

Chapter 8

Children's Exposure to Food and Beverage Advertising on Television: Tracking Calories and Nutritional Content by Company Membership in Self-regulation

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Introduction

American children have an energy imbalance that has contributed to current obesity rates of 10.4% and 19.6% for children aged 2–5 and 6–11, respectively (Ogden, Carroll, Curtin, Lamb, & Flegal, 2010). Whereas estimated energy requirements for moderately active children aged 2–5 and 6–11, respectively, are 1,300 kilocalories (kcal) and 1,733 kcal for boys and 1,250 kcal and 1,633 kcal for girls (United States Department of Agriculture, 2005), actual estimated daily intake for these respective age groups is 1,559 kcal and 2,151 kcal for boys and 1,393 kcal and 1,889 kcal for girls (Wright, Wang, Kennedy-Stephenson, & Ervin, 2003). This implies an energy gap based on moderate activity in the range of 143–418 kcal per day, on average, depending on age and gender. Recent estimates of top sources of energy show that children obtain significant empty calories from grain desserts (e.g., 138 kcal/day for ages 4–8 and 145 kcal for ages 9–13) and sugar-sweetened beverages (e.g., 121 kcal/day for ages 4–8 and 169 kcal for ages 9–13) (Reedy & Krebs-Smith, 2010). It was

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estimated that approximately 40% of children's total energy intake (798 out of 2,027 kcal per day) came in the form of empty calories with 433 kcal from solid fat and 365 kcal from added sugar (Reedy & Krebs-Smith, 2010). Children's overall diets are less healthy than recommended and related high intakes of sugar, sugar sweetened beverages, fat, saturated fat, and sodium and have been associated with greater risk of obesity in addition to other negative health outcomes and other health consequences (Appel, Frohlich, Hall, Pearson, Sacco, Seals et al., 2011; Bray & Popkin, 1998; Gidding, Dennison, Birch, Daniels, Gillman, Lichtenstein et al., 2006; Guenther, Dodd, Reedy, & Krebs-Smith, 2006; Ludwig, Peterson, & Gortmaker, 2001).

Extensive evidence has emerged over the past few decades documenting the poor nutritional content of foods advertisements seen by children and on children's programming (Batada, Seitz, Wootan, & Story, 2008; Harris, Schwartz, Brownell, Sarda, Weinberg, Speers et al., 2009; Powell, Szczypka, Chaloupka, & Braunschweig, 2007; Powell, Schermbeck, Szczypka, Chaloupka, & Braunschweig, 2011; Schwartz, Vartanian, Wharton, & Brownell, 2008; Stitt & Kunkel, 2008). The Institute of Medicine Report on Food Marketing to Children and Youth concluded that for children aged 2–11 years old there is strong evidence that television advertising influences children's food and beverage preferences and purchase requests and short-term food consumption patterns and moderate evidence that it influences usual dietary intake. There is strong evidence that exposure to television advertising is associated with adiposity in children (Institute of Medicine, 2006; see Chap. 2). As a result there has been an emphasis on the need to address unhealthy food advertising directed at children (Federal Trade Commission, 2008; Institute of Medicine; The Henry J. Kaiser Family Foundation, 2004).

In 2006, the Council of Better Business Bureaus launched the Children's Food and Beverage Advertising Initiative (CFBAI) composed at the time of 10 major US food companies that pledged to devote at least half of their child-directed advertising to promote healthier or "better-for-you" products (as defined by each company) and/or encourage good nutrition and healthy lifestyles (Council of Better Business Bureaus, 2008). At the writing of this chapter (2011), 17 companies were members of the CFBAI and four companies (Cadbury Adams, The Coca-Cola Company, Hershey Company, and Mars) pledged not to engage in any advertising of food or beverage products on programming primarily directed to children under the age of 12, while the remaining companies pledged to engage in 100% "better-for-you" advertising (Council of Better Business Bureaus, 2009; Council of Better Business Bureaus, 2011a; see Chaps. 6 and 7).

Several recent studies have assessed changes in the volume of food advertising and the nutritional content of ads seen by children or those on children's programming post-implementation of the CFBAI. An examination of the nutritional content of food ads aired on a sample of children's programming on broadcast and cable television channels found that 72.5% of ads were for high-calorie low-nutrient products, 26.6% were for products high in fat or sugar that should be consumed only in moderation and just 0.9% of ads were for low calorie nutrient rich food products (Kunkel, McKinley, & Wright, 2009). Another recent study examined children's

exposure to cereal ads using an international nutrient profile method and found that cereal companies mostly market their least nutritious cereals to children, and that none of the brands marketed directly to children in the USA received a nutrient score high enough to advertise to children on TV in the UK (Harris, Schwartz, & Brownell, 2009).

In our previous work, we found that although children were exposed to fewer food and beverage ads between 2003 and 2009 (pre- and post-CFBAI), decreased from 10.1 ads to 6.8 ads daily for children aged 2–5 and decreased 10.1–7.9 ads daily for children aged 6–11, among those ads seen, there was only a modest improvement in nutritional content (Powell et al., 2011). In 2003, pre-CFBAI, 94% of food and beverage ads seen by children were high in either saturated fat, sugar, or sodium as compared to 88% in 2009. Our previous study also documented a substantial increase in fast-food advertisements seen by children aged 2–5 and 6–11 which increased 21.1% and 30.8%, respectively. Other previous research also reported large increases in children's exposure to fast-food advertising and has documented its poor nutritional content (Harris, Schwartz, & Brownell, 2010).

