

Marketing foods to children and adolescents: licensed characters and other promotions on packaged foods in the supermarket

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Abstract

Objective: To analyse cross-promotions targeted to children and adolescents on packaging in the supermarket.

Design: On three occasions from 2006 to 2008, researchers purchased all foods in a large supermarket that included a cross-promotion on the package. A total of 397 products were categorized by promotional partner, food category, targeted age group, promotion type, product nutrition, and company policies on marketing to children.

Results: The number of products with youth-oriented cross-promotions increased by 78% during the period examined. Overall, 71% of cross-promotions involved third-party licensed characters and 57% appealed primarily to children under 12 years of age; however, the use of other forms of promotions increased from 5% of the total in 2006 to 53% in 2008, and promotions targeting pre-school and general audiences increased from 23% to 54% of the total. Only 18% of products met accepted nutrition standards for foods sold to youth, and nutritional quality declined during the period examined. Food manufacturers with policies limiting marketing to children represented 65% of all youth-oriented cross-promotions, their use of cross-promotions increased significantly, and the nutritional quality of their products did not improve. Some media companies did reduce the use of their properties on food promotions.

Conclusions: Overall, the supermarket environment worsened due to an increase in cross-promotions targeted to children and adolescents and a decline in the nutritional quality of these products. This analysis failed to find improvements in food marketing to youth and highlights the need to expand current industry self-regulatory pledges.

Keywords
Childhood obesity
Food marketing
Youth
Nutrition

Health authorities believe that the marketing of energy-dense, low-nutrient food products directly to children and adolescents is a factor contributing to the obesity epidemic^(1,2). Several comprehensive literature reviews document the significant levels of advertising for foods of low nutritional value targeted to youth, as well as the negative effects of advertising on children's food preferences and eating behaviours^(2–4). As these reviews point out, however, the majority of existing research has focused on television advertising only. Television represents 46% of food marketing expenditures to children and adolescents in the USA, totalling \$745 million in 2006⁽⁵⁾. However, the percentage of marketing budgets spent on television advertising has declined in recent years, and marketers have increased their use of other media and marketing venues to reach young consumers^(2,6). The Institute of Medicine (IOM) report on children's food marketing notes the importance of gathering data on various marketing methods⁽²⁾.

Strategies commonly used by food marketers to drive product purchase include packaging and other in-store marketing programmes. According to a recent US Federal Trade Commission (FTC) report, in 2006, food companies spent \$195 million to reach children and adolescents at the point of sale, or 12% of their youth-targeted marketing expenses (second only to television advertising)⁽⁵⁾. A recent study examined food targeted to children in the supermarket using 'fun' imagery (including 'tie-ins with children's television programs, merchandise or films') and found that 89% contained high levels of sugar, fat and/or sodium⁽⁷⁾.

Also noted in the FTC report, food companies typically utilize integrated campaigns that combine several forms of marketing (including television, Internet and product packaging) with cross-promotions, or agreements with other companies to promote each others' products⁽⁵⁾. Cross-promotions are used to increase food products'

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youth appeal through association with entertainment or other properties popular with these age groups. Examples of cross-promotion agreements include third-party licensed characters (i.e. the use of animated characters from television and movies), as well as tie-ins with other television shows and movies; athletes; sports teams and events; theme parks; toys and games; and charities. These promotions take many forms, including characters or celebrities featured on the package, special flavours (e.g. American Idol 'Mint Karaoke Cookie' ice cream), sweepstakes, premium giveaways and charitable donations. In 2006, 14.5% of all food marketing expenditures in the USA (\$235 million) targeting youth involved cross-promotions or celebrities, compared with only 4% of adult-targeted food marketing⁽⁵⁾.

Licensed characters and other youth-oriented promotions on product packaging and the associated 'pester power' (i.e. children's requests for those products) raise concerns among child health advocates and parents⁽²⁾. In-store marketing programmes that appeal to youth appear to be extremely effective: 34% of parents with children under 12 years old and 60% of parents with teenagers report that they spend more in the supermarket when shopping with their children than when shopping alone⁽⁸⁾. A recent public opinion survey indicates that 50% of parents believe that cartoon characters on food packages have a 'strong impact' on children's eating habits (i.e. 8 or higher on a scale from 1 to 10), and 46% believe that premium offers, such as toys and other giveaways, have a strong impact (JL Harris, MB Schwartz and KD Brownell, unpublished results).

