

## A Portrait of Food and Drink in Commercial TV Series

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This study examines the content and presentation of food and drink on fictional, commercial television. It provides the first comparison of food and drink consumption across different television program genres designated for different age groups. Data originated with a random sample of 50 taped episodes of children's shows, 50 episodes of "tween" programs (shows targeted for 9- to 14-year-olds), 40 episodes of afternoon soaps, and 50 episodes of prime time shows. The choice of TV series was based solely on the strength of Nielsen audience ratings. The study coded the foods for nutritional content and the drinks for alcoholic/nonalcoholic content, how they were used, and in what context. Findings indicate that foods were more commonly offered and consumed on children's shows, and that problematic foods (defined as oils, solid fats, and foods with added sugars) were significantly more prevalent in youth-oriented shows than in adult-oriented shows. Although there was only a negligible presence of alcohol on children's shows, the average hourly use of alcohol on the tween shows matched that of the adult programs; therefore, alcohol was as common in the shows directed at young audiences as in shows for adults. Negative outcomes were largely absent from food and drink behaviors on these TV series.

Cupcakes, cookies, pizza, hamburgers, and French fries—Americans love fast and fatty foods. According to a mortality trend reported by the Centers for Disease Control and

Prevention (2004), heart disease is the No. 1 cause of death in the United States. Between 2003 and 2004, the Centers for Disease Control and Prevention (2006) said that 67% of adults and 17% of children and adolescents (6–19) were overweight and 34% of adults were obese. More recently, the focus of this issue has moved to children's eating habits. Research by the Kaiser Family Foundation (2004b) identifies

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a clear linkage between media usage and an alarming increase in childhood obesity. This is reported in a media context in which children (ages 8–18) and adults spend more time watching TV than in any other leisure activity (Roberts, Foehr, & Rideout, 2005; Signorielli & Lears, 1992). From these linkages, one needs to address the process by which TV may contribute to unhealthy family eating decisions by parents and unhealthy consumption choices by both children and adults.

The potential for television to influence perceptions of health and nutrition is not a new proposition. It is embodied in both social cognitive theory and in cultivation theory. Social cognitive theory contends that viewers can learn and can model behaviors based on observing them, for example, in media portrayals (Bandura, 1986). Wilson (2007) recently summarized a set of factors that enhance viewers' potential for modeling what they observe, within Bandura's framework. Wilson was applying the factors to the tendency to emulate mediated violence, but their adaptation to eating behaviors is straightforward. These include (a) attractive models engaging in the behavior, for example, eating fatty foods, (b) realistic portrayals, (c) whether the behavior is rewarded, for example, "Clean your room and I'll give you some ice cream," (d) whether the behavior has consequences, for example, a stomach ache, (e) if it is socially acceptable, for example, everyone's eating pizza, and (f) whether it is visual/graphic, for example, you can watch them eat.

In addition, for nearly 50 years, researchers have been studying the cultivation hypothesis and generally have affirmed that television contributes to an individual's conception of social reality (Gerbner, Gross, Morgan, Signorielli, & Shanahan, 2002). Cultivation analysis is used to determine the content consistencies in television stories. Then the cultivation researcher attempts to find the outcomes that heavy viewing of these consistent messages may have on its viewers.

Both social cognitive theory and the cultivation approach focus ultimately on how content influences its receivers. The first step in identifying potential outcomes of media portrayals is reflected in this study, that is, to document what food is available in popular TV shows during different times of the day and for different age groups. No prior study has done this.

Research support exists for these perspectives. Studies on adults, adolescents, and children find that consuming health messages from fictional media sources, especially television, can negatively affect nutrition beliefs. For example, heavy TV viewing increases children's preferences for unhealthy foods (Signorielli & Staples, 1997), and children who watch more television are more likely to be obese (Kaiser Family Foundation, 2004b). Harrison (2005) finds that the framing of diet foods in TV commercials can confuse children and distort their knowledge such that weight loss benefits are confused with nutritional benefits.

Another body of research focuses on food in TV advertising. Overall, findings from that research suggest that many advertised food products are unhealthy options. Several studies consistently demonstrate that ads promote foods that are high in sugar and fat (Byrd-Bredbenner, 2002; Byrd-Bredbenner & Grasso, 2000a, 2000b). Harrison and Marske (2005) recently studied food advertising during TV programs watched mostly by children. She found that fast foods and sweets made up 83% of advertised foods and that snack times were featured more than scheduled meals. Further, the advertised foods exceeded the daily recommended values of fat, saturated fat, and sodium, and failed to provide adequate fiber and vitamins.

Less plentiful and less focused is research on the use of foods in programs themselves, strengthening the need for this study. In TV shows from 1971 to 1981, more than 75% of characters ate, drank, or talked about food during an episode, with snacking occurring more often than eating a meal (Gerbner, Gross, Morgan, & Signorielli, 1981). The top 15 prime time shows in 1988 included more references to beverages and foods of low nutritional value than to other food groups (Story & Faulkner, 1990). In prime time shows from 1994 to 1995, child characters (ages 1–12) were more likely to be eating foods high in calories and sugar than were older characters (Avery, Mathios, Shanahan, & Bisogni, 1997).

It is not possible to determine the motives behind these product appearances from studies of media content alone. Nevertheless, many of these products are likely appearing in media content through the efforts of brand marketers and industry product-placement professionals who are trying to influence viewers to use their products and develop loyalty to specific brands. Since the success of Reese's placement of its candy in the movie "E.T." and its consumption by the lovable lead character, product placement has mushroomed into a \$3.5 billion per year industry, and children and adolescents are often the prime target of product-placement campaigns (Balasubramanian, Karrh, & Patwardhan, 2006; Newell, Salmon, & Chang, 2006). Linking the product to likable show characters, as opposed to unknown actors in commercials, can be a powerful marketing device.

