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Assessing the Distracting Viewing Environment for Televised Sports and its Relationship to Advertising Recall

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Abstract

The viewing of televised sports, like other television viewing situations, is often accompanied by many audience distractions. These distractions, which are particularly acute in the viewing of televised sports, include group viewing, wagering, and food and beverage consumption. All these activities may influence the impact of advertising placed within sports programs, which totals almost \$3 billion annually.

This study uses reports of the activities listed above by individuals while viewing pro football's Super Bowl and gathered through a day-after national coincidental sample, to assess the relationship of these distractions to advertising recall. Regression results show that the consumption of certain foods and beverages, as well as conditions common to viewing televised sports, are related to recall of commercials. Growing use of database marketing, linking product purchases with viewing habits, broadens the implications of these findings for future media planning.



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Introduction

Despite the continued popularity of sports programming as an attractive advertising vehicle (more than \$2.5 billion/year [McManus 1990]), little published research is available on the effectiveness of advertising in this vehicle. Research shows distinct characteristics of televised sports programming (Gantz 1981) and of its viewing, which makes generalizations from other television programming research inappropriate. For example, eating and drinking occurs significantly more often during sports viewing than during viewing of other television fare (Rothenbuhler 1988).

These activities appear to be very distracting tasks, with viewers' attention drawn away from the screen to eat and drink, not to mention the possibilities of their leaving the room to replenish supplies. In addition, there are

physiological effects to consider caused by the intake of certain foods and beverages (especially alcohol). Caffeine and carbohydrates are two other potential contaminants to information processing systems in humans. Considering all factors, advertisers in sportscasts are likely to find a very distracting viewing environment for their commercials.

Until recently, knowledge of consumption habits and participation in other distracting tasks during television viewing was limited, leaving advertisers unarmed to combat the problem. But the increased application of database marketing, which merges lifestyle and consumption patterns with media usage, raises the potential value of this data. Televised sports is a complex phenomenon, and this paper introduces added variables to consider when evaluating the potential value of the sports programming environment for advertising: viewer distractions.

There are several distinct characteristics of televised sports programming (Gantz 1981) that are necessary to understand fully so that the genre can be adequately assessed as an advertising vehicle. First, sports' live and unrehearsed character and their coverage by the news media draw attention and audience interaction with program content unsurpassed by most other television programs. This bodes well for advertisers in these programs.

However, several drawbacks to advertisers include a high level of simultaneous programming of sports events (leading to an effect known as remote control "grazing" during commercials), and the propensity to view televised sports in groups (Gantz 1981). Although group viewing has some benefit for advertisers (e.g., greater attention to the game), they are outweighed by the distractions of increased conversation and accompanying behaviors such as food and beverage consumption.

Pro football's Super Bowl was used as the vehicle for this study of the relationships between these distractions and the processing of advertising information. Despite its "blockbuster" nature, the Super Bowl is typical, on two dimensions, of how regular season football telecasts are viewed: (1) in groups, and (2) accompanied by consumption of food and drink (Wenner and Gantz 1989). Many of the ads appearing during the telecast are new and are repeated within the telecast, providing two important

components for the advertising tests (Fletcher and Bowers 1988). One drawback to using the Super Bowl as a test vehicle is the inclusion of atypical football viewers, but this variable was measured and evaluated in this study.

Literature Review

Nature of sports viewing

Gantz (1981) reported that among a sample of over 200 college students, the most important motive for watching sports on television was to experience the thrill of victory. The need to escape or "let off steam," which was sometimes manifested by consuming an alcoholic drink, was a second motive for watching sports, according to Gantz. Research fails to identify either motive of viewing for other programming.

Gantz also found behavioral correlates distinct to televised sports viewing. In addition to viewing sports in groups, other common behaviors included talking, disputing officials' or coaches' calls, and rooting aloud. These behaviors potentially cause a very disruptive environment for the processing of advertising information.

