SOCIAL BEHAVIOR AND PERSONALITY, 2007, **35**(2), 157-168

DOI 10.2224/sbp.2007.35.2.157

WHO IS WATCHING TV? WHO IS LISTENING TO RADIO? CONSUMER PERCEPTIONS OF TV AND RADIO ADVERTISING INFORMATION

JANE LU HSU AND SHUEN-AN YANG
National Chung Hsing University, Taiwan
LI-CHANG SU
M-Radio Station, Taiwan

The objective of this study was to analyze consumer perceptions of television and radio advertising information. Four factors were extracted to explain advertising information, including product/selling information, image information, appealing information, and utilization information. For heavy TV watchers, positive attitudes are formed toward the information in television advertising. When consumers spend more time on radio or at least as much as on television, positive attitudes toward the information in radio advertising are generated. Respondents value information that is entertaining, attractive, has strong product images, and assisted memory recall in advertising as important.

Keywords: medium information, consumer perceptions, television, radio, advertising information, positive attitudes, assisted memory recall.

Consumers rely on information to evaluate alternatives prior to product purchases (Bettman, 1979; Blackwell, Miniard, & Engel, 2001; Howard, 1989; Mowen, 1995). In order to obtain information to support decisions, consumers devote extra efforts to external information searching when internal searching cannot provide sufficient information (Beatty & Smith, 1987). Among various information sources, information provided by the media is widely accessible and is a relatively cost-efficient means of finding information.

Jane Lu Hsu, Department of Marketing, National Chung Hsing University, Taiwan; Shuen-An Yang, Department of Marketing, National Chung Hsing University, Taiwan; and Li-Chang Su, M-Radio Station, Taiwan.
Appreciation is due to anonymous reviewers.
Please address correspondence and reprint requests to: Jane Lu Hsu, Department of Marketing, Rm 208, National Chung Hsing University, 250 Kuo Kuang Road, Taichung 40227, Taiwan. Phone: +886-4-2284-0392; Fax: +886-4-2285-6376; Email: **jlu@dragon.nchu.edu.tw**

Consumers prefer searching for information for specific purposes instead of being approached by unsolicited mail, email, or telephone calls (McKenna, 1995). Abernethy, Gray, and Butler (1997) mentioned that because of concerns about information overload, advertisers needed to focus on important components in disseminating information in the market. Television is a commonly used medium for advertising campaigns due to its popularity and the capability to reach audiences of all ages (Edell & Keller, 1989). Similarly to television, radio has characteristics of external pacing and volatility (Verhoef, Hoekstra, & Van Aalst, 2000). The advantages of radio advertising are low production costs and selectivity in reaching segments of audiences homogeneous in demographics or lifestyles (McDonald, 1998; Roberts & Berger, 1989).

The objective of this study was to investigate consumer perceptions of television and radio advertising information in Taiwan. Since this type of study has not previously been conducted exclusively in this geographic area, the findings will provide new insights into the Taiwanese market and may assist marketing managers in delivering product- or service-related information using TV or radio advertising, more effectively to reach consumers in the targeted market segments.

Television and radio advertisements have certain likenesses in the way they use sound effects and themes to impress audiences. Leigh (1991) pointed out that the relative effectiveness of television versus radio as a broadcast medium is an important issue both practically and theoretically. Upon receiving information from television and radio advertising, consumers may form positive attitudes toward the advertised products or services (Aaker & Stayman, 1990; Derbaix, 1995; Edell & Burke, 1987). Buchholz and Smith (1991) found that consumers' processing of television and radio advertising was different and needed further research.

To measure the efforts of consumers' information searching, Heaney and Goldsmith (1999) used Likert scales to quantify respondents' information concerning searching behavior prior to service provider selection. Schmidt and Spreng (1996) believed that consumers' perceived abilities and motivations to search for information were factors that directly influenced their searching behavior. Mowen and Minor (2001) indicated that information searching helped consumers gather more information on product prices and qualities in order to reduce perceived risks and uncertainty.