In 2006, the Council of Better Business Bureaus (CBBB) in the USA launched the Children's Food and Beverage Advertising Initiative, a voluntary programme for food companies to 'shift the mix of advertising messages directed to children under 12 to encourage healthier dietary choices and healthy lifestyles'⁽⁹⁾. One core requirement for participation in the initiative is a commitment to 'reduce the use of third-party licensed characters in advertising'⁽⁹⁾. Initially, eleven major food companies in the USA signed on and issued their own pledges to reduce unhealthy marketing to children. Since then, four additional companies have joined the agreement. Unfortunately, most of these pledges limit licensed characters on television advertising alone. Only four of the fifteen CBBB participants have also pledged to reduce licensed characters on product packages (Cadbury Adams, General Mills, Hershey and Kellogg) and only one (Kellogg) has pledged to apply the restrictions beyond third-party licensed characters to other forms of promotions, including games, sweepstakes, toys and food packaging. Separately, five US media companies have issued policies to limit the use of their licensed characters in food marketing to children⁽¹⁰⁾. These policies specifically prohibit the use of their characters on product packaging (with the exception of Sesame Workshop, whose restrictions only apply to television advertising). These restrictions, however, apply

only to foods that do not meet nutrition standards as set by the media companies, and these criteria vary widely⁽¹⁰⁾.

In summary, in-store marketing programmes, including product packaging and promotional tie-ins, are important marketing strategies for food companies to promote their products to children and adolescents. The public has raised concerns, in particular, about the use of licensed characters and premium offers to promote unhealthy food to children. Beginning in 2006, US food and media companies began to issue policies pledging to reduce unhealthy advertising to children, but most of these policies do not address in-store marketing programmes. As a result, it is important to quantify and evaluate food marketing to youth in the supermarket environment. To date, no research has examined the prevalence or content of promotions for food products targeted to children and adolescents at the point of sale. The present study analyses the use of cross-promotions on product packaging in a large US supermarket over a 3-year period, from 2006 to 2008. It examines the types of cross-promotions, targeted age groups and nutritional quality of the foods promoted. Three-year trends are also noted, including changes in the use of cross-promotions by food and media companies with policies on marketing to children.

Methods

On three separate occasions (February of 2006, 2007 and 2008) researchers visited one branch of a large US supermarket chain (Stop & Shop) and purchased all products with a package that depicted any type of cross-promotion with an outside partner. The only type of cross-promotions that were not included in this initial screen was promotions for another packaged food product (e.g. the Trix Cereal rabbit on yoghurt). On each supermarket visit, three or four researchers participated to ensure that all appropriate products were identified. Stop & Shop is one of the largest supermarket chains in the north-eastern USA with more than 550 stores and \$16.5 billion in annual sales⁽¹¹⁾. The branch visited was 65 000 sq ft and contained approximately 55 000 items for sale; larger than the median-sized supermarket or combination food retailer in the USA of 53 583 sq ft with 41 000 items⁽¹²⁾.

A total of 399 products were purchased over the three data collection time points. The food brand and promotional property (i.e. the name of the character or other promotion on the package) was recorded for each product, as well as the product category, food manufacturer and promotional partner. Products with the same food brand and promotional property that differed only in the flavour or version of the food brand were combined and counted as one promotional agreement.

The targeted age group (i.e. pre-school, children and general audience) was identified for each promotional property according to the following criteria: (i) any

character that appeared on a pre-school television show or toys that appeal specifically to age 6 years and under, according to the manufacturer's guidelines, was classified as a pre-school target; (ii) any product that contained a character or other product that appears on children's television programming (e.g. Nickelodeon and Disney Channel cartoon characters), a G- or PG-rated movie (i.e. considered appropriate for child viewing)⁽¹³⁾ or toys that appeal specifically to age 12 years and under, according to the manufacturer's guidelines, was classified as a child target; and (iii) any product that contained a product or personality from general audience television programming, a PG-13 movie (i.e. may contain some profanity, violence or brief nudity that might not be appropriate for children) or other type of entertainment, sports or other product marketed to a general audience that would appeal to age 17 years and under, was classified as a general audience target. Although specific youth appeal could not be assessed for many of the promotions identified for general audiences, the use of video games, sports and entertainment properties (i.e. the majority of promotional partners assigned to this category) is a common strategy used by food companies to reach a youth audience⁽⁵⁾. Only two products were eliminated because the licensed properties had no apparent youth appeal (Rachael Ray, a television chef, and Iyanla Vanzant, a motivational speaker); therefore, over 99% of all cross-promotions in the supermarket appealed to a youth market. A total of 397 products and 296 separate promotional agreements were included in the final analysis.

