

# Prevalence of Food and Beverage Brands in Movies: 1996–2005



**WHAT'S KNOWN ON THIS SUBJECT:** Much research has focused on food and beverage advertising during children's television programming. Advertising during children's television programming is for food and beverages that largely are high in sugars, salt, and fat and with few vitamins, minerals, or fiber.



**WHAT THIS STUDY ADDS:** This is the first study, to our knowledge, that provides a comprehensive analysis of food and beverage product placement in popular movies. The majority of items recorded were for brands that represent energy-dense, nutrient-poor products and/or product lines.

## abstract

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**OBJECTIVE:** The objective of this study was to describe food and beverage brand placements in a large representative sample of popular movies.

**METHODS:** We identified and coded brand placements for foods, beverages, and food retail establishments in the top 20 US box office movie hits for each year from 1996 to 2005. We also coded general movie characteristics (Motion Picture Association of America rating, run time, genre, and information about major characters). We summarized the number and types of food, beverage, and food retail establishment brands by movie characteristics and also identified manufacturers that are associated with each of the brands.

**RESULTS:** Of the 200 movies coded, 138 (69%) contained at least 1 food, beverage, or food retail establishment brand. Movies rated PG-13 and R were significantly more likely to have brand placements compared with movies in other rating categories. Comedies, action/adventures, and horror films had more brand placements than other genres. We did not detect a significant difference in the number of movies with brand placements or mean number of placements per movie by year of movie release. A total of 1180 brand placements were identified and verified, including 427 food, 425 beverage, and 328 food retail establishment brand placements. Candy/confections (26%) and salty snacks (21%) were the most prevalent food brands, sugar-sweetened beverages (76%) were the most prevalent beverage brands, and fast food composed two thirds of the food retail establishment brand placements.

**CONCLUSIONS:** Food, beverage, and food retail establishment brands are frequently portrayed in movies, and most of the brand placements are for energy-dense, nutrient-poor foods or product lines. Movies are a potent source of advertising to children, which has been largely overlooked. *Pediatrics* 2010;125:468–474

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### KEY WORDS

diet, food and beverage, obesity, media

### ABBREVIATION

FRE—food retail establishment

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Diet quality of US children and adolescents has declined during the past 20 years.<sup>1</sup> It is estimated that only 1% of children eat a diet consistent with the US Department of Agriculture's MyPyramid food guidance, and fewer than one fifth of adolescents meet the dietary recommendations for fat or fruit and vegetables.<sup>2</sup> In addition to poor diet quality, obesity rates have doubled for children aged 6 to 11 years and tripled for adolescents aged 12 to 19 years in the past 20 years, so high blood pressure and elevated cholesterol are no longer "adult" diseases.<sup>3,4</sup> Television viewing by children and adolescents has long been recognized as a risk factor for overweight, and it seems that this association is not simply because children are replacing physical activity with sedentary activity.<sup>5,6</sup> Television viewing is also associated with increased snacking and poor diet quality among children.<sup>7-9</sup> This may be attributable, in part, to increased exposure to food advertisements on television. Experts believe that food marketing and advertising aimed at children directly affects their food choices and dietary habits,<sup>10</sup> and numerous studies have demonstrated that foods high in sugar, salt, and fat and low in vitamins, minerals, and fiber (eg, energy-dense, nutrient-poor) are regularly advertised during children's television programming.<sup>11-14</sup> Recognizing that children have substantial influence and often use "pester power" to manipulate parental purchasing, marketers often target children with their advertisements.<sup>15</sup> In addition to television advertising through commercials, product placement (eg, the paid presence of branded products) in movies and television programs is a strategy used by the advertising industry to reach consumers. Although product placement has been around for some time, it did not receive much attention as a food

and beverage marketing strategy until the 1980s, after Reese's Pieces appeared in the movie "E.T."<sup>16</sup> In the 3 months immediately after the film's release, brand sales of Reese's Pieces increased 65%.<sup>17</sup> This demonstrated the potential power of product placement in the movies as a marketing tool.