Consumers select, process, and explain information to form meaningful representations (Armstrong & Kotler, 2003). In decisions, positive advertising cognition is found to be related to positive brand cognition (Lutz, 1985; MacInnis & Jaworski, 1989). Well-designed information increases consumer awareness as well as generating positive attitudes toward the advertisements and further toward the products or services. Armstrong and Kotler found that an average

person may be exposed to more than 1,500 advertisements in a single day. Since consumers cannot possibly process all the information they have received, understanding how the stimuli contained in advertising are perceived has its importance for practitioners.

Coulter and Punj (1999) examined the cognitive responses to advertising by consumers and concluded that the information in advertisements influenced their decisions. Franzen (1999) indicated that the primary or initial stage in processing advertising information occurred unconsciously, but the secondary stage created a deliberate focus of sustained duration.

METHOD

Srinivasan and Ratchford (1991) utilized questionnaires to gather information on the channels, sources, and quantities of information respondents consumed, to measure the efforts of their external information searching behavior. The content of the searched information is also an important dimension to measure the efforts of consumers' searching behavior (McColl-Kennedy & Fetter, 2001).

SAMPLE

This study examined consumer perceptions of TV and radio advertising using consumer survey data. Questionnaires were designed based on findings in the literature and discussions with professionals and practitioners. A pilot survey was conducted prior to the formal survey. Modifications of the questionnaires were made following suggestions by professionals, practitioners, and respondents who participated in the pilot survey.

The repertory grid technique developed by Kelly (1955) was adopted in the questionnaires to measure the discrepancies between perceptions of television and radio advertising information. Repertory grids allow survey respondents to view, understand, compare, and predict events using constructs (Kelly) which have been applied in the areas of consumer cognition and retailing (Hallsworth, 1987; Hudson, 1974; Mitchell & Kiral, 1998). In this study, each of the characteristics measuring information perceptions was specified by two opposing statements in the questionnaires. Taking retail location as an example, survey respondents were asked to compare "information about retail location is described more clearly in television advertising" and "information about retail location is described more clearly in radio advertising". If the specified characteristics of television advertising information were favorable, positive scores (one or two, depending on the degree of favorableness) were marked. If the specified characteristics of radio advertising information were favorable, negative scores (minus one or minus two) were marked. Zero scores indicated that the respondents were neither for, nor against, the specified characteristics.

The formal survey was conducted in Taichung, the most populated metropolitan area in central Taiwan. A gift worth approximately one US dollar was provided to each respondent who was willing to participate in the survey. Respondents needed approximately 15 to 20 minutes to answer all the questions. Trained surveyors provided any necessary assistance in explaining the questions. If for any reason respondents decided not to continue the survey, the gifts were not retrieved and the questionnaires were discarded.

The formal survey was conducted in several locations including the main train station, two large department stores, two hyper-marts, a cultural center, and the campus of a university, to ensure diversity of respondents. The survey was conducted in May 2002. Three hundred and sixty respondents were surveyed and the total valid samples were 347.

Slightly more female respondents (56%) than male respondents (44%) were included in the dataset. Approximately 43% of the respondents were married. Respondents who had high school educational levels or less accounted for 41% of the respondents. About half of the respondents had some college education, and 5% of the respondents had studied in graduate schools. In terms of occupations, about 28% of the respondents were in the service sector, 30% were students, 9% were in educational institutions, and 6% were homemakers. The rest of the respondents worked in manufacturing, the military, government administration, and general business. The average age of respondents was 32, and the average monthly household income was USD 1,833.

Analysis

Factor analysis and cluster analysis were used to examine the differences in consumer perceptions between television and radio advertising information. Factor analysis is a technique used to generate new underlying variables that contain most of the information included in the original variables (Johnson, 1998). The extracted dimensions or factors are uncorrelated while the variables in each factor are highly correlated.

Cluster analysis is used to partition observations so each group has observations with similar characteristics but is distinct from the characteristics of other groups. Two kinds of cluster analysis, hierarchical and nonhierarchical, are commonly applied in empirical studies. The hierarchical method has the disadvantage of the researcher's not being able to amend the segmentation of previously assigned observations during the clustering process and is not suitable for large datasets (Khattree & Naik, 2000). The K-means approach, a nonhierarchical clustering method, was applied in this study. The classifications of observations are iterated to reduce the possibilities of assigning observations to a segment that does not best describe the characteristics of respondents in clusters.

