

Prime-Time Health: An Analysis of Health Content In Television Commercials Broadcast During Programs Viewed Heavily by Children

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Abstract

For Americans of all ages, television is the primary source of health information. A major concern is the inadequate, inaccurate, and/or questionable content of messages embedded in television programs and commercials. To facilitate our work as health educators, an up-to-date description of the health-related content (HRC) shown on television is needed. Thus, the purpose of this study was to identify, content analyze, and describe the HRC shown in commercials aired during 17.5 hours of the 1998 top-ranked, prime-time network shows for the age 2 to 11 year-old category.

Introduction

Commercials...."They are as pervasive as roaches, as persuasive as the weather, as popular as Princess Diana. They adorn our clothes, our luggage, our sneakers and our hats. They are ubiquitous on television, unavoidable in magazines and inevitable on the Internet. The average American, it is estimated, is pelted by some 3,000 advertising messages a day" (Kakutani, 1997, p 32).

For Americans of all ages, television is their primary source of health information (Dan, 1995; Nutrition Trends Survey, 1995). However, the quality of televised health information has been criticized for a variety of reasons. A major concern is the inadequate, inaccurate, and/or questionable content of messages embedded in television programs and commercials (Levy, 1996; Ortega, Andres, Jimenez, & Ortega, 1995; Smith, Trivax, Zuehlke, Lowinger, & Nghiem, 1972). For example, scenes showing slender actors eating high fat foods, people consuming alcohol or smoking cigarettes, kids playing with matches, or individuals resolving disagreements with violence often are considered inadequate because the consequences of these behaviors are seldom shown (Anonymous, 1993; Gerbner, Gross, Morgan, & Signorelli, 1981; Horovitz & Wells, 1997; Kaufman, 1980; Price, Merrill, & Clause, 1992; Willis & Strasburger, 1998). The impact of television on children is a particular concern because they are very impressionable and tend to have difficulty in both interpreting information provided via television and discerning reality from fantasy (Ambrosino, 1972;

Centerwall, 1992; Condry & Freund, 1989; Van Evra, 1998). Moreover, the active involvement of children with television, averaging three to four hours daily, has important implications for their cognitive, social, emotional, and behavioral development (Nielsen Media Research, 1998; Van Evra, 1998). This large time segment invested in television viewing means that this medium is a disproportionately large informational and attitudinal source for children (Van Evra, 1998). The potential effects of questionable content on children's health behaviors is a subject of great interest because it is widely acknowledged that television may influence many types of behaviors ranging from destructive (Anonymous, 1993; Garlington, 1977; Horovitz & Wells, 1977; Medved, 1998; Willis & Strasburger, 1998) to desirable (Armitage, Rigers, Riggulfsford, Bradley, Moss, & Easty, 1991; Della Cava, 1993; Herlitz, Hartford, Karlson, Risenfors, Blohm, Luepker, Wennerblom, & Holmberg, 1991; Rushton & Owen, 1975).

To facilitate our work as health educators, we need to have an up-to-date description of the health-related content (HRC) shown on television. An awareness of what television is teaching its "students" also can help us to more effectively do our job as health educators. After all, children spend more time watching television each year than they do attending school (Nielsen Media Research, 1998). Earlier studies have investigated only certain specific types of HRC (i.e., those related to nutrition, smoking, alcohol, mental health, or sex) (Brown, 1977; Cotugna, 1988; Cruz & Wallack, 1986; Gussow, 1972; Kaufman, 1980; Kotz & Story, 1994; Lank, Vickery, Cotugna, & Shade, 1992; Lowery & Towles, 1989; Story & Faulkner, 1990; Wallack, Breed,

& Cruz, 1987; Wallack, Grube, Madden, & Breed, 1990; Way, 1983). And, studies focusing on television programming watched by children tend to be limited to Saturday morning broadcasts (Brown, 1977; Cotugna, 1988; Story & Faulkner, 1990; Gerbner, et al., 1981; Gussow, 1972). Few studies have examined all types of HRC in prime-time commercials despite the facts that prime-time has the highest advertising costs (Gerbner, et al., 1981; Harris, 1994; Wallack & Dorfman, 1992) and that children's viewing of television is heaviest during prime-time (Nielsen Media Research, 1998). [Weekend daytime 'children's programming' equals only about one-fifth of the total time children spend watching prime-time television (Nielsen Media Research, 1998).] No studies examining the HRC in commercials broadcast during prime-time shows watched frequently by children 2 to 11-years old according to Nielsen Media Research could be located. Thus, the purpose of this study was to identify, content analyze, and describe the HRC shown in commercials aired during the top-ranked prime-time [i.e., 8:00 PM to 11:00 PM Monday through Saturday and 7:00 PM to 11:00 PM Sunday (Nielsen Media Research, 1998)] network (i.e., ABC, CBS, NBC, Fox, and WB) shows for the age 2 to 11 year-old category.