Other television health-related portrayals promote a thin-body ideal (Harrison, 1997, 2000; Hofschire & Greenberg, 2002) that is seriously discrepant from both real body averages and distributions and what would be considered healthy (Greenberg, Eastin, Hofschire, Lachlan, & Brownell, 2003). Overall, these studies propose that the TV information obtained about nutrition can be damaging to the body and distort knowledge about what is healthy to consume.

Media images of alcohol also may influence viewers' dispositions toward drinking. Content analyses since the late 1970s have investigated the incidence of prime time alcohol portrayals. Breed and De Foe (1981) analyzed prime time dramas and situation comedies from the 1977 season and found that 62% of the beverages contained alcohol and drinking occasions that were motivated primarily by

social or ceremonial reasons. Men and regular characters also were more likely to drink than were women or guest characters. Wallack, Breed, and Cruz (1987) analyzed a random sample of prime time TV from the fall of 1984. They found at least one alcohol appearance in 78% of the program episodes, with about 11 alcohol acts per hour—three times the frequency of nonalcoholic acts. Christenson, Hennikson, and Roberts (2000) analyzed alcohol and drug depictions on 20 teen and 20 adult TV shows. More than 75% of episodes referenced alcohol; further, half the teen and 70% of the adult shows featured major characters linked to alcohol. In experimental work, celebrity endorsers of alcohol have had more impact on young people than ads with ordinary people as the endorsers (Atkin & Block, 1983).

A further argument for the likelihood of viewers “learning” about food and drink from their intended and unintended presence in TV shows can be found in the entertainment–education research (Singhal & Rogers, 1999). A summary of demonstrated effects from that literature (Kaiser Family Foundation, 2004a) finds that TV exposure is positively related to learning about such diverse content issues as designated drivers, library usage, HIV testing, breast cancer awareness, and condom failure. The regularity of food and drink in TV programs, as indicated in the cited studies, creates ample argument for determining whether those food emphases are more or less healthy.

This study provides the first comparison of food and drink across different TV program genres and across the TV show preferences of different age groups. It reports the first evidence in the past decade as to food content in fictional TV programs. It analyzes a much larger number of program hours than most prior studies and describes the landscape of TV’s portrayal of food and drink across the most popular shows of children, “tweens” and adults. Given no prior research that compared the presence of foods in programs popular with different age groups, we asked two research questions:

- RQ1: What is the relative presence of problematic foods (oils, solid fats, and foods with added sugars) in TV shows targeted to younger viewers as compared to shows targeted to older viewers?
- RQ2: In what contexts and with what characters are problematic foods (oils, solid fats, and foods with added sugars) more commonly associated in shows for different age audiences?

Prior research on the portrayal of alcohol on television (Christenson et al., 2000) permits the following hypothesis:

- H1: Alcohol is present more in TV shows aimed at adults than in shows aimed at pre-adults.

And a final research question:

- RQ3: In what contexts and with what characters are alcoholic drinks more commonly found in TV programs for different age audiences?

## METHOD

### Television Sample

Children’s (ages 2–11), tween (age 9–14), daytime soap opera, and prime time fictional programs from the 2003 season were recorded and analyzed. All were chosen based on year-end 2002–2003 Nielsen ratings and audience definitions, with unique sets of shows for each group. Five episodes of each series for each genre were videotaped, yielding 190 television episodes and 127 hours of television for the master sample. Episodes were randomly selected and taped between 6 a.m. and 11 p.m. from April 7 to June 30, 2003.

The top 10 children’s shows were: *Chalkzone*, *Fairly Odd Parents*, *Hey Arnold!*, *Jimmy Neutron*, *Rocket Power*, *SpongeBob SquarePants*, *Rugrats* (all on Nickelodeon), *Pokemon* (WB), *The Simpsons* (Fox), and *Yu-Gi-Oh* (WB). All 50 episodes were animated and 30 min long, or 25 content hours. Ratings ranged from 1.5 to 2.7, with each rating point referencing approximately 1.1 million households.

The top 10 tween shows excluded series listed in the top 10 children series and were: *According to Jim* (ABC), *Bernie Mac* (Fox), *Even Stevens* (Disney), *George Lopez* (ABC), *Lizzie McGuire* (Disney), *Malcolm in the Middle* (Fox), *My Wife and Kids* (ABC), *Sister Sister* (Disney), *That ’70s Show* (Fox), and *That’s So Raven* (Disney). All 50 episodes were 30 min long, resulting in 25 content hours. Ratings ranged from .8 to 1.5.

The top 10 fictional series in prime time were; *CSI* (CBS), *CSI: Miami* (CBS), *ER* (NBC), *Everybody Loves Raymond* (CBS), *Friends* (NBC), *Law & Order* (NBC), *Law & Order: SVU* (NBC), *Scrubs* (NBC), *Will & Grace* (NBC), and *Without a Trace* (CBS). Of these 50 episodes, half were 30 min and half were 60 min, summing to 40 program hours. Ratings ranged from 9.9 to 15.9.

Eight daytime soap operas were included: *All My Children* (ABC), *As the World Turns* (CBS), *Days of Our Lives* (NBC), *General Hospital* (ABC), *Guiding Light* (CBS), *One Life to Live* (ABC), *The Bold and the Beautiful* (CBS), and *The Young & the Restless* (CBS). Of these 40 episodes, most were hour-long shows, resulting in 37 hours of programming. Ratings ranged from 2.6 to 4.7 and were higher ratings than obtained for either the children’s or tween shows.

