*J Community Nutrition* 5(4) : 230~238, 2003

# American Television : A Source of Nutrition Education and Information

**Carol Byrd-Bredbenner**†

*Extension Specialist in Nutrition, Rutgers University, New Brunswick, USA*

## ABSTRACT

Television is a powerful and persuasive teacher. It has the potential to influence perceptions, knowledge, beliefs, and behaviors, thus nutritionists need to be aware of the nutrition-related information (NRI) in television programming and the effect this information has on viewers. The purpose of this article was to review research published in peer-reviewed journals between 1988 and 2003 that examined the NRI embedded in American television programming, which is exported to over 125 nations, and its impact on nutrition knowledge, attitudes, and/or behaviors. This review revealed that, for the past 15 years, NRI was commonly included in both television advertisements and shows. Advertised foods were mainly high in fat, sodium, and/or sugar. In addition, the NRI embedded in food advertisements tended to be misleading or inaccurate. Prime-time television shows included numerous NRI containing scenes every hour, with situation comedies having the most and real-life re-enactment shows the least. Overall, low nutrient density foods accounted for approximately 40 percent or more of all food references on prime-time television shows. In television shows, foods were mostly consumed as snacks rather than meals and children often ate more nutritious foods than adults. Although relatively few studies have examined the impact of television programming on viewers, those that do exist indicate that as children watch more television, nutrition knowledge and understanding declines while misconceptions about nutrition increase. Advertising influences children's food purchase requests and subsequent purchases by adults, with the most requested and purchased foods being high in sugar, fat, and/or salt foods. Existing research indicates that television must be acknowledged as a major source of NRI and a potentially powerful influence on dietary practices. (*J Community Nutrition* 5(4) : 230~238, 2003)

**KEY WORDS** : television · nutrition · advertising.

## Introduction

Television watching is a popular leisure time activity in all but the most remote areas of the world. In fact, watching television is often the most time-consuming leisure activity of people of all ages and nationalities. Those living in Japan, Russia, the Republic of Korea, United Kingdom, and United States, for example, watch approximately three hours of television each day (Anonymous 2003 ; Australian Children's Television Foundation 2003 ; British Broadcasting Corporation 2003 ; International Study Center, Boston College, Lynch School of Education 1999 ; Japan Information Network 2003 ; Nielsen Media Research 1998).

In addition to its entertainment value, television also can be a poweul and persuasive teacher about any topic imaginable, including nutrition and health. As Gerbner et al point out, "television is only one of many influences in life, [but] it may well be the single most common and pervasive source of health information" (Gerbner, et al. 1981). In fact, worldwide, television is named as a primary source of health information (European Commission 2003 ; National Institutes of Health & National Science Foundation 1993 ; National Science Board 2002 ; Wong, et al. 2002). Also, considerable evidence exists that television is a potent influence on knowledge, attitudes, behaviors, and values and its impact may be more profound than school, religion, parents, or books (Bandura 1977 ; Everett, et al. 1998 ; Pearl, et al. 1982 ; Signorielli, Staples 1997 ; Smith, et al. 1972 ; Watkins 1985).

Concerns about the quality of televised information and the effect of programming are many and have been voiced by

†**Corresponding author** : Carol Byrd-Bredbenner, Professor/Extension Specialist in Nutrition, Rutgers University 88 Lipman Drive New Brunswick, NJ 08901, USA
Tel : (732) 932-5000, Fax : (732) 932-6633
E-mail : bredbenner@aesop.rutgers.edu

myriad organizations including numerous public health authorities such as the British Medical Association (2000), American Pediatric Association (2000), Australian Public Health Association (2002), and Health Canada (Josephson 1995). From a nutrition and health perspective, these concerns focus on the content and influence of television programming as well as the sedentary nature of television watching (Hoffman 1996 ; Kennedy, et al. 2002).

Because television programming has the potential to influence perceptions, knowledge, beliefs, and behaviors and because it is an important health information and education source, nutritionists need to be aware of the nutrition-related information (NRI) in television programming and the effect this information has on viewers. "To ignore television's impact is to forget where most of our patients learn about the medical world each evening" (Dan 1987). Thus, the purpose of this research review is to examine existing evidence and create a comprehensive picture of the extent and type of NRI presented in American television programming and the influence of television programming on nutrition-related knowledge, attitudes, and behaviors. An examination of the health effects related to the inactivity associated with viewing television as well as the psychological impacts of television viewing on the development of disordered eating symptoms are beyond the scope of this review.

American television was selected as the focus for this review because the impact of this programming in the U.S. and abroad has been a topic of great concern (Kang, Morgan 1988). American television programming is exported to more than 125 international markets (Motion Picture Association of America 2003). MTV, for example, can be viewed in more homes outside the U.S. than in that country. In addition to imported American programming broadcast by local stations, American Forces Radio and Television Service (AFRTS), which is part of the U.S. Department of Defense, provides American television programming, via satellite, to service men and women as well as Department of Defense members and their families living overseas in over 175 countries (American Forces Radio and Television Service 2003). As a result, local residents in the area often can easily access AFRTS broadcasts, too. The widespread availability of these exported television shows contributes to the increasingly globally-shared information on many topics, including health behaviors (Beadle 1999 ; Blum, Samuels 1990 ; Kang, Morgan 1988 ; Kwong 1997 ; Storm 2001 ; Zaharopolous 1997). Although television advertisements produced for the American market likely are seldom broadcast in other nations, advertisements for products made by American companies (e.g., McDonalds, et al.) are aired (Ji, McNeal 2001). Also, including advertisements provides a more complete picture of the total NRI load on American television.

