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THE GREENING OF PRODUCTS: TRUTH OR DECEPTION?

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ABSTRACT

THE GREENING OF PRODUCTS: TRUTH OR DECEPTION?

By

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This study investigates consumer perceptions of green advertisements. Information Manipulation Theory (IMT) is used as a framework for understanding people's evaluations of green advertisements. Participants (N=138) were given either a greened or a non-greened advertisement paired with information describing the company as having either high or low corporate environmental concern or a control condition with no information. Participants then rated the advertisements for adherence to the IMT maxims of quality, quantity, manner, and relevance as well as honesty in general. Attitudes toward the advertisement and the company were also assessed. When participants perceived adherence to the IMT maxims they had more positive attitudes about the company and advertisement. The results indicated that a green advertisement from a company with high environmental concern is perceived as more honest than an advertisement from a company with low environmental concern. A green advertisement from a company with high environmental concern is viewed more positively than a green advertisement from a company with low environmental concern. A company with high environmental concern that uses green advertisements is also perceived more positively than a company with low environmental concern that uses green advertisements.

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INTRODUCTION

With threats of global warming, increased natural disasters, and other adverse environmental changes, environmental issues have gained prominence in the media and in the minds of consumers. Consumers have begun to make purchasing decisions based on the extent to which they perceive products as 'green' (Phillips, 1999). Companies have begun to capitalize on consumers' desire for environmentally conscious products by launching a variety of marketing tactics to convince consumers of the organizations' environmentally responsible practices and policies (Carlson, Grove, & Kangun, 1993).

Although there has been research examining the truthfulness of environmental messages, there has been little theoretical reasoning offered for why these messages might be perceived as deceptive by consumers. Past studies have used content analysis to classify green advertisements into categories using topologies to rate the deceptiveness of these claims (e.g., Kangun, Carlson, & Grove, 1991; Carlson et al., 1993; Polonsky et al., 1998). These studies use a small number of expert judges to categorize advertisements and fail to investigate consumers' perceptions of the validity of green advertisements as a whole.

This paper integrates the literature on deceptive messages with environmental advertising research to produce a clearer picture of why environmental advertisements might be perceived as deceptive. The purpose of this study is to use Information Manipulation Theory (IMT) as a framework for understanding people's evaluations of advertisements and to examine consumer perceptions of deceptive advertisements. The following paper will address: environmental attitudes and the historical context of green promotion, the conceptual distinction between green marketing and green advertising,

initial attempts at categorizing green advertisements, consumer skepticism and greenwashing, Information Manipulation Theory (IMT), and the deceptive nature of green advertisements.

Environmental Attitudes and the Historical Context of Green Promotion

There is a growing recognition that people believe protecting the natural environment is important and that attitudes toward the environment can translate into dollars in the marketplace. In a poll conducted by Environmental Research Associates, Phillips (1999) reports that consumers consider environmental products and product labels when making purchasing choices. Increased consumer environmental awareness has led to greater pressure on companies to create and market products about which specific environmental claims are made; Recycled paper and dolphin-safe tuna are two examples (Banerjee, Gulas & Iyer, 1995).

The trend toward green advertising resonates with a consumer base that is increasingly concerned with environmental issues. Survey reports show 87% of Americans are concerned about the environment (Phillips, 1999) and 75% of Americans consider themselves environmentalists (Osterhus, 1997). Thus, it is in a company's interest to convince consumers that their organization or products are 'green.'

Green marketing and green advertising were born out of environmental movements in the United States in the 1960s. The environmental movements of this era attempted to change business practices through public pressure. This tactic failed, and in the 1970s, environmentalists began to use legal pressure to force socially responsible business practices resulting in laws and regulations to limit the environmental consequences of business practices (Menon & Menon, 1997).

In response to these laws, corporations began to create specialized departments to deal with environmental issues. Corporations adopted strategies to manage their corporate image and satisfy consumer demands for social responsibility. This was done in an attempt to gain the support of interest groups and regulatory agencies (Menon & Menon, 1997). In the middle of the 1980s corporations explored marketing as one option for managing consumer perceptions about their environmental record. Since then green marketing has become integrated into overall business strategy for many organizations (Menon & Menon, 1997).

Green Marketing and Green Advertising

It is useful to make the distinction between green marketing and green advertising. In general terms, marketing involves an overall sales strategy that incorporates product, price, place, and promotion, known as the "four P's" of marketing (Kotler & Armstrong, 1996, p. 48). Advertising is a part of promotion along with other activities such as personal selling, public relations, sales promotion, and merchandising. Advertising involves activities that communicate the benefits of a product or service and encourage consumers to purchase it (Kotler & Armstrong, 1996). Green marketing and green advertising both make environmental claims about a product, service, or organization (Prakash, 2002).