Although the prevalence of food and beverage advertising during children's television programming has been widely studied, little is known about product placement in movies and how it might affect the food and beverage preferences and choices of children and adolescents. Auty and Lewis<sup>18</sup> suggested that movie product placement is "on par with subliminal advertising," yet it has been largely ignored by those who study the impact of marketing on children. A number of studies that focused on other health-related behaviors, including alcohol and tobacco use, showed that movies contain frequent portrayals of these risk behaviors and often include brand appearances of the products. It is well-established that children who view these risk behaviors in movies are more likely to engage in the behavior themselves (eg, smoking, alcohol use, violence, sexual behavior).<sup>19-24</sup> In addition, a global study of young adults found that viewing products/brands in movies to be the best predictor of their trying a new product.<sup>25</sup> On the basis of this research, it is plausible that movies could potentially influence children's dietary choices. The first step toward understanding this potential influence is determining the extent to which food and beverage brands are portrayed in movies.

The purpose of this study was to provide a comprehensive description of food and beverage brand appearances in a large sample of popular movies that were released in US theaters between 1996 and 2005. A secondary objective was to determine whether the

type or prevalence of food and beverage brand appearances varied by movie rating or year of release.

## METHODS

Drawing on well-established methods used previously to identify tobacco brands in movies,<sup>26</sup> we conducted a content analysis of 200 contemporary movies. Movies that were included in our study represented the top 20 US box office "hits" per year from 1996 to 2005, as determined by total gross revenues, for each movie in the year it was released.<sup>27</sup> For a larger study of movie influences on health behaviors, we coded general characteristics, including Motion Picture Association of America ratings (G, PG, PG-13, and R), run time (minutes), and genre (action/adventure, comedy, drama, family/animated, family/comedy, horror, and science fiction/fantasy).<sup>26,28</sup> Each movie was viewed twice to identify and code every food and/or beverage and food retail establishment (FRE) brand appearance. A brand placement was defined as any food, beverage, or FRE with an identifiable logo, product name, or both. When a coder was uncertain as to the reality of the brand, the item was coded and then verified by a second coder or a study research assistant.

## Brand Placements

For each onscreen food, beverage, and FRE brand, the coder recorded the brand name, product type, start and stop time of placement, type of brand placement, brand recognizability, and imagery used. Type of brand placement was coded as (1) the use of a food/beverage branded product by a major character; (2) the use of a branded product by a minor or major character; (3) suggested use (eg, handling or preparation to eat or drink by a character); (4) brand placement, with no use; or (5) food or beverage brand mentioned but not used. Brand recognizability, which describes the

degree to which the brand was identifiable, was coded as (1) clearly recognizable (ie, full name or icon for product showing); (2) reasonably certain, either the product name or logo was identifiable; (3) suggested but not certain; (4) verbal mention (no visual); or (5) a “spoof” (eg, Farbucks instead of Starbucks). For this analysis, we excluded any placement in which the brand was suggested but not certain ( $n = 110$ ). We also excluded 77 brand placements because we could not confirm that they were real brands and they were not obvious spoofs on a real product brand. For each brand placement, the study investigators (Dr Sutherland and Ms Purvis) identified the brand’s manufacturing company and, when applicable, the parent company via product and company Web site and annual report documentation.

### Product Type Categories

Once the brand placements were coded, the study investigator (Dr Sutherland) postcoded each food, beverage, or FRE brand placement into specific product type classifications on the basis of previously defined categories from the television food and beverage advertising literature.<sup>11–13,29,30</sup> Food brand placements were categorized into the following product types: (1) breads/grains; (2) breakfast pastries (eg, Pop-Tarts); (3) cereals—high sugar (eg, Froot Loops); (4) cereals—low sugar (eg, Cheerios); (5) condiments; (6) confections/candy (eg, candy, gum); (7) convenience meals; (8) dairy (eg, milk, yogurt, cheese); (9) fruits and vegetables; (10) meat and nuts; (11) salty snacks; (12) sweet snacks/desserts; and (13) other (specify). Beverage brands were coded as (1) no calorie; (2) milk/100% juice, (3) sugar-sweetened beverages, and (4) coffee/tea. FREs were classified as (1) grocery or convenience store, (2) fast food/quick service, (3) casual/family style dining, and (4) fine dining. For ex-

ample, if a cup with a Wendy’s logo was shown onscreen, then the brand placement would be coded as a FRE and then additionally categorized as “fast food/quick service.”