## Methods

A thorough search of the peer-reviewed journal literature published during the past 15 years (1988 − 2003) was conducted to identify all research studies that examined NRI embedded in American television shows and advertisements broadcast since 1986 that were published in English. (NRI was defined as visual or verbal references to nutrition or food [e.g., displays of food, food activities such as eating, purchasing food, talking about food, preparing food]). This search yielded 19 studies that reported on NRI in television advertisements, 10 that reported on NRI television shows, and 12 that reported on the influence of television programming on nutrition-related knowledge, attitudes, and behaviors. The findings of the studies reporting on NRI in television shows and advertisements were used to create a description of the extent and type of NRI commonly found in American television shows. The remaining studies were used to describe the influence of television programming.

## Results and Discussion

### 1. Nutrition information presented in american television advertisements

The studies located described the foods advertised during children's programming (primarily Saturday mornings), women's daytime programming (i.e., weekday afternoon serials or soap operas), and prime-time (7 : 30 − 11 : 00 PM).

Food Advertisements During Children's Television Programming. Children's programming tends to occur primarily on Saturday mornings, with some programming occurring on weekdays before and after school. Studies that examined the Saturday morning time period are noted in Table 1. They revealed that during the past 15 years, advertisements on Saturday morning children's television tended to be primarily food advertisements during all months except December when toy advertisements predominated (Condry, et al. 1988). In fact, the majority of the studies reported that food advertisements

accounted for 57 percent or more of all advertisements during this broadcast period or between 10 and 17 advertisements per hour.

An examination of the types of foods advertised revealed that fruits, vegetables, protein-rich foods, and dairy products were rarely advertised. Foods in the breads and cereals group, particularly breakfast cereals, however, were well represented on Saturday morning children's television (Rajecki et al. 1994 ; Warnke, Albrecht 1994). These cereals tended to be high in sugar, with the ratio of high sugar to low sugar cereals ranging from 5.5 : 1 to 19.5 : 1 (Cotugna, 1988 ; Kotz, Story 1994). Additionally, foods in the fats and sweets group were advertised frequently, with candy and soft drinks the most prevalent foods in this group in many studies (Byrd-Bredbenner 2002 ; Condry et al. 1988 ; Gamble, Cotugna 1999 ; Kunkel, Gantz 1992 ; Taras, Gage 1995). Over the years, the number of advertisements for fast food restaurants tended to change from 10 percent of all advertisements in 1987 (Condry et al. 1988) to 6 percent in 1991 − 1992 (Kotz, Story 1994) to 16 percent in 1993 (Byrd-Bredbenner 2002) to 17 percent in 1996 (Gamble, Cotugna 1999) to 22 percent in 1999 (Byrd-Bredbenner 2002).

Foods advertised on Saturday morning children's television were mostly high in fat, sodium, and/or sugar. An analysis of the actual nutrient content of advertised foods indicated that, per serving, the foods averaged nearly 400 calories (44% of which were from fat), more than 500 mg sodium, and more than 27 grams of sugar (Kuribayashi, et al. 2001). In sum, the foods advertised on Saturday morning children's television tended to be high in fat, sodium, sugar, and generally judged to be of low nutritional value (Byrd-Bredbenner 2002 ; Cotugna 1988 ; Kuribayashi et al. 2001 ; Taras, Gage 1995).

An additional observation of food advertisements on Saturday morning children's television was that food advertisements were not gender biased. That is, the overwhelming majority of food advertisements included both males and females (Ogletree, et al. 1990 ; Rajecki, et al. 1993). Also observed was that the primary explicit messages used to sell foods were taste and fun (Kotz, Story 1994 ; Kunkel, Gantz 1992). Although explicit messages related to the healthfulness or nutritional qualities of the foods were seldom used in advertising messages, nearly half of the food advertisements implied the food had healthful or nutritional qualities, likely erroneously so given the nutrient content of advertised foods (Kotz, Story 1994).

The two studies that examined public service announcements (PSAs) on Saturday morning children's television indicated that a minority focused on nutrition. Of the PSAs that were nutrition related, they frequently focused on healthy snacking (Gamble, Cotugna 1999 ; Kotz, Story 1994).

In addition to Saturday morning children's television, two of the studies listed in Table 1 also examined advertisements broadcast during children's programming hours before and/or after school (Kotz, Story 1994 ; Taras, Gage 1995). These studies reported that, like Saturday morning children's television, the foods advertised during the before and after school time period tended to be high in sugar and fat.