This study builds on our previous research by examining detailed nutritional content information for saturated fat, sugar and sodium as well as trends in caloric content of food and beverage product ads for each CFBAI member company. Analyses are presented by age, product categories and by parent company. The results are assessed in the context of the self-regulatory CFBAI based on a detailed nutritional analysis of exposure for each CFBAI member company.

Methods

Children's exposure to food and beverage television advertisements was assessed using television ratings data from Nielsen Media Research for television advertisements in calendar years 2003 and 2009, pre- and post-CFBAI self-regulation. We used annual age-specific targeted rating points for children aged 2–5 and 6–11 to capture exposure to broadcast network, cable network, syndicated and spot television food advertising from all programming (except Spanish language programming). The food and beverage product advertisements were assessed by five broad categories including cereals, sweets, snacks, beverages, and other food products, and by parent company based on membership in the CFBAI. This study assessed caloric and nutritional content of all food and beverage products which accounted for 6.8 out of 10.9 and 7.9 out of 12.7 food-related ads, including restaurant ads seen per day by children aged 2–5 and 6–11, respectively. The caloric and nutritional content of fast-food and full-service restaurant ads were not assessed given that many ads did not market a specific product, sources for nutritional information on restaurants are limited, and nutritional content of fast-food restaurants was recently assessed in another study (Harris et al., 2010).

Calories (kcal) were assessed per product advertisement with related measures of exposure to total calories from all food and beverage products per day, and by

product categories and parent company. Nutrient content was assessed for total grams (g) of saturated fat and sugar, and total milligrams (mg) of sodium. Caloric and nutritional content data were determined by one of four methods, in the following order: (1) the Minnesota Nutrient Data System; (2) US Department of Agriculture (USDA) Nutrient Data base; (3) nutrition facts panels on the product's label; and, (4) manufacturer's website. Using these data for each age group, we assessed exposure to food product advertising in terms of mean percentage of kcal from saturated fat and sugar and mean sodium content (mg) per 50 g serving. Nutrient content of products was classified as high in saturated fat or sodium using USDA standards for foods sold in competition with the school meal program (National Academy of Science & Institute of Medicine, 2007). A food was classified as "high saturated fat" if it contained >10% of total calories from saturated fat (nuts, nut butter, and seeds were exempted). Products containing >200 mg of sodium per 50 g serving were classified as "high sodium." High sugar products were defined based on recommendations contained in the dietary reference intakes report from the National Academy of Sciences that no more than 25% of total calories come from added sugars and thus we classified products as "high sugar" if >25% of kcal came from sugar (whole fruits, 100% juice, and plain white milk were exempted).

Results

Table 8.1 shows that, in 2009, children aged 2–5 and 6–11 years, respectively, were exposed, on average, to a total of 962 and 1,123 calories from food and beverage product ads on television, daily. With the 32.5% decrease in food and beverage advertisements seen by children aged 2–5 from 10.1 to 6.8 ads per day, exposure to calories fell proportionately by 32.6% from 1,427 to 962 kcal from 2003 to 2009. For children aged 6–11, total calories seen daily fell by 21.5% from 1,431 to 1,123 kcal, parallel to the 21.7% drop in ads seen. Average kcal per ad seen by 2–5 and 6–11 year olds, respectively, remained constant at 141 and 142 kcal for each age group over the 2003–2009 period. However, there was substantial variation in changes in the caloric content of ads by product category.

As compared to 2003, calories per ad in 2009 were higher for cereal and snacks, about the same for sweets, and decreased for beverages and other products. For both age groups, the average number of calories per cereal ad increased by almost 25%, from approximately 120 kcal per ad to 149 kcal per ad. Previous work showed that a smaller proportion of cereal ads seen in 2009 compared to 2003 were high in sugar (decreased from 92.6% to 86.5% among 2–5 year olds and down from 91.6% to 85.8% for children aged 6–11), while ads for cereals high in saturated fat remained at less than 1%, and fiber content in cereal ads seen increased by approximately 75% (Powell et al., 2011). This suggests that the additional calories found in cereal ads are, in part, likely from fiber-related content.