### Reliability

Two experienced movie coders were trained to conduct the food and beverage content analysis. Ten percent of the movie sample was double-coded to assess the interrater reliability. The principal investigator (Dr Sutherland) arbitrated coder disagreements. All measures reported in this article had a minimum agreement of 80%, indicating “almost perfect” reliabilities.<sup>51</sup>

### Statistical Analysis

All data were entered into a Microsoft Access relational database. Descriptive statistics were generated for the absolute and relative frequencies for movie characteristics; brand placements; and food, beverage, and FRE distributions. Proportions (eg, proportion of movies with at least 1 brand placement) were compared between movie classifications (eg, Motion Picture Association of America ratings) by using  $\chi^2$  tests. Tests for trend were used to determine whether a proportion increased during the 10-year time frame of this movie cohort. Frequency of placement (an ordinal end point) was compared between movies by using Kruskal-Wallis test.<sup>52</sup> A Spearman rank correlation was used to test when the frequency of placement increased during the 10-year time frame. Pairwise comparisons were done by using correction for multiple comparisons (ie, Bonferroni) by using  $\chi^2$  and Mann-Whitney (Wilcoxon rank sum) tests.<sup>53</sup>

## RESULTS

### Brand Placement by Movie Characteristics

Two hundred movies that were released between 1996 and 2005 were coded, 7.5% of which were rated G,

20.5% of which were rated PG, 49% of which were rated PG-13, and 19% of which were rated R. A total of 138 (69%) of these movies had  $\geq 1$  food, beverage, or FRE brand placement. The percentage of movies with brand placements varied across movie rating, ranging from 33% of G-rated movies to 80.8% of R-rated movies. PG-13-rated and R-rated movies were more likely to have brand placements compared with G and PG movies (Table 1). Comedies/family comedies, drama, and horror films were more likely to have brand placements, whereas family animations and science fiction/fantasy movies were least likely to have brand placements. Examining the prevalence of movies with brand placements by type revealed similar associations; G-rated and PG-rated movies were significantly less likely to contain any brand placement for beverages ( $P < .01$ ), foods ( $P < .05$ ), or FREs ( $P < .05$ ), compared with PG-13-rated and R-rated movies. When examining the relationship between gross sales receipts and the placement of all food brands, we found that movies that grossed at least \$200 million were less likely to have any brand placements ( $P < .05$ ) than movies that grossed less than \$200 million (Table 1).

### Prevalence and Types of Brand Placements

Overall, a total of 1180 brand placements were identified, including 427 food brands, 425 beverage brands, and 328 FRE brands. Among movies that contained at least 1 brand placement, there was an average of 8.6 brand placements per movie. Although there was no significant difference in the mean number of food brands by movie rating, the mean number of beverage brands was significantly higher in PG-rated, PG-13-rated, and R-rated compared with G-rated movies ( $P < .01$ ). The number of FRE brand placements was higher ( $P < .01$ ) in PG-rated and

