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Food Marketing on Popular Children's Web Sites: A Content Analysis

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ABSTRACT

In 2006 the Institute of Medicine (IOM) concluded that food marketing was a contributor to childhood obesity in the United States. One recommendation of the IOM committee was for research on newer marketing venues, such as Internet Web sites. The purpose of this cross-sectional study was to answer the IOM's call by examining food marketing on popular children's Web sites. Ten Web sites were selected based on market research conducted by KidSay, which identified favorite sites of children aged 8 to 11 years during February 2005. Using a standardized coding form, these sites were examined page by page for the existence, type, and features of food marketing. Web sites were compared using χ^2 analyses. Although food marketing was not pervasive on the majority of the sites, seven of the 10 Web sites contained food marketing. The products marketed were primarily candy, cereal, quick serve restaurants, and snacks. Candystand.com, a food product site, contained a significantly greater amount of food marketing than the other popular children's Web sites. Because the foods marketed to children are not consistent with a healthful diet, nutrition professionals should consider joining advocacy groups to pressure industry to reduce online food marketing directed at youth. *J Am Diet Assoc. 2008;108:710-713.*

In 2006 the Institute of Medicine (IOM) released an extensive report documenting the existence and known effects of food marketing on children ([1]). The report concluded that food marketing was one link to childhood obesity. Specifically, they found that television advertisements influence children's food preferences, food requests, and short-term eating behaviors. Because almost all of the studies reviewed in the report focused on television advertising, the IOM committee called for additional research into newer marketing venues, such as the Internet. This study responds to the IOM's call by examining food marketing on popular children's Web sites.

Two content analyses of online food marketing have been conducted since the IOM report ([2,3]). These studies, which analyzed Web sites of food companies that commonly market to children offline, revealed that more than 80% of these Web sites contain child-directed marketing ([2]), and identified numerous marketing techniques being used to influence children's food preferences. Because the Web sites examined in both investigations were food product sites, it is unclear how much time children actually spend in these online locations. An assessment of popular children's Web sites, the focus here, may provide a better understanding of children's exposure to online marketing.

We predicted that, like children's television advertising, online food marketing would be out of balance with a healthful diet ([4]). It was also predicted that Internet marketing would employ features such as dynamic images (ie, Flash, GIF, or JPEG-generated images), bold and/or colorful text, and animation to attract children's attention ([5]). In addition, branded characters, including spokescharacters like Ronald McDonald (McDonald's Corp, Oak Brook, IL), created to promote a product or brand, and licensed characters like Nickelodeon's SpongeBob, the rights to which are sold to companies to endorse products, were expected to appear in online marketing as they do on television ([6]). It was also expected that, like television advertisers, online marketers would employ repetition of marketing appeals ([7]). Given the potential of the Internet to employ innovative marketing techniques, it was predicted that newer kinds of marketing would appear on children's Web sites. These techniques include product placements (marketing that embeds a product within the central content of a Web page) ([8]), integrated marketing pages (Web pages that seamlessly incorporate a marketed product or brand into a Web page with the use of product logos, product packaging images, and branded characters [2], such as a virtual McDonald's restaurant, which features Ronald McDonald, McDonald's logos, and images of McDonald's food), and advergames (online games that combine marketing with game play) ([9]).

METHODS

For this cross-sectional study, 10 very popular children's Web sites were analyzed. Web sites were selected from the company KidSay's February 2005 market research report ([10]), which identified the most popular 15 sites for

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Table 1. Frequency of food marketing instance types on 10 popular children's Web sites