Food Advertisements During Women's Television Programming. A single study was located that focused on television programming with an audience largely comprised of women aged 18 to 35 years, that is soap operas or daytime serials (Lank, et al. 1992). The findings of this study indicated that food advertisements accounted for more than one-third of all advertisements broadcast during daytime soap operas. On average, viewers saw 12 food advertisements per hour. Fruits and vegetables were almost never advertised. The most commonly advertised foods were desserts and sweets, convenience foods, and breads and cereals. The vast majority of advertised convenience foods and desserts and sweets were high in saturated fat. Convenience foods also tended to be high in cholesterol and sodium. In fact, nearly half of all advertised foods during soap operas were high in fat and/or sodium, more than two-thirds were high in saturated fat, and a quarter were high in cholesterol. Although health claims were made infrequently, approximately 1-in-10 advertisements indicated a food was low in cholesterol or 'heart healthy'-despite the fact that at least 70 percent of these foods were high in fat (e.g., margarines, salad oils).

Food Advertisements During Prime-Time Television Programming. Prime-time television programming is the most heavily viewed time period for all age groups. The studies that examined advertising during prime-time (Table 1) indicated that food advertisements accounted for approximately one-quarter of all advertisements broadcast during this time period and tended to be the largest category of advertisements. Viewers saw six to seven food advertisements every hour of prime-time programming (Byrd-Bredbenner, Grasso 2000a ; Kotz, Story 1994 ; Kuribayashi et al. 2001 ; Story, Faulkner, 1990 ; Tirodkar, Jain 2003). In fact, a study that examined a 'typical' day of television programming reported that the ave-

**Table 1.** Studies reporting content analysis of television advertising

| |
|---|
| Byrd-Bredbenner 2002[a] |
| Byrd-Bredbenner, Grasso 1999a,[d] 1999b,[d] 2000a,[d] 2000b[d] |
| Condry, Bence, Schiebe 1988[a] |
| Cotugna 1988[a] |
| Gamble, Cotugna 1999[a] |
| Kotz, Story 1994[ab] |
| Kunkel, Gantz 1992[a] |
| Kuribayashi, Roberts, Johnson 2001[ad] |
| Lank, Vickery, Cotugna, Shade 1992[c] |
| Ogletree, Williams, Raffeld, Mason, Fricke 1990[a] |
| Rajecki, Dame, Creek, Barrickman, Reid 1993[a] |
| Rajecki, McTavish, Rasmussen, Schreuders, Byers, Jessup 1994[a] |
| Story, Faulkner 1990[d] |
| Taras, Gage 1995[ab] |
| Tirodkar, Jain 2003[a] |
| Wallack, Dorfman 1992[e] |
| Warnke, Albrecht 1994[a] |

[a]Saturday morning children's television programming
[b]Children's television programming before and/or after school
[c]Women's television programming
[d]Prime-Time television programming
[e]Programming throughout the day

**Table 2.** Studies reporting content analysis of television shows

| |
|---|
| Avery, Mathios, Shanahan, Bisogni 1997[b] |
| Byrd-Bredbenner In press[b] |
| Byrd-Bredbenner, Grasso, Finckenor 2001[b] |
| Fouts, Burggraf 2000[b] |
| Fouts, Vaughan 2002[b] |
| Greenberg, Eastin, Hofschire, Lachlan, Brownell 2003[b] |
| Larson 1991[b] |
| Prabhu, Duffy, Stapleton 1996[c] |
| Story, Faulkner 1990[b] |
| Tirodkar, Jain 2003[b] |
| Warnke, Albrecht 1994[a] |

[a]Saturday morning children's television shows
[b]Prime-Time television shows
[c]Television news shows

rage number of food advertisements broadcast each hour throughout the day was nearly seven (Wallack, Dorfman 1992).

Of all food advertisements aired during prime-time, approximately one-third were for fast food restaurants (Byrd-Bredbenner, Grasso 1999b). Fruits, vegetables (except French fries), and dairy products were rarely advertised. The percentage of foods advertised that were high in fat ranged from 35 to 65 percent and those that were high in sodium ranged from 29 to 69 percent (Byrd-Bredbenner, Grasso 1999a ; Kuribayashi et al. 2001). An analysis of the actual nutrient content of advertised foods indicated that, per serving, they averaged nearly 300 calories (40% of which were from fat), more than 500 mg sodium, and more than 13 grams of sugar (Kuribayashi et al. 2001). In fact, more than three-quarters of the foods advertised were judged to be unhealthy (Kuribayashi et al. 2001).

Consumer-related promotional claims, especially those focusing on flavor, quality, and economy were used to promote most foods (Byrd-Bredbenner, Grasso 2000b). Half to three-quarters of the health and nutrition information embedded in food advertisements were reported to be misleading or inaccurate (Byrd-Bredbenner, Grasso 2000a).

The types of foods advertised during prime-time shows may vary somewhat with the target audience. For instance, a comparison of the types of foods advertised on top prime-time African American shows with those advertised on shows intended for general audiences revealed that alcohol advertisements were not aired on sampled African American shows but accounted for nearly one-fifth of the advertisements on general audience shows. In contrast, soft drinks and chocolate candy were advertised much more frequently on African American shows than general audience shows. Advertisements for fast food restaurants, however, seem to be equally represented on both types of show, accounting for nearly one-third of the food advertisements (Tirodkar, Jain 2003). Regardless of the differences in the frequency with which food types are advertised to different target audiences, the limited evidence available indicates that the nutritional quality of foods advertised during prime-time tended to be high in fat and/or sugar.