Nutrition data were obtained from the package nutrition fact panels. The percentage of kilojoules from fat and sugar was calculated and recorded, as well as the milligrams of sodium per serving. The US Food and Drug Administration (FDA) reference amounts for amount customarily consumed per eating occasion were used to determine serving size⁽¹⁴⁾. Because the purpose of the study was to evaluate the suitability of marketing these particular foods to children and adolescents, all foods were classified as either 'healthy' or 'unhealthy' based on Nutrition Standards for Foods in Schools guidelines developed by a national expert panel in the USA to identify foods that are appropriate for sale to children and adolescents in schools⁽¹⁵⁾. The IOM standards for snack foods sold in schools (i.e. Tier 2 foods) do not allow products that contain over 35% of total energy from fat, 35% of total energy from sugar, over 200 mg of sodium and/or over 837 kJ (200 kcal) per serving. These criteria were applied to the sample products and resulted in a total of forty-four products that met the Tier 2 criteria. The remaining foods were then evaluated to determine whether they would meet the IOM Tier 1 criteria for foods sold during school meal programmes. Within this sample, yoghurt with up to 30 g of sugar per 8-oz serving and 100% fruit juice in packages up to 4 oz met the Tier 1 criteria, resulting in an additional twenty-nine products

classified as healthy foods. The IOM Tier 1 criteria also allow entrees with less than 480 mg of sodium that contain fruits, vegetables and/or whole grains and are less than 837 kJ (200 kcal). None of the meal items in this sample, however, met those criteria.

Chi-square analyses were conducted to assess differences by year and other categorical variables, including targeted age group, food and promotional partner categories, promotion type and healthy classification. ANOVA was also used to measure differences in sugar, fat and sodium content by year and targeted age group.

Results

Table 1 presents the number of youth-oriented cross-promotions found in the supermarket during the three years sampled, including breakdowns by targeted age group and categories of food and promotional partner. Over half of all promotions were targeted towards a child audience, with the remainder fairly evenly divided between pre-school and general audiences. Promotions were found in most major food categories, but two-thirds occurred in only five categories: cereals, fruit snacks, meal products, frozen desserts and candy. Promotional partners also represented a wide range of industries. The majority involved third-party licensed characters from television or movies; however, other types of television and movie promotions, toys and games, philanthropies, sports teams and celebrities, and theme parks were also represented (see Table 2). Cross-promotions included products from seven food manufacturers who had publicly pledged to reduce food marketing to children at the launch of the CBBB initiative (companies who issued pledges at a later date were not identified, as they would have had more limited time to implement their plan)⁽⁹⁾; these manufacturers produced two-thirds of the cross-promotional agreements. Cross-promotions were also found for all of the media companies who had issued policies concerning the use of their properties to market foods to children, representing 38% of the total (see Table 1).

Table 3 presents the number of products by food manufacturer and promotional partner. Three food manufacturers (Kellogg, General Mills and Kraft Foods) were responsible for over half of all cross-promotions, and three promotional partners (Viacom, Disney and Warner Brothers) accounted for over one-third.

Over the three years, the total number of products in the grocery store with youth-oriented cross-promotions almost doubled, and the total number of promotional agreements grew by 44% (see Table 1). In addition, the nature of the cross-promotions changed markedly. In 2006, 95% involved third-party licensed characters. This percentage declined significantly to only 47% in 2008 ($\chi^2(2, 296) = 54.8, P < 0.001$). Similarly, the age of the target audience changed significantly ($\chi^2(4, 296) = 25.9$,