For snacks, calories per ad increased modestly, by 11% in ads seen by children 2–5 and 9% among 6–11 year olds. Again, given lower levels of sugar and saturated

Table 8.1 Children's exposure to food and beverage television advertisements and calories by age, by product category, and by year

	# of Ads/day			# of Calories/day			%Change		
	2003	2009	2003-2009	2003	2009	2003-2009	2003	2009	2003-2009
All children aged 2-5 years									
Beverages	1.5	0.9	-43.0%	170.5	63.3	-62.9%	114.4	74.5	-34.9%
Cereal	2.6	1.8	-30.4%	308.0	266.8	-13.4%	119.9	148.8	+24.1%
Snacks	1.3	0.7	-43.5%	143.9	90.1	-37.4%	110.0	121.5	+10.5%
Sweets	2.3	1.0	-55.1%	364.7	167.0	-54.2%	160.9	163.9	+1.9%
Other	2.5	2.4	-2.0%	440.2	374.6	-14.9%	177.2	153.8	-13.2%
All food and beverage product ads	10.1	6.8	-32.5%	1427.4	961.8	-32.6%	141.0	140.6	-0.3%
All children aged 6-11 years									
Beverages	1.7	1.0	-40.9%	198.2	75.7	-61.8%	116.3	74.9	-35.6%
Cereal	2.3	2.1	-11.5%	281.7	309.5	+9.9%	120.5	149.1	+23.7%
Snacks	1.3	0.9	-32.0%	143.2	105.5	-26.3%	111.8	121.5	+8.7%
Sweets	2.3	1.3	-44.0%	372.0	210.6	-43.4%	160.6	162.4	+1.2%
Other	2.5	2.7	+8.1%	435.7	422.0	-3.1%	176.6	158.0	-10.5%
All food and beverage product ads	10.1	7.9	-21.7%	1430.9	1123.4	-21.5%	141.6	141.8	+0.2%

@ The Nielsen Company 2009. Note: % Change calculations were based on two decimal points

fat and higher fiber content previously documented for snack ads, similar to cereal, the increased caloric content is likely related to increased fiber content in many of these products. Calories per ad for sweets remained stable (up 1–2%). Calories, on average, per beverage ad seen by children decreased from about 115 kcal to 75 kcal per ad in both age groups. This reduction stemmed in part from the reduction in the proportion of beverage ads that were for high-sugar products which, as previously documented, fell from 85.7% to 62.7% for children aged 2–5 and from 85.6% to 64.1% for children aged 6–11 (Powell et al., 2007).

Examining exposure to calories on the basis of membership in the CFBAI, Tables 8.2 and 8.3 show that among the CFBAI companies, on average, the number of calories seen per day fell by a slightly lesser extent than the number of ads per day (–34.9% versus –37.5% for 2–5 year olds and –21.8% versus –25.1% for 6–11 year olds). Therefore, on average, the number of calories per ad viewed per day increased between 2003 and 2009 by 4.1% among children aged 2–5 and by 4.4% among 6–11 year olds. In 2009, calories per ad seen from CFBAI companies ads versus non-CFBAI companies were, on average, 148.0 kcal per ad versus 111.7 kcal for children aged 2–5, and, similarly, 149.1 kcal per ad versus 111.3 kcal per ad for children aged 6–11.

In terms of the nutritional content of ads seen by children in 2003 and 2009, as shown in Tables 8.4 and 8.5, there were larger reductions in ads for products containing high saturated fat and high sugar among CFBAI companies compared to non-CFBAI companies. In 2003, about 30–31% of both CFBAI and non-CFBAI ads seen were for products high in saturated fat, but by 2009 this fell to about 23% for the CFBAI companies compared to about 27–28% for non-CFBAI companies across the two age groups. The proportion of ads for high-sugar products also fell to a larger extent among CFBAI versus non-CFBAI companies, but such ads nonetheless remained higher among CFBAI versus non-CFBAI companies in 2009. In 2009, among 2–5 and 6–11 year olds, respectively, 63.3% and 62.9% of CFBAI ads seen were for high sugar products compared to 50.0% and 50.9% of non-CFBAI company ads seen. The relatively larger reductions in ads for products high in saturated fat and sugar by CFBAI companies were offset with increases in ads for products with high sodium (+10.3% for 2–5 years old and +14.9% for 6–11 year olds), whereas the reductions in ads for products high in saturated fat and sugar from the non-CFBAI were complemented by reductions in ads for products high in sodium. As a result, from 2003 to 2009, for both age groups of children, non-CFBAI companies had about 15% fewer ads seen that were for foods high in saturated fat, sugar or sodium compared to a smaller reduction of about 6% for the CFBAI companies.

Between 2003 and 2009, the largest advertiser to children, General Mills, had an 18.8% and 18.1% increase in calories per ad seen by children aged 2–5 and 6–11, respectively. Correspondingly, as shown from the detailed nutrient content analyses in Tables 8.4 and 8.5, although about 10% fewer of these ads were for high-sugar products, roughly one quarter (23.3% and 27.9% for aged 2–5 and 6–11, respectively) more ads between 2003 and 2009 were for products high in saturated fat. Additionally, the proportion of ads seen that were for products high in sodium increased by about 21% for both age groups of children. As a result, in addition to the increased exposure

Table 8.2. All children aged 2-5 years' exposure to food and beverage advertising and calories by parent company, by age, by year

