advertising targeted at children. American Journal of Health Behavior, 23(4), 261–267. https://doi.org/10.5993/AJHB.23.4.3

Gantz, W., Schwartz, N., & Angelini, J. R. (2007). Television food advertising to children in the United States. The Kaiser Family Foundation.

Goris, J. M., Petersen, S., Starmatas, E., & Veerman, J. L. (2010). Television food advertising and the prevalence of childhood overweight and obesity: A multicountry comparison. Public Health Nutrition, 13(7), 1003–1012. https://doi.org/10.1079/PHN2010.0609

Graff, S., Kunkel, D., & Mermin, S. E. (2012). Government can regulate food advertising to children because cognitive research shows that it is inherently misleading. Health Affairs, 31(2), 392–398. https://doi.org/10.1377/hlthaff.2011.0609

Guttmann, A. (2019). Advertising spending in the world’s largest ad markets 2019. Retrieved March 13, 2020 from https://www.statista.com/statistics/273136/advertising-expenditure-in-the-worlds-largest-admarkets/

Halford, J. C., Boyland, E. J., Hughes, G. M., Stacey, L., McKeon, S., & Dovey, T. M. (2008). Beyond-brand effect of television food advertisements on food choice in children: The effects of weight status. Public Health Nutrition, 11(9), 897-904. https://doi.org/10.1071/PH071231

Harker, D., Harker, M., & Burns, R. (2007). Tackling obesity: Developing a research agenda for advertising researchers. Journal of Current Issues & Research in Advertising, 29(2), 39–51. https://doi.org/10.1080/10641730701505215

Harris, J. L., Barh, J. A., & Brownell, K. D. (2009). Priming effects of television food advertising on eating behavior. Health Psychology, 28(4), 404. https://doi.org/10.1037/a0014399

Harrison, K., & Marske, A. L. (2005). Nutritional content of foods advertised during the television programs children watch most. American Journal of Public Health, 95(9), 1568–1574. https://doi.org/10.2105/AJPH.2004.048058

Hastings, G., Stead, M., McDermott, L., Forsyth, A., Mackintosh, A. M., Rayner, M., … Angus, K. (2003). Review of research on the effects of food promotion to children. Food Standards Agency.

Hentges, B. A., Bortsch, R. A., & Meier, J. A. (2007). Gender representation in commercials as a function of target audience age. Communication Research Reports, 24 (1), 55–62. https://doi.org/10.1080/08824090601128174

Hentges, B., & Case, K. (2013). Gender representations on disney channel, cartoon network, and nickelodeon broadcasts in the United States. Journal of Children and Media, 7(3), 319–333. https://doi.org/10.1080/17482798.2012.729150

Hingle, M. D., Castonguay, J. S., Ambuel, D. A., Smith, R. M., & Kunkel, D. (2015). Alignment of children’s food advertising with proposed federal guidelines. American Journal of Preventive Medicine, 48(6), 707–713. https://doi.org/10.1016/j.amepre.2015.01.004

Hoek, J., & Gendall, P. (2006). Advertising and obesity: A behavioral perspective. Journal of Health Communication, 11(4), 409–423. https://doi.org/10.1080/1081073060071888

Kotz, K., & Story, M. (1994). Food advertisements during children’s Saturday morning television programming: Are they consistent with dietary recommendations? Journal of the American Dietetic Association, 94(11), 1296–1300. https://doi.org/10.1016/S0002-8223(94)92463-5

Kunkel, D. L., Castonguay, J. S., & Filer, C. R. (2015). Evaluating industry self-regulation of food marketing to children. American Journal of Preventive Medicine, 49(2), 181–187. https://doi.org/10.1016/j.amepre.2015.01.027

Kunkel, D., & Gantz, W. (1992). Children’s television advertising in the multichannel environment. Journal of Communication, 42(3), 134–152. https://doi.org/10.1111/j.1460-4622.1992.tb00803.x

Kunkel, D., Wilcox, B. L., Cantor, J., Palmer, E., Linn, S., & Dowrick, P. (2004). Report of the APA task force on advertising and children. American Psychological Association, 30, 60.

Linn, S. (2004). Consuming kids: The hostile takeover of childhood. New Press.