**TABLE 1** Characteristics of Top 20 Movies Per Year From 1996 Through 2005

Characteristic	Total Movies Coded ( <i>N</i> = 200), <i>n</i> (%)	Movies With ≥1 Brand ( <i>n</i> = 138), <i>n</i> (%)	Movies With ≥1 Brand, <i>n</i> (%)			No. of Brand Placements Per Movie Among Movies With ≥1 Brand for That Category, Mean ± SD <sup>a</sup>		
			Beverage ( <i>n</i> = 105)	Food ( <i>n</i> = 110)	Retail ( <i>n</i> = 85)	Beverage ( <i>n</i> = 425)	Food ( <i>n</i> = 427)	Retail (FRE) ( <i>n</i> = 328)
MPAA rating		b	b	c	c	d		e
G	15 (7.5)	5 (3.6)	2 (1.9)	4 (3.6)	1 (1.2)	2.5 ± 0.7	3.3 ± 1.9	3.0 <sup>f</sup>
PG	41 (20.5)	24 (17.4)	16 (15.2)	19 (17.3)	15 (17.6)	3.1 ± 2.1	4.4 ± 6.7	3.9 ± 2.7
PG-13	97 (48.5)	71 (51.4)	53 (50.5)	60 (54.5)	49 (57.6)	4.7 ± 4.5	3.8 ± 5.1	4.2 ± 4.8
R	47 (23.5)	38 (27.5)	34 (32.4)	27 (24.5)	20 (23.5)	3.6 ± 3.2	3.6 ± 3.8	3.0 ± 1.8
Genre		b	b	b	c	d	d	d
Action/adventure	59 (29.5)	40 (30.0)	29 (27.6)	30 (27.3)	22 (25.9)	3.7 ± 3.0	3.9 ± 5.8	4.0 ± 4.5
Comedy	41 (20.5)	40 (30.0)	34 (32.4)	34 (30.9)	33 (38.8)	4.9 ± 4.5	4.6 ± 6.2	4.5 ± 4.6
Drama	33 (16.5)	25 (18.1)	20 (19.0)	21 (19.0)	13 (15.3)	3.2 ± 5.0	3.2 ± 2.9	2.3 ± 1.8
Family/animated	23 (11.5)	6 (4.3)	4 (3.8)	4 (3.6)	4 (4.7)	4.5 ± 2.4	1.5 ± 0.6	5.8 ± 2.2
Family/comedy	15 (7.5)	13 (9.4)	10 (9.5)	11 (10.0)	8 (9.4)	4.5 ± 5.4	3.9 ± 1.9	3.6 ± 2.7
Horror	7 (3.5)	6 (4.3)	5 (4.7)	4 (3.6)	2 (2.4)	3.2 ± 2.7	6.5 ± 7.5	2.0 ± 1.4
Sci-Fi/fantasy	22 (11.0)	8 (5.8)	3 (2.9)	6 (5.5)	3 (3.5)	4.7 ± 6.4	1.5 ± 0.5	1.7 ± 1.2
Movie year								
1996	20 (10.0)	17 (12.3)	14 (13.3)	11 (10.0)	9 (10.6)	5.7 ± 4.5	5.9 ± 4.8	3.7 ± 1.7
1997	20 (10.0)	17 (12.3)	10 (9.5)	14 (12.7)	10 (11.8)	3.1 ± 2.6	2.1 ± 1.4	3.2 ± 2.2
1998	20 (10.0)	13 (9.4)	7 (6.6)	13 (11.8)	8 (9.4)	5.0 ± 5.9	3.2 ± 2.0	3.6 ± 3.8
1999	20 (10.0)	13 (9.4)	12 (11.4)	9 (8.1)	6 (7.0)	3.4 ± 3.8	7.0 ± 10.7	7.3 ± 9.8
2000	20 (10.0)	14 (10.1)	13 (12.4)	11 (10.1)	10 (11.8)	3.6 ± 4.9	3.1 ± 2.2	1.9 ± 1.9
2001	20 (10.0)	13 (9.4)	10 (9.5)	10 (9.0)	7 (8.2)	3.4 ± 1.6	1.6 ± 0.8	3.6 ± 2.9
2002	20 (10.0)	13 (9.4)	10 (9.5)	10 (9.0)	10 (11.8)	4.3 ± 2.9	4.1 ± 4.3	4.9 ± 5.8
2003	20 (10.0)	13 (9.4)	10 (9.5)	11 (10.0)	9 (10.6)	3.9 ± 3.3	3.4 ± 2.1	4.1 ± 1.9
2004	20 (10.0)	11 (8.0)	8 (7.6)	9 (8.2)	9 (10.6)	5.0 ± 4.3	3.9 ± 5.1	4.0 ± 3.1
2005	20 (10.0)	14 (10.1)	11 (10.5)	12 (10.9)	7 (8.2)	3.5 ± 3.6	5.2 ± 8.4	3.4 ± 1.6
Gross \$1000s		c	b			d		
<120	59 (29.5)	42 (30.4)	34 (32.4)	36 (32.7)	24 (28.2)	3.6 ± 3.2	3.3 ± 3.0	3.1 ± 2.1
120–149	54 (27.0)	42 (30.4)	29 (27.6)	33 (30.0)	26 (30.6)	4.3 ± 3.9	3.5 ± 3.6	4.5 ± 2.8
150–199	40 (20.0)	30 (21.7)	28 (26.7)	22 (20.0)	19 (22.4)	4.2 ± 4.6	4.7 ± 7.0	4.7 ± 7.0
≥200	47 (23.5)	24 (17.4)	14 (13.3)	19 (17.3)	16 (18.8)	4.3 ± 3.5	4.6 ± 7.1	2.9 ± 1.9

MPAA indicates Motion Picture Association of America.

