Green Advertising and Environmentally Responsible Consumer Behaviors: Linkages Examined

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Recently, global warming and environmental issues have come to the forefront, with companies like Coca-Cola joining General Electric Co., Toyota, IBM and others to focus on sustainability (Bush, 2008). The results of this study uncover additional factors beyond those found 15 years ago in studying green advertising and consumer behaviors. However, similar to previous research, consumers who are more proactive with their environmental behaviors also have better attitudes toward green advertising. The results imply that green advertising may be best at reaching those who are already practicing green behaviors.

Introduction

Environmental concerns have been on the agendas of industry and academia for more than 30 years. Recently, they have resurfaced as a top issue (Bush, 2008). Al Gore was named a runner-up in *Time* magazine's Person of the Year contest after receiving the Nobel Peace Prize for his work on Global Warming and Environmental concerns (Walsh, 2007). Environmental issues also have strategic implications for organizations (Banerjee, 2002). For example, Erdman (2008) claims that eco-consciousness is now an expectation and that numerous brands across categories are in a race to see who can be "greenest." Consumer concerns about the environment have been on the increase in recent years (Chitra, 2007). With the increasing number of "green" customers, businesses attempt to understand and respond to external pressures to improve their environmental performance (Chen, 2008). The green movement has so much momentum that the term "going green" had 15.6 million hits on Google in January 2008 (Erdman, 2008) and 31 million hits just over two months later. Marketing practitioners and academics attempt to identify and understand green consumers and their needs, and to develop market offerings that meet these needs (D'Souza *e.t al,* 2007).

A number of organizations demonstrate their environmental sensitivity with different strategies. One of the marketing tools used by organizations is environmental or green advertising. Green advertising first began in the 1970s when a recession led to sky-high oil prices and a focus on environmental issues. It has resurfaced now due to similar problems, with record-level fuel prices (Healey and Hagenbaugh, 2008). Neff and Thompson (2007) reported that packaged goods executives at the Food Marketing Institute Show agree that eco-marketing will have staying power this time around. They feel that consumers who weren't willing to pay more for green products in the past are willing to do so now. These executives believe that support for green products from top retailers, such as Wal-Mart, Home Depot, and Kroger Co. is making a difference in consumer attitudes.

While green marketing and advertising efforts continue to grow, marketers do not have adequate tools for evaluating the success of green advertising, nor do they have sufficient tools for determining consumers' environmental attitudes, intentions, and behaviors. Additionally, there is little consensus about the identity and nature of green consumers (Peattie, 2001). Understanding and predicting environmental behavior has proved to be remarkably difficult. Nearly everyone has concerns and beliefs regarding the environment, however, environmental attitudes have not been correspondingly ubiquitous (McCarty and Shrum, 2001).

Previous research into consumers' attitudes toward green advertising and the environment has concluded different results over time. Much of the work in this area developed in the 1970s (Schewpker and Cornwall, 1991). Earlier research in this area also has mixed or inconclusive results (Troy, 1993; Schewpker and Cornwall, 1991). It is likely that surveys developed a long time ago may no longer be valid for measuring consumers' attitudes, intentions, and behaviors, given the societal and legal changes that have occurred since the 1970s (Matulich, Haytko and Austin, 1999).

In the current research, we updated a study done more than a decade ago to measure consumer attitudes toward green advertising and environmental attitudes. We purified the survey instrument by adding and removing some items to make the instrument more up-to-date. We also compared current research results with previous work to understand changes in consumer perceptions of green advertising and environmentally responsible consumer behaviors. The purpose of this research is to provide a modern, reliable scale academic researchers and business

practitioners can use to assess their "green" advertising strategies in conjunction with the environmental makeup of their customers. The paper utilizes Churchill's (1979) model for developing improved measures of marketing constructs.

Attitude Toward Green Advertising

Previous research into consumer attitudes toward green advertising was very comprehensive and addressed some of the same concepts we look for today. From previous research, we used themes that were unique to green advertising. For example, several authors noted motivations for a firm to produce green advertising (Davis, 1992; Frankel, 1992; Gillespie, 1992; Ottman, 1992, 1998, Zinkhan and Carlson, 1995). Others researched consumer responses to green advertising and products in terms of loyalty (Frankel, 1992), willingness to pay higher prices (Phillips, 1999; Schlossberg, 1992), and perceptions of product safety or harm to the environment (Davis, 1994; Wheeler, 1992). Finally, we included items examining the positive and negative impact of green advertising on society, as noted by Banerjee et al. (1995), Davis (1992), Ottman (1992b), and Schlossberg (1992). In addition to themes used in previous research, we also included three new items. Based on the research conducted by Manrai, Manrai, Lascu and Ryans (1997), we included "Green advertising strengthens company image." Based on the research conducted by Chan (2001), we included "I plan to switch to products and services that were advertised as being green." Finally we included "I prefer products with eco-labeled packages" based on current trends in packaging and labeling to include environmentally friendly messages and/or recycling information.