Psychological distractions of advertising processing

The consumption of food and beverages is likely to distract attention and redirect cognitive activity toward the consumption process, adding to the disruptive environment inherent in viewing televised sports. Eye-hand coordination is needed not only to consume light snacks and beverages, but in handling silverware, napkins and plates. Leaving the room to replenish supplies introduces another cognitive distraction.

In all, these distracting activities are likely to result in the type of cognitive processing best described by Petty and Cacioppo (1981) as peripheral processing. According to their processing model (elaboration likelihood), the finite processing capacity of viewers is divided between the television screen and the distracting activities in the viewing room. During eating and drinking, very little capacity is likely to be directed to the screen, allowing only peripheral processing of information. This suggests that the distractions associated with eating and drinking may be more pronounced when considering unaided recall, where more advanced processing must occur, than

when partially-aided or aided recall is the response mechanism measured.

Other distractions assessed in this study included wagering on the game and participation in a special, nationwide promotional tie-in with the Super Bowl. Wagering on the outcome of the contest potentially provides an emotional distraction to information processing. Since wagering usually encourages gamblers to root for one team, emotional arousal is likely to be high. Arousal intensity is likely to be positively related to the size of the wager. Most research on arousal has found a curvilinear (inverted U-shape) relationship to cognitive processing, with moderate levels of arousal related to superior cognitive processing (Donohew, Nair, and Finn 1984). Several studies specifically testing arousal's effects on processing of advertising messages found either no relationship (Mattes and Cantor 1982) or a negative relationship (Kennedy 1971; Soldow and Principe 1981; Pavelchak, Antil, and Munch 1988). The latter study used day-after recall for Super Bowl ads, the measures used in this study.

Overall results show emotional arousal enhances processing to a point beyond which individuals will turn away from the source of the arousal because of emotional discomfort (Donohew, Nair, and Finn 1984). Applied to wagerers viewing sports programs, one would expect viewers with large wagers on the game to turn away from the screen more often than others, and commercial breaks provide a convenient opportunity to do this, negatively affecting ad recall.

In this Super Bowl, a major advertiser heavily promoted and widely distributed 3-D glasses through retail outlets several weeks before the game. These glasses were to be worn to view a special commercial run during the telecast. Participating in this promotion was considered a potential factor influencing advertising processing, since one had to pay attention to the game and the commercial breaks to know when to participate.

Physiological distractions of advertising processing

When one considers the impact of food consumption from a physiological perspective, additional insights emerge. That's because some medical research has found that consumption of certain foods improves memory (recall) and information processing, while other foods

inhibit cognitive process (Flood and Morley 1984). Several gastrointestinal hormones released during food digestion have been linked to both short and long term memory. In one experiment, consumers of a high carbohydrate meal experienced inhibited performance in attention tests relative to consumers of a high protein meal (Wurtman and Wurtman 1986). This shows the potential value of knowing what specific foods are consumed during television viewing to understand the relationship with advertising recall.

The influences of alcohol and other beverage consumption on information processing provide additional value in understanding advertising performance during televised sports. According to some medical studies (Birnbaum and Parker 1977), alcohol is likely to inhibit unaided recall more severely than other types of recall (e.g., aided recall) because it interferes with attention, inhibits rehearsal during information acquisition, and negatively affects the number or range of what Krugman (1967) called "connection." Beer may have even greater adverse effects on information processing than distilled spirits because it contains fewer calories. Calories, when broken down in the digestive tract, provide important nutrients to the brain (Wurtman and Wurtman 1979). Soft drinks with caffeine may improve alertness and perceptual sensitivity, but have mixed effects on cognitive processing (Wurtman and Wurtman 1983). Because of increased arousal associated with sugar and caffeine intake, one would expect certain soft drinks to have adverse effects on advertising processing.

Research Questions

Taking the previously mentioned influences into account, the following research questions were addressed:

1: What roles will distractions such as the size of the group viewing a sport telecast, the level of wager and participating in other distracting activities like eating, drinking and using 3-D glasses to view a special commercial, have with recall of commercials?