Table 1 Cross-promotional agreements by category and year: survey conducted in one branch of a large US supermarket chain, north-eastern USA, February of 2006, 2007 and 2008

| | Total | | 2006 | | 2007 | | 2008 | |
|---------------------------------|-----------|------|-----------|------|-----------|------|-----------|------|
| | Frequency | % | Frequency | % | Frequency | % | Frequency | % |
| Age group targeted | | | | | | | | |
| Pre-school | 64 | 21.6 | 11 | 14.1 | 30 | 28.3 | 23 | 20.5 |
| Children | 170 | 57.4 | 60 | 76.9 | 58 | 54.7 | 52 | 46.4 |
| General audience | 62 | 20.9 | 7 | 9.0 | 18 | 17.0 | 37 | 33.0 |
| Food product categories | | | | | | | | |
| Cereal | 56 | 18.9 | 19 | 24.4 | 14 | 13.2 | 23 | 20.5 |
| Fruit snack | 50 | 16.9 | 21 | 26.9 | 21 | 19.8 | 8 | 7.1 |
| Meal | 40 | 13.5 | 12 | 15.4 | 13 | 12.3 | 15 | 14.4 |
| Frozen desserts | 27 | 9.1 | 5 | 6.4 | 14 | 13.2 | 8 | 7.1 |
| Candy | 25 | 8.4 | 0 | 0.0 | 11 | 10.4 | 14 | 12.5 |
| Cookies | 23 | 7.8 | 8 | 10.3 | 7 | 6.6 | 8 | 7.1 |
| Other breakfast | 17 | 5.7 | 3 | 3.8 | 4 | 3.8 | 10 | 8.9 |
| Yoghurt and yoghurt drinks | 14 | 4.7 | 2 | 2.6 | 6 | 5.7 | 6 | 5.3 |
| Crackers | 13 | 4.4 | 4 | 5.1 | 4 | 3.8 | 5 | 4.5 |
| Juice and juice drinks | 10 | 3.4 | 3 | 3.8 | 3 | 2.8 | 4 | 3.6 |
| Savoury snacks | 10 | 3.4 | 0 | 0.0 | 4 | 3.8 | 6 | 5.4 |
| Fruits and vegetables | 5 | 1.7 | 1 | 1.3 | 1 | 0.9 | 3 | 2.7 |
| Other | 6 | 2.1 | 0 | 0.0 | 4 | 3.8 | 2 | 1.8 |
| Promotional partner categories | | | | | | | | |
| Commercial television | 104 | 35.1 | 34 | 43.6 | 41 | 38.7 | 29 | 25.9 |
| Movies | 74 | 25.0 | 26 | 33.3 | 28 | 26.4 | 20 | 17.9 |
| Toys and games | 38 | 12.8 | 5 | 6.4 | 9 | 8.5 | 24 | 21.5 |
| Public television | 35 | 11.8 | 11 | 14.1 | 11 | 10.4 | 13 | 11.6 |
| Sports | 26 | 8.8 | 0 | 0.0 | 8 | 7.5 | 18 | 16.1 |
| Other | 18 | 5.7 | 2 | 2.6 | 9 | 8.5 | 7 | 6.3 |
| CBBB pledge participants* | 193 | 65.2 | 57 | 73.1 | 67 | 63.2 | 69 | 61.6 |
| Media companies with policies† | 112 | 37.8 | 33 | 42.3 | 47 | 44.3 | 32 | 28.6 |
| Third-party licensed characters | 210 | 70.9 | 74 | 94.9 | 83 | 78.3 | 53 | 47.3 |
| Total agreements | 296 | | 78 | | 106 | | 112 | |
| Total products | 397 | | 96 | | 130 | | 171 | |

CBBB, Council of Better Business Bureaus.

*Food companies with policies to reduce unhealthy marketing to children.

†Media companies with policies to limit the use of licensed characters in food marketing to children.

Table 2 Promotion properties that did not involve third-party licensed characters (number of products from 2006 to 2008*): survey conducted in one branch of a large US supermarket chain, north-eastern USA, February of 2006, 2007 and 2008

| Type of property | Frequency | Type of property | Frequency |
|---------------------|-----------|----------------------------|-----------|
| Other television | | Movies | |
| American Idol | 12 | Spiderwick Chronicles | 14 |
| Kids' Choice Awards | 7 | Pirates of the Caribbean | 5 |
| Hannah Montana | 3 | 20th Century Fox Movie DVD | 4 |
| Drake Bell | 2 | Narnia | 2 |
| The Wiggles | 2 | Sports | |
| Toys and games | | Boston Red Sox | 8 |
| Barbie | 19 | NASCAR | 6 |
| Hot Wheels | 4 | UConn Huskies | 4 |
| Xbox 360 | 4 | ESPN Winter Games | 3 |
| Lego | 3 | Peyton & Eli Manning | 2 |
| Wii | 3 | Other | |
| Mario | 2 | Chuck E Cheese | 7 |
| My Little Pony | 2 | Sea World | 3 |
| Rescue Heroes | 2 | Girl Scouts | 2 |
| Tonka | 2 | | |
| Game Fly | 2 | | |

*Properties found on more than one product.