Mcnutt, S. W., Hu, Y., Schreiber, G. B., Crawford, P. B., Obarzanek, E., & Melbin, L. (1997). A longitudinal study of the dietary practices of black and white girls 9 and 10 years old at enrollment: The NHLBI growth and health study. Journal of Adolescent Health, 20(1), 27–37. https://doi.org/10.1016/S1054-139X(96)00176-0

Most Parents Lose Rules for Children’s Media Consumption During the Summer. (2011). Retrieved April 2, 2020, from https://theharrispoll.com/ah-summer-a-time-when-kids-spend-their-days-playing-and-beaches-but-with-all-the-various-forms-of-media-now-available-are-these-quitessential-su/

Nestle, M., & Jacobson, M. F. (2000). HaIting the obesity epidemic: A public health policy approach. Public Health Reports, 115(1), 12–24. https://doi.org/10.1093/phr/115.1.12

Perspectives on Marketing, Self-Regulation, & Childhood Obesity | Federal Trade Commission. (2008). Retrieved 29, 2020, from https://www.ftc.gov/reports/perspectives-marketing-self-regulation-childhood-obesity-report-joint-workshop-federal-trade

Powell, L. M., Schermeck, R. M., & Chaloupka, F. J. (2013). Nutritional content of food and beverage products in television advertisements seen on children’s programming. Childhood Obesity, 9(6), 524–531. https://doi.org/10.1089/chi.2013.0072.
Powell, L. M., Szczypka, G., & Chaloupka, F. J. (2007). Exposure to food advertising on television among US children. Archives of Pediatrics & Adolescent Medicine, 161(6), 553–560. https://doi.org/10.1001/archpedi.161.6.553

Reisch, L. A., Gwiazda, W., Barbo, G., De Henauw, S., Lascorz, N., & Pigeot, I. (2013). Experimental evidence on the impact of food advertising on children’s knowledge about and preferences for healthful food. Journal of Obesity, 2013, 1–13. https://doi.org/10.1155/2013/408582

Rideout, V. (2017). The Common Sense census: Media use by kids age zero to eight. Common Sense Media.

Rideout, V. J., & Robb, M. B. (2019). The common sense census: Media use by tweens and teens. Common Sense Media.

Robinson, T. N. (2001). Television viewing and childhood obesity. Pediatric Clinics of North America, 48(4), 1017–1025. https://doi.org/10.1016/S0031-3955(05)70354-0

Rust, R. T., & Cool, B. (1994). Reliability measures for qualitative data: Theory and implications. Journal of Marketing Research, 31(1), 1–14. https://doi.org/10.1177/002224379403100101

Schor, J. B., & Ford, M. (2007). From tastes great to cool: Children’s food marketing and the rise of the symbolic. The Journal of Law, Medicine & Ethics, 35(1), 10–21. https://doi.org/10.1111/j.1748-720X.2007.00110.x

Stitt, C., & Kunkel, D. (2008). Food advertising during children’s television programming on broadcast and cable channels. Health Communication, 23(6), 573–584. https://doi.org/10.1080/1041023080265258

Teras, H. L., & Gage, M. (1995). Advertised foods on children’s television. Archives of Pediatrics & Adolescent Medicine, 149(6), 649–652. https://doi.org/10.1001/archpedi.1995.02170190059010

Turner, J. S. (2011). Sex and the spectacle of music videos: An examination of the portrayal of race and sexuality in music videos. Sex Roles, 64(3–4), 173–191. https://doi.org/10.1007/s11199-010-9766-6

Veerman, J. L., Van Beeck, E. F., Barendregt, J. J., & Mackenbach, J. P. (2009). By how much would limiting TV food advertising reduce childhood obesity? European Journal of Public Health, 19(6), 365–369. https://doi.org/10.1093/eurpub/ckp039

We Can! GO, We Can! GO, and We Can! GO. (n.d.). NIH. Retrieved September 25, 2021, from https://www.nhlbi.nih.gov/health/educational/wecan/downloads/gswtips.pdf

Welcome to We Can! (2013). U.S. Department of Health & Human Services. Retrieved September 21, 2020, from https://www.nhlbi.nih.gov/health/educational/wecan/index.htm
APPENDIX A
List of children’s programming analyzed.

Cartoon Network:

(1) The Amazing World of Gumball
(2) Apple & Onion
(3) Teen Titans Go!
(4) Craig of the Creek
(5) Mao Mao: Heroes of Pure Heart
(6) Total DramaRama
(7) We Bare Bears

Disney Channel:

(8) Puppy Dog Pals
(9) Mira, Royal Detective
(10) T.O.T.S.
(11) Mickey Mouse
(12) Miraculous: Tales of Ladybug and Cat Noir
(13) Big City Greens
(14) Amphibia
(15) Bunk’d
(16) Raven’s Home
(17) Coop & Cami Ask the World
(18) Jessie
(19) Sydney to the Max
(20) Bluey
(21) Disney Channel Summer Sing-Along
Nickelodeon:

(22) Paw Patrol
(23) Bubble Guppies
(24) Rio
(25) SpongeBob SquarePants
(26) Blue's Clues & You
(27) The Loud House
(28) Nickelodeon's Unfiltered
(29) Cake My Day