Methodology

Sample

A composite week of the commercials broadcast during the top-ranked, prime-time network programs for the age 2 to 11 population segment was constructed for October, 1998 using Nielsen Media Research season-to-date rankings. Mid-October was selected because it did not have a major holiday or activity by the network (such as sweep weeks) that would affect usual television program schedules or advertising. Only the commercials aired in programs on major networks were included because networks have the greatest proportion of viewers, a sizable proportion of the U.S. population either lacks access or does not subscribe to cable, and cable programming varies with geographic regions (Nielsen Media Research, 1998). Only commercials appearing in a regularly scheduled series were included in this study.

The 17.5-hours of programming recorded for this study occurred over a period of two weeks because some programs were pre-empted or not scheduled for the data collection week. Thus, the 17.5-hours recorded represent a composite week of prime-time commercials. The total sample was 700 commercials, 298 (43%) of which contained HRC. For the purposes of this study,

commercial time was defined as all non-program time and included advertisements, public service announcements, and promotions for television programs.

Instrument

The HRC in the commercials aired during the programs was content analyzed. HRC was defined as any visual or verbal reference to mental or physical illness, health care professionals, medical treatments (e.g., medications, surgery), substance use (i.e., tobacco, alcohol, drugs), food/nutrition, fitness, or safety (Gerbner, et al., 1981; Wallack & Dorfman, 1992). This study employed content analysis methodology because it enabled the researchers to examine and describe the frequencies, meanings, and use of visual and linguistic elements in television commercials in an objective, systematic, and quantitative manner (Berelson, 1971; Pratt & Pratt, 1995). Content analysis also allows researchers to draw "replicable and valid inferences from the data to their context" (Krippendorff, 1980, p.21) which, in the case of this study, contributes to our understanding of how television commercials can influence health knowledge and attitudes (Pratt & Pratt, 1995). The purpose of this methodology is to "provide knowledge, new insights, a representation of 'facts', and a guide to action" (Krippendorff, 1980, p.21).

The instrument used in this study was based on those employed in previously reported studies (Barr, 1989; Cotugna, 1988; Kotz & Story, 1994; Lohmann & Kant, 1998; Smith, et al., 1972; Story & Faulkner, 1990; Wallack & Dorfman, 1992; Winick, Williamson, Chuzmir, & Winick, 1973). The instrument was pilot tested by four trained senior- or graduate-level nutrition and health students and two health education researchers who independently content analyzed the commercials aired during four hours of prime-time television programming not included in this study. Individuals involved in the pilot test were also requested to indicate whether the instrument permitted complete descriptions of the commercials. The instrument was revised, tested again by two health education researchers who independently content analyzed the commercials broadcast during four additional hours of prime-time television programming not included in this study, and then further refined.

The final instrument included two parts. Information about the program during which the commercial was aired (e.g., program name and type, network, broadcast date and time) and information about the commercial (e.g., commercial length and type, name and type of product/service advertised) were

recorded in Part 1. The HRC embedded in the commercial was recorded in Part 2 of the instrument. HRC also was categorized as being a) explicit or implicit, and b) accurate, accurate but misleading or incomplete, or inaccurate. Explicit HRC was defined as information that directly linked the advertised product or service with a health outcome (e.g., improved health or diet, reduced risk factors) and overtly made this link for the viewer (Wallack & Dorfman, 1992). Implicit HRC implied a link between the advertised product or service and a health outcome, but did not explicitly establish this link for viewers (Wallack & Dorfman, 1992). For instance, a commercial that stated that a drug relieved the aches and pains of arthritis was coded as explicit. A commercial that implied using a product was linked to health, perhaps by describing ingredients (e.g., natural, kavakava) or a particular quality (e.g., low fat), without overtly linking the product to health, was judged to be implicit because it implied that the product improved health. Implicit commercials relied on the viewer to make the connection between the product and health. Accuracy is an attempt to judge the HRC's freedom from error while not misleading the viewer (Smith, et al., 1972). An example of accurate, but misleading HRC is a commercial that touts a food's low fat content without revealing that its calorie content is nearly equal to its higher fat counterpart. An example of an accurate, but incomplete HRC is one that promotes the ability of a mouthwash to fight bad breath without indicating that this condition may be a symptom of a disease.