$P < 0.001$). The number of cross-promotions targeted to a child audience declined from 2006 to 2008 (77% to 46%); whereas the number targeted to pre-school audiences increased, as well as those targeted to a general audience.

The use of cross-promotions in some food categories also changed from 2006 to 2008 ($\chi^2(28, 296) = 48.2$, $P = 0.01$). Cereals and meal products remained among the top five categories in all three years. Fruit snacks,

Table 3 Products with cross-promotions, by food manufacturer and promotional partner: survey conducted in one branch of a large US supermarket chain, north-eastern USA, February of 2006, 2007 and 2008

| | Total | | 2006 | | 2007 | | 2008 | |
|-------------------------------------|-----------|------|-----------|------|-----------|------|-----------|------|
| | Frequency | % | Frequency | % | Frequency | % | Frequency | % |
| Food manufacturers top 10* | | | | | | | | |
| Kellogg Company† | 105 | 26.4 | 37 | 38.5 | 34 | 26.2 | 34 | 19.9 |
| General Mills† | 54 | 13.6 | 13 | 13.5 | 20 | 15.4 | 21 | 12.3 |
| Kraft Foodst† | 48 | 12.1 | 8 | 8.3 | 8 | 6.2 | 32 | 18.7 |
| Nestlé | 27 | 6.8 | 3 | 3.1 | 6 | 4.6 | 18 | 10.5 |
| Campbell Soup Company† | 16 | 4.0 | 6 | 6.3 | 6 | 4.6 | 4 | 2.3 |
| Apple & Eve | 14 | 2.5 | 4 | 4.2 | 3 | 2.3 | 7 | 4.1 |
| PepsiCot | 10 | 2.5 | 3 | 3.1 | 0 | – | 7 | 4.1 |
| Unilever† | 10 | 2.5 | 2 | 2.1 | 6 | 4.6 | 2 | 1.2 |
| Coca Colat | 7 | 1.5 | 0 | – | 5 | 2.3 | 2 | 1.8 |
| Proctor & Gamble | 6 | 1.8 | 0 | – | 3 | 3.8 | 3 | 1.2 |
| Promotional partners top 10* | | | | | | | | |
| Viacom Nickelodeon and Nick Jr‡ | 74 | 18.6 | 14 | 14.5 | 24 | 18.5 | 36 | 21.0 |
| Warner Brothers | 46 | 11.6 | 22 | 22.9 | 16 | 12.3 | 8 | 4.7 |
| Disney‡ | 36 | 9.1 | 12 | 12.5 | 20 | 15.4 | 4 | 2.3 |
| Sesame Workshop‡ | 30 | 7.6 | 5 | 5.2 | 9 | 6.9 | 16 | 9.4 |
| Mattel | 27 | 6.8 | 3 | 3.1 | 5 | 3.8 | 19 | 11.1 |
| PBS Kids‡ | 18 | 4.5 | 7 | 7.3 | 6 | 4.6 | 5 | 2.9 |
| 20th Century Fox | 16 | 4.0 | 13 | 13.5 | 3 | 2.3 | 0 | – |
| Dreamworks | 15 | 3.8 | 1 | 1.0 | 8 | 6.2 | 6 | 3.5 |
| Freemantle Media American Idol | 13 | 3.3 | 1 | 1.0 | 0 | – | 12 | 7.0 |
| Major League Baseball | 10 | 2.5 | 0 | – | 5 | 3.8 | 5 | 2.9 |

*Top ten in number of food products with cross-promotions.

†Original CBBB (Council of Better Business Bureaus) pledge participants, i.e. companies that have pledged to reduce their advertising of unhealthy products to children⁽⁹⁾.

‡Media companies with policies to limit the use of their licensed characters in food marketing to children⁽¹⁰⁾.

however, declined from the largest food category in 2006 to only 7% of promotions in 2008. In contrast, there were no promotions within the candy category in 2006; but in 2008, candy represented the third largest category. There was no significant change in the proportion of all cross-promotions that involved food companies participating in the CBBB initiative ($\chi^2(2, 296) = 3.0, P = 0.22$), although there was wide variation in the 3-year trends for specific food manufacturers (see Table 3).