2: What are the relationships between the consumption by viewers of alcoholic beverages, soft drinks, and certain types of foods, and recall of commercials?

Three types of advertising recall were used as the dependent measures in this study: 1) unaided recall; 2) partially aided recall; and 3) aided recall. Overall scores were used, summing the number of different ads recalled for each of the three types of measures. Correlations among the three types of recall were moderate (highest being .49), justifying their use as independent measures. Details on these measures follow in the Method Section.

Method

The results of Super Bowl XXIII day-after recall telephone survey conducted by a professional research company were based on 650 interviews with Super Bowl viewers using a national probability sampling procedure. Super Bowl XXIII was played between 4 p.m. and 7:30 p.m. CST on Sunday, Jan. 22, 1989. Day-after recall interviewing began on Monday, Jan. 23, at about 3 p.m. CST. Only respondents who indicated they viewed the entire game were included in this analysis (n=524 (81%)).

Qualified respondents first were asked to recall the names of Super Bowl XXIII advertisers. There were 26 different national advertisers represented. Next, regardless of the extent of unaided recall, respondents were read a brief description of the commercial scenarios for the portion of the game they watched. The following is an example:

In several scenes burglars try to break open padlocks, but the locks won't open (Masterlock).

Based on the brief description (partial aid), respondents were asked to name the advertiser. Finally, the names of the advertisers not previously identified were read (aided recall) and respondents were asked whether or not they recalled seeing a commercial sponsored by each advertiser. Because this measure of recall is influenced by the number of advertisers previously mentioned, an adjustment was needed. Hence aided recall, rather than being representative of the absolute number of ads recalled, represents the percentage of ads asked about that are recalled, based on the following formula:

$$\frac{\# \text{ ads total aided recall}}{\text{total number of ads (n=26)} - \# \text{ ads partial aid recall}}$$

Following the commercial recall measures, a variety of Super Bowl viewership and lifestyle questions were asked. Total average time of each interview: 20 minutes.

Results

Demographic characteristics of the sample reflected national statistics. About 70% of respondents said they were regular viewers of pro football, and less than half of the remaining 30% said the Super Bowl was the only pro football game they watched. This indicates that the regular football viewer dominates this sample, permitting generalizations of these findings beyond just this "blockbuster" event.

Almost 85% of the sample could recall without aid at least one commercial during the Super Bowl. The average number of ads each respondent could remember unaided was 1.7. With partial aid, respondents averaged 6.7 commercials recalled, and with total aid, the raw number of ads recalled averaged 6.2. Adjusting this last measure to account for the number of ads asked about in the total aided section (not previously recalled in partial aid section) resulted in an average of 35 percent recall of ads asked about.

Interrelationships with advertising recall

Relationships to advertising recall were analyzed using multiple regression and included four types of variables: 1) categories of food and beverages consumed while viewing; 2) other potential distractors such as wagering, what team the viewer rooted for, and participating in the 3-D glasses promotion; 3) variables related to how the program was viewed, such as the number of people gathered to watch the game, general attitude toward the Super Bowl commercials; and 4) demographics—age, income and number of years of school. See Table 1 for the complete list of 26 variables. SPSS was used to analyze the data, with all variables entered into the equation for each recall measure, with listwise deletion of cases resulting in a usable sample of 385.

Of the 45 food items covered in the survey, those consumed by at least 10% of the respondents were included in the analyses. These 12 foods were coded 1=ate, 0=did not eat, and were treated as dummy variables. Consumption