Data Collection

The instrument developed for this study was used to analyze the commercials in the 17.5 hours of videotaped programs. Two health education researchers reviewed the instrument and discussed pertinent definitions before beginning data collection in order to establish uniformity in the instrument's recording protocol and definitions. The researchers jointly viewed and coded the commercials in an hour of representative prime-time programs (two 30-minute shows) that were not a part of the study sample. They then independently watched and coded the commercials in an additional hour (two 30-minute shows) of prime-time programs and compared their coding. They repeated this step three times at which point a comparison of their coding indicated either unanimous or near-unanimous agreement. The test-retest method was used to determine intra-observer reliability. That is, the researchers independently viewed and coded the commercials in two 30-minute prime-time programs that were not part of the sample twice (2 weeks apart).

The intra-observer agreement rates were 0.93 and 0.92 for the two researchers, calculated using Holsti's formula, indicating a high degree of consistency (Holsti, 1969).

For the actual study, each researcher independently viewed and coded all the commercials in the sample of 17.5 hours of programs. The procedure was to first view each commercial in its entirety without recording any data, then code data from the commercial using the study instrument. The researcher could stop, restart, and/or rewind the videotape, use slow motion video, and/or use closed captioning information, as needed, to ensure that all relevant information was completely and accurately recorded. Then, the researchers compared their coding and, in the few cases where coding differed, they discussed the differences in order to reach a unanimous decision.

Results

The 17.5 hours of programming included 17 half-hour and 9 one-hour programs. During the study period, a total of 700 commercials were broadcast; of these 467 (67%) advertisements were for products and services, 223 (32%) promotions were for upcoming television programs, and 10 (1%) were PSAs. A total of 258 minutes, or one-quarter of the 17.5 hour sample, was commercial time. The number of commercials per half-hour ranged from 15 to 25, with the mean being 20. The mean commercial length was 22.09 ± 10.11 SD seconds. More than 4 in 10 (43%, $n=298$) of all the commercials sampled contained HRC in the form of verbal, written, and/or visual references. Therefore, on average, approximately 17 commercials containing HRC were shown every hour.

Advertisements for Products and Services

Advertisements in this study were defined from the consumer's perspective. Specifically, all market-related information for products or services, except upcoming television programs, provided by an identified sponsor that were broadcast during non-program time were categorized as an advertisement. Advertisements for products and services accounted for 199 minutes (77%) of the non-program time. These advertisements ranged in length from 5 to 60 seconds and had a mean length of 25.6 ± 8.7 SD seconds. Health-related content occurred in 51% ($n=231$) of the 467 advertisements analyzed (see Table 1).

The advertisements were grouped by product category: medications, foods and beverages, apparel, health and beauty aids (e.g., cosmetics, shampoo), entertainment (e.g., travel destinations, magazines, newspapers, videotapes, movies, toys), automotive, retail stores (e.g., Sears), electronics (e.g., computers, telephones, internet search engines, batteries), financial

Table 1. Frequency of Commercial Types and Percent Containing Health-Related Content (HRC)

Commercial Type	# Commercials (%)	# with HRC (%)
Advertisements For Products And Services	467 (66%)	231 (51%)
Promotions For Upcoming Television Programs	223 (32%)	62 (28%)
Public Service Announcements	10 (1%)	5 (50%)
Total	700 (100%)	298 (43%)

services (e.g., credit cards, insurance), utilities (e.g., telephone), and miscellaneous. Table 2 reports the total number of advertisements in each product category as well as the proportion of each category that included HRC.

Medicine Advertisements

All 29 advertisements for medicine explicitly promoted these products using health factors (e.g., relieves symptoms, is alcohol free, will decrease hunger). Four of these advertisements (14%) were for prescription medications while the remainder were for

over-the-counter (OTC) medications. Two of the advertisements for prescription medications were for specific drugs (i.e., Meridia and Propecia) and elucidated numerous potential side-effects, while two others were for drug companies producing unnamed medications to treat erectile dysfunction and the symptoms of menopause. The drug company advertisements encouraged viewers to speak with their physicians about these problems and possible drug treatment.