### Coding Process

A coding instrument recorded all acts of ingestion portrayed that involved foods and drinks ( $N = 1,862$ ). Within scenes, an item was coded only once for a given character. Scene changes occurred with a change in physical location, a commercial break, or a flashback.

The final instrument recorded descriptive information about each food/drink item, as well as information about the usage, context, motives, outcomes, and demographics

associated with each item. Nine coders were trained to complete the coding in a reasonable time period. Coders were trained using alternative episodes from the same TV series as examples. Episodes used for training were omitted from analyses. Coder training continued until minimum kappa reliabilities of .80 were achieved for all but two variables [talked about (.78) and meals (.73), which remained in the analyses]. The Program for Reliability Assessment With Multiple Coders (Pram, Version 0.4.5, Skymeg Software, 2004; <http://academic.csuohio.edu/kneuendorf/content/reliable/pram.htm>) was used to calculate all but one interrater reliability coefficient. Two coders made the distinction as to whether foods were problematic or not (defined later in this section) and Scott's Pi was calculated for that single variable.

### Measures of Prevalence

**Ingestion acts.** Each food or drink item was coded as an act of ingestion or an incidental use of the item. An *ingestion act* was defined as an individual's visual or verbal offering and/or consumption of any type of food or beverage. Offering, without consumption, was included as a component of ingestion because it highlights the specific food or drink. If the item did not fit this definition, the coders determined if it was incidental. *Incidental* use of the item was defined as a visual or verbal reference to a product seen on camera and touched but not consumed or offered. This included any mention of or visual reference to a product, including brand-name products. Verbal references were coded as incidental only if the item mentioned was explicit, for example, "I want pizza." The reliability for this measure was .86.

**Food pyramid.** Each coded food item ( $n = 937$ ) was examined to determine its location in the new United States Department of Agriculture food pyramid (United States Department of Agriculture, 2005). There are six distinct categories: oils (e.g., cooking oils, salad dressings), grains (e.g., bread, cereal, crackers, rice, pasta), vegetables (e.g., spinach, carrots, peas), fruits (e.g., apples, strawberries, oranges), milk (e.g., milk, cheese, yogurt), and meat and beans (e.g., beef, chicken, eggs, nuts, beans). In this pyramid, oils should be consumed sparingly in comparison to all the other food groups. Also, all foods with solid fats and added sugars should be eaten sparingly, including butter, meat fats, and sweets. To incorporate all foods that should be consumed infrequently, we created the category "OFFS" to represent those foods that included or were primarily oils, solid fats, and/or foods with added sugars. In addition to the preceding items, a handful of food items were not coded because they were not sufficiently specific, for example, plates of food ( $n = 89$ ).

The analyses focused on comparing the consumption of OFFS (e.g., salad dressing, butter, sugar, chips, ice cream,

cookies, candy) to the other five food categories (e.g., grapes, peas, cheese, sausage, yogurt). A food item primarily in one food category was coded only into that category. Multiple-category coding occurred for 16% ( $n = 150$ ) of the foods. Subsequently, the food categories were collapsed into OFFS and nonproblematic (NP) foods ( $\pi = .91$ ). Of the multiply coded items, 93% contained no OFFS and were assigned to the NP category. Thus, only 7%—11 items out of 150—went into the OFFS category, which was too small to impact the analyses.

Only 6% of the food items and 5% of the drink items provided specific brand identification. This low level of food brand identification in TV programs is consistent with a recent review on that subject (La Ferle & Edwards, 2006). More important, the lack of brand information did not permit the same kind of calorie analysis as Harrison and Marske (2005) was able to do with advertised foods.

**Alcohol.** Each drink item was coded as an alcoholic ( $n = 238$ ) or nonalcoholic drink ( $n = 481$ ), or as an unidentified beverage ( $n = 117$ ;  $\kappa = .82$ ).

### Measures of Context

For food and drink items that had been coded as incidental, there was no further coding. For all ingestion acts, the following variables were coded, generally coded as present or not.

**Usage.** Items included whether the product was offered ( $\kappa = .95$ ) to a character. If offered, it was coded as accepted or not ( $\kappa = .95$ ) or rejected or not ( $\kappa = .96$ ). Coders also assessed whether or not the item was consumed ( $\kappa = 1.00$ ), visible on screen ( $\kappa = .95$ ), or talked about ( $\kappa = .78$ ).

**Preparation and location.** Items assessed whether the food was part of a meal ( $\kappa = .73$ ), and whether it required preparation ( $\kappa = .96$ ), for example, cooking, getting food ready, and using the stove or microwave, but did not include premade items like delivered pizza or carry-out. We also coded the location of the acts, for example, restaurant, bar, home, outdoors, store, or workplace, later collapsed into home or elsewhere ( $\kappa = 1.00$ ).

**Motives.** We began with a set of eight potential motives or reasons for each ingestion act. Only two occurred with sufficient frequency to be retained for analyses. These were to celebrate ( $\kappa = .95$ ), for example, drinking champagne to celebrate a victory; and for social reasons ( $\kappa = .95$ ), for example, meeting friends for coffee. These two motives were combined, that is, the food/drink act was or was not accompanied by a social/celebratory motive.

**Outcomes.** Coding of potential outcomes from ingestion acts included both negative and positive outcomes. Negative outcomes included excess (e.g., getting drunk), illness (e.g., vomiting), death, harm to others (e.g., car

accident because of drinking and driving), and disgust (e.g., grimacing). Positive outcomes were helping others (e.g., giving water to someone who is dehydrated), enjoyment (e.g., smile), and feeling better (e.g., relief from illness). No individual outcome for food or drink occurred frequently enough to analyze, nor were there sufficient positive or negative outcomes to create a summary measure.