Environmental Behaviors

With respect to the scale examining environmentally responsible consumer behaviors, we used almost all the themes studied in previous research. Previous research widely borrowed environmental themes from Ecological Attitudes and Knowledge Scale (EAKS). However, we excluded one of the items from previous research: "I am willing to give up driving on a weekend due to an ozone/smog alert." We believed this question is not valid anymore for our research purpose. After a comprehensive review of both current academic and popular literature, we determined some new environmental concerns that we included in our research. Consequently, we added 17 more items. Some of the new items were about recycling (Laroche, Bergeron, Barbaro-Forleo, 2001; Brown and Wahlers, 1998), renewable energy (Rowlands, Scott and Parker, 2002), eco-labeling (Brown and Wahlers, 1998; Mohr, Eroglu, Ellen, 1998), climate change (Rowlands, Scott and Parker, 2002) and eco-friendly cars (Buss, 2001).

The Measures

This study utilizes a combination of several previously used measures that have not been studied simultaneously, in addition to new items thought to tap the domains of attitudes toward green advertising and environmental behaviors. All items use a 5-point Likert scale, with 5 = strongly agree and 1 = strongly disagree. The attitude toward green advertising scale contains 38 items; 35 were adapted from items used in past attitude toward advertising in general scales, and 3 items were constructed based on reviews of the green marketing literature. The environmental attitudes scale contains 47 items; 30 were adapted from the items used in the past environmental attitudes scale; and 17 items were included based on reviews of the environmental concerns and behavior literature.

Data Collection, Analysis and Results

The survey was delivered to 565 undergraduate and graduate business students who are attending private and public universities in Florida. Response rates and responses among private and public university students were not significantly different; so all responses were combined for purposes of data analysis.

The following procedures were performed on both the attitude toward green advertising scale and the environmental behavior scale. First, overall reliabilities were assessed. Second, principal components factor analysis was performed to ascertain the dimensionality of each scale. Then reliabilities were assessed for sub dimensions. We looked at gender differences across all scale items, and finally assessed the relationship between environmentally responsible behaviors and attitudes toward green advertising.

Reliability Analysis

The most significant measure of reliability is coefficient alpha. Nunnally (1978) suggests that an acceptable level of coefficient alpha in exploratory analyses is .70. The overall Cronbach's alpha for the Green Advertising scale was .695 across 38 items. Item-to-total correlation analysis indicates that if q9, q36, q37, and q38 were deleted, Cronbach's alpha would improve to .700. This suggests that the items are tapping a significant amount of the "common core" of attitude toward green advertising. The overall Cronbach's alpha for the Environmentally Responsible Behaviors scale was .895 across 47 items. Item-to-total correlation analysis indicates that if q4 were deleted, Cronbach's alpha would improve to over .900.

Factor Analysis

Attitude Toward Green Advertising. Exploratory factor analysis was used to assess the dimensionality of the attitude toward green advertising construct. Prior to analysis, appropriate items were recoded so that all items ran in the same direction. Principal components analysis was performed with VARIMAX rotation. Initial default extraction produced eight factors with eigenvalues greater than 1.0. However, this solution was not interpretable. An eigenvalue scree plot suggested between two and five factors could be appropriate. Careful analysis of factor solutions between two and five solutions resulted in the selection of the four-factor solution as most interpretable and "cleanest" (with the fewest cross-loadings), which accounted for 42 percent of the variance explained.

Table 1 shows the items and their loadings on each of the four factors. The first factor seems to describe cognitive and affective responses to green advertising in general. This result corresponds to a similar dimension found in the Haytko and Matulich (1993) study of advertising in general. Coefficient alpha for items within this dimension was .86. The second factor appears to be consumers' responses to the companies and their green products, which is similar to the institution dimension defined by Sandage and Leckenby (1980), with α=.84. The third factor appears to describe consumers' specific behaviors with regard to green products and advertising (α=.76). Finally, the fourth factor is clearly some type of moral factor of the ethical impact of green advertising (α=.60). An ethical dimension also appeared in the Haytko and Matulich (1992) study, and has components of the social dimension as defined by Greyser (1962).