Table 2. Frequency of Advertisements (n=700) in Each Product Category and Number Including Health-Related Content (HRC)

Category	# Advertisements (%)	# with HRC (%)
Medications	29 (6)	29 (100)
Foods And Beverages	108 (23)	108 (100)
Health And Beauty Aids	32 (7)	12 (38)
Apparel	21 (5)	6 (29)
Entertainment	99 (21)	27 (27)
Automotive	57 (12)	8 (14)
Retail Stores	40 (9)	11 (28)
Electronics	30 (6)	12 (40)
Financial Services	24 (5)	10 (42)
Utilities	14 (3)	4 (29)
Miscellaneous	13 (3)	4 (31)
Total	467 (100)	231 (49)

All OTC medications warned viewers to use the drug as directed, however only two mentioned potential side effects, another two warned that interactions between drugs were possible, and just one told viewers to see restrictions on the package. None of the OTC advertisements warned viewers that their symptoms (e.g., heartburn, sore throat, headaches, cough) could be the symptoms of a more serious disease. The format of two OTC pain relief medication advertisements was unique in that they were presented in a manner that mimicked PSAs. That is, the advertiser devoted most

of the time in one 60-second advertisement to describing how prescription drugs may interact with OTC drugs, encouraging individuals to read medication labels, and exhorting them to dispose of expired medications. Only at the end did the advertisement identify the product and tell viewers that this pain reliever is the one doctors recommend to most patients on prescription medications. In a second, unrelated advertisement, the advertiser emphasized the impact of some OTC cold medications on blood pressure, encouraged viewers to get the facts from the American

Heart Association, and ended by stating that the advertised product will not raise your blood pressure. Although no one was shown actually using any of the medications (prescription or OTC), use was implied in 83 percent (n=24) of the advertisements.

Like previously reported research (Tsao, 1997) the OTC drug advertisements tended to highlight what the drug will do for the user and seldom addressed the reasons why the drug should be ingested. Moreover, the use of most drugs was portrayed as being an easy, rapid, and risk-free method for relieving symptoms. Advertisements tended to cultivate a 'magic of medicine' belief and encouraged a casual attitude toward drug usage.

Food and Beverage Advertisements

Foods and beverages accounted for 23 percent (108 of 467) of all advertisements, which is somewhat less than the 28 percent reported 20 years earlier by Brown (1977) and Kaufman (1980). Consumer-related factors, such as taste, convenience, and economy, were the themes most commonly used to sell foods and beverages. In fact, consumer-related factors were used to sell virtually all (n=96; 89%) foods and beverages advertised in the sample. Almost 30 percent (n=30) of the advertisements using consumer-related factors also promoted foods and beverages using health or nutrition factors (e.g., pointing out that the food contains vitamins, is low in sugar, is healthy or 'good for you'). Rarely (n=11; 10%) were food and nutrition factors alone used to promote a food or beverage. The majority of the advertisements using health or nutrition factors did so in an explicit fashion. These findings are congruent with earlier research reporting that television, as well as magazine, advertisements for food products tend to emphasize consumer-related factors, particularly taste, rather than health or nutrition factors (Barr, 1989; Hickman, Gates, & Dowdy, 1993; Lord, Eastlack, & Stanton, 1987; Lohmann & Kant, 1998; Ortega, et al., 1995).

Foods and beverages were classified into eight categories adapted from the USDA Food Guide Pyramid (Whitney & Rolfes, 1999): 1) breads and cereals, 2) dairy products, 3) meat (i.e., eggs, meat, poultry, fish, shellfish, nuts, and seeds), 4) fruits and fruit juices, 5) vegetables and vegetable juices, 6) fats, sweets, and alcohol (e.g., butter, oils, salad dressing, syrup, candy, soft drinks, wine), 7) fast foods (e.g., foods that fit into more than one category), and 8) miscellaneous (e.g., seasonings, calorie free beverages, nutrient supplements, and other foods that did not fit into the other categories). Figure 1 compares the