**Character roles and demographics.** Coders identified a set of characteristics for each person directly involved in an ingestion act. Coded characters were either human or animated humanoids; pets were not coded. Character attributes included whether they were a regular character on the show or a guest seen only for this episode or a few episodes ( $\kappa = .84$ ). If the character was seen and heard throughout the episode he or she was considered a major character. If the character was seen in some scenes but not throughout the episode and was not central to the main storyline, he or she was coded as a supporting character ( $\kappa = .96$ ). The gender ( $\kappa = 1.00$ ), age category—child, teen, adult ( $\kappa = 1.00$ ), and ethnicity—White, African American, Hispanic, Asian, Other—( $\kappa = 1.00$ ) of all individuals involved in ingestion acts were recorded, as well as parental status—parent, nonparent ( $\kappa = .86$ ).

A subset of variables, in addition to outcomes, had insufficient entries for analysis. There were too few uses of the food items as reward or as punishment, and too few uses motivated by hunger/thirst, weight/diet issues, for general health, for preventative measures, for reasons of anger, or because the user was upset or depressed.

## RESULTS

Tables 1 and 2 provide the obtained frequencies for the study variables with sufficient incidents for analyses and a

subset of the statistical analyses. Table 1 shows that the distributions of OFFs and NP foods do not differ across the program types. However, the distributions of alcoholic to nonalcoholic drinks do differ, with the locus of this difference primarily between the children’s shows and the adult shows.

The distributions in Table 2 indicate that food and drink are more likely to be talked about in children’s shows, to be part of a meal in both children and tween shows, and to be located in the homes of tweens. Children’s food and drink acts are most likely to occur outside the home. Further, children and tween shows demonstrate a greater linkage between these acts and the social/celebratory motive. As for the characters associated with food and drink, children’s shows are disproportionately more likely to emphasize food with regular cast members, males, Whites, and younger characters.

### Food Analyses

The relative presence of OFFs (RQ1) was determined by one-way analyses of variance among the program types—children’s, tween, and adult shows (Table 3). The adult show category combined soaps and prime time series to provide sufficient incidents for detailed analyses. Children’s shows averaged 2.6 OFFs acts per hour, tween shows averaged 2.1, and the adult shows (soaps = .24 and prime time = .73) averaged .49 OFFs acts per hour,  $F(2, 124) = 18.66, p < .001$ . Foods identified on children’s television shows were five times more likely to contain OFFs than those on adult programs. Multiple comparison tests (post hoc Tukey honestly significant difference) demonstrate that both the children’s and tween show means are statistically larger ( $p < .001$ ) than the adult show average.

When OFFs acts and incidentals are combined, the findings have the identical pattern: children’s shows contained

TABLE 1  
Frequencies of Food and Drink Variables

Variable	TV Genres								$\chi^2$
	Children		Tween		Soaps		Prime Time		
	A	I	A	I	A	I	A	I	
All Codings <sup>a</sup>	238 (14%)	261 (16%)	206 (12%)	299 (18%)	127 (8%)	118 (7%)	162 (10%)	245 (15%)	
Foods									
OFFS <sup>b</sup>	66 (35%)	87 (43%)	53 (41%)	69 (36%)	9 (43%)	13 (35%)	29 (42%)	42 (44%)	n.s.
NP	121	116	77	125	12	24	40	54	
Drinks									
Alcohol	10 (20%)	11 (19%)	28 (37%)	31 (30%)	35 (33%)	30 (37%)	35 (38%)	58 (39%)*	
Nonalcoholic	41	47	48	74	71	51	58	91	

*Note.* A, acts; I, incidentals; NP, nonproblematic foods; OFFS, foods that included or were primarily oils, solid fats, and/or foods with added sugars. Chi-square comparisons combine the acts and incidentals for each genre. The Alcohol  $\times$  Genre comparison was not significant for acts only,  $\chi^2(3, N = 326) = 5.53, p < .20$ .

<sup>a</sup>Percentages in the first line add to 100% horizontally. <sup>b</sup>Foods and Drinks rows add to 100%.

\*Chi-square = 12.78,  $p < .01$ .

TABLE 2  
Frequencies of Context Variables

Variable	Series				$\chi^2$
	Children	Tween	Soaps	Prime Time	
Use, Location, and Motives					
Offered	83 (33%)	57 (25)	48 (33)	61 (32)	4.60
Accepted	70 (28)	48 (21)	40 (28)	50 (26)	3.42
Consumed	214 (84)	195 (85)	122 (85)	156 (81)	1.32
Visible	251 (98)	221 (97)	138 (96)	186 (97)	2.72
Talked about	108 (42)	69 (30)	41 (29)	68 (35)	11.17*
Part of a meal	108 (42)	91 (40)	28 (19)	43 (22)	36.56*
Social/celebratory	56 (24)	22 (11)	38 (29)	18 (10)	31.08*
Location					158.83*
Home	38 (15)	160 (70)	57 (40)	61 (32)	
Elsewhere	217	69	87	131	
Characters					
Type					20.06*
Regular	205 (82)	183 (81)	120 (89)	130 (70)	
Guest	45	44	15	57	
Role					2.32
Major	165 (65)	162 (72)	99 (69)	127 (68)	
Supporting	88	64	45	59	
Gender					31.75*
Male	189 (76)	144 (63)	70 (49)	114 (59)	
Female	60	85	74	78	
Ethnicity					87.69*
Caucasian	209 (91)	150 (66)	131 (91)	169 (88)	
African American	7 (3)	63 (28)	8 (6)	13 (7)	
Other	13 (6)	16 (6)	5 (3)	10 (5)	
Age					527.02*
Child	154 (66)	35 (15)	3 (2)	3 (2)	
Teen	9 (4)	92 (40)	4 (3)	3 (2)	
Adult	69 (30)	102 (45)	137 (95)	186 (96)	
Parent	48 (30)	76 (46)	33 (66)	46 (61)	32.05*

Note. Context variables reflect acts only. Use and motive variables represent whether the context variable was present or not, e.g., 33% of the acts in children shows were offered; thus, 67% were not. Values given are Frequencies.