### 2. Nutrition information presented in american television shows

Like television advertisements, American television shows convey substantial amounts of NRI. This section describes the nutrition information found in Saturday morning children's shows and prime-time shows (Table 2).

Nutrition Information During Saturday Morning Children's Television Shows. One study examined the foods portrayed during Saturday morning children's television shows (Warnke, Albrecht 1994). During this time period, the most commonly portrayed foods were fruits, protein-rich foods, and sweets. Fruits were frequently seen because they were depicted in candy, beverage, and cereal advertisements to inform the viewer about the food's flavor. Vegetables were seldom shown, however when they were, French fries and tater tots were most common. Foods were primarily shown in a positive context ; that is, one that positively described the food's qualities or encouraged one to try the food (Warnke, Albrecht 1994).

Nutrition Information During Prime-Time Television Shows. Scenes containing NRI were frequently included in prime-time shows with researchers reporting that every hour between 9 and 17 NRI containing scenes were broadcast (Byrd-Bredbenner, In press ; Byrd-Bredbenner, et al. 2001 ; Larson 1991 ; Story, Faulkner 1990). An examination of prime-time programming by genre indicated that situation comedies had the most NRI containing scenes (nearly 20 per hour) and real-life re-enactment shows had the least (approximately 8 per hour) (Avery, et al. 1997 ; Byrd-Bredbenner et al. 2001).

Foods in NRI containing scenes were referenced verbally, shown (but not eaten), and/or eaten. Beverages tended to be the most common food reference in prime-time shows with the most frequently referenced beverages being low nutrient density (e.g., coffee, soft drinks, and alcohol) (Avery et al. 1997 ; Byrd-Bredbenner, In press ; Byrd-Bredbenner et al. 2001 ; Story, Faulkner 1990). Three studies reported that alcoholic beverages accounted for 15 to 30 percent of all beverage references (Byrd-Bredbenner, In press ; Byrd-Bredbenner et al. 2001 ; Story, Faulkner 1990). One-third of all meals included alcoholic beverages (Story, Faulkner 1990).

Low nutrient density foods tend to represent about 40 percent or more of all food references on prime-time television shows (Byrd-Bredbenner, In press ; Byrd-Bredbenner et al. 2001 ; Larson 1991 ; Story, Faulkner 1990). Adults tended to eat less nutritious foods than children did. For instance, children on prime-time television shows ate nearly twice as many nutritious foods as less nutritious foods. They also ate more healthy snacks than unhealthy snacks. In contrast, adults ate three times as many unhealthy snacks as healthy ones (Larson 1991). In addition to differences in age, racial differences were also noted. In specific, African-American characters were much more likely to eat nutritious foods than white characters (Avery et al. 1997).

On prime-time shows, foods were mostly consumed as snacks rather than meals (Byrd-Bredbenner, In press ; Larson 1991 ; Story, Faulkner 1990), with the most common snacks being sweets or salty snacks (e.g., chips) (Story, Faulkner 1990). Foods portrayed as snacks were less nutrient dens than those portrayed in meals (Avery et al. 1997). When meals were shown, breakfasts were evenly divided between those offering nutritious foods (e.g., cereal and toast) and less nutrient dense foods (e.g., sweet rolls and donuts). One-third of the lunch or dinner meals referenced included only dessert and beverage (i.e., coffee or wine) (Story, Faulkner 1990).

Scenes containing NRI occurred most commonly at dining room or kitchen tables, outside, in restaurants, and in living rooms (Avery et al. 1997 ; Byrd-Bredbenner et al. 2001). NRI in prime-time television shows was seldom integral to the main point of the scene. Rather, it was primarily associated with background activity (e.g., the scene occurred in a restaurant or kitchen but the dialogue and action were unrelated to nutrition) or was a set garnish (e.g., bowl of fruit on a table, wine glass in the hand of a character who did not verbally mention or drink the beverage) (Byrd-Bredbenner et al. 2001 ; Larson, 1991).

When the action in NRI containing scenes was judged in terms of whether it depicted a behavior that was a positive and recommended by nutrition professionals, negative and non-recommended, or neutral, researchers reported that the majority NRI containing scenes were neutral (e.g., serving food, setting the table). Approximately one-fifth of the NRI containing scenes promoted positive, recommended behaviors such as eating fruit for a snack or drinking juice to restore blood glucose levels. But, about 15 to 25 percent of the NRI containing scenes promoted negative, non-recommended behaviors including equating weight loss with starvation and using alcoholic beverages to rehydrate (Byrd-Bredbenner, In press ; Byrd-Bredbenner et al. 2001).

The amount of food consumed tended to be very small-a few bites or sips at most. However, heavy males were shown eating more than normal or thin ones (Byrd-Bredbenner, In press ; Greenberg, et al. 2003). Interestingly, though, overweight characters were less likely to be shown with high calorie or sugary foods than average weight characters (Avery et al. 1997).