TABLE 1

PREDICTORS OF UNAIDED AD RECALL

Significant Variables	Beta
Age	-.19
Participation in 3D glasses promo(0,1)	.14
Consumed soft drinks (0,1)	.14
Education level	.13
Consumed cheeses and crackers (0,1)	.12
Consumed wine and/or mixed drinks (0,2)	-.10
Regular viewer of football (0,1)	-.10
Insignificant Variables	
# people viewing together	.01
Team rooted for (0,1)	-.07
Consumed water (0,1)	-.02
Consumed cold cuts (0,1)	.01
Consumed pizza (0, 1)	.07
Consumed chicken (0,1)	.05
Super Bowl ads more interest regular TV ads (0,1)	.01
Consumed popcorn (0,1)	-.05
Consumed nachos (0,1)	.06
\$ Amount of wager on game	.02
Consumed cake (0,1)	-.01
Consumed cookies (0,1)	-.03
Consumed veggies and dip (0,1)	.03
Consumed peanuts (0,1)	-.07
# TV sets tuned to game at gathering	-.04
Consumed chips (0,1)	-.05
Consumed pretzels (0,1)	.01
Annual income	.07
Quantity of 12 oz. beers consumed	-.07

$F(26,359)=2.9; p>.00001$

Multiple R=.42

R²=.17

Note 1: (0,1) dummy variables coded 1=consumed; 0=did not.

Note 2: Wine and mixed drink consumption combined with 2 representing consumption of both.

Note 3: Team rooted for coded 1=winner; 2=loser.

TABLE 2

PREDICTORS OF PARTIALLY AIDED AD RECALL

Significant Variables	Beta
Age	-.26
# people viewing together	-.15
Education level	.14
Regular viewer of football (0,1)	.13
Insignificant Variables	
Participation in 3D glasses promo(0,1)	.04
Consumed cheeses and crackers (0,1)	.03
Consumed wine and/or mixed drinks (0,2)	.04
Consumed soft drinks (0,1)	.03
Team rooted for (0,1)	-.09
Consumed water (0,1)	.04
Consumed cold cuts (0,1)	-.02
Consumed pizza (0,1)	.05
Consumed chicken (0,1)	.08
Sup Bowl ads more interest regular TV ads(0,1)	.06
Consumed popcorn (0,1)	-.01
Consumed nachos (0,1)	.07
\$ Amount of wager on game	-.06
Consumed cake (0,1)	-.04
Consumed cookies (0,1)	-.01
Consumed veggies and dip (0,1)	-.05
Consumed peanuts (0,1)	-.01
# TV sets tuned to game at gathering	-.04
Consumed chips (0,1)	.04
Consumed pretzels (0,1)	.07
Annual income	.07
Quantity of beer consumed	-.09

$F(26,359)=2.7; p>.00001$

Multiple R=.41

R²=.16

Note 1: (0,1) dummy variables coded 1=consumed; 0=did not.

Note 2: Wine and mixed drink consumption combined with 2 representing consumption of both.

Note 3: Team rooted for coded 1=winner, 2=loser.

TABLE 3

PREDICTORS OF AIDED AD RECALL

Significant Variables	Beta
Sup Bowl ads more interest regular TV ads (0,1)	.19
# people viewing together	-.15
Regular viewer of football (0,1)	.12
Consumed pizza (0,1)	.12
Consumed chicken (0,1)	.12
\$ Amount of wager on game	-.12
Insignificant Variables	
Age	.01
Education level	.04
Participation in 3D glasses promo(0,1)	-.03
Consumed cheeses and crackers (0,1)	.03
Consumed wine and/or mixed drinks (0,2)	-.07
Consumed soft drinks (0,1)	.03
Team rooted for (0,1)	.04
Consumed water (0,1)	.05
Consumed cold cuts (0,1)	-.02
Consumed popcorn (0,1)	-.04
Consumed nachos (0,1)	-.01
Consumed cake (0,1)	.05
Consumed cookies (0,1)	.05
Consumed veggies and dip (0,1)	.02
Consumed peanuts (0,1)	-.02
# TV sets tuned to game at gathering	-.02
Consumed chips (0,1)	.05
Consumed pretzels (0,1)	.09
Annual income	-.04
Quantity of beer consumed	-.01

$F(26,359)=2.6; p>.00001$

Multiple R=.40

R²=.16

Note 1: (0,1) dummy variables coded 1=consumed; 0=did not.

Note 2: Wine and mixed drink consumption combined with 2 representing consumption of both.