RESULTS

Our intention in this study was to examine the information perception discrepancies between TV and radio advertising in Taiwan. Survey respondents indicated that the average time spent watching television (126 min./day) was more than twice the time they listened to the radio (58 min./day) (Table 1). In general, radio was listened to in the morning. Since certain service and manufacturing companies allowed employees to listen to the radio while working, about 15% to 20% of the respondents listened to the radio during normal working hours (9 a.m. to 5 p.m.). During the evening, from 5 o'clock to midnight, television dominated. More than 70% of the respondents watched television during prime time (from 7 p.m. to 10 p.m.). Late at night, from 10 p.m. to 1 a.m., radio attracted a larger audience than during other broadcast time periods. Students and people who needed to work late at night may turn on the radio while studying or working.

TABLE 1
TELEVISION WATCHING AND RADIO LISTENING OF RESPONDENTS

	Watching television	Listening to radio
Average time (min./day)	126	58
Time		
5:01 ~ 7:00	2%	7%
7:01 ~ 9:00	6%	25%
9:01 ~ 12:00	5%	19%
12:01 ~ 14:00	19%	14%
14:01 ~ 17:00	10%	17%
17:01 ~ 19:00	23%	15%
19:01 ~ 22:00	71%	18%
22:01 ~ 1:00	38%	33%
1:01 ~ 5:00	5%	8%
Day		
Weekdays	16%	30%
Weekends	34%	16%
About the same	50%	54%
Switching among channels		
1~2	12%	54%
3~4	35%	18%
5~6	21%	3%
Not fixed to particular channels	32%	25%

Respondents seemed to watch television more on weekends than on weekdays, but more respondents listened to the radio on weekdays than on weekends. In terms of channel switching, more than half of the respondents listened to one or two radio channels, compared to only 12% of the respondents who constantly

watched the same number of television channels. Respondents had a tendency to switch TV channels more frequently than radio channels due to the ease of using a TV remote control.

Principal components analysis was used in this study to determine the number of dimensions needed for the factor analysis. The maximum likelihood method, with varimax rotation, was applied in the factor analysis to extract the underlying factors in order to explain the differences in advertising information perceptions. As indicated in Table 2, the first factor describes the advertising information related to products and sales. The second factor is associated with brand and image. The third factor indicates the information appeal in TV and radio advertising. The last factor explains the value and usefulness of the information provided in advertising. Cronbach's alpha is utilized to measure the reliability of scales. An alpha coefficient above 0.7 is considered reliable (Nunnally, 1978). Murphy and Davidshofer (1988) stated that a coefficient alpha below 0.6 could be unacceptable. In this study, the Cronbach's alpha coefficients are above 0.7 except for the second factor which is below 0.7 but within the acceptable range.

TABLE 2
UNDERLYING FACTORS OF ADVERTISING INFORMATION

Factor 1 Product/Selling information	Factor 2 Image information	Factor 3 Appealing information	Factor 4 Utilization information
Product function	Brands	Entertaining information	Utilization information
Product usage	Features	Attractive advertising	Believable
Retail location	Images	Strengthening images	Essential
Issuing time of new products		Helping recall memories	Local activity information
Promotion			
Safety warranty			
Services			
Content			
Cronbach's $\alpha = 0.8755$	Cronbach's $\alpha = 0.6585$	Cronbach's $\alpha = 0.7730$	Cronbach's $\alpha = 0.7678$

The four factors and the time spent on watching television and listening to radio were used in the cluster analysis to classify respondents into different segments. Results indicated that slightly more than half of the respondents were included in the first cluster, spending about an hour and twenty minutes watching television and another thirty minutes listening to radio, on average, per day (Table 3). A quarter of respondents were in the second cluster. The time spent watching television and listening to radio were almost the same for the

respondents in this cluster – about 100 minutes on average for each medium per day. Twenty-three percent of respondents were included in the third cluster, spending more than four hours each day watching television and another hour listening to radio.