\* $p < .05$ .

6.1 acts and incidentals/hour, tweens had 5.0, and the adult shows had 1.2,  $F(2, 124) = 26.82, p < .001$ . Again, the post hoc analyses confirmed that the children's and tween shows each contained higher rates of OFFS than the adult shows ( $p < .001$ ).

Overall, foods of all kinds were more evident on the children's shows. NP food acts were found 4.8 times/hour on the children's shows, 3.1/hour on the tween shows, and .68/hour on the adult shows,  $F(2, 124) = 18.02, p < .001$ .

To examine the food attribute variables (RQ2), chi-squares were calculated on the distributions of those attributes; that is, the incidence of OFFS and NP food acts were cross-tabulated with each of the contextual measures that contained sufficient entries for analysis. Items omitted for that reason included all outcome variables, as well as "rejection of food." Program genres were analyzed separately and nonsignificant findings are not reported.

TABLE 3  
Hourly Rates of Food Acts and Incidentals

Variable	Series				$F^a$
	Children	Tweens	Soaps	Prime Time	
Foods					
OFFS A <sup>b</sup>	2.64	2.12	0.24	0.73	12.99*
SD	2.72	1.99	0.86	1.30	
OFFS A + I	6.08	4.96	0.59	1.78	18.93*
SD	5.24	3.48	1.66	2.61	
NP Food A	4.80	3.08	0.32	1.00	12.29*
SD	5.32	4.17	0.58	1.75	
NP Food A + I	9.48	8.08	0.97	2.35	24.83*
SD	7.07	6.42	1.36	3.04	

<sup>a</sup>Post hoc tests among the genres found that the children and tween means for food each are significantly different ( $p < .001$ ) from both the soaps and prime time means.

<sup>b</sup>NP, nonproblematic foods; OFFS, foods that included or were primarily oils, solid fats, and/or foods with added sugars; A, Acts; I, Incidentals. \* $p < .001$ .

Children's shows on the Fox Network contained the largest proportion (53%) of OFFS acts and incidentals, compared with 35% on Nickelodeon and 7% on the WB,  $\chi^2(2, N = 390) = 9.44, p < .01$ . The remaining attributes show a consistent trend—OFFS were less likely to be talked about (23% vs. 52%),  $\chi^2(1, N = 187) = 15.93, p < .001$ , and were less likely to be part of a sit-down meal (16% vs. 57%),  $\chi^2(1, N = 187) = 28.42, p < .001$ . But OFFS were more likely to be consumed, 89% versus 75%,  $\chi^2(1, N = 187) = 5.42, p < .05$ . They also were less often associated with a celebratory or social motive than were NP foods (10% vs. 36%),  $\chi^2(1, N = 168) = 12.80, p < .001$ . OFFS were more often associated with show guests than with regulars (52% vs. 33%),  $\chi^2(1, N = 183) = 3.43, p < .07$ , and with supporting than major characters (46% vs. 30%),  $\chi^2(1, N = 186) = 4.30, p < .05$ . Last, adults (46%) were more often associated with OFFS than were children (32%),  $\chi^2(2, N = 169) = 7.39, p < .05$ .

In the tween programs, OFFS acts and incidentals were more likely to be found on the Disney channel shows (55%), than on Fox (30%) or ABC (15%),  $\chi^2(2, N = 324) = 12.31, p < .01$ . Eleven percent of OFFS were part of a meal, compared with 81% of the NP foods,  $\chi^2(1, N = 130) = 60.26, p < .001$ . Forty percent of OFFS were consumed outside the home, compared with 23% of the NP foods,  $\chi^2(1, N = 130) = 3.95, p < .05$ . Female teens (53%) were more often associated with OFFS than were males (34%),  $\chi^2(1, N = 130) = 4.70, p < .05$ . Parents were less often connected to OFFS—26% of the parents and 48% of the nonparents were linked with OFFS,  $\chi^2(1, N = 91) = 4.56, p < .05$ .

On adult programs (combining prime time shows and soaps), OFFS that were offered were more likely to be accepted than NP foods (42% vs. 21%),  $\chi^2(1, N = 90) = 4.59, p < .05$ . Fifty-five percent of OFFS were talked about,

compared with 33% of the NP foods,  $\chi^2(1, N = 90) = 4.59$ ,  $p < .05$ . Twenty-one percent of OFFS were part of a meal, compared with 58% of the NP foods,  $\chi^2(1, N = 90) = 12.08$ ,  $p < .01$ , and OFFS were less likely to feature preparation, 3% versus 17%,  $\chi^2(1, N = 90) = 4.79$ ,  $p < .05$ . Parents (11%) were less likely to be associated with OFFS, compared with 53% of nonparents,  $\chi^2(1, N = 42) = 8.89$ ,  $p < .01$ .