Note 3: Team rooted for coded 1=winner; 2=loser.

Note 4: Aided recall represents percentage recalled of ads questioned about that were not ID'd with partial aid.

of four types of beverages were analyzed: water, soft drinks, hard liquor (mixed drink and wine consumption) and quantity of beer.

The dollar amount wagered represented another potential distraction. Participation in a promotion where 3-D glasses were to be worn to view a specific commercial, and which team viewers were rooting for, were also included. Two variables included in the analyses related to circumstances associated with the viewer (regular viewer of pro football; Super Bowl ads more interesting than regular TV ads) and two variables reflecting viewing conditions (numbers of people at gathering and TV sets in use). Three demographics (age, income, and education level) were also included in the analyses.

Unaided recall

Seven significant predictors of unaided recall emerged as seen in Table 1. Soft drink consumption was positively related to recall while intake of hard liquor was inversely related. Eating cheese and crackers was related to improved recall. Participation in the 3-D glasses promotion was related to better recall. Better recall emerged in the atypical football viewer, and also in those younger and better educated.

Several of the relationships found here seem consistent with expectations. The avoidance or limited intake of alcohol should relate to recall because of improved alertness. Participants in the 3-D promotion likely heightened attention during commercial breaks to know when to use the special glasses. The atypical football fan may have been more keyed in to the entire viewing experience, although this relationship only emerged for unaided recall.

Physiologically speaking, better recall among consumers of cheese and crackers, high in carbohydrates, is counter to expectations, while the lack of knowledge on caffeine and sugar intake from soft drinks leaves any explanation for this finding inconclusive.

Partially-aided recall

Four significant predictors emerged for partially-aided recall, according to Table 2. Once again, younger and more educated consumers had better recall. No food or beverage consumption was related to recall. However,

improved recall was related to viewing the game in smaller groups and for regular football viewers. Apparently, these regular viewers know when to "tune down" to commercial breaks (limiting unaided recall) without completely "tuning out."

Aided recall

For aided recall, an almost entirely new set of relationships emerged. Table 3 shows consumption of chicken and pizza were positively related to recall. Small wagering (\$1-\$2) also emerged as a significant predictor of aided recall. Regular football viewers and those viewing in smaller groups again showed superior recall, but in addition, attitudes that Super Bowl ads were more interesting than regular television ads emerged as a significant predictor. No demographic variables were related to aided recall.

The relationship between chicken consumption (an almost carbohydrate-void entree) and recall, is consistent with physiological data related to cognitive processing (Haas 1986). To a similar degree, pizza, ranked moderate on the carbohydrate scale (although the final ranking would depend on toppings), also fits the physiological prediction for recall. Wagering and the accompanying emotional arousal generated by even small wagers appeared to block more extensive information processing (unaided recall), but seems to have allowed peripheral processing capable of producing aided recall.

Conclusions and Implications

The results of this study revealed a variety of characteristics, some previously known, others new, that are related to advertising recall—at least for blockbuster events like the Super Bowl. Significant relationships for variables concerning the viewing environment (e.g., number of people in room) confirm previous concerns about the importance of a "quality" viewing environment for commercials to be effective, and raise questions about sports in general as an advertising vehicle. New variables such as the type of food and beverages consumed while viewing provide media buyers with additional evaluative criteria.

Food and beverage consumption appear to play a role in affecting processing of commercial content, both from the distractions they provide as well as how they alter the physiological condition of the viewer. Carbohydrate and alcohol intake, and to a lesser extent sugar and caffeine in soft drinks, seem to show some promise as predictors of ad recall.

Overall, the food-related variables included in the regression analyses added from 2 to 10 percent to total variance explained for ad recall. On the surface this contribution seems small until further investigation shows no other variable featured in this study explained more than 10 percent of variance.