	# of Ads/day			# of Calories/day			% Change			# of Calories/day			% Change		
	2003	2009	% Change 2003-2009	2003	2009	% Change 2003-2009	2003	2009	% Change 2003-2009	2003	2009	% Change 2003-2009	2003	2009	% Change 2003-09
CFBAI companies															
Cadbury	0.1	0.1	+16.7%	0.4	2.0	+363.6%	7.1	30.1	+324.7%						
Campbell	0.3	0.3	+3.4%	26.4	24.1	-8.7%	92.0	80.6	-12.3%						
Coca-Cola	0.2	0.1	-57.9%	22.1	5.0	-77.2%	118.6	63.1	-46.9%						
ConAgra	0.3	0.3	+3.8%	71.0	66.4	-6.5%	276.7	241.8	-12.6%						
Dannon	0.2	0.2	+22.2%	20.6	20.8	+0.7%	112.7	93.9	-16.7%						
General Mills	2.4	2.0	-16.0%	277.0	275.9	-0.4%	116.9	138.9	+18.8%						
Hershey	0.3	0.2	-34.5%	47.6	45.4	-4.7%	165.8	234.8	+41.6%						
Kellogg	1.5	0.7	-50.7%	213.4	115.4	-46.0%	145.9	161.2	+10.5%						
Kraft	1.3	0.6	-51.6%	176.1	86.8	-50.7%	139.8	141.9	+1.5%						
Mars	0.7	0.3	-64.3%	138.8	43.6	-68.6%	197.2	175.1	-11.2%						
Nestle	0.4	0.3	-35.7%	88.2	52.9	-40.0%	207.7	197.7	-4.8%						
Pepsi	0.6	0.2	-70.7%	74.4	18.0	-75.8%	128.0	106.6	-16.7%						
Post	0.4	0.2	-46.5%	52.1	36.5	-30.0%	120.3	157.4	+30.9%						
Unilever	0.2	0.1	-65.0%	27.7	12.0	-56.5%	136.9	177.1	+29.3%						
CFBAI companies' food and beverage products subtotal	8.7	5.4	-37.5%	1236.0	804.9	-34.9%	142.1	148.0	+4.1%						
Non CFBAI companies' food and beverage products subtotal	1.4	1.4	-1.4%	194.3	156.7	-19.3%	136.7	111.7	-18.3%						
Total food and beverage companies' products	10.1	6.8	-32.7%	1430.2	961.5	-32.8%	141.3	140.6	-0.5%						

@ The Nielsen Company 2009. Note: % Change calculations were based on two decimal points

Table 8.3 All children aged 6–11 years' exposure to food and beverage advertising and calories by parent company, by age, by year

	# of Ads/day			# of Calories/day			% Change		
	2003	2009	% Change 2003–2009	2003	2009	% Change 2003–2009	2003	2009	% Change 2003–2009
CFBAI companies									
Cadbury	0.1	0.1	+42.9%	0.5	3.9	+704.2%	7.1	40.2	+466.3%
Campbell	0.3	0.3	+17.2%	26.6	27.6	+3.5%	91.9	81.2	-11.6%
Coca-Cola	0.2	0.1	-54.5%	27.4	6.3	-76.9%	122.7	66.4	-45.9%
ConAgra	0.2	0.3	+25.0%	65.0	70.3	+8.1%	269.0	236.9	-12.0%
Dannon	0.2	0.2	+27.8%	20.2	21.6	+7.3%	112.8	93.7	-16.9%
General Mills	2.2	2.3	+6.5%	256.2	321.8	+25.6%	118.7	140.2	+18.1%
Hershey	0.3	0.2	-20.0%	49.3	56.8	+15.2%	165.6	233.6	+41.1%
Kellogg	1.4	0.9	-36.8%	201.2	138.6	-31.1%	147.5	161.6	+9.6%
Kraft	1.3	0.8	-40.8%	180.7	109.0	-39.7%	138.8	142.0	+2.3%
Mars	0.8	0.3	-56.0%	146.8	55.2	-62.4%	196.4	169.8	-13.6%
Nestle	0.4	0.3	-33.3%	86.9	59.4	-31.6%	207.9	214.9	+3.3%
Pepsi	0.7	0.2	-67.7%	83.0	22.6	-72.8%	128.1	107.6	-16.0%
Post	0.4	0.3	-32.6%	52.2	45.9	-12.1%	120.9	158.4	+31.1%
Unilever	0.2	0.1	-55.6%	24.4	15.0	-38.7%	132.5	192.1	+45.0%
CFBAI companies' food and beverage products subtotal	8.6	6.4	-25.1%	1220.4	953.9	-21.8%	142.7	149.1	+4.4%
Non CFBAI companies' food and beverage products subtotal	1.6	1.5	-2.6%	213.2	169.4	-20.5%	137.1	111.3	-18.8%
Total food and beverage companies' products	10.1	7.9	-21.7%	1433.6	1123.4	-21.6%	141.8	141.8	0.0%

@ The Nielsen company 2009. Note: % Change calculations were based on two decimal points

Table 8.4 Nutritional indicators for advertised food and beverage products for children aged 2-5 years by parent company, by year