Web site	Food Marketing Type				
	Ad	Product placement	Integrated page	Advergame	Total
Candystand.com	196	17	2	26	241
Neopets.com	9	23	1	0	33
Cartoonnetwork.com	17	0	0	1	18
Nick.com	9	1	0	0	10
Miniclip.com	0	2	0	1	3
Disney.com	2	0	0	0	2
Ebaumsworld.com	1	0	0	0	1
Barbie.com	0	0	0	0	0
Disneychannel.com	0	0	0	0	0
Funnyjunk.com	0	0	0	0	0
Total	234	43	3	28	308

children aged 8 to 11 years based on a paper-and-pencil survey. The sites scored were Candystand.com, Neopets.com, Cartoonnetwork.com, Nick.com, Miniclip.com, Disney.com, Ebaumsworld.com, Barbie.com, Disneychannel.com, and Funnyjunk.com. Five of the original 15 sites were not analyzed because they served as portals to other Web sites and/or were primarily created for adults (ie, google. com, yahoo.com, and espn.com), or were blogging (ie, xanga. com) or audio-based sites (ie, launch.yahoo.com).

Web pages from the remaining 10 children's sites were recorded individually between October 2005 and March 2006 using the screen capture computer program Camtasia Studio 3 (2005, TechSmith, Okemos, MI). For each site, the pages recorded included the homepage, all pages linked directly to the homepage (the second level of the site), all pages linked to those second level pages (the third level of the site), and pages linked to third level pages if those links represented food images or advertisements (the fourth level of the site).

Three undergraduate and postbaccalaureate research assistants underwent 30 hours of training and then analyzed the Camtasia videos using an 18-item questionnaire. The scorers searched for food marketing on each Web page, and classified each instance of marketing as an advertisement, a product placement, an integrated marketing page, or an advergame. The scorers then listed the name of the food item and categorized the food into one of 15 possible food or beverage categories (food categories: candy, cereal, chips, crackers, desserts/sweet snacks, fruit, vegetables, dairy products, and other; beverage categories: soda, juice, water, milk, sports drinks, and coffee/tea). Marketing features were scored, such as animation, bold/colorful text, dynamic images, branded character presence, and whether the marketing instance had appeared before on the Web site. Insitutional review board approval was not required because no human subjects were involved.

To conduct interrater reliability, 20% of the analyzed Web pages were rescored by a second coder for the existence of food marketing instances. Scorers agreed on instances 93% of the time ($\kappa=0.77$). Once the marketing instances were agreed upon, 20% of the instances from each Web site were rescored on all individual categories. Reliability for each attribute was as follows: marketing instance type: $\kappa=0.92$, food category: $\kappa=1.00$, animated image presence: $\kappa=0.74$*, bold/colorful text presence: $\kappa=1.00$, dynamic image presence: $\kappa=0.96$, and branded character presence: $\kappa=1.00$.[†] Analyses were conducted using χ^2 to compare the Web sites using SPSS (version 15.0.0, 2006, SPSS, Inc, Chicago, IL).

RESULTS AND DISCUSSION

To conduct χ^2 analyses of Web sites, the data were truncated such that an equivalent number of Web pages were examined from each site. The shortest video recorded was from Candystand.com, which contained 74 Web pages. Consequently, only data from the first 74 pages of the other nine sites were analyzed, yielding a total of 740 pages.[‡] Of these pages, 13.9% contained at least one instance of food marketing.

The presence of marketed food differed significantly by site ($\chi^2_9=391.8$; $P<0.001$). Seven of the 10 children's Web sites contained food marketing. Candystand.com, a food company Web site, featured significantly more Web pages with marketed food (86.5%) than did Cartoonnetwork. com (23.0%), Nick.com (13.5%), Neopets.com (8.1%), Miniclip.com (4.1%), Disney.com (2.7%), or Ebaumsworld. com (1.4%). Disneychannel.com, Funnyjunk.com, and Barbie. com contained no food marketing. The 241 food marketing instances on Candystand.com also vastly outnumbered the instances of food marketing on the other sites (see Table 1).

As expected, the foods marketed on children's Web sites mirrored the foods of poor nutritional quality that are

*Computer-drawn images were redefined as "animated" during reliability scoring. Marketing instances were rescored to reflect this definition.
†Repetition could not be tested for reliability because marketing instances were randomly selected for reliability scoring.
‡A systematic comparison of the first and last 10 Web pages appearing on the nontruncated Web site videos revealed that the amount and kind of food marketing appearing at the beginning and end of the tapes were comparable.