<sup>a</sup> Based on movies with at least 1 appearance in the category.

<sup>b</sup> The proportions differ significantly ( $P < .01$ ) by category.

<sup>c</sup> The proportions differ significantly ( $P < .05$ ) by category.

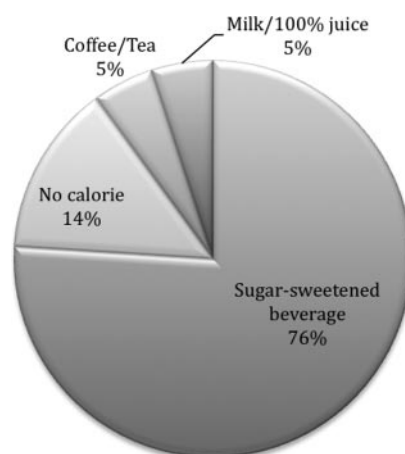
<sup>d</sup> The number of appearances differ significantly (Kruskal-Wallis  $P < .01$ ) by category.

<sup>e</sup> The number of appearances differ significantly (Kruskal-Wallis  $P < .05$ ) by category.

<sup>f</sup> Only 1 movie with at least 1 appearance was in this category, so SD could not be calculated.

PG-13-rated compared with G-rated and R-rated movies. On average, comedies had a high number of brand placements of all 3 types (food, beverage, and FRE). We did not detect a significant difference in the prevalence of brand placements by year of movie release.

Sugar-sweetened beverages (soda, sports drinks, and fruit drinks) composed the majority (76%) of beverage products, which was significantly greater than no-calorie drinks (14%), milk/100% juice (5%), and coffee/tea (5%; Fig 1). Food brands were more

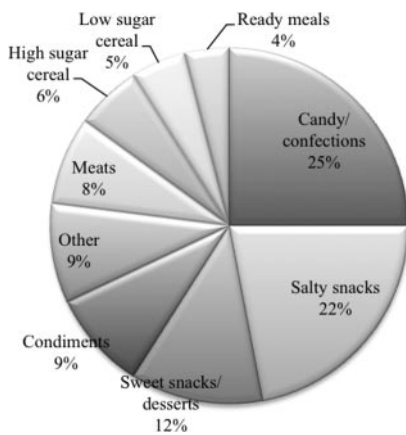


**FIGURE 1** Brand distribution by beverage type (*n* = 425).

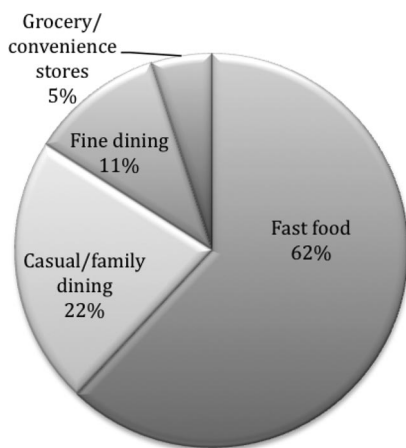
varied with candy/confections (26%), salty snack foods (22%), sweet snacks/desserts (12%), and condiments (9%) composing the majority of placements (Fig 2). As shown in Fig 3, fast food establishments made up the majority (62%) of the FRE brands, significantly greater than the other retail categories.

### Manufacturing Companies and Brand Placement

Six companies accounted for 45% of all brand placements: PepsiCo (Purchase, NY), Coca-Cola (Atlanta, GA), Nestle USA



**FIGURE 2**  
Brand distribution by food type ( $n = 427$ ).



**FIGURE 3**  
Brand distribution by FRE type ( $n = 328$ ).

(Glendale, CA), McDonald's (Oak Brook, IL), Dr Pepper Snapple Group Inc (Plano, TX), and Burger King (Miami, FL; Table 2). Whereas 2 companies (PepsiCo and Coca-Cola) accounted for almost three quarters of the beverage brand placements, 7 companies composed half of the food brand placements and 5 companies were responsible for just more than one third of FRE brand placements (Table 2).