### Drink Analyses

Alcohol (H1) on prime time shows averaged 2.3 alcoholic drinks/hour, 2.4/hour on tween shows, 1.8/hour on soaps, and .8/hour on children's shows. These genre differences for acts and incidentals were not significant, and remain insignificant when the low incidence in the children's shows is combined with the tween show data. Thus, drinking alcohol was as common on the subset of shows favored by tweens as it was in adult shows. Analyses for acts alone yielded parallel findings.

In addition, comparing the average number of nonalcoholic drinks in these program types—children's (3.5), tween (4.9), prime time (3.7), and soaps (3.3)—also yielded no significant differences. However, the distribution of alcoholic and nonalcoholic acts and incidentals was significant, with 38% of all drinking on prime time being alcohol, compared with 35% on soaps, 33% on tween shows, and 19% on children's shows,  $\chi^2(3, N = 719) = 12.78$ ,  $p < .05$ . So, at least one of every three drinking incidents on the tween shows displayed alcohol.

The depiction of alcoholic and nonalcoholic beverages across different programming genres also was examined (RQ4). Positive and negative outcomes are absent because they did not occur with sufficient frequency for statistical analysis. Two patterns are consistent—differences in the presence of alcohol on different television networks and the association of alcohol with social and celebratory interactions. Nonsignificant findings are not reported.

Alcohol acts and incidentals were found only on Fox and ABC for tween programming (children's shows are excluded because they did not include enough acts for these comparisons); that is, 38% of the drinking acts on Fox and 50% on ABC were with alcohol, compared to zero on Disney,  $\chi^2(2, N = 181) = 34.65$ ,  $p < .001$ . On those youth shows, 39% of alcohol was offered, compared to 19% of nonalcoholic beverages,  $\chi^2(1, N = 76) = 3.85$ ,  $p = .05$ . Celebration/social motives accompanied 62% of the alcohol acts and 5% of the nonalcohol acts,  $\chi^2(1, N = 67) = 26.00$ ,  $p < .001$ . Male characters (82%) were more often associated with alcoholic acts than were female characters (18%),  $\chi^2(1, N = 76) = 7.74$ ,  $p < .01$ . Adult characters carried out 82% of the alcohol acts and 42% of the nonalcohol ones,  $\chi^2(2, N = 76) = 11.88$ ,  $p < .01$ . Parents were associated with 75% of the alcohol and 42% of the non-alcohol acts,  $\chi^2(1, N = 60) = 6.47$ ,  $p < .05$ .

There were fewest alcohol acts and incidentals on the CBS soaps: 52% of the drinking acts and incidentals on NBC, 51%

on ABC, and 21% on CBS were with alcohol,  $\chi^2(2, N = 187) = 18.90$ ,  $p < .001$ . Celebration/social motives were found with 58% of the alcohol acts and 17% of the nonalcohol acts on the soaps,  $\chi^2(1, N = 96) = 16.85$ ,  $p < .001$ .

On the prime time series, there were fewer alcohol acts and incidentals on the CBS prime time shows: 48% of the drinking acts on NBC were alcohol-related, compared with 20% on CBS,  $\chi^2(1, N = 242) = 17.95$ ,  $p < .001$  (ABC had no prime time series in the top 10). Nonalcoholic beverages were more often talked about (40%) than were alcoholic drinks (14%),  $\chi^2(1, N = 93) = 6.68$ ,  $p < .05$ . Celebration/social motives were identified for 27% of the alcohol acts and 0% of the nonalcohol acts,  $\chi^2(1, N = 82) = 15.01$ ,  $p < .001$ .

## DISCUSSION

Studies cited in the introduction demonstrate a strong emphasis on OFFS in television advertising, particularly commercials placed in shows directed at young audiences. This study's findings complement and extend that research. We have looked within fictional series targeted at children and compared that content with that of adult-oriented shows. The findings demonstrate that television stories aimed at young audiences feature OFFS and that those foods are present at a rate several times greater than is found in soaps and in prime time series. About one third of the foods depicted during the shows primarily contain oils, solid fats, and foods with added sugars. The hourly rates of appearance for OFFS foods range from approximately 6/hour on the children's series, 5/hour on the tweens, 2/hour on prime time to < 1/hour on the soaps.

Are they eating more because they are too young to drink? This may be true with the children's animated series, but the presence of alcohol in the tween shows is at a drink per hour rate that does not differ from the adult shows. Taken together, these findings suggest that heavy exposure may lead to potentially unhealthy food-related beliefs and behaviors. Further, this study is the first to index alcohol use on children's favorite shows and to compare it with programs aimed at older age groups. Although these data reflect TV from six seasons ago, there is little reason to doubt the presence of similar emphases today, given the relative consistency of our findings with earlier ones (cf. Kaufman, 1980; Mathios, Avery, Bisogni, & Shanahan, 1998). Clearly, that emphasis has been strengthened in the most recent content analysis of food advertising to children (Harrison & Marske, 2005). An obvious next step is to analyze and compare the advertising and the program content concurrently within shows and across series.

Here we systematically relate the findings to the positions outlined in the introduction—cultivation theory (for preferences/beliefs) and social cognitive theory (for behavioral modeling).

The findings support these cultivation propositions, especially for young viewers:

- Eating and drinking are relatively common activities on their favorite shows.
- OFFS foods are especially common on those shows.
- OFFS foods are typically eaten outside of regular meals, for example, as treats.
- Drinking alcohol is common on the favorite tween shows.
- Drinking alcohol is associated with social events and celebrations.

Thus, eating OFFS foods and drinking alcohol should be judged as more normative and more attractive to heavy TV viewers. If children repeatedly view unhealthy food images during the shows, at breaks in the shows, and between shows, the appeal of those foods should be stronger (Gerbner et al., 2002).