TABLE 1: GREEN ADVERTISING ITEMS AND RESULTS

Attitudes Toward Green Advertising: * indicates recoded item	Mean	Std. Dev.	Factor
Cognitive and Affective Responses to Green Advertising			
3. Green advertising is valuable to society.	3.95	.849	1
4. Green advertising promotes materialism.*	2.43	.974	1
6. Green advertising leads people to be more socially responsible.	3.68	.943	**1**, 2
11. Green advertising shows the consumer that the firm is addressing consumers' environmental concerns.	3.84	.815	1
12. Green advertising strengthens company image.	4.01	.793	1
23. I think green advertising is good.	3.86	.910	1
25. Most green advertising insults people's intelligence.*	2.32	1.011	1
27. Green advertising claims are insincere.*	2.62	.932	1
30. Green advertising is a good business practice.	3.84	.809	1
31. Green advertising is a weak form of advertising.*	2.31	.884	1
33. Green advertising is unprofessional.*	1.96	.885	1
Consumer Responses to the Companies and Their Products			
1. A company that uses green advertising is trustworthy.	3.30	.914	2
5. Products and services that are advertised as green are safer to use.	3.20	1.018	2
32. Green advertising is good at addressing environmental problems.	3.55	.921	1, **2**
13. Green advertising is a good source of information about products/services.	3.15	.942	2
14. Green advertising is believable.	3.19	.860	2

15. Green advertising results in better products.	2.93	.918	2
17. Products/services that are advertised as green are less expensive to society in the long run.	3.18	1.029	2
19. Green advertising helps to solve environmental problems.	3.21	1.056	2
20. Green advertising is interesting to see.	3.42	.984	**2**, 3
21. Green advertising presents a true picture of the product being advertised.	2.69	.885	2
26. Sponsors of green advertising have sincere intentions.	2.99	.920	2
28. I have more confidence in advertised green products than in unadvertised green ones.	2.85	.998	2
29. I believe the claims in green advertising are truthful.	3.25	.844	2
Consumers' Specific Behaviors			
22. I tend to be more loyal to products from companies that practice green advertising.	2.98	1.673	3
24. I plan to switch to products and services that were advertised as being green.	2.76	.988	3
34. I would pay more for products or services that were advertised as being green.	2.60	1.100	3
35. I prefer products with eco-labeled packages.	3.01	1.054	3
Moral/Ethical Impact of Green Advertising			
2. Green advertising exploits environmental issues instead of addressing them.*	2.84	.978	1, **4**
7. Green advertising is deceptive.*	2.73	.956	4
8. Green advertising preys upon consumers' environmental concerns.*	3.49	1.082	4
10. Companies use green advertising to protect their reputations.	3.69	.962	4
16. Green advertising results in higher prices for products.*	3.22	.944	4
18. Advertisements that focus on environmental concerns persuade people to buy products they do not really need. *	2.87	.995	4
Removed Items to Improve Reliability			
9. Green advertising is unnecessary.*	1.92	.973	1
36. I don't pay much attention to green advertising.*	3.36	1.215	3
37. I have an unfavorable view of green advertising.*	2.18	1.034	1
38. Green advertising is wasteful.*	1.91	.948	1

Environmentally Responsible Consumer Behaviors. The default factor analysis extraction produced nine factors with eigenvalues greater than 1.0. However, nine factors were not readily interpretable. An eigenvalue scree plot suggested two to five factors could be appropriate. Careful analysis of factor solutions between two and five solutions resulted in the selection of the five-factor solution as most interpretable, which accounted for 44 percent of the variance explained.

Table 2 shows the items and the loadings on each of the five factors. The first factor appears to describe environmental activism. These items, describing strong and overt forms of environmental behavior, together had a coefficient alpha of .88. The second factor seems to describe current, personal, "everyday" environmental thoughts and behaviors (α=.86). The third factor depicts the respondent's emotional response to environmental problems (α=.81). The fourth factor appears to describe environmental responsibility and impact (α=.59), while the fifth factor appears to describe awareness and understanding of environmental issues (α=.55).

Gender Differences

T-tests were performed on all items to determine if there were significant differences between males and females. Almost all question items differed at the $p<.05$ level, with females generally expressing more positive attitudes toward green advertising and exhibiting more environmentally responsible behaviors than males

Linking Attitudes to Environmental Behaviors

In order to examine the link between attitudes toward green advertising and the link to environmentally responsible consumer behaviors, respondents were coded into three groups: environmentally responsible (if responses to environmental behavior questions were averages above 3.5), environmentally apathetic (if responses to environmental behavior questions were averages below 2.5), or neutral. T-tests were performed to see if the environmentally responsible group differed from the apathetic group with regard to their attitudes toward green advertising. Not surprisingly, at the $p<.05$ level, there were significant differences between the two groups on almost all green advertising questions (with the exception of 2, 4, 8, 10, 16, and 25). For the remaining 32 items, those who were environmentally responsible had more positive attitudes toward green advertising than those who were environmentally apathetic. This supports research done by Matulich, Haytko, and Austin (1995).