Multiple brand line extensions were often represented in movies. For example, Coca-Cola products ( $n = 145$ ) included 11 different beverages: Coke ( $n = 106$ ), Diet Coke ( $n = 15$ ), Sprite ( $n = 6$ ), Minute Maid orange juice ( $n = 5$ ), Vitamin Water ( $n = 4$ ), Fanta ( $n = 3$ ), Fruitopia ( $n = 2$ ), Mr Pibb ( $n =$

**TABLE 2** Brand Placements by Type and Manufacturer

Parameter	$n$ (%)	Cumulative %
<b>Beverage (<math>n = 425</math>)</b>		
PepsiCo Inc	151 (35.5)	35.5
Coca-Cola	145 (34.1)	69.6
Cadbury	40 (9.4)	79.0
Schweppes		
Nestle	14 (3.3)	82.3
Kraft Foods, Inc	11 (2.6)	84.9
Massimo Zanetti	6 (1.4)	86.3
Bev USA		
Other	58 (13.7)	100.0
<b>Food (<math>n = 427</math>)</b>		
PepsiCo In.	75 (16.6)	16.6
Nestle	55 (12.2)	28.8
General Mills	20 (4.4)	33.3
Kellogg's	18 (4.0)	37.3
Kraft Food, Inc	18 (4.0)	41.2
Mars Inc	18 (4.0)	45.2
Unilever	18 (4.0)	49.2
Heinz	17 (3.8)	53.0
Hershey Company	13 (2.9)	55.9
Utz Quality Foods, Inc	10 (2.2)	58.1
Other	183 (42.9)	100.0
<b>Retail (<math>n = 328</math>)</b>		
McDonald's	43 (13.1)	13.1
Burger King	23 (7.0)	20.1
Dunkin Donuts	19 (5.8)	25.9
Starbucks	19 (5.8)	31.7
Hooter's	15 (4.6)	36.3
Krispy Creme	13 (4.0)	40.0
Yum Brands Inc	8 (2.4)	42.4
Other	188 (57.3)	100.0

1), Powerade ( $n = 1$ ), Minute Maid orange soda ( $n = 1$ ), and Smart Water ( $n = 1$ ). Similar trends were noted for the other beverage companies.

Specific product types (eg, salty snacks) and brand line extensions were often represented for food brand placements. For example, 68% of PepsiCo's nonbeverage brand line extension Frito-Lay (Plano, TX) included salty snack product brand placements; 83% of Nestle brand placements were Willy Wonka Brands (Itasca, IL) candy/confections; 75% of General Mill's (Golden Valley, MN) products were cereal brands (7 high-sugar, 8 low-sugar); and 72% of Kellogg's (Battle Creek, MI) brands were cereals (6 high-sugar, 7 low-sugar).

## DISCUSSION

Sixty-nine percent of the top 200 revenue-grossing US movies that were released between 1996 and 2005 contained  $\geq 1$  food, beverage, or FRE brand placement. Although R-rated movies were most likely to have brand placements, we found that a surprising proportion of movies that were targeted to children and adolescents featured brand appearances. Specifically, one third of G-rated movies, more than half (58.5%) of PG-rated movies, and almost three quarters (73.2%) of PG-13-rated movies had brand appearances. Overall, we identified a total 1180 brand placements in 138 movies, the majority of which were for foods or product lines with little nutritional value. Sugar-sweetened beverages, salty snacks, candy/confections, and fast food were the most frequently recorded branded product types. Whereas sparkling waters and fine dining were most often depicted in R-rated movies, soft drink, chips, and fast food brands dominated PG-rated and PG-13-rated movies. Similar to what is advertised during children's television programming (TVY, TV7, and TVPG<sup>34</sup>), our findings demonstrate that popular movies provide yet another medium through which energy-dense, nutrient-poor foods are promoted to children and adolescents.