	% of Ads high in saturated fat			% of Ads high in sugar			% of Ads High in Sodium			% of Ads High in Saturated Fat, Sugar or Sodium		
	2003	2009	% Change 2003-2009	2003	2009	% Change 2003-2009	2003	2009	% Change 2003-2009	2003	2009	% Change 2003-2009
CFBAI companies												
Cadbury	0.0%	0.0%	-	0.0%	17.2%	-	0.0%	0.0%	-	0.0%	17.2%	-
Campbell	28.9%	8.2%	-71.8%	39.2%	26.0%	-33.5%	54.2%	46.7%	-13.8%	88.2%	70.7%	-19.8%
Coca-Cola	0.0%	0.0%	-	82.9%	41.4%	-50.1%	0.0%	0.0%	-	93.9%	41.4%	-56.0%
ConAgra	40.6%	20.8%	-48.8%	13.0%	9.8%	-24.5%	25.9%	48.4%	+86.9%	63.9%	63.1%	-1.2%
Dannon	83.4%	11.3%	-86.4%	100.0%	99.9%	-0.1%	0.0%	0.0%	-	100.0%	99.9%	-0.1%
General Mills	14.8%	18.3%	+23.3%	92.7%	83.3%	-10.1%	50.5%	61.1%	+20.9%	97.2%	97.4%	+0.2%
Hershey	67.9%	89.1%	+31.1%	81.5%	100.0%	22.7%	0.0%	0.0%	-	81.5%	100.0%	+22.7%
Kellogg	14.3%	12.0%	-16.0%	72.2%	67.4%	-6.7%	75.6%	61.1%	-19.1%	98.8%	89.2%	-9.8%
Kraft	41.2%	30.1%	-26.8%	65.8%	36.2%	-45.0%	37.4%	60.1%	+61.0%	97.7%	94.3%	-3.5%
Mars	61.9%	54.6%	-11.8%	93.5%	72.9%	-22.1%	2.7%	1.3%	-50.9%	95.5%	75.1%	-21.4%
Nestle	72.2%	55.2%	-23.6%	57.8%	18.6%	-67.9%	16.0%	16.3%	+1.6%	91.0%	72.3%	-20.5%
Pepsi	16.7%	3.2%	-81.1%	66.4%	58.2%	-12.3%	44.8%	23.4%	-47.8%	91.7%	81.6%	-11.0%
Post	0.0%	0.0%	-	86.6%	82.6%	-4.6%	90.0%	96.7%	+7.4%	95.2%	96.7%	+1.5%
Unilever	66.5%	65.6%	-1.4%	32.0%	37.7%	18.0%	59.8%	37.0%	-38.2%	95.1%	92.2%	-3.1%
CFBAI companies food and beverage products subtotal	30.3%	23.0%	-24.1%	74.9%	63.4%	-15.4%	43.6%	48.1%	+10.3%	94.0%	88.2%	-6.2%
Non CFBAI companies food and beverage products subtotal	31.4%	27.6%	-12.0%	56.1%	50.0%	-10.9%	38.5%	30.2%	-21.4%	93.3%	79.1%	-15.3%
Total food and beverage companies' products	30.4%	23.9%	-21.4%	72.4%	62.0%	-14.4%	42.9%	44.4%	3.5%	93.9%	86.3%	-8.1%

@ The Nielsen Company 2009. Note: % change calculations were based on two decimal points. % change calculations could not be computed for cases where the 2003 value was 0%.

Table 8.5 Nutritional Indicators for Advertised Food and Beverage Products for Children Aged 6–11 Years by Parent Company, by Year

	% of Ads High in Saturated Fat			% of Ads High in Sugar			% of Ads High in Saturated Fat, Sugar or Sodium			
	2003	2009	% Change 2003–2009	2003	2009	% Change 2003–2009	2003	2009	% Change 2003–2009	
CFBAI companies										
Cadbury	0.0%	0.0%	–	24.3%	24.3%	–	0.0%	0.0%	24.3%	–
Campbell	28.5%	8.0%	–71.9%	25.1%	25.1%	–38.0%	52.9%	46.1%	88.5%	–12.9%
Coca-Cola	0.0%	0.0%	–	44.8%	44.8%	–46.7%	0.0%	0.0%	94.5%	–52.6%
ConAgra	42.1%	19.5%	–53.7%	8.7%	8.7%	–33.3%	27.1%	49.3%	66.3%	–5.2%
Dannon	80.7%	13.0%	–83.9%	100.0%	99.9%	–0.1%	0.0%	0.0%	100.0%	–0.1%
General Mills	14.9%	19.1%	+27.9%	90.5%	81.6%	–9.8%	50.4%	60.8%	96.6%	+20.6%
Hershey	67.0%	89.0%	32.8%	100.0%	100.0%	+25.7%	0.0%	0.0%	79.6%	–
Kellogg	15.4%	11.9%	–22.8%	71.8%	66.5%	–7.5%	73.9%	60.4%	98.7%	–18.3%
Kraft	40.5%	30.6%	–24.5%	64.9%	36.8%	–43.2%	38.0%	60.0%	97.6%	+57.9%
Mars	60.8%	50.1%	–17.6%	93.4%	72.1%	–22.9%	2.5%	1.4%	95.3%	–43.4%
Nestle	70.7%	55.5%	–21.4%	60.1%	18.7%	–68.9%	17.1%	20.2%	92.6%	+18.1%
Pepsi	15.2%	3.0%	–80.5%	66.3%	57.4%	–13.4%	37.8%	25.0%	90.8%	–34.0%
Post	0.0%	0.0%	–	85.2%	83.7%	–1.8%	89.8%	96.9%	94.7%	+8.0%
Unilever	64.0%	66.3%	+3.6%	36.9%	39.6%	+7.3%	56.8%	31.7%	96.8%	–44.2%
CFBAI companies food and beverage products subtotal	30.3%	23.3%	–23.3%	74.0%	62.9%	–15.0%	41.8%	48.1%	93.7%	+14.9%
Non CFBAI companies food and beverage products subtotal	31.4%	27.1%	–13.5%	55.5%	50.9%	–8.2%	38.5%	29.1%	93.6%	–24.4%
Total food and beverage companies' products	30.5%	24.0%	–21.3%	71.4%	61.8%	–13.3%	41.4%	44.4%	93.6%	7.5%