An examination of body types portrayed in prime-time programming revealed that few men and women on television are overweight or obese and substantial numbers are far more likely to be underweight than their real life counterparts (Fouts, Burggraf 2000 ; Fouts, Vaughan 2002 ; Greenberg et al. 2003). However, African Americans tended to have larger body types than whites (Greenberg et al. 2003). In fact, the incidence of overweight characters was four times more frequent on prime-time shows targeted to an African-American population than shows aimed at general audiences (Tirodkar, Jain 2003).

### 3. Nutrition information presented in American television news shows

A single study investigated the child health news broadcast

**Table 3.** Studies reporting impact of television programming

| |
|---|
| Borzekowski, Robinson 2001[a] |
| Carruth, Goldberg, Skinner 1991[a] |
| Chew, Palmer, Kim 1995,[b] 1998[b] |
| Dawson, Jeffrey, Walsh 1988[a] |
| Goldberg 1990[a] |
| Isler, Popper, Ward 1987[a] |
| Reicken, Yavas 1990[a] |
| Signorielli, Lears 1992[c] |
| Taras, Sallis, Patterson, Nader, Nelson 1989[a] |
| Taras, Zive, Nader, Berry, Hoy 2000[a] |
| Wiman, Newman 1989[a] |

[a]Impact of television advertisements
[b]Impact of television shows
[c]Impact of total time spent watching television

on American television news shows (Prabhu, Duffy, Stapleton 1996). The findings of this study indicated that one-fifth of the national medical news stories focused on pediatric issues, and of these stories, nearly a third concentrated on nutrition.

### 4. Impact of television advertisements on nutrition-related knowledge, attitudes, and behaviors

Research studies published in the past 15 years documenting the impact of television advertisements on nutrition-related knowledge, attitudes, and behaviors are listed in Table 3. These studies indicated that increasing exposure to advertisements on Saturday morning children's television was positively correlated with lower nutrition knowledge and lower understanding of nutrition phraseology commonly used in television advertisements (e.g., "part of a nutritious breakfast") (Wiman, Newman 1989). The study authors hypothesized that repeated exposure to highly persuasive advertising messages may confuse children about the nutritional value of foods (Wiman, Newman 1989).

In terms of attitudes, Riecken and Yavas (1990) found that children aged 8 to 12 years had negative attitudes toward television advertisements in general (e.g., they believed that television advertisements : don't tell the truth, tell only good things about a product, make people buy things they don't really need, don't always promote the best products, etc.). However, children in this age group did not apply their negative feelings to advertisements in general ; that is, they assessed advertisements individually. For example, when asked to evaluate advertisements for three cereal brands, one was rated more positively than the other two.

Television advertising also has the potential to shape nutrition-related behaviors (Dawson, et al. 1988 ; Goldberg 1990). These behaviors generally focus on two main areas : purchase requests and actual purchases. Brief exposures to advertisements for low-nutrient density foods can influence young children to select those foods. And, the more often a food is advertised, the more likely it is to be requested by children and purchased by adults (Borzekowski, Robinson 2001 ; Taras, et al. 2000). Children frequ-ently requested food items advertised on television and asked to visit restaurants advertised (Borzekowski, Robinson 2001 ; Isler, et al. 1987 ; Taras, et al. 1989 ; Taras et al. 2000). The more time children spent watching television, the more likely they were to request foods that were advertised (Isler et al. 1987) The most frequently requested and subsequently purchased foods tended to be high in sugar (e.g., presweetened cereals, fruit rollups, soft drinks) followed by high fat (e.g., fast foods) and high salt foods (Baxter 1991 ; Isler et al. 1987 ; Taras et al. 1989). In comparison to younger children, older children tended to make fewer food purchase requests. Interestingly, teens reported that seeing a food advertisement generally did not make them want to get something to eat (Carruth, et al. 1991).

### 5. Impact of television shows on nutrition-related knowledge, attitudes, and behaviors

Little research has focused on the impact of shows themselves on any type of health-related knowledge, attitudes, and behaviors, including that related to nutrition. In fact, only two studies documenting the impact of American television shows on nutrition-related knowledge, attitudes, and eating behaviors that were published in the last 15 years could be located with both reporting on the effects of the same show (Chew, et al. 1995, 1998). These two studies found that a television show could increase adult's nutrition knowledge levels (Chew et al. 1995) as well as motivate these viewers to practice healthy dietary behaviors, increase concern about food and fitness, and raise self-confidence in their nutrition knowledge base (Chew et al. 1998).

Several studies have examined total television viewing time, without parsing the effects of advertisements and shows. In general, as children's television viewing time increased, so did the rate of poor eating habits, inaccurate knowledge about nutrition, and unhealthy conceptions about food (e.g., what constitutes a healthy breakfast, belief that fast foods are as nutritious as food prepared at home) (Signorielli, Lears 1992). In addition, there was a positive correlation between time spent watching television and children's preferences for and con-

sumption of unhealthy foods (Signorielli, Lears 1992). Also, as viewing time increased, so did the child's misperception that an unhealthy food choice is healthier than it actually is.

## Conclusions

Overall, this study's findings reveal that television viewers in the U.S. and countries that import American television shows are bombarded with nutrition messages, a substantial portion of which promote unhealthy behaviors. While providing health information via any means does not necessarily influence consumer dietary behavior, both social learning theory and cultivation theory indicate that television must be recognized as a major source of health and nutrition information and a potentially powerful influence on nutrition and health practices (Bandura 1977 ; Gerbner et al 1981).