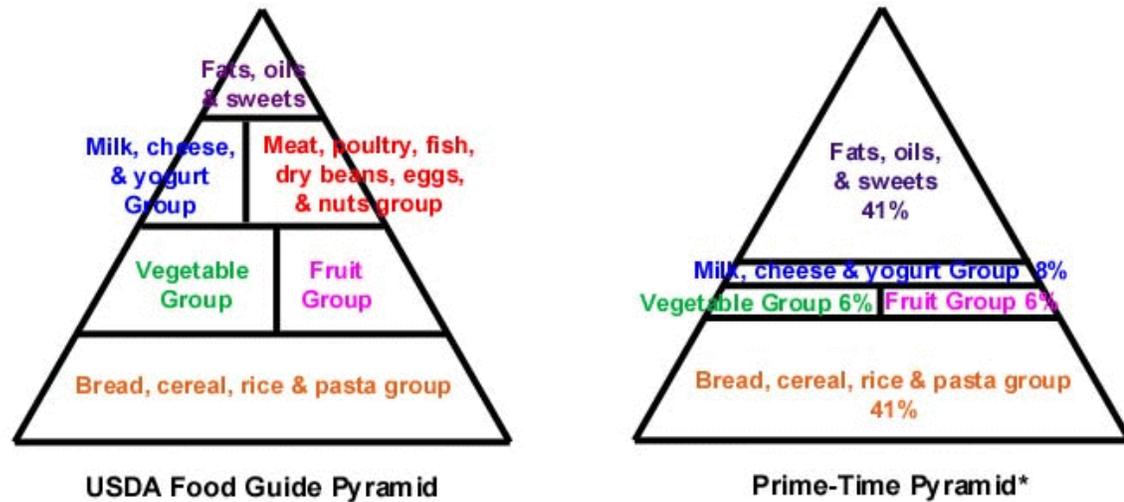
USDA Food Guide Pyramid to a food guide pyramid constructed by grouping the foods advertised during the study sample. The USDA Food Guide Pyramid is designed to illustrate the concept that foods nearer the base of the pyramid should be consumed more frequently and in greater quantities than foods located nearer the pyramid top. The foods advertised during the sampled television programs were mainly fast foods, in fact 4 of every 10 advertisements advertised fast food items.

Although fast foods do not fit into a single food guide pyramid category, advertisers seem to have made these high fat, low fiber, and in some cases, high sugar, foods a category of their own. Of the foods that fit into a single food category in the food guide pyramid, most were in the Breads and Cereals or Fats, Sweets, and Alcohol groups. Although Breads and Cereals should form the base of our diets, nearly half (48%) of the advertised foods classified as being in the Breads and Cereals group were either high in fat (e.g., crackers, croissant) or high in sugar (e.g., cakes, pastries) and none were whole grain foods. Advertisements for fruits, vegetables, and dairy products were virtually nonexistent. A comparison of the pyramid constructed in this study with one constructed for food advertisements aired on Saturday mornings reveals striking similarities—the diet advertised on prime-time television is indeed the antithesis of the recommended diet (Kotz & Story, 1994). Health educators have long expressed concern about the types of foods advertised during time periods devoted to children's programming (e.g., Saturday mornings) (Brown, 1977; Cotugna, 1987; Kotz & Story, 1994), however the findings of this study appear to indicate that this concern should also extend to other viewing times. This study's findings reveal that television viewers are also bombarded with messages to consume low nutrient density foods during prime-time, the most heavily watched time period (Nielsen Media Research, 1998).

Personal Product Advertisements

HRC also was found in personal products like health and beauty aids (HBA) and apparel (e.g., jeans, sneakers). More than one-third (n=12) of the 32 HBA advertisements (e.g., shampoo, cosmetics, toothpaste) included HRC. Of the HBA advertisements with HRC, five identified nutrients (e.g., vitamin E) as ingredients in the product and implied they were important for healthy hair, three explicitly indicated that a lotion would heal and/or nourish skin, two explicitly stated that a soap would cure or prevent acne, and two explicitly told viewers to brush and floss regularly and

Figure 1
 USDA Food Guide Pyramid (left) compared with the Prime-Time Pyramid (right) which is based on data from this study. **NOTE:** The Prime-Time Pyramid does not include advertisements for fast foods or miscellaneous foods because either they do not fit into any category or because they fit into more than one category.



*Percents exceed 100 due to rounding.

indicated the product would help reduce plaque. Most of these advertisements contained misleading information. Of the 21 advertisements for apparel, six (29%) contained implicit HRC: four sneaker advertisements visually depicted exercise and two clothing advertisements included visual images of foods.