@ The Nielsen company 2009. Note: % Change calculations were based on two decimal points. % change calculations could not be computed for cases where the 2003 value was 0%

to calories per ad, the overall proportion of ads that were seen for products high in saturated fat, sugar or sodium remained virtually unchanged at 97%.

Kellogg Company, the next largest advertiser, also had an increase in calories per ad by about 10% for both age groups. The detailed nutritional indicators showed that there were declines in the proportion of ads that were for products high in saturated fat and high in sugar, indicating that these components were not the contributors to the higher caloric content per advertisement. Given that Kellogg Company is a large cereal producer, as noted earlier these additional calories likely stemmed from fiber-related ingredients. Almost three quarters (73%) of Kellogg Company ads seen were for cereal. Further, sodium levels in Kellogg Company ads seen by children also decreased (−19.1% for children aged 2–5 and −18.3% for children aged 6–11). As a result of declines across all three indicators of saturated fat, sugar and sodium (although with relatively smaller declines in sugar), the overall proportion of products high in saturated fat, sugar or sodium fell by 9.8% and 10.1% for children aged 2–5 and 6–11, respectively.

Kraft Foods Global, Inc. (Kraft), the third of the top three advertisers to children, had virtually no change in calories per ad seen by children between 2003 and 2009, although similar to Kellogg Company, overall ad exposure fell substantially. Among ads that were viewed by children aged 2–5 and 6–11, respectively, 26.8% and 24.5% fewer were high in saturated fat and 45.0% and 43.2% fewer were high in sugar between 2003 and 2009. Unfortunately, this progress was offset by an increase in exposure to high sodium ads (+61.0% for 2–5 and +57.9% for 6–11 year olds). As a result of this increase in sodium, there was only a modest reduction in overall exposure to products high in saturated fat, sugar or sodium which was decreased by just 3.5% among 2–5 year olds and 2.7% among 6–11 year olds.

Nestle USA was another company where there were reductions in the proportions of high saturated fat and high sugar ads seen, but there was an increase in ads seen that were high in sodium between 2003 and 2009. Of note, Nestle USA had the largest percentage decrease in high sugar ads seen by children (−67.9% for ages 2–5 and −68.9% for ages 6–11). Overall, the proportion of ads that were high in saturated fat, sugar or sodium fell by 20.5% for children in both age groups. Post Foods, whose advertisements were all for cereal products, had a 30.9% and 31.1% increase in calories per ad (in line with the changes reported for cereal above). Post Foods cereal ads continued to have no high-saturated fat content, were down slightly in high-sugar content, and up slightly in sodium with almost no resultant change in overall nutritional content.

As we saw from Table 8.1, there was a substantial reduction in exposure to calories from beverage advertisements between 2003 and 2009. Correspondingly, the largest reductions among CFBAI companies came from The Coca-Cola Company and PepsiCo, Inc. with a 77.2% and 75.8% respective fall in total daily calories seen by 2–5 year olds and a 76.9% and 72.8% respective fall in total calorie exposure among 6–11 year olds. Among children aged 2–5 and 6–11, respectively, calories per ad seen fell by 46.9% and 45.9% for The Coca-Cola Company and by 16.7% and 16.0% for PepsiCo, Inc. These reductions in calories were related to the reductions in exposure to high-sugar ads from these companies as shown in Tables 8.4 and 8.5.

The product ads seen from ConAgra Foods continued to be those with the highest number of calories per ad in 2009 for both 2–5 year olds at 241.8 kcal (down by 12.6% from 2003) and 6–11 year olds at 236.9 kcal (down by 12.0%). Compared to other companies these products were more likely to be entrees (about 75%) and thus had higher total calories per product. The prevalence of both high-saturated fat and high-sugar product ads from ConAgra Foods fell over the 2003–2009 period; among 2–5 and 6–11 year olds, respectively, the proportion of product ads seen that were high in saturated fat ads was down 48.8% and 53.7% and those that were high in sugar were down 24.5% and 33.3%. On the other hand, there were substantial increases in sodium levels: between 2003 and 2009, there was an 82.2% and 86.9% increase in the number of high-sodium product ads seen by 2–5 and 6–11 year olds. As a result, similar to the findings for Kraft, these increases in sodium offset the positive reductions in saturated fat and sugar, such that, between 2003 and 2009 there was only a modest reduction in the proportion of product ads that were viewed that were high in saturated fat, sugar or sodium (–1.2% for ages 2–5 and –5.2% for ages 6–11). Unilever’s product ads, on the other hand, either increased or stayed approximately the same for saturated fat and higher in sugar, but substantially fewer of their ads seen by children both ages 2–5 (–38.2%) and 6–11 (–44.2%) were high in sodium.