Social learning theory provides a theoretical basis for explaining how media transmits ideals : many behaviors are acquired through observational learning (i.e., modeling) of other people in the environment including those on television (Bandura 1977 ; Jeffrey, McLellarn, Fox 1982). Cultivation theory helps explain why viewers may choose to engage in behaviors observed on television : programming shapes or 'cultivates' viewers' perceptions of what they consider to be normal, common, or acceptable behavior (Gerbner et al. 1981 ; Shrum 1999 ; Signorielli, Staples 1997). Considerable research evidence suggests that those Americans who watch relatively more television tend to emulate observed television behaviors because they perceive that the real world is much like that portrayed on television (Gerbner et al. 1981 ; Shrum 1999). And, as exposure to television increases, emulation of the behaviors portrayed often becomes increasingly desirable. Studies with foreign audiences indicate that those who watch relatively more American television programming may have different perceptions of American cultural values and social stereotypes than those watching less (Kang, Morgan 1988 ; Tan, Suachavarat 1988 ; Zaharopolous 1997). Thus, frequent portrayals of health behaviors may send erroneous messages to viewers of all nationalities about what is considered acceptable behavior for maintaining health and may encourage modeling of non-recommended diet and health behaviors (Avery et al. 1997 ; Diener 1993 ; Parsons, et al. 1999). Consequently, community nutritionists should not underestimate the potential for viewers, especially youth, to embrace negative, non-recommended diet and health messages (Parsons et al. 1999). Community nutritionists also need to be cognizant of the potential for American television programming as well as television programming exported from elsewhere or created domestically to influence behavior.

Clearly, television plays an important role in the daily lives of millions of people worldwide. Television's critics argue that television programming creates reality while its defenders assert that is merely reflects reality (Belk, Pollay 1985). Although it is not clear whether it creates or reflects reality, it is important to note that if television mirrors reality, it is reinforcing and strengthening less than optimal nutrition behaviors. On the other hand, if it is creating reality, it frequently demonstrates and cultivates behaviors that are not recommended by nutrition professionals. Regardless of whether it is creating or reflecting reality, television is replete with NRI and must be acknowledged as a potentially powerful influence on diet and health. Because it, too, is a competing 'nutrition educator', community nutritionists must remain aware of the nutrition instruction occurring via television and recognize the potential effects it may have on viewers' nutrition knowledge, attitudes, and behaviors and the impact it may have on community nutrition interventions.

## References

American Academy of Pediatrics (2001) : (Media education in the practice setting. An overview of the media and the pediatrician's role). 2000. Retrieved January 21, 2001, from Available at: www.aap.org/advocacy/mmcamp.htm

American Forces Radio and Television Service (2003) : *AFRTS Purpose/Mission.* Retrieved 10/18/2003, from http://www.afrts.osd.mil/

Anonymous (2003) : Soap operas become Chinese favorite. *People's Daily Online,* p. english.peopledaily.com.cn/200303/200321/eng20030321_20113693.shtml.

Australian Children's Television Foundation (2003) : *Submission to the inquiry into the future opportunities for Australia's film, animation, special effects and electronic games industries* (No. http://www.aph.gov.au/house/committee/cita/film/subs/sub029.pdf).

Avery R, Mathios A, Shanahan J, Bisogni C (1997) : Food and nutrition messages communicated through prime-time television. *J Pub Policy & Marketing* 16 (2) : 217-227

Bandura A (1977) : *Soc learning theory.* Englewood Cliffs, NJ : Prentice-Hall

Baxter P (1991) : How children use media and influence purchases. *J Adv Res* 31 (6) : RC2-RC4

Beadle M (1999) : The influence of U.S. media use and demographic factors on Argentine men and women about perceptions of U.S. lifestyle. *Transnational Broadcasting Studi J,* 3 (Fall), http://

www.tbsjournal.com/Archives/Fall99/Articles93/Beadle/beadle.html.

Belk R, Pollay R (1985) : Images of ourselves : The good life in twentieth century advertising. *J Cons Affairs* 11 : 887-897

Blum R, Samuels S (1990) : Television and teens : Health Implications. *J Adol Heal Care* 11 : 2-4

Borzekowski D, Robinson T (2001) : The 30-second effect : An experiment revealing the impact of television commercials on food preferences of preschoolers. *J Am Diet Asso* 101 (1) : 42-46

British Broadcasting Corporation (2003) : *Children in UK watch most TV.* Retrieved May 5, 2003, from Available at:news.bbc.co.uk/1/hi/entertainment/tv_and_radio/1409044.stm

British Medical Association, Board of Science and Education (2000) : *Eating Disorders, Body Image & The Media.* London : British Medical Association

Byrd-Bredbenner C (2002) : Saturday morning children's television advertising : A longitudinal analysis. *Family and Cons Sci Res J* 30 (3) : 382-403

Byrd-Bredbenner C (In press) : An internationally shared health frame of reference created by a television program : The Simpsons, a content analysis of health messages. *Heal Edu*