In addition, the findings support several social cognitive theory factors that influence the likelihood of imitative behavior (Bandura, 1986).

- The lack of negative consequences for eating OFFS foods makes them more attractive.
- The lack of negative consequences from drinking increases interest in alcohol.
- The stronger association of OFFS foods with adults on children's shows signifies approval of those foods by appropriate models.
- Greater consumption of OFFS foods on children's shows increases social acceptance.
- The characters are consuming "real" problematic foods.
- Social rewards and celebrations come with drinking alcohol.

These propositions require some elaboration. For the foods, the sheer rate of messages: doing something with OFFS foods 5 to 6 times per hour gives it prominence both for modeling and for preference development. The content attributes associated with the drinking measures are more consistent correlates of potentially risky behavior. Although drinking occurs less often than eating, from one fourth to one third of all drinking involves alcohol. Most surprising is that the rate of drinking on the shows aimed at tweens is not different from soaps and prime time series. Furthermore, drinking is fun: consistently and for each of the show genres, drinking alcohol is more often associated with social interactions and celebrations. That provides a prevalent social reward for drinking alcohol. Tweens, who average 3 to 4 hours of TV daily (Roberts et al., 2005), will watch 6 to 8 incidents of alcohol consumption daily. From such viewing, one can posit they will be more favorable to the idea of drinking alcohol—at an earlier age and more often.

Much of the incidental food and drinks found in this data set can be construed as "props" for the show's characters. Seldom are they central to a storyline. This means there typically is no content-based reason for these props to be fatty or sugary foods rather than dairy or grain, or for the

drink to be alcohol rather than water. Although some health-related products may be showing up serendipitously as background props, it is likely that many more appearances of food and alcohol products are the result of planned product-placements specifically designed to circumvent viewers' perceptual defenses that would otherwise be invoked in response to an obtrusive television commercial (Newell et al., 2006). Manufacturers know that prominent appearances of their products, portrayed in a manner that is congruent with the plot, can lead to greater brand awareness and positive attitudes (Gupta & Lord, 1998; Russell, 2002).

A content analysis such as this study cannot differentiate between portrayals of products that serendipitously appear versus those that are intentionally placed. However, in those instances in which production houses have the freedom to portray any sort of food or drink in a scene, we would recommend that healthier props be considered, especially on shows directed at younger audiences. A precedent for this suggestion may be found in the presence of "safe sex" messages in TV series. Two decades ago, there were none (Greenberg & Busselle, 1996; Greenberg & D'Alessio, 1985). With the onset of AIDS and related concerns, increases occurred (Kunkel, Eyal, Finnerty, Biely, & Donnerstein, 2005). We propose that "safe food" messages introduced into programs, for example, "How about eating some fruit instead of that candy bar?" or "Forget the beer, here's some water," are overdue, given the increasing national rates of obesity documented earlier. These "safe food" messages might be thought of as "inoculators" to be used by viewers to offset the bombardment of OFFS and alcohol appearances in shows and in commercials. Pfau et al. (2005) point out that many of us may be ill prepared with counterarguments, in the face of messages that consistently advocate (by word or behavior) in one direction. This is likely to be especially true for young viewers. Giving them reasons for passing up the fatty and sugary foods might strengthen their resolve to do so.

The trivial nature of much of the food and drink portrayed is further captured by a series of measures in this study that did not yield sufficient incidents for analysis. Foremost among these are the attempts to find motives, outcomes, and rewards associated with these eating and drinking behaviors. Such possible motives as health, anger, and hunger/thirst were largely absent. There also were virtually no positive or negative outcomes presented verbally or physically; that is, no one got sick or injured because they were drunk, or felt better and expressed great enjoyment of the food. Last, our attempt to assess the use of food and/or drink as reward and/or punishment also was stymied by lack of incidents. For these reasons, food and drink are not substantively important in these shows, which supports the proposed substitution of "healthier" props as well as "safe food" statements in television shows.

Until we also are able to demonstrate that the present emphasis on OFFS and alcohol has negative health consequences



for viewers, there remains primarily a speculative basis for requesting changes. As with any content analysis, these findings pose questions that require answers from the laboratory and the field.