TABLE 2: ENVIRONMENTAL ITEMS AND RESULTS

Thoughts and Behaviors about the Environment: * indicates recoded item	Mean	Std. Dev.	Factor
Environmental Activism			
7. I'd be willing to ride a bicycle or use public transportation to go to work/school to reduce air pollution.	2.34	1.248	1
8. I would purchase an environmentally-friendly car in my budget even if it would be difficult to service.	2.45	1.233	1
11. I often subscribe to ecological publications.	1.60	.928	1
13. I'd be willing to write my congressional representative concerning ecological problems.	2.60	1.271	1
16. I often urge my friends to use products that are advertised as being green.	2.46	1.415	1
21. I probably would go to a house to distribute literature on the environment.	1.93	1.051	1
22. I would be willing to donate a day's worth of pay to a foundation to help them improve the environment.	2.67	1.316	1
23. I often attend meetings of an organization specifically concerned with bettering the environment.	1.56	.891	1
27. I make every attempt to join environmental cleanup drives.	1.89	1.010	1
35. I would be willing to join a group or club which is concerned solely with ecological issues.	2.38	1.173	1
37. I strive to learn as much as possible about environmental issues.	2.61	1.073	1
39. I regularly contact community agencies to find out what I can do to help the environment.	1.64	.864	1
Personal Everyday Thoughts and Behaviors			
2. I would be willing to pay an environmental tax to help decrease environmental problems.	3.25	1.318	2, 3
17. I would be willing to stop buying products from companies guilty of harming the environment, even though it might be inconvenient.	3.25	1.122	2, 3
19. I refuse to buy products from companies accused of being polluters.	2.85	1.107	2
24. I buy products in refillable containers.	3.13	1.210	2
32. I strive to conserve water in my home.	3.42	1.251	2
33. I read labels to see if contents are environmentally safe.	2.51	1.218	2
38. I avoid buying products in aerosol containers.	2.83	1.312	2
40. I've often bought products just because they were safer for the environment.	2.56	1.181	2
41. I would pay extra on my electricity bill each month to ensure that all of the electricity I use comes from 'green' sources	2.36	1.219	2
42. I consider myself to be an environmentalist.	2.17	1.093	1, 2
43. I do my best to keep up-to-date on environmental issues.	2.45	1.367	2
44. I've changed my choice of many products for ecological reasons.	2.25	1.040	1, 2
45. I am a strong supporter of environmental regulation.	3.00	1.171	2
46. I make a special effort to buy products with environmentally friendly packaging.	2.61	1.112	2
47. I try hard to use less heat in the winter and use less air conditioning in the summer to conserve energy.	3.26	1.374	2
Respondent's Emotional Response			
1. I believe recycling will reduce pollution.	4.43	.906	3
3. I become upset when I think about the harm being done to the environment.	3.77	.995	3
9. When I think of the ways industries are destroying the environment, I get frustrated.	3.47	1.111	3
14. I feel people worry too much about environmental contaminants in food products.*	2.42	1.153	3
15. Recycling is important to save natural resources.	4.37	.853	3

18. I am very concerned about how climate change will effect future generations.	3.45	1.202	3
26. It frightens me to think that much of the food I eat may be dangerous because of environmental contamination.	2.92	1.283	3
34. The seriousness of environmental problems is exaggerated by environmentalists.*	2.51	1.139	3
36. It makes me angry to think that the government doesn't do more to help control environmental problems.	3.31	1.186	3
Environmental Responsibility and Impact			
5. It is the government's job to help the environment, not mine.*	2.05	1.112	4
6. I would be more willing to recycle if there were a monetary reward.	3.47	1.397	4
20. Keeping separate piles of garbage for recycling is too much trouble me.*	2.23	1.154	4
25. Even if everyone tried to conserve energy at home, it wouldn't make a big impact on energy use.*	2.15	1.202	4
28. Recycling is too much trouble for me.	1.99	1.033	4
29. Most of the environmentally safe products I use are too hard to find.*	2.66	.933	4
Awareness and Understanding of Environmental Issues			
10. I am aware of recycling programs in the area.	3.11	1.326	5
12. I understand the environmental phrases and symbols on product packages.	3.42	1.177	5
30. I feel that I am very knowledgeable about environmental issues.	2.81	1.039	5
31. I regularly keep track of my congressional representatives' voting records on environmental issues.	1.78	1.013	1, 5
Removed Items to Improve Reliability			
4. I rarely ever worry about the effects of the environment on me and my family.*	2.31	1.130	3

Discussion

With the addition of new question items, this research improves on previous research by uncovering additional factors with further construct explanatory value. For example, in attitude toward green advertising, the Matulich, *et. al* 1995 study found three factors, all of which were again found here. However a new factor was added (factor 3), consumers' specific behaviors with regard to green products and advertising. Two of the additional question items loaded into this factor ("I plan to switch to products and services that were advertised as being green" and "I prefer products with eco-labeled packages").