Byrd-Bredbenner C, Grasso D (1999a) : A comparative analysis of television food advertisements and current dietary recommendations. *Am J Heal Studi* 15 (4) : 169-180

Byrd-Bredbenner C, Grasso D (1999b) : Prime time health : An analysis of health content in television commercials broadcast during programs viewed heavily by children. *The Int Electr J Heal Edu* 2 (4) : 159-169

Byrd-Bredbenner C, Grasso D (2000a) : Health, medicine, and food messages in television commercials during 1992 and 1998. *J Sch Heal* 70 (2) : 61-65

Byrd-Bredbenner C, Grasso D (2000b) : What is television trying to make children swallow? : Content analysis of the nutrition information in prime-time advertisements. *J Nutr Edu* 32 (4) : 187-195

Byrd-Bredbenner C, Grasso D, Finckenor M (2001) : Nutrition messages on prime-time television programs. *Topics in Clin Nutr* 16 (4) : 61-72

Carruth B, Goldberg D, Skinner J (1991) : Do parents and peers mediate the influence of television advertising on food-related purchases? *J Adol Res* 6 (2) : 252-271.

Chew F, Palmer S, Kim S (1995) : Sources of information and knowledge about health and nutrition : Can viewing one television programme make a difference? *Pub Unders Sci* 4 : 17-29

Chew F, Palmer S, Kim S (1998) : Testing the influence of the health belief model and a television program on nutrition behavior. *Heal Comm* 10 (3) : 227-245

Condry J, Bence P, Scheibe C (1988) : Nonprogram content of children's television. *J Broadc and Electr Med* 32 (3) : 255-270

Cotugna N (1988) : TV ads on Saturday morning children's programming : What's new? *J Nutr Edu* 20 (3) : 125-127

Dan B (1987) : One-minute medicine. *J Am Med Asso* May 22 (2) : 798

Dawson B, Jeffrey D, Walsh J (1988) : Television food commercials' effect on children's resistance to temptation. *J Appl Soc Psy* 18 (16) : 1353-1360

Diener B (1993) : The frequency and context of alcohol and tobacco cures in daytime soap opera programs : Fall 1989 and Fall 1991. *J Pub Policy & Marketing* 12 (2) : 252-257

European Commission (2003) : *EU survey results : Europe goes online for health information, but still prefers more traditional sources.* Retrieved 10/18/2003, from http://europa.eu.int/rapid/start/cgi/guesten.ksh?p_action.gettxt=gt&doc=IP/03/550|0|RAPID&lg=EN&display=

Everett S, Schnuth R, Tribble J (1998) : Tobacco and alcohol use in top-grossing American films. *J Comm Heal* 23 (4) : 317-324

Fouts G, Burggraf K (2000) : Television situation comedies : Female weight, male negative comments, and audience reviews. *Sex Rol* 42 (9/10) : 925-932

Fouts G, Vaughan K (2002) : Locus of control, television viewing, and eating disorder symptomatology in young females. *J Adol* 25 : 307-311

Gamble M, Cotugna N (1999) : A quarter century of TV food advertising targeted at children. *Am J Heal Beh* 23 (4) : 261-267

Gerbner G, Gross L, Morgan M, Signorelli N (1981) : Special report : Health and medicine on television. *The New England J Med* October 8 : 901-904

Goldberg M (1990) : A quasi-experiment assessing the effectiveness of TV advertising directed to children. *J Marketing Res* 27 (4) : 445-454

Greenberg B, Eastin M, Hofschire L, Lachlan K, Brownell K (2003) : Portrayals of overweight and obese individuals on commercial television. *Am J Pub Heal* 03 (8) : 1342-1348

Hoffman K (1996) : Exposure to television poses a public health concern. *Ann of Epid* 6 (2) : 160-161

International Study Center, Boston College, Lynch School of Education (1999) : *Mathematics benchmarking report, TIMSS 1999-Eighth Grade* (No. http://isc.bc.edu/timss1999b/mathbe-nch_report/t99bmath_TOC.html). Boston, MA.

Isler L, Popper H, Ward S (1987) : Children's purchase requests and parental responses : Results from a diary study. *J Adv Res* 27 (5) : 28-39

Japan Information Network (2003) : *What kid of TV shows to Japanese kids watch?* Retrieved May 5, 2003, from Available at: www.jinjapan.org/kidsweb/japan/c/q8.html.

Jeffrey D, McLellarn R, Fox D (1982) : The development of children's eating habits : The role of television commercials. *Heal Edu Quarterly* 9 : 174-189

Ji M, McNeal J (2001) : How Chinese children's commercials differ from those of the United States : A content analysis. *J Adv* 30 (3) : 79-92

Josephson W (1995) : *Television violence : A review of the effects of children of different ages.* Ottawa, Canada : National Clearinghouse on Family Violence, Health Canada.