Table 2. Food products and brands marketed on popular children's Web sites, by number of marketing instances for product/brand observed

Food category	Food product/brand	No. of marketing instances
Candy	LifeSavers[a]	80
	Sugar Free LifeSavers[a]	68
	Crème Savers[a]	66
	LifeSavers Fusions[a]	5
	LifeSavers Gummies[a]	4
	LifeSavers Kickerz[a]	4
	LifeSavers Minis[a]	4
	Starburst[b]	3
	Trolli Candies[a]	3
	LifeSavers Sours[a]	2
	Crème Savers Soft Candy[a]	1
	LifeSavers Gummie Sours[a]	1
	LifeSavers Mints[a]	1
	LifeSavers Sorbets[a]	1
	LifeSavers Wint-O-Green[a]	1
	Sugar Free Crème Savers[a]	1
	Trolli Gummi Candy[a]	1
Breakfast cereals	Cocoa Puffs[c]	7
	Lucky Charms[c]	7
	Trix Cereal[c]	6
	Froot Loops[d]	4
	General Mills Cereals[c]	4
	Honey Nut Cheerios[c]	4
	Peanut Butter Cookie Crisp[c]	3
	Cinnamon Toast Crunch[c]	2
	Cookie Crisp[c]	2
	Frosted Flakes[d]	1
	Kellogg's Cereals[d]	1
	Reese's Puffs[c]	1
Quick-serve restaurants	McDonald's[e]	9
Chips	Cheetos[f]	3
Dairy products	Trix/Yoplait Yogurt[c]	3
Other	Mazola Pure Cooking Spray[g]	1
	Olive Garden[h]	1
Sweet snacks	Pop-Tarts[d]	1

[a]Wm. Wrigley Jr Co, Chicago, IL.
[b]Mars Inc, McLean, VA.
[c]General Mills Corp, Minneapolis, MN.
[d]Kellogg's Co, Battle Creek, MI.
[e]McDonald's Corp, Oak Brook, IL.
[f]Pepsico, Purchase, NY.
[g]ACH Food Companies, Inc, Memphis, TN.
[h]Darden Restaurants, Inc, Orlando, FL.

typically advertised on television. Of 15 possible food categories, the only marketing observed was for candy (248 instances), sweetened breakfast cereals (42 instances), quick-serve restaurants (nine instances), chips (three instances), dairy products (three instances), other (two instances), and sweet snacks (one instance) (see Table 2). The types of foods marketed differed significantly by Web site ($\chi^2_{36}=630.4$; $P<0.001$). Not surprisingly, Candystand.com only marketed candy prod-

ucts. Miniclip.com also only contained marketing for candy. By contrast, two thirds of the foods marketed on Cartoonnetwork.com, Neopets.com, and Nick.com were sweetened breakfast cereals, which may relate to the television origins of two of these Web sites, where cereal is an advertising mainstay (4). Cartoonnetwork.com also contained chip and sweetened yogurt marketing appeals, whereas Nick.com and Neopets.com included several McDonald's marketing instances. Disney.com featured one cereal and one cooking spray ad, and Ebaumsworld.com featured an ad for a popular restaurant chain.

As predicted, the techniques used to market food products online were similar to those used on television (5,7,11). These include attention-getting production features, branded characters, and repetition. Features such as animation, bold/colorful text, and dynamic images that are likely to attract children's attention were prevalent in all online food marketing but were especially pronounced in advertisements, advergames, and integrated marketing pages (animation: $\chi^2_3=17.2$, $P<0.005$; bold/colorful text: $\chi^2_3=97.6$, $P<0.001$; and dynamic images: $\chi^2_3=136.2$, $P<0.001$). All advergames and integrated marketing pages analyzed in the data set contained bold/colorful text and dynamic images. Of the advertisements, 98.3% used bold/colorful text, and 90.2% had dynamic images. By contrast, product placements, which may try to influence children by blending in with Web site content rather than standing out, rarely employed dynamic images (16.3%) and used bold/colorful text (55.8%) considerably less than the other marketing types. Animation was heavily employed in all marketing, but appeared relatively less in product placements.