A greater number of changes occurred in the types of promotional partners (see Table 1). Commercial television and movies remained among the top three partner categories in all three years; however, their combined share of all food promotions declined from 76% in 2006 to 44% in 2008. Toys and games increased from only 6% of promotion partners in 2006 to surpass movies as the second most common type of promotion in 2008. There were no sports promotions in 2006; however, by 2008, sporting events and teams was the fourth largest partner category. There was also a significant decline in the use of promotional properties from media companies with policies regarding promotions with food companies ($\chi^2(2, 296) = 6.66, P = 0.04$), although this trend was due entirely to a decline in the use of Disney characters (see Table 3).

Table 4 provides nutritional content for the products analysed. On average, across the three years examined, products contained 38.0% of energy from added sugar, 17.7% of energy from fat and 208 mg of sodium per serving. The nutritional quality of the products differed by

age group targeted ($F(2, 389) = 5.91, P < 0.01$; $F(2, 390) = 29.96, P < 0.001$; $F(2, 390) = 3.29, P < 0.05$ for added sugar, fat and sodium content, respectively). After Bonferroni corrections, foods with promotions targeted to children contained significantly more sugar than those targeted to the other age groups and significantly more sodium than foods with pre-school-targeted promotions. Foods targeted to a general audience contained significantly more fat than those targeted to children or pre-schoolers. In addition, nutritional quality declined over the three years examined. There was no improvement in the proportion of energy from added sugar ($F(2, 389) = 2.37, P = 0.10$), the proportion of energy from added fat increased ($F(2, 390) = 4.81, P < 0.01$), and the increase in sodium per serving approached significance ($F(2, 390) = 2.92, P = 0.06$).

Table 5 presents the proportion of products with youth-oriented cross-promotions that met IOM standards for foods sold in schools⁽¹⁵⁾. Only seventy-three of the 397 foods (18.4%) met either Tier 1 or Tier 2 criteria, and were classified as healthy foods that are appropriate for sale to children. Of note, products targeted to pre-schoolers were significantly more likely to meet the standards than products targeted to other age groups ($\chi^2(2, 396) = 62.84, P < 0.001$), although the majority did not meet the standards. Additionally, products with promotions that involved media companies with policies concerning marketing to children were more likely to meet the standards than products with other promotional

Table 4 Sugar, fat and sodium content of products that included youth-oriented cross-promotions: survey conducted in one branch of a large US supermarket chain, north-eastern USA, February of 2006, 2007 and 2008

| | Year | | | | | | Age targets | | | | | |
|---------------------------------|-------|--------------|-------|--------------|-------|--------------|--------------------|--------------|----------|-------------|---------------------|--------------|
| | 2006 | | 2007 | | 2008 | | Pre-school | | Children | | General audience | |
| | Mean | 95% CI | Mean | 95% CI | Mean | 95% CI | Mean | 95% CI | Mean | 95% CI | Mean | 95% CI |
| Total | Mean | 95% CI | Mean | 95% CI | Mean | 95% CI | Mean | 95% CI | Mean | 95% CI | Mean | 95% CI |
| Added sugar (% of total energy) | 40.0 | 36.9, 43.0 | 37.1 | 31.2, 42.8 | 42.6 | 37.0, 48.1 | 35.6 | 31.4, 39.7 | 33.1 | 31.4, 39.7 | 42.5 ^{c,d} | 38.5, 46.4 |
| Fat (% of total energy) | 18.5 | 16.6, 20.3 | 13.3 | 10.3, 16.4 | 16.4 | 13.0, 19.8 | 20.6 ^a | 18.1, 23.1 | 11.7 | 8.6, 14.7 | 15.2 | 13.1, 17.2 |
| Sodium (mg) | 206.7 | 179.6, 233.5 | 200.9 | 151.6, 250.2 | 165.4 | 125.7, 205.1 | 240.8 ^b | 193.8, 287.8 | 142.8 | 93.3, 192.3 | 228.8 ^c | 190.2, 267.4 |

*Includes cross-promotions found in all three years.

Mean value was significantly higher than in: ^a2006; ^b2007; ^cpre-school target; ^dgeneral audience target; ^echildren target.

partners ($\chi^2(1, 396) = 19.22$, $P < 0.001$), although, again, almost three-quarters did not meet the guidelines. The percentage of healthy products from food companies who had signed CBBB pledges did not differ significantly from the percentage for companies who had not signed pledges ($\chi^2(1, 396) = 1.33$, $P = 0.35$).