The positive relationship between ad recall and participation in a promotion tied closely to a specific advertisement provides an encouraging sign for advertisers. Promotional glasses users showed better recall of all commercials, not just for the sponsor. This suggests that television programmers, not just advertisers, need to consider strategies to get viewers more involved with the commercial breaks. Contests that reveal valuable clues during commercial breaks are one strategy CBS and K-Mart have tried in the past.

The negative relationship between wagering and recall shows the potentially inhibiting effect of emotional arousal on cognitive processing. Viewers with larger financial stakes in the outcome of the game may become distracted during interruptions (e.g., commercials) or use commercial breaks to calm their heightened emotions. Several studies have found viewers with strong cognitive or emotional attachment to the program exhibit poor information processing of advertising (Kennedy 1971; Soldow and Principe 1981; Thorson, Reeves, Schleuder, Lang, and Rothschild 1985).

The implications of this effect extend beyond sports programs. Viewers are often encouraged (mainly by the media) to pick winners in advance of the airing of awards shows for music, theater, and television show performances, which likely lead to some wagering. Even sponsorships of state lottery shows may come into question given the results of this study.

Finally, the inconsistent yet consistently significant relationship between ad recall and how regularly a viewer

watches football seems on the surface difficult to explain, but ends up being somewhat revealing. The fact that atypical football viewers showed superior unaided recall, but regular football viewers were superior on partial and aided recall, may reflect two levels of cognitive processing promoted by the elaboration likelihood model (Petty and Cacioppo 1981). Regular viewers of football likely have become savvy and sophisticated about how commercial breaks are inserted into football coverage. When a break appears, regular viewers may peripherally process televised information with the primary purpose of knowing when game action will resume.

Atypical viewers, on the other hand, are unfamiliar with the patterns used by broadcasters to break up sports coverage. They attend more closely to the set, unsure of when the game may resume. A more central processing scheme is likely to be utilized, explaining why overall unaided recall was superior for this group.

Broadcasters may need to respond in sports coverage similarly to what was done by NBC with some of their fall 1993 programming. Here, commercial break positions have been varied, with no commercials occurring between programs in some instances, while breaks separate programs in other instances. This irregular programming may keep viewers from attempting to guess when and how long breaks will occur, cutting down on mental as well as physical ("zapping") tune out.

If the relationships between recall and the variables that emerged in this study are further validated, demand will increase for enhanced television audience metering systems capable of showing how viewers are viewing. Single source data systems (e.g., I.R.I.'s BehaviorScan) that can link product purchase and consumption patterns with media habits may also help media planners identify shows by a "propensity to consume" index, adding another variable to the formula when determining ad placements.

Limitations and Future Research

At a minimum, the results of this study suggest some additional "qualitative" criteria for marketers to consider when assessing the investment in Super Bowl advertising time. That in itself is meritorious, given the huge expense

of Super Bowl commercial time.

In addition, combining results that showed almost 70% of respondents in this survey were regular football viewers with reports of behavior while viewing this Super Bowl that were commonly found by past researchers (Gantz 1981; Rotherbuhler 1988) for all televised sports viewership, suggests implications for all types of sports programming.

At a maximum, the results of this study may have implications for advertising placed in other programming (e.g., movies, programs aired during mealtimes) more likely to be viewed in groups and while food and beverages are consumed.

Nonetheless, some limitations do exist in this study. At best, only 20% of variance in the recall measures employed was explained by the variables in this study. This means there are many other characteristics also affecting recall, like creative strategy.

Relying on self-reports of viewing and consumption behavior, as well as the potential measurement bias provided by respondents reporting on an illegal behavior (wagering), introduces a certain amount of error. This sacrifice may be offset, however, by the advantage of having viewers behave naturally in the viewing environment.

Future research employing experiments to control important variables (e.g., types of food and drink consumed) may be useful to identify why and how food and beverage consumption are related to advertising recall. More specific measurement of the quantity of carbohydrate, sugar and caffeine intake during the viewing of sports will better isolate the exact effects on advertising recall. Extending the focus of measurement to attitudes and behavioral intentions may improve further the value of these "qualitative" criteria for evaluating television advertising effectiveness.

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