## REFERENCES

- Atkin, C., & Block, M. (1983). Effectiveness of celebrity endorsers. *Journal of Advertising Research, 23*, 57–61.
- Avery, R. J., Mathios, A., Shanahan, J., & Bisogni, C. (1997). Food and nutrition messages communicated through prime-time television. *Journal of Public Policy & Marketing, 16*, 217–227.
- Balasubramanian, S. K., Karrh, J. A., & Patwardhan, H. (2006). Audience response to product placement: An integrative framework and future research agenda. *Journal of Advertising, 35*(3), 115–141.
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice Hall.
- Breed, W., & De Foe, J. R. (1981). The portrayals of the drinking process on prime-time television. *Journal of Communication, 31*, 58–67.
- Byrd-Bredbenner, C. (2002). Saturday morning children's television advertising: A longitudinal content analysis. *Family and Consumer Science Research Journal, 30*, 382–403.
- Byrd-Bredbenner, C., & Grasso, D. (2000a). Health, medicine, and food messages in television commercials during 1992 and 1998. *The Journal of School Health, 70*, 61–64.
- Byrd-Bredbenner, C., & Grasso, D. (2000b). What is television trying to make children swallow? A content analysis of the nutrition information in prime-time advertisements. *Journal of Nutrition Education and Behavior, 32*, 187–194.
- Centers for Disease Control and Prevention. (2004). *Deaths: Final data for 2004*. Retrieved March 7, 2007, from <http://www.cdc.gov/nchs/products/pubs/pubd/hestats/finaldeaths04/finaldeaths04.htm>
- Centers for Disease Control and Prevention. (2006). *Chartbook on trends in the health of Americans*. Retrieved March 1, 2007, from <http://www.cdc.gov/nchs/data/hus/06.pdf>
- Christenson, P. G., Hennikson, L., & Roberts, D. F. (2000). *Substance use in popular prime time television*. Washington, DC: Office of the National Drug Control Policy.
- Gerbner, G., Gross, L., Morgan, M., & Signorielli, N. (1981). Health and medicine on television. *New England Journal of Medicine, 305*, 901–904.
- Gerbner, G., Gross, L., Morgan, M., Signorielli, N., & Shanahan, J. (2002). Growing up with television: Cultivation processes. In J. Bryant & D. Zillmann (Eds.), *Media effects: Advances in theory and research* (pp. 43–68). Mahwah, NJ: Lawrence Erlbaum Associates, Inc.
- Greenberg, B. S., & Busselle, R. (1996). Soap operas and sexual activity: A decade later. *Journal of Communication, 46*, 153–160.
- Greenberg, B. S., & D'Alessio, D. (1985). The quantity and quality of sex in the soaps. *Journal of Broadcasting and Electronic Media, 29*, 309–321.
- Greenberg, B. S., Hofschire, L., Lachlan, L. K., Eastin, M., & Brownell, K. (2003). Portrayals of overweight and obese individuals on commercial television. *American Journal of Public Health, 93*, 1342–1348.
- Gupta, P. B., & Lord, K. R. (1998). Product placement in movies: The effect of prominence and mode on audience recall. *Journal of Current Issues and Research in Advertising, 20*(1), 47–59.
- Harrison, K. (1997). Does interpersonal attraction to thin media personalities promote eating disorders? *Journal of Broadcasting and Electronic Media, 41*, 478–500.
- Harrison, K. (2000). The body electric: Thin-ideal media and eating disorders in adolescents. *Journal of Communication, 50*, 119–143.
- Harrison, K. (2005). Is "fat free" good for me? A panel study of television viewing and children's nutritional knowledge and reasoning. *Health Communication, 17*, 117–132.
- Harrison, K., & Marske, A. L. (2005). Nutritional content of foods advertised during the television programs children watch most. *American Journal of Public Health, 95*, 1568–1574.
- Hofschire, L. J., & Greenberg, B. S. (2002). Media's impact on adolescents' body dissatisfaction. In J. D. Brown, J. R. Steele & K. Walsh-Childers (Eds.), *Sexual teens, sexual media* (pp. 125–149). Mahwah, NJ: Lawrence Erlbaum Associates, Inc.
- Kaiser Family Foundation. (2004a). *Entertainment education and health in the United States*. Retrieved November 5, 2007, from <http://www.kff.org/entmedia/7047.cfm>
- Kaiser Family Foundation. (2004b). *The role of media in childhood obesity*. Retrieved April 5, 2004, from <http://www.kff.org/entmedia/7030.cfm>
- Kaufman, L. (1980). Prime-time nutrition. *Journal of Communication, 30*, 37–46.
- Kunkel, D., Eyal, K., Finnerty, K., Biely, E., & Donnerstein, E. (2005). *Sex on TV 4*. Retrieved June 6, 2007, from <http://www.kff.org/entmedia/upload/Sex-on-TV-4-Full-Report.pdf>
- La Ferle, C., & Edwards, S. M. (2006). Product placement: How brands appear on television. *Journal of Advertising, 35*(4), 65–86.
- Mathios, A., Avery, R., Bisogni, C., & Shanahan, J. (1998). Alcohol portrayal on prime-time television: Manifest and latent messages. *Journal of Studies on Alcohol, 59*, 305–310.
- Newell, J., Salmon, C. T., & Chang, S. (2006). The hidden history of product placement. *Journal of Broadcasting and Electronic Media, 50*, 575–594.
- Pfau, M., Ivanov, B., Houston, B., Haigh, M., Sims, J., Gilchrist, E., et al. (2005). Inoculation and mental processing: The instrumental role of associative networks in the process of resistance to counterattitudinal influence. *Communication Monographs, 72*, 414–441.
- Roberts, D. F., Foehr, U. G., & Rideout, V. J. (2005). *Generation m: Media in the lives of 8–18 year-olds*. Retrieved May 1, 2005, from <http://www.kff.org>
- Russell, C. A. (2002). Investigating the effectiveness of product placements in television shows: The role of modality and plot connection congruence on brand memory and attitude. *Journal of Consumer Research, 29*, 306–319.
- Signorielli, N., & Lears, M. (1992). Television and children's conceptions of nutrition: Unhealthy messages. *Health Communication, 4*, 245–257.
- Signorielli, N., & Staples, J. (1997). Television and children's conceptions of nutrition. *Health Communication, 9*, 289–301.
- Singhal, A., & Rogers, E. (1999). *Entertainment education: A communication strategy for social change*. Mahwah, NJ: Lawrence Erlbaum Associates, Inc.
- Story, M., & Faulkner, P. (1990). The prime time diet: A content analysis of eating behavior and food messages in television program content and commercials. *American Journal of Public Health, 80*, 738–740.
- United States Department of Agriculture. (2005). *My pyramid: Steps to a healthier you*. Retrieved October 1, 2005, from <http://www.mypyramid.gov>
- Wallack, L., Breed, W., & Cruz, J. (1987). Alcohol on prime-time television. *Journal of Studies on Alcohol, 48*, 33–38.
- Wilson, B. (2007). *Violent television programming and its impact on children* (FCC 07–50). Washington, DC: Federal Communications Commission.