The proportion of unhealthy *v.* healthy products did not change significantly from 2006 to 2008 ($\chi^2(2, 396) = 1.08$, $P = 0.55$). There was no improvement for food companies who had signed CBBB pledges ($\chi^2(2, 249) = 0.65$, $P = 0.74$), nor for media companies with food marketing policies ($\chi^2(2, 162) = 3.15$, $P = 0.21$), and no change in the likelihood that products targeted to a child or general audience met the IOM standards ($\chi^2(2, 221) = 0.24$, $P = 0.87$ and $\chi^2(2, 88) = 1.34$, $P = 0.52$, respectively). The difference by year for products marketed to pre-schoolers approached significance ($\chi^2(2, 87) = 7.50$, $P = 0.07$); however, the percentage of unhealthy products increased sharply in 2007, and then declined in 2008. Only products that included third-party licensed characters showed a year-over-year improvement in nutritional quality ($\chi^2(2, 268) = 7.04$, $P = 0.03$). By 2008, however, over two-thirds still did not meet the IOM criteria.

Discussion

As described in the FTC report on food marketing to youth, cross-promotions on packaging in the grocery store continue to remain a significant strategy to market foods to children and adolescents⁽⁵⁾, and the majority of these foods are of low nutritional value. The present findings suggest that the situation has worsened since 2006, a period during which the food and media industries have promised to market to children in more responsible ways. The number and variety of cross-promotions increased and the nutritional quality of products with youth-oriented cross-promotions declined.

The number of promotions with third-party licensed characters and those targeting a child audience did decline from 2006 to 2008. Unfortunately, an increase in most other types of promotional partners and promotions targeting pre-schoolers and a broader youth audience more than offset these reductions. Interestingly, the overall use of youth-oriented promotions on packaging by food companies that have signed CBBB pledges did not decline significantly in proportion to the total, and the nutritional value of the products promoted did not improve. Although most of these companies did not pledge to reduce marketing targeted to children on product packaging, an improvement would have indicated a broader commitment to encouraging healthy marketing practices targeted to children. Therefore, it is disappointing that no improvement was found. On the contrary, it appears that many food companies have increased their use of promotional partners not specifically covered by their CBBB pledges; for

Table 5 Overall nutritional quality of products that included youth-oriented cross-promotions: survey conducted in one branch of a large US supermarket chain, north-eastern USA, February of 2006, 2007 and 2008

| | Percentage of products that met IOM nutrition standards | | | |
|--|---|------|------|------|
| | Total | 2006 | 2007 | 2008 |
| Age targets | | | | |
| Pre-school | 47.1 | 50.0 | 30.6 | 62.9 |
| Children | 10.3 | 11.3 | 9.7 | 10.0 |
| General audience | 9.3 | 0.0 | 13.6 | 8.9 |
| Food category | | | | |
| Juice and juice drinks | 67.7 | 87.5 | 55.6 | 64.3 |
| Cookies | 55.2 | 44.4 | 62.5 | 63.6 |
| Fruits and vegetables | 50.0 | 0.0 | 50.0 | 66.7 |
| Yoghurt and yoghurt drinks | 40.0 | 0.0 | 28.6 | 54.4 |
| Cereal | 32.8 | 26.3 | 46.7 | 30.0 |
| Other breakfast | 11.1 | 0.0 | 12.5 | 15.4 |
| Savoury snacks | 7.7 | – | 0.0 | 11.1 |
| Fruit snack | 0.0 | 0.0 | 0.0 | 0.0 |
| Meal | 0.0 | 0.0 | 0.0 | 0.0 |
| Frozen desserts | 0.0 | 0.0 | 0.0 | 0.0 |
| Candy | 0.0 | – | 0.0 | 0.0 |
| Crackers | 0.0 | 0.0 | 0.0 | 0.0 |
| Other | 0.0 | – | 0.0 | 0.0 |
| Promotional partner category | | | | |
| Public television | 52.6 | 47.1 | 44.4 | 63.6 |
| Commercial television | 15.5 | 10.0 | 15.6 | 19.6 |
| Sports | 14.3 | – | 14.3 | 8.0 |
| Toys and games | 12.5 | 0.0 | 0.0 | 17.8 |
| Movies | 9.1 | 13.3 | 5.9 | 9.7 |
| Other | 3.6 | 0.0 | 7.7 | 0.0 |
| CBBB pledge participants* | 16.5 | 13.2 | 16.5 | 18.6 |
| Media companies with policies† | 28.4 | 26.8 | 21.7 | 36.1 |
| Third-party licensed characters | 21.6 | 17.6 | 17.2 | 32.1 |
| Total products | 18.2 | 16.8 | 16.2 | 20.5 |

IOM, Institute of Medicine; CBBB, Council of Better Business Bureaus.