TABLE 3
RESULTS OF THE CLUSTER ANALYSIS

	Cluster I	Cluster II	Cluster III	Test statistics
Respondents	52.16%	25.07%	22.77%	
Watching TV (min./day)	77	108	256	$F = 288.15^{**}$
Time				
5:01 ~ 7:00	0.00%	4.60%	2.53%	$\chi^2 = 7.70^{**}$
7:01 ~ 9:00	7.18%	3.45%	3.80%	$\chi^2 = 2.14$
9:01 ~ 12:00	5.52%	2.30%	5.06%	$\chi^2 = 1.44$
12:01 ~ 14:00	13.26%	21.84%	30.38%	$\chi^2 = 10.82^{**}$
14:01 ~ 17:00	6.08%	8.05%	21.52%	$\chi^2 = 14.99^{**}$
17:01 ~ 19:00	19.34%	20.69%	34.18%	$\chi^2 = 7.19^{**}$
19:01 ~ 22:00	71.82%	63.52%	73.42%	$\chi^2 = 1.52$
22:01 ~ 1:00	38.12%	32.18%	41.77%	$\chi^2 = 1.70$
1:01 ~ 5:00	4.97%	2.30%	8.86%	$\chi^2 = 3.66$
Listening to radio (min./day)	33	98	68	$F = 30.50^{**}$
Time				
5:01 ~ 7:00	8.84%	3.45%	7.59%	$\chi^2 = 2.58$
7:01 ~ 9:00	25.41%	27.59%	22.78%	$\chi^2 = 0.51$
9:01 ~ 12:00	12.15%	27.59%	24.05%	$\chi^2 = 11.09^{**}$
12:01 ~ 14:00	12.15%	19.54%	12.66%	$\chi^2 = 2.82$
14:01 ~ 17:00	11.60%	27.59%	16.46%	$\chi^2 = 10.79^{**}$
17:01 ~ 19:00	14.92%	21.84%	6.33%	$\chi^2 = 7.96^{**}$
19:01 ~ 22:00	19.34%	20.69%	10.13%	$\chi^2 = 3.99^{**}$
22:01 ~ 1:00	32.04%	33.33%	32.19%	$\chi^2 = 0.05$
1:01 ~ 5:00	7.73%	5.75%	12.66%	$\chi^2 = 2.77$
Factor 1 (product/selling information)	0.1772	-0.6996	0.3556	$F = 37.14^{*}$
Factor 2 (image information)	0.2008	-0.6591	0.2575	$F = 36.40^{**}$
Factor 3 (appealing information)	0.2341	-0.8241	0.3503	$F = 73.54^{**}$
Factor 4 (utilization information)	0.1852	-0.6759	0.3028	$F = 39.12^{**}$
Gender				
Male	44.20%	55.17%	29.11%	$\chi^2 = 11.51^{**}$
Female	55.80%	44.83%	70.89%	
Age (years)	31.5	34.3	29.8	$F = 2.76^{*}$
Marital status				
Married	41.11%	51.16%	39.24%	$\chi^2 = 3.99^{**}$
Single	58.89%	48.84%	60.76%	

Table 3 continued

	Cluster I	Cluster II	Cluster III	Test statistics
Educational levels				
Elementary school	2.76%	3.45%	2.53%	
Junior high school	4.97%	11.49%	8.86%	
Senior high school	22.65%	34.48%	44.30%	$\chi^2 = 24.37^{**}$
College	62.99%	41.38%	43.04%	
Graduate School	6.63%	9.20%	1.27%	
Monthly average income (USD)	1,889	1,747	1,733	$\chi^2 = 0.69$

** indicates significance at 5% level.
* indicates significance at 10% level.

For TV watching, relatively more respondents in the third cluster watched television from noon to midnight. During the prime time evening hours, the majority of respondents were in front of the television. However, after 10 o'clock at night, the percentage of respondents watching television dropped sharply. Since the respondents in the third cluster were intensive TV watchers, more than 40 percent of them would be watching television during the late evening hours. Chi-square indicated that television watching among the three clusters was not significantly different during the evening hours, but was different at noon and in the afternoon hours.

For radio listening, the morning and afternoon commute was the time more consumers turned on radio. A higher percentage of respondents in the second cluster listened to the radio from early morning (seven o'clock) to midnight. More than 30 percent of respondents turned on the radio late at night. During working hours, the percentages of respondents listening to radio in the three clusters were statistically different.