Other Advertisements

HRC was not confined to the medicine, food and beverages, and personal products categories. In fact, like the findings presented by Wallack and Dorfman (1992), all other categories included HRC. For example, more than one-fourth (n=27) of the entertainment advertisements contained implicit HRC, such as verbal, written, and visual references to food as well as food-related activities (e.g., cooking, serving food). Of the 30 electronics advertisements, 12 (40%) contained HRC with all but one being implicit. In the Retail Stores category, more than one-fourth of the advertisements contained implicit HRC including visual and verbal references to foods and a hospital

emergency scene as the background for the advertisement. Approximately 42 percent of the 24 advertisements for financial services contained implicit HRC, such as verbal and visual references to food and food-related activities such as food purchasing. One of the financial services advertisements also described treatments for degenerative diseases (e.g., heart disease, cancer) covered by a health insurer, but there was no mention of disease prevention. The HRC in automotive advertisements was limited to seat belt use and braking systems as well as background eating. In the utilities category, all HRC was implicit and food related. The HRC in the miscellaneous category was either food related or claims that household cleaning products disinfect surfaces.

Promotions for Upcoming Television Programs

Promotions for upcoming television programs accounted for 56 minutes (22%) of the non-program time. These promotions ranged in length from 3 to 60 seconds with a mean length of 14.95±8.7SD seconds. More than one-quarter (28%, n=62) of the 223

advertisements in the study sample included HRC (Table 1).

Promotions for upcoming news shows frequently used an explicit safety or health issue to attract viewers. Some promotions featured health and safety issues that likely affected a large proportion of the viewing audience such as how to protect kids from guns, the effects of smoking on sex, and pregnancy. Other promotions were designed to alarm viewers enough to motivate them to watch the show. Examples of health and safety alarms were the risk of leaving children in a hot car, food safety, downhill skiing dangers (this was tied to a recent skiing death), and hazards associated with a new fad diet. Still other promotions were designed to attract individuals who wanted to improve their quality of life and cope with aging; these promotions included hormone treatments that reverse the effects of aging, sciatica problems, and Viagra. The sensational manner in which health-related stories are advertised may trivialize and/or oversimplify serious health issues (Wallack & Dorfman, 1992).

Promotions for upcoming, non-news type television shows tended to be clips from the program itself. The HRC in promotions for these programs was implicit. Background smoking, eating, and beer and wine drinking as well as hospital/medical treatment settings were the most commonly shown HRC in promotions for upcoming non-news type television programs. Although this study did not analyze television programs, the frequency with which HRC appeared in the promotions likely indicates that viewers are exposed to significant amounts of health information during program as well as commercial time. Although the impact of televised smoking, eating, and drinking images on viewers' behaviors is not clear, researchers have reported that smoking images in youth magazines may serve to reinforce smoking and that beer advertising may predispose upper elementary age students to drinking (Amos, Currie, Gray, & Elton, 1998; Grube & Wallack, 1994).

Public Service Announcements

PSAs were virtually non-existent during prime-time, accounting for only 2.7 minutes (1%) of the non-program time. PSAs had a length ranging from 1 to 30 seconds with the average being 16.1 ± 13.1 SD seconds. Half ($n=5$) of the 10 PSAs promoted learning, reading, child supervision (Do you know where your children are?), and civic group participation. The other half of the PSAs focused on a health issue (Table 1).

One of the five PSAs with HRC addressed domestic violence and encouraged viewers to call the

National Domestic Violence Hotline. The other four PSAs with HRC focused on drug abuse and were sponsored by the Partnership for a Drug Free America. Three of the drug-related PSAs were directed specifically to young teens and had the underlying message that 'you can make your own rules—you don't need to do what others do', 'don't use pot because you think everyone else does', and 'the average kid doesn't use pot'. The fourth PSA addressing drug abuse was directed to parents. It was informational in nature in that it pointed out the wide variety of common household cleaning agents available for children and teens to sniff.

PSAs are recognized as a viable method for widespread delivery of important public health information because they can reach millions of viewers in a single broadcast (Klingler & Aune, 1994). Unfortunately, the amount of time television stations devote to PSAs is short and has continually diminished. When compared to previously reported research (Wallack & Dorfman, 1992), this study indicates that the limited amount of time allotted to PSAs during prime-time hours in 1989 has declined. Partnership for a Drug Free America continues to be the sponsor of drug abuse PSAs. The observation made by Wallack and Dorfman (1992) that none of the PSAs sampled in 1989 addressed the three leading behavioral risk factors for chronic disease in the U.S. (i.e., alcohol, tobacco, or diet) still holds true today.