*Food companies with policies to reduce unhealthy marketing to children.

†Media companies with policies to limit the use of licensed characters in food marketing to children.

example, those targeting a somewhat older youth audience or tie-ins to non-media properties (e.g. toys and games). Some media companies appear to have made progress: for example, Disney and Warner Brothers reduced the volume of properties licensed for youth-oriented promotions in the supermarket, and the nutritional quality of food products with third-party licensed characters overall showed some improvement.

The present study does have some limitations that should be addressed in future research. A significant limitation is that only one large supermarket was examined, thus limiting the generalizability of the findings. The distribution of cross-promotions found in this supermarket may not provide a representative sample of all cross-promotions in the USA. However, common US supermarket industry practices regarding product distribution suggest that this limitation may not affect the overall findings or conclusions. Approximately three-quarters of the food products were produced by large national food manufacturers who distribute their foods at the national level. In addition, these food manufacturers typically reach agreements with supermarket retailers at the headquarters level that specify the products to be stocked in each of their stores^(16,17). As a result, it is reasonable to assume that few differences would be found

between the products carried by different supermarkets within a chain or between different supermarkets of similar size. To test this assumption, however, future studies should assess potential variations in the type and number of promotions across a wider geographic area and differences between types of food retailers.

Another limitation of the findings is that only the number of promotions, and not the total number of items within the supermarket or within specific categories, was tracked. As a result, these results do not provide information about the relative incidence of promotions in the supermarket. Future research should also examine the prevalence of promotions compared with all products offered. Again, however, this limitation is not expected to alter the findings of the present study. Due to space limitations, the number of products within a supermarket does not change markedly from year to year. In an average 54 000 sq ft supermarket (similar to the store in the present study), the net increase in number of products stocked in 2007 was only 250, or 0.6%⁽¹²⁾. As a result, the 35% increase in total number of promotions from 2006 to 2007, found in the present study, is likely to be significantly greater than the overall increase in total number of products within the supermarket. In addition, as an example of the relative incidence of promotions as

compared with all products, a recent analysis of products in the ready-to-eat cereal aisle at the same supermarket demonstrated that 44.9% (seventy-five out of 167) contained some type of cross-promotion (JL Harris, MB Schwartz and KD Brownell, unpublished results).

Overall, these findings suggest that public scrutiny of food marketing practices can lead to industry change, as appears to have occurred in the use of third-party licensed characters on food packaging. However, they also highlight that it is important for the public health community to continue to monitor the overall food marketing environment to ensure that progress in one area does not lead to decline in another. These results support several suggestions made by the FTC to improve food company self-regulatory pledges, including: (i) the scope of 'advertising to children' in food industry initiatives should be expanded to cover all forms of marketing, including product packaging; (ii) the criteria for 'healthy dietary choices' that are appropriate for marketing to children should be standardized and include only nutritious products; and (iii) all children's food advertising should be required to promote objectively healthy choices⁽⁵⁾. In addition, these findings suggest that the scope of the food industry pledges should extend to marketing that targets all youth to avoid simply shifting advertising efforts to a broader audience that continues to include significant numbers of children and adolescents. Finally, in addition to media companies, all companies that participate in promotional agreements with food companies (including toys, sports and philanthropies) should limit the use of their properties to market only healthy dietary choices to youth.

Given the extent of the necessary changes to current self-regulatory pledges, these findings also support the concerns of many public health advocates that self-regulation by the food industry may not produce any meaningful improvement in the food environment that surrounds young people^(18–21). Many consider this initial focus on industry self-regulation in the USA to be a trial period to ascertain the industry's true commitment to improve public health. A continued absence of real progress in the marketing environment is likely to reinforce support for more direct interventions, including government regulations to enforce reductions in unhealthy food marketing to youth.

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