A number of studies have reported on food and beverage advertising during television programming for children and adolescents.<sup>12,13,29,30,35</sup> We found some similarities, including the low nutritional quality of the majority of branded products, but also noted interesting differences. Recent studies that examined television ads during adolescent programming found fast food (23.1%) to top the list<sup>35</sup> and ready-to-eat cereals and cereal bars (27%) to be most prevalent during children's programming.<sup>12</sup> In contrast, we found sugar-sweetened beverages com-

posed the largest proportion of all of the brands that we recorded, accounting for 1 of every 4 brand placements that we identified. This is substantially greater than the percentage of television ads devoted to sugar-sweetened beverages, estimated to be 12.3% and 5.6% of ads during adolescent and children's television programming, respectively.<sup>30,35</sup> Coca-Cola and PepsiCo have long-standing commitments not to advertise their soft drink products during children's television programming, yet sugar-sweetened beverage products from these companies regularly appeared in movies, especially those rated for children and adolescents. We found that fast food brands appeared at approximately the same rate (17%) in movies as that for television advertising to children and adolescents (19%–23%). We, like Powell et al<sup>35</sup> and Batada et al,<sup>12</sup> also found that McDonald's and Burger King composed one fifth of all fast food brand placements. What was strikingly similar between brand placements in movies and food and beverage advertising on child and adolescent television programming is the low nutritional quality of the majority of items.<sup>12,36</sup>

There has been much research and discussion about the potential impact of food and beverage advertising on children's television. Our findings clearly demonstrate the need to expand this forum to include movies, especially those rated for youth audiences. Of particular concern are the food and beverage product placements in comedies and PG-rated and PG-13-rated movies, which are geared specifically to older children and teenagers, who are gaining independence with respect to their food choices. Although the impact of this type of advertising on children is not known, it provides a likely avenue by which brand loyalty and product preference can be built.

In November 2006, the Better Business Bureau launched the Children's Food and Beverage Advertising Initiative to "shift the mix of advertising messaging directed at children to encourage healthier dietary choices and lifestyle choices."<sup>37</sup> Fifteen companies, including Kellogg's, PepsiCo, Coca-Cola, and Kraft Foods, agreed to the guidelines set forth. This policy, or "pledge," is a step in the right direction but needs to go further. For product placement, companies will "commit to not paying or actively seeking to place their food or beverages in the program/editorial content of any medium primarily directed to children under 12 for the purposes of promoting the sale of those products."<sup>37</sup> Although this reflects forward movement by industry, the self-regulatory nature of the guidelines allows products that (1) represent healthy dietary choices according to company-developed standards or (2) include healthy lifestyle messages that contradict the products advertised.

This study is not without limitation. First, the goal of this study was to determine the prevalence of food and beverage product placement in movies that might have the potential to affect youth dietary preferences. As such, we coded only branded products, not every single food and beverage occurrence in movies—only those with our defined parameters of product placement. Using this method, we may have underestimated the total food and beverages on-screen, including fruits and vegetables and soft drinks; however, 2 previous studies found that the majority of soft drink on-screen was branded<sup>38</sup> and that the total eating occurrences in movies was minimal.<sup>39</sup> In addition, we coded only nonalcoholic beverages. A study by Cassady et al<sup>38</sup> concluded that branded soft drinks appeared 4 to 5 times more frequently in movies than branded alcoholic drinks but that unbranded alcohol appeared

20 times more often in movies than unbranded soft drinks. On the basis of these findings, we have most likely accurately estimated soft drink placements but underestimated total beverage product placements. Because we did not analyze the nutrition content of specific foods, our food categories and classifications of FREs are fairly broad and may not correspond directly to individuals' nutritional needs. Finally, although we did not find any significant change in the number of movies with sugar-sweetened beverages, salty snacks, or sweet snacks/desserts over time, we analyzed movies beginning in 1996, when product placement was already fairly standard in movies. Future research should include movies before 1996, perhaps as far back as 1976, when "E.T." first introduced America to Reese's Pieces.

## CONCLUSIONS

More than two thirds of popular movies featured food, beverage, and/or FRE brand placements. The overwhelming majority of the brand placements were for energy-dense, nutrient-poor products. Movies provide an avenue through which companies are marketing foods of low nutritional value to consumers, including children and adolescents, who may not even be aware of the advertising. These findings provide a benchmark against which future research can evaluate the commitments by food companies to change the nature of food advertising directed at America's children as promised by the Children's Food and Beverage Advertising Initiative pledge.

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