The use of branded characters was another strategy that migrated from children's television advertising to Internet marketing. Of the online marketing instances examined, one out of seven featured a branded character. Branded character use was nearly universal in marketing appearing on Cartoonnetwork.com (100%) and Nick.com (90%), Web sites exported from television where branded character use is common. On Neopets.com, a little less than half of the food marketing instances used branded characters. Candystand.com, Disney.com, Ebaumsworld.com, and Miniclip.com employed none. Branded characters were predominately product spokescharacters, such as Ronald McDonald and Lucky the Leprechaun, although a few licensed characters, such as the Power Rangers, were present.

Repetition, a common television advertising technique (7), was also prevalent in online marketing. Of the 308 food marketing instances, 112 were unique. Only 32 products and 18 brands were marketed overall. The Web site with the most repetition of marketing instances was Candystand.com ($\chi^2_6=76.5$, $P<0.001$), primarily because the same three ads appeared at the bottom of almost every Web page. This high level of repetition is characteristic of food product sites (2).

Although traditional advertisements dominated, newer forms of marketing were observed on some children's Web sites. The appearance of different marketing forms varied significantly by site ($\chi^2_{18}=114.4$, $P<0.001$). Candystand.com featured a large number of traditional advertisements but also contained many advergames and product placements, whereas Neopets.com mainly employed

product placements with some traditional advertisements. Miniclip.com featured a food advergame and two product placements. Cartoonnetwork.com, Nick.com, Disney.com, and Ebaumsworld.com focused almost exclusively on traditional advertisements. Integrated marketing pages appeared infrequently, although a few were observed on Candystand.com and Neopets.com. The migration of television programs and associated marketing practices to the Internet may partly explain the current dominance of traditional advertising techniques.

One limitation of this study was the snapshot picture of marketing practices that occurred at one point in time. Additional research is needed to track evolving marketing practices. Moreover, the relatively small sample size limits the generalizability of findings. Future studies should conduct a more exhaustive investigation of popular children's and adults' Web sites, as well as track the findings reported here. It also would be instructive to play the online advergames, and to conduct qualitative analyses of sites such as Neopets.com that employ integrated marketing practices.

CONCLUSIONS

Childhood obesity is a public health crisis in this country (12), and food marketing is a contributor to the problem (1). Like food marketing on television, products marketed online are inconsistent with a healthful diet and may have a negative influence on children's food preferences, choices, and diet-related health (1). Because online advertisements, advergames, and integrated marketing pages use many of the same techniques as television commercials, it is quite possible that they have similar effects. In fact, the seamless integration of content and marketing observed on some children's sites may make online marketing even more effective than advertising on television (13). Moreover, because the reach of food marketers now extends to online as well as television media platforms, children, regardless of their preferred platforms (14), are exposed to food marketing.

Although 70% of the most popular children's Web sites contained food marketing, the overall incidence of food marketing was relatively low with the exception of Candystand.com. Food product Web sites geared toward children, like Candystand.com, provide a particularly saturated food marketing environment (2,3).

Food and nutrition professionals can respond to online food marketing to children in two main ways. They can join current efforts by a number of expert groups such as Children Now, Center for Science in the Public Interest, and the Berkeley Media Studies Group to pressure industry to create more responsible marketing practices. Food and nutrition professionals can also play a unique role by working with industry to improve the nutritional quality of tasty food products marketed to children, and can continue to educate the public about proper child nutrition in an effort to counter online marketing messages. As childhood obesity escalates and children spend more time on the Internet, such reforms are essential to solving this public health crisis.

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