Seventeen question items were added in the environmentally responsible behaviors section, which improved explanatory values. For example in the 1995 study, factor 2 (everyday personal environmental thoughts and behaviors) increased alpha values from .79 to .86. Items added included "I buy products in refillable containers," "I would pay extra on my electricity bill each month to ensure that all of the electricity I use comes from 'green' sources," "I avoid buying products in aerosol containers," and "I read labels to see if contents are environmentally safe."

In previous research, a four-factor solution was found, with three of the four factors matching the current research. The "lost" factor was "possible future environmental behaviors," for which items loaded in the current research on the "personal everyday behaviors" factor. The new research proposes a five-factor solution, with two new factors not seen before. Factor 4, "environmental responsibility and impact" may have appeared because of the addition of five new items: "I would be more willing to recycle if there were a monetary reward," "Keeping separate piles of garbage for recycling is too much trouble for me," "Even if everyone tried to conserve energy at home, it wouldn't make a big impact on energy use," "Recycling is too much trouble for me," and "Most of the environmentally safe products I use are too hard to find." The fifth factor appears to describe awareness and understanding of environmental issues and included two new items: "I am aware of recycling programs in the area" and "I understand the environmental phrases and symbols on product packages." However, the coefficient alpha for these two new factors is relatively low, indicating that further items could be explored for addition to future surveys.

Limitations and Future Research

The current study utilized students as the sample, with a relatively homogeneous age group and income level. These results may or may not be comparable to previous research studies, given the makeup of a student population from the South versus a general population from the Northern Midwest. Additionally, the sample size was relatively small for performing scale purification, given the number of items on the scale.

This was the first study to specifically investigate gender differences with regard to attitude toward green advertising and environmentally responsible behaviors. It appears that this generation of consumers has distinct gender differences, with females exhibiting more positive attitudes toward green advertising and increased amounts of environmentalism. Future research should further explore the reasons underlying these differences and the implications for marketers.

Additionally, future research should use a sample containing a wide range of ages, educational levels, or incomes. Mohai and Twight (1987) found that age is strongly related to environmental concern, and other authors have found additional variables related to responsible environmental behavior. Weigel (1977) found that high levels of pro-ecology behavior were found in subjects who were liberal, more educated, and had higher occupational status. Hines, et al. (1986) found that knowledge, locus of control, commitment, and sense of responsibility were related to environmental behaviors.

Clearly, further research is needed to provide a better understanding of the conceptual foundations of attitude toward green advertising and corresponding environmental behaviors. The next step, according to Churchill (1979) and Gerbing and Anderson (1988), would be to use the purified instrument to collect additional data, and perform confirmatory factor analysis using the new factors. Additionally, despite the inclusion of multiple dimensions, a large portion of the variance is yet to be explained for both measures. Future research could explore possible additional variables that tap the same domain of these constructs.

These purified, multidimensional scales provide a broader perspective of the attitude toward green advertising and environmental behavior constructs than previous research. This perspective is necessary to study the influence of attitude toward green advertising in general on specific advertisements, especially in light of advertising's changing role in society. Additionally, advertising practitioners can benefit from the results of using these measures to better determine how their market is responding to the green advertisements being produced. Finally, this study provides a foundation for future research.

Conclusion

This study is a replication and extension of work that was completed more than a decade ago. Concerns about the environment have again come to the forefront of thinking in the United States, with a return to sky high oil prices and global climate change (Bush, 2008, Healey and Hagenbaugh, 2008). Thus, it is important to reexamine consumer attitudes toward environmentally responsible behaviors and also products and advertising touting themselves as “green.” The findings of this study show that females tend to be more environmentally responsible and have more positive attitudes toward both the advertising and the products viewed as being “green.” This study also found that consumers are willing to pay more for these types of products. A revised and purified scale for future study of these issues was developed and should be useful to both academics and practitioners in studying consumer responses to green marketing efforts and the resulting consumer behaviors.

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