In 2009, Cadbury Adams, Campbell Soup Company, The Dannon Company, and The Coca-Cola Company advertisements seen by children aged 2–5 and 6–11 were for products, on average, with less than 100 kcal per advertisement. The Campbell Soup Company also had significant reductions in ads for products high in saturated fat, and its ads were also less likely to be for high-sugar or high-sodium products in 2009 as compared to 2003. For The Dannon Company, whereas there were also substantial reductions in high-saturated fat ads seen (–86.4% for ages 2–5 and –83.9% for ages 6–11), virtually all of its advertised products continued to be high in sugar in 2009. Some new high-sugar ads from Cadbury Adams were seen, but, despite this development, overall advertising exposure remained very low as did calories, on average, at 30 kcal per advertisement.

Discussion

Children saw fewer nonrestaurant food and beverage product ads between 2003 and 2009. As a result, they were exposed to fewer ads for unhealthy products and fewer total calories from nonrestaurant food and beverage products daily. Over this period, calories per ad seen remained relatively constant at 141 kcal per advertisement. Where calories per ad for cereal and snacks increased, the evidence suggested that this did not stem from increased fat or sugar content. In particular, increases in caloric content of cereal ads were likely related to higher fiber content. In terms of the detailed nutritional content of ads seen by children, between 2003 and 2009, among CFBAI versus non-CFBAI companies there were relatively larger reductions, on average, in high-saturated fat and high-sugar product ads seen.

However, among CFBAI companies these reductions in saturated fat and sugar were offset by increases in high-sodium ads, whereas among the non-CFBAI companies these reductions were complemented by reductions in high sodium product ads. The increases in sodium that offset positive changes in reductions in saturated fat and reductions in sugar occurred for a number of companies, particularly ConAgra Foods and Kraft. Overall, the largest advertiser, General Mills, not only had an increase in high-sodium product ads but also an increase in the proportion of their ads seen that were for products high in saturated fat. Overall, the majority of ads, 88% and 79%, respectively, of CFBAI and non-CFBAI company ads seen by children in 2009, continued to be for products high in saturated fat, sugar or sodium.

Between 2009 (the last year of exposure data analyzed in this study) and 2011, eight companies made changes to their individual pledges. For example, the Campbell Soup Company strengthened their pledge and added new sodium guidelines for their products, General Mills added a sugar guideline for their products, and The Dannon Company streamlined their total fat requirements from age specific to one general requirement. PepsiCo was the only company to change their policy to be less restrictive than in previous years, but did include language requiring positive nutrients/food groups to be present in food and beverages advertised on programming primarily directed toward children less than 12 years. A number of other companies (ConAgra Foods, Nestle USA, Post Foods) made changes to their food categories or made changes to "and/or" statements that did not actually affect the strength of the guidelines (Kraft Foods) (Council of Better Business Bureaus, 2011b).

Despite these changes, the CFBAI pledges continue to lack uniformity. In July 2011, CFBAI addressed this concern by announcing that by January 1, 2014 any company wishing to be a part of the CFBAI will follow a uniform set of nutrition criteria developed by the CFBAI and a "participant committee" that included nutritionists and scientists. The CFBAI has noted that approximately one-third of the products currently advertised to children under the existing company-specific nutrition standards do not meet the new uniform criteria. Thus, the participants will have to change their recipes for these products if they wish to continue advertising them after these new criteria go into effect. Companies that are unable to reformulate products or choose not to reformulate products by January 1, 2014 will not advertise those products any longer on programming directed at children under the age of 12.

These proposed CFBAI guidelines have some benefits over the company-specific guidelines aside from being uniform. Currently, among the 17 food and beverage companies that are part of the CFBAI there are 25 different food categories with various nutritional standards (i.e., soup, canned pasta, meals, cereals, 100% fruit juices, popsicles, etc.). The uniform guidelines have only 10 major food categories (juice; dairy products; grain, fruit and vegetable products and items not in other categories; soup and meal sauces; seed, nuts, nut butters and spreads; meat, fish, poultry products; mixed dishes; main dishes and entrees; small meals; meals, entrée and other items including a beverage) with dairy products separated out into four subcategories (milk and milk substitutes; yogurt and yogurt type products; dairy-based desserts; cheese and cheese products). Additionally, food and beverage products

no longer will qualify for advertising simply for meeting a “reduced” claim (i.e., $\geq 25\%$ less sodium) or being sold in a portion controlled package (i.e., 100 calorie packs). Finally, all product categories have calorie limits, and will have to meet criteria for nutrients to limit (saturated fat, sodium and total sugars), and nutrition components to encourage (i.e., dairy, fruits, vegetables, whole grains and/or nutrients, i.e., fiber, calcium, potassium, iron, vitamin A, vitamin C, and/or vitamin D) (Council of Better Business Bureaus, 2011c).