Conclusion

This study indicates that prime-time television commercials frequently include HRC. And, the HRC is not always reflective of current health recommendations. For example, the majority of food and beverage advertisements promote products health professionals recommend Americans eat in only limited amounts. This inverse relationship between advertising of various foods and their importance in a healthy diet may distract consumers from focusing on foods that should comprise the bulk of their diets and persuade them to adopt eating patterns incongruent with the recommendations (Kotz & Story, 1994; Lohmann & Kant, 1998). The health of the majority of Americans is already in danger because they eat too much fat and too little produce and whole grains. The 'miracle medicine' attitude cultivated in many medication advertisements coupled with a dearth of information on potential side effects may contribute to the gratuitous, casual use of OTC medications. Advertisements implying that wine contributes to feelings of passion, romance, and happiness may predispose children to

drinking (Grube & Wallack, 1994). Young children are particularly vulnerable to misleading and inaccurate television messages because they are both “cognitively incapable of making informed decisions about the products advertised” (Kotz & Story, 1994, p1299) and easily influenced by the media (Adler, Lesser, Meringoff, Robertson, Rossiter, & Ward, 1980; Condry & Freund, 1989; Robertson & Rossiter, 1974; Sylvester, Achterberg, & Williams, 1995).

The results of this study have generated many questions, such as: What is the role of TV in the process of "health socialization"? What are the implications of exposure to the less than healthful content embedded in television advertising? Does exposure to HRC really lead to the actual acquisition of health-related knowledge, attitudes, and behaviors? Previous research evidence indicates that there is no doubt that television can influence behavior. Several studies have found a direct correlation between television watching and requests, purchases, and consumption of foods advertised on television (Clancy-Hepburn, Hickey, & Nevill, 1974; Galst, 1980; Galst & White, 1976; Goldberg, Gorn, & Gibson, 1978; Gorn & Goldberg, 1982; Taras, Sallis, Patterson, Nader, & Nelson, 1989). Researchers have found that children who view altruistic behaviors such as friendliness, sharing, cooperation, self-control, and generosity on TV tend to later behave similarly in interactions with peers (Gorn, Goldberg, & Kanungo, 1976; Ruston & Owen, 1975). Researchers also have found that viewing violent acts on television increases aggressive behavior in children (Venbrux, Kettl, & Bixler, 1993). In addition, research has demonstrated an association between television viewing and various areas of child development such as racial and gender role stereotypes, decreased interest in other activities, as well as poor health habits and attitudes (Harris, 1994; Venbrux, et al., 1993; Zillman, Bryant, & Huston, 1994). An incident of playing with fire on the program *Beavis and Butt-head* that ran contrary to fire safety recommendations has been reported to have had devastating results (Anonymous, 1993) and a *Nightline* episode showing how to make a pipe bomb nearly lead to disastrous consequences when a 10-year old actually constructed such a bomb (Anonymous, 1994).

Television is a formidable educator that has both pervasive and cumulative effects. Television watching is so much a part of everyday American life that it must be recognized as a major socializing influence almost comparable to the family, school, and religion (Pearl, Bouthilet, & Lazar, 1982). Thus, it is imperative the

health educators be aware of what television is teaching its ‘students’, who also are our students, and recognize the potential effects of television on health-related knowledge, attitudes, and behaviors.

Although this study was limited to prime-time, network advertising messages during a composite week in 1998, the findings suggests that health educators need to become involved as a resource for advertisers and encourage them to be more sensitive to the perspective, context, and accuracy of information provided in advertisements as well as the health risks of viewers (Borra, Earl, & Hogan, 1998). Educators and advertisers should explore how to harness television’s potential for reaching audiences with positive health-related messages (Borzekowski, 1996). Innovative school programs that teach children how to watch television critically and that teach parents appropriate television watching management skills and strategies also are needed (Strasburger, 1986). In addition, further research should focus on other broadcast time periods and HRC embedded in programs in order to document whether conflicting messages are being sent to viewers. More research is needed to determine the comprehension, interpretation, and believability of HRC by children.

An ongoing dilemma with content analyses is whether the viewer sees what the researcher sees. Nonetheless, content analyses like the findings reported here can serve as a springboard for media effects studies that assess the messages presented by television and the perceptions of viewers. Research on the effect of television on children must become a top priority in health education because children are avid consumers of TV and they are a potentially vulnerable audience (Condry & Freund, 1989; Sylvester, et al., 1995).

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