For the four underlying dimensions in the cluster analysis, positive scores indicated positive attitudes towards the information provided in *TV* advertising, and negative scores revealed positive attitudes toward the information provided in *radio* advertising. For intensive TV watchers in the third cluster, the scores were relatively higher than the corresponding scores in other clusters, indicating stronger positive attitudes toward the information provided in TV advertising. Respondents in the second cluster spent relatively more time listening to radio. The negative scores revealed that respondents in the second cluster had a more positive attitude toward radio advertising.

The attitudes of the respondents in the third cluster were more positive about the information provided in TV advertising. The product/selling information in TV advertising was important for the respondents in the third cluster, but did not seem to cause concerns for the respondents in the first cluster, who spent relatively less time watching TV. Respondents in all three clusters valued as

important information, advertising information that was entertaining, attractive, had strong product images, and assisted with memory recall.

The respondents in the first cluster had higher monthly incomes and consisted of more college graduates. The second cluster had more male respondents. More females were included in the third cluster: they were unmarried and relatively young. For consumers like those in the third cluster, who had time to watch television for several hours every day, positive attitudes were formed about the information provided in TV advertising. For consumers who did not spend much time on television or radio, only when the time allocated to television viewing was more than to radio, were positive attitudes formed toward TV advertising information. When consumers spent more time on radio or at least as much as on television, positive attitudes toward the information provided in radio advertising could be generated.

CONCLUSION

This study examined consumer perceptions of television and radio advertising information in Taiwan. Buchholz and Smith (1991) stated that fundamental differences existed in message processing between two types of broadcasting media: radio and television. The differences influence the way consumers process persuasive messages, and have significant empirical implications for practitioners.

A consumer survey was conducted in this study to reveal the average time consumers spent on television and radio and the differences in attitudes toward the information provided in TV and radio advertising. Factor analysis was utilized in the study to extract four underlying dimensions of information in TV and radio advertising, including product/selling, image, appealing, and utilization. For consumers who had relatively more time to watch television, positive attitudes were formed toward the information provided in TV advertising. For male and older consumers who spent more time on radio, positive attitudes were formed toward radio advertising information. For consumers who had limited time for either media, the information provided in TV advertising prevailed. Results of this study revealed that consumers perceived TV and radio advertising information differently when they allocated different time to these two media.

How consumers perceive information in TV and radio advertising has not been studied exclusively in Taiwan. The findings in this study coincide with what McNeal and Ji (1999) concluded about how Chinese children learned information from different media. The more time Chinese children watch TV, the more important TV is regarded as the product information source. The Chinese children who were radio listeners claimed radio as a more important information source.

The implications of this study are that not all consumers value information in TV advertising more highly than information in radio advertising. Marketing managers may utilize radio advertising as a cost-effective complement to TV advertising in disseminating information, especially to those who spend more time in listening to radio. In the contemporary business environment, various channels can be utilized to disseminate product- or service-related information. Further studies may need to broaden the media selection in examining consumer perceptions of media information.

REFERENCES

Aaker, D. A., & Stayman, D. M. (1990). Measuring audience perceptions of commercials and relating them to ad. impact. *Journal of Advertising Research*, **30** (4), 7-17.

Abernethy, A. M., Gray, J. I., & Butler, D. D. (1997). Radio advertising information strategy: Differences between services and products. *Journal of Services Marketing*, **11** (5), 344-357.

Armstrong, G., & Kotler, P. (2003). *Marketing: An Introduction* (6th ed.). NJ: Prentice-Hall.

Beatty, S. E., & Smith, S. M. (1987). External search effort: An investigation across several product categories. *Journal of Consumer Research*, **14** (1), 83-96.

Bettman, J. R. (1979). *An information processing theory of consumer choice*. MA: Addison-Wesley Publishing Co., Inc.

Blackwell, R. D., Miniard, P. W., & Engel, J. F. (2001). *Consumer behavior* (9th ed). TX: Harcourt College Publishers.

Buchholz, L. M., & Smith, R. E. (1991). The role of consumer involvement in determining cognitive response to broadcast advertising. *Journal of Advertising*, **20** (1), 4-17.