These new uniform voluntary guidelines can be expected to change the nutritional quality of foods and beverages advertised on children’s programming starting in 2014 and hopefully will have led to the reformulation of food and beverage products. However, some companies may not have to reformulate products or they may only make minimal changes to the product lines advertised to children because the current company-specific guidelines already meet or exceed the uniform guidelines. For example, The Campbell Soup Company currently has three product categories they advertise on children’s programming (1) baked snacks, (2) soup, and (3) canned pasta. For all the “nutrients to limit” categories Campbell Soup Company has the same guidelines or exceeds the guidelines that will be in effect starting 2014. The only categories that will require Campbell Soup Company to address are total sugars and saturated fat in the soup and saturated fat in canned pasta. Companies that have pledges that cover the entire product line (i.e., all products advertised will be ≤ 175 kcal, $\leq 15\%$ kcal from sat fat, ≤ 480 mg of sodium, and ≤ 12 g of total sugar), such as General Mills, Kellogg Company and PepsiCo, Inc. may have to make more substantial changes in order to comply with the uniform guidelines. For example, General Mills and Kellogg Company have one sodium limit that all their products must meet in order to be eligible to advertise to children: ≤ 480 mg and ≤ 230 mg, respectively. The new guidelines have a range of sodium limits for the 10 categories from ≤ 110 mg for dairy-based desserts to ≤ 740 mg for meals (entrée and other items including a beverage). Overall, the uniform guidelines address the product categories that the companies have targeted since the inception of the initiative. Of the ten product categories only two address beverage advertisement (juices and dairy products which includes a milk and milk substitute subcategory). All other potentially advertised beverages, including bottled waters, must meet FDA regulations for “low calories” and “very low sodium.” However, diet sodas may not be advertised (Council of Better Business Bureaus, 2011c).

Parallel to the industry-level changes, in 2009, Congress directed the Interagency Working Group (IWG) made up of the Federal Trade Commission (FTC), Centers for Disease Control and Prevention (CDC), Food and Drug Administration (FDA) and the USDA to develop model, voluntary guidelines addressing food and beverage marketing directed towards children. By April 2011, IWG had developed nutrition standards based on the Dietary Guidelines for American, the Institute of Medicine, the Daily Reference Intakes the USDA’s food pyramid and the FDA’s food-labeling rules. The IWG voluntary guidelines divide foods into three categories (individual foods, main dishes, and meals) and have two parts (Principle A and B) which must be met for a food to be advertised to children. Principle A relates to the provision of food groups that make a meaningful contribution to a

healthful diet and Principle B addresses nutrients including saturated fat, trans fat, added sugars and sodium that should be limited due to their negative impact on health or body weight.

Overall, IWG's proposed guidelines are stronger than CFBAI's uniform guidelines. For example, sodium restrictions for CFBAI vary from ≤ 110 mg to ≤ 740 mg per serving size across the 10 product categories. IWG only has three product categories with a sodium limit ≤ 210 mg per serving size and ≤ 450 mg per serving size for main dishes and meals. These recommendations become stronger effective 2021; ≤ 140 mg/RACC (reference amount customarily consumed) for individual foods and ≤ 300 mg/RACC for main dishes and meals. Total sugar guidelines (no more than 13 g of added sugars per RACC for individual foods; per serving size for main dishes and meals) are generally stronger for IWG guidelines than the CFBAI guidelines with a few exceptions such as cheese and cheese products; soups and meal sauce; seeds, nuts, nut butters and spreads. Other differences include that IWG has a limit for trans fats in food and beverage products, while the CFBAI guidelines do not and that CFBAI includes a limit on calories while the IWG does not.

A recent study conducted by the Center for Science in the Public Interest (CSPI) found that many of the currently CFBAI-approved products do meet the IWG guidelines for saturated fat (71%), trans fat (100%), added sugar (75%) and the interim sodium guideline (66%) for individual items; although, only one-third of current pledge-approved products will meet the final sodium recommendation that will be in effect as of 2021 (Wootan, Vickroy, & Pokress, 2011). The CSPI report indicated that where companies have problems meeting the IWG guidelines is in providing a positive nutritional component such as 0.5 cups of fruit or fruit juice in the product, 0.6 cups vegetable or vegetable juice, 1 egg or egg equivalent, etc.

Despite the recent reductions in children's television advertising exposure to unhealthy food and beverage ads, the study results from this chapter show that children continue to be exposed to food and beverage advertising for products that are high in saturated fat, sugar and sodium. The development of new uniform CFBAI pledges can be expected to improve exposure starting in 2014. If the IWG recommendations were to be adopted by the CFBAI, we can expect even further improvements in the nutritional content of foods ads seen by children. As companies reformulate products and change their advertising practices directed at children, we nonetheless need to continue to be cognizant of the extent to which advertising for unhealthy products reaches children. Companies may be 100% compliant in their child-directed advertising but many ads for unhealthy products may continue to reach substantial numbers of children. Previously, the definition of what constitutes child-directed advertising was set by each company. In 2010, the CFBAI created a uniform definition for "child-directed advertising" of 35% or greater share of children 2–11 in the audience for all participating companies to utilize (Council of Better Business Bureaus, 2011a). The IWG recommends for children aged 2–11 years, the audience share for consideration as "directed" to children should be 30% as measured on an annual basis. In this regard, overall exposure and exposure based on different measures of children's audience share need to be monitored closely to ensure that children are safeguarded from ads that promote products that are high in empty calories.

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