Kang J, Morgan M (1988) : Culture clash : Impact of U.S. television in Korea. *J Quarterly* 65 : 431-438

Kennedy C, Strzempko F, Danford C, Kools S (2002) : Children's perceptions of tv and health behavior effects. *J Nurs Sch* 34 (3) : 289-294

Kotz K, Story M (1994) : Food advertisements during children's Saturday morning television programming : Are they consistent with dietary recommendations? *J Am Diet Asso* 94 (11) :

1296-1300

Kunkel D, Gantz W(1992) : Children's television advertising in the multichannel environment. *J Comm* 42(3) : 134-152

Kuribayashi A, Roberts MC, Johnson RJ(2001) : Actual nutritional information of products advertised to children and adults on Saturday. *Child Heal Care* 30(4) : 309-322

Kwong K(1997) : *Cultural impact of U.S. television programs on Chinese youth in Hong Kong*. Retrieved 10/18/03, from http://home.netvigator.com/~kwongkf/ma_comm.html

Lank MS, Vickery CE, Cotugna N, Shade DD(1992) : Food commercials during television soap operas : What is the nutrition message? *J Comm Heal* 17(6) : 377-384

Larson M(1991) : Health-related messages embedded in prime-time television entertainment. *Heal Comm* 3(3) : 175-184

Motion Picture Association of America(2003) : *About MPA*. Retrieved 10/19/2003, from www.mpaa.org/about/content.htm

National Institutes of Health, National Science Foundation(1993) : *NIH survey of public understanding of biomedical concepts, 1993* (http://www.nsf.gov/sbe/srs/seind93/chap7/doc/7s293.htm). Washington, D.C : National Institutes of Health, National Science Foundation

National Science Board(2002) : *Science and Engineering Indicators* (NSB-02-1 ed.). Arlington, VA : National Science Foundation

Nielsen Media Research(1998) : *1998 Report on Television*. New York : Nielsen Media Research

Ogletree S, Williams S, Raffeld P, Mason B, Fricke K(1990) : Female attractiveness and eating disorders : Do children's television commercials play a role? *Sex Rol* 22(11/12) : 791-797

Parsons S, Rissel C, Douglas W(1999) : Alcohol portrayal in Australian prime time television in 1990 and 1997. *Australian and New Zealand J Pub Heal* 23 : 67-71

Pearl D, Bouthilet L, Lazar J(1982) : Television and behavior : *Ten years of scientific progress and implications for the eighties*. Washington, D.C : U.S. Government Printing Office

Prabhu N, Duffy L, Stapleton F(1996) : Content analysis of prime-time medical news. A pediatric perspective. *Arch Ped and Adol Med* 150(1) : 46-49

Rajecki D, Dame J, Creek K, Barrickman P, Reid C(1993) : Gender casting in television toy advertisements : Distributions, message content analysis, and evaluations. *J Cons Psy* 2(3) : 307-327

Rajecki D, McTavish D, Rasmussen J, Schreuders M, Byers D, Jessup K(1994) : Violence, conflict, trickery, and other story themes in TV ads for food for children. *J Appl Soc Psy* 24 (19) : 1685-1700

Shrum L(1999) : Television and persuasion : Effects of the programs between the ads. *Psy and marketing* 16(2) : 119-140

Signorielli N, Lears M(1992) : Television and children's conceptions of nutrition : Unhealthy messages. *Heal Comm* 4(4) : 245-257

Signorielli N, Staples J(1997) : Television and children's conceptions of nutrition. *Heal Comm* 9, 289-301

Smith F, Trivax G, Zuehlke D, Lowinger P, Nghiem T(1972) : Health information during a week of television. *New England J Med* 286 : 516-520

Storm J(2001, October 7, 2001) : U.S. television has mixed global impact. *The Holland (Michigan) Sentinel*

Story M, Faulkner MS(1990) : The prime time diet : A content analysis of eating behavior and food messages in television program content and commercials. *Am J Pub Heal* 80(6) : 738-740

Tan A, Suachavarat K(1988) : American TV and social stereotypes of Americans in Thailand. *J Quarterly* 65 : 648-654

Taras H, Gage M(1995) : Advertised foods on children's television. *Arch Ped and Adol Med* 149 : 649-652

Taras H, Sallis J, Patterson T, Nader P, Nelson J(1989) : Television's influence on children's diet and physical activity. *Dev and Beh Ped* 10(4) : 176-180

Taras H, Zive M, Nader P, Berry C, Hoy T(2000) : Television advertising and classes of food products consumed in a paediatric population. *Int J Adv* 19 : 487-493

Tirodkar M, Jain A(2003) : Food messages on African American television shows. *Am J Pub Heal* 93(3) : 439-441

Wallack L, Dorfman L(1992) : Health messages on television commercials. *Am J Heal Prom* 6(3) : 190-196

Warnke M, Albrecht J(1994) : Media portrayal of foods during Saturday morning television programming and in children's magazines. *J Cons Studi and Home Econo* 18 : 85-95

Watkins B(1985) : Television viewing as a dominant activity of childhood : A developmental theory of television effects. *Crit Studi in Mass Comm* 2 : 323-337

Wiman A, Newman L(1989) : Television advertising exposure and children's nutritional awareness. *J Acad Marketing Sci* 17(2) : 179-188

Wong R, Constable L, Beattie B, Semeniuk P(2002) : Health information needs and patterns of information seeking in community-dwelling older adults. *Annals RCPSC*

Zaharopolous T(1997) : US television and American cultural stereotypes in Greece. *World Comm* 26(1) : 30-44