Coulter, K. S., & Punj, G. (1999). Influence of viewing context on the determinants of attitude toward the ad. and the brand. *Journal of Business Research*, **45** (1), 47-58.

Derbaix, C. M. (1995). The impact of affective reaction on attitudes toward the advertisement and the brand: A step toward ecological validity. *Journal of Marketing Research*, **32** (4), 470-479.

Edell, J. A., & Burke, M. C. (1987). The power of feelings in understanding advertising effects. *Journal of Consumer Research*, **14** (3), 421-433.

Edell, J. A., & Keller, K. L. (1989). The information processing of coordinated media campaigns. *Journal of Marketing Research*, **26** (2), 149-163.

Franzen, G. (1999). *Brands and advertising*. Oxfordshire, UK: Admap Publications.

Hallsworth, A. G. (1987). Repertory grid methodology and the analysis of group perceptions in retailing. *International Journal of Retailing*, **3** (4), 43-54.

Heaney, J. G., & Goldsmith, R. E. (1999). External information search for banking services. *International Journal of Bank Marketing*, **17** (7), 305-323.

Howard, J. A. (1989). *Consumer behavior in marketing strategy*. NJ: Prentice-Hall.

Hudson, R. (1974). Images of the retailing environment: An example of the use of the repertory grid methodology. *Environment and Behavior*, **6** (4), 470-494.

Johnson, D. E. (1998). *Applied multivariate methods for data analysts*. CA: Duxbury Press.

Kelly, G. A. (1955). *The psychology of personal constructs*. Vols. 1-2, NY: Norton.

Khattree, R., & Naik D. N. (2000). *Multivariate data reduction and discrimination with SAS software*. NC: SAS Institute Inc.

Leigh, J. H. (1991). Information processing differences among broadcast media: Review and suggestions for research. *Journal of Advertising*, **20** (2), 71-75.

Lutz, R. J. (1985). Affective and cognitive antecedents of attitude toward the ad: A conceptual framework. In L. Alwitt & A. Mitchell, (Eds.), *Psychological processes and advertising effects*. NJ: Erlbaum.

MacInnis, D. T., & Jaworski, B. J. (1989). Information processing from advertisements: Toward an integrative framework. *Journal of Marketing*, **53** (4), 1-23.

McColl-Kennedy, J. R., & Fetter, Jr., R. E. (2001). An empirical examination of the involvement to external search relationship in services marketing. *Journal of Services Marketing*, **15** (2), 82-98.

McDonald, W. J. (1998). *Direct marketing: An integrated approach*. MA: Irwin McGraw Hill.

McKenna, R. (1995). Real-time marketing. *Harvard Business Review*, **73** (4), 87-95.

McNeal, J. U., & Ji, M. F. (1999). Chinese children as consumers: An analysis of their new product information sources. *Journal of Consumer Marketing*, **16** (4), 345-364.

Mitchell V. W., & Kiral, R. H. (1998). Primary and secondary store-loyal customer perceptions of grocery retailers. *British Food Journal*, **100** (7), 312-319.

Mowen, J. C. (1995). *Consumer behavior* (4th ed.). NJ: Prentice-Hall.

Mowen, J. C., & Minor, M. S. (2001). *Consumer behavior: A framework*. NJ: Prentice-Hall.

Murphy, K. R., & Davidshofer, C. O. (1988). *Psychological testing: Principles and applications*. NJ: Prentice-Hall.

Nunnally, J. C. (1978). *Psychometric theory* (2nd ed.). NY: McGraw-Hill.

Roberts, P. D., & Berger, M. L. (1989). *Direct marketing management*. NJ: Prentice-Hall.

Schmidt, J. B., & Spreng, R. A. (1996). A proposed model of external consumer information search. *Journal of Academy of Marketing Science*, **24** (3), 246-256.

Srinivasan, N., & Ratchford, B. T. (1991). An empirical test of a model of external search for automobiles. *Journal of Consumer Research*, **18** (2), 233-242.

Verhoef, P. C., Hoekstra, J. C., & Van Aalst, M. (2000). The effectiveness of direct response radio commercials. *European Journal of Marketing*, **34** (1/2), 143-155.