Green marketing involves activities designed to create an environmentally responsible image of an organization's products, policies, or processes (Prakash, 2002). Green advertising is messaging that focuses on the environmental benefits of a product or service (Manrai, Manrai, Lascu, & Ryans, 1997). Banerjee et al. (1995) defined green advertising as messages that do one or more of the following: focus on the relationship

between a product or service and the environment, promote a green lifestyle and link it to a product or service, or propagate an environmentally responsible corporate image. Banerjee et al. (1995) performed a content analysis on 95 green television advertisements and 175 green print advertisements and found that most of these messages focused on promoting an environmentally responsible corporate image rather than focusing on a specific product or service.

What it Means to be Green

Studies examining the types and effects of green advertising have conceptualized the 'green' in green advertising in several ways. Initial attempts at conceptualization, such as work by Carlson et al. (1993), involved the development of different categories as a framework for understanding the green content of advertisements.

Carlson et al. (1993) sought to develop a mechanism for understanding green advertising content that examines the advertisements from an image and process orientation. The authors classified the advertisements into five categories including: product orientation, process orientation, image orientation, environmental fact, and combination. Product orientation is an advertisement that focuses on the environmental benefits of a product. Process orientation is a message that deals with a firm's environmentally superior technology, production technique, or its disposal method. Image orientation concentrates on a popular environmental cause or activity rather than on the product. Environmental fact is a claim involving an independent factual statement from an organization, other than the one in the advertisement, about the environment or its condition. Finally, combination refers to claims that include more than one of the characteristics of the aforementioned categories. Carlson et al. (1993) found

environmental claims were most often categorized as image based and that environmental advertisements were more often found to be misleading than truthful. Image based claims and product oriented claims were more likely to be judged as misleading than those in the environmental fact or process orientation category (Carlson et al., 1993). The present study attempted to categorize green advertisements but did not examine the effect of these advertisements on consumer behavior.

Studies of the effects of green advertisements have shown that environmental advertisements influence consumer attitudes and behaviors (Davis, 1994; D'Souza & Taghian, 2005) and the influence of the advertisements depends on a number of factors. Davis (1994) found that when consumers have positive pre-existing evaluations of a corporation's environmental image they have a more positive attitude toward the company's advertisements, advertised message, products, and the corporation itself. The advertising message was also seen as more believable when consumer's pre-existing attitudes toward the advertiser's environmental image were positive.

D'Souza and Taghian (2005) found that concern for the environment among consumers also made a difference in their evaluations of green advertisements. The authors conducted telephone interviews with 207 randomly sampled consumers. The consumers were asked to rate their concern for environmental issues and their attitudes toward green advertisements. The study found that highly concerned consumers are more likely to rate green advertisements as believable and favorable than consumers with low concern.

Consumer Skepticism and Greenwashing

Though green advertisements appear to be effective under certain conditions (Davis, 1994), some consumers are skeptical towards green marketing claims, which hinder the benefits of green marketing (Polonsky & Rosenberger, 2001). One reason for this cynicism might be the media exposure given to false environmental claims (Landler, 1991). Chase and Smith (1992) report on poll data from Advertising Age that indicates 90% of people find environmental claims somewhat or not at all believable. Similarly Osterhus (1997) found the effectiveness of pro-social advertising, advertisements that are cause-related or promote environmental issues, was moderated by consumer trust in the marketing source and attributions of consumer responsibility towards conservation and overconsumption behaviors. That is, when consumers have high trust and high responsibility, businesses are able to capitalize on these attributes and boost their market power (Osterhus, 1997).

Critics and the popular press (e.g., SourceWatch; The Green Life) have looked at green advertisements in a different light, suggesting that in order to promote an environmentally-friendly image or product, firms may seek to appear more pro-social than they actually are by using green advertising tactics. The term 'greenwashing' is used to refer to environmental advertisements that are believed to be misleading or deceptive (Kangun et al., 1991). Greenwashing is achieved through the use of green advertisements, which corporations use to create a green image or promote the environmental benefits of a product (Laufer, 2003; Banerjee et al., 1995).

Greenwashing is considered an attempt by corporations to present an environmentally favorable image while hiding wrongdoing and shifting blame.

Greenwashing may also maintain a company's reputation, or create the appearance that the CEO is taking on a leadership role in environmental issues (Laufer, 2003). Critics suggest companies greenwash to "create confusion, undermine credibility, criticize viable alternatives, and deceptively posture firm objectives, commitments, and accomplishments" (Laufer, 2003 p. 255). Greenwashing is, by definition, deceptive (Gray-Lee, Scammon, & Mayer, 1993; Kangun et al., 1991).

Despite concerns over the truthfulness in environmental claims (Kangun et al., 1991; Carlson et al., 1993), there are no federal laws that make deceptive advertisements illegal. Instead, the Federal Trade Commission (FTC) with the help of the Environmental Protection Agency (EPA), has established a set of guidelines for use in environmental marketing claims. These guidelines provide marketers with a framework for the appropriate use of environmental language and suggest ways to avoid deception in their claims (see Appendix A). These guidelines are not enforceable regulations (Federal Trade Commission, 1999). Despite the existence of these guidelines, consumers may or may not perceive the environmental claims made in green advertisements as true.

Information Manipulation Theory (IMT)

Most scholars agree that deception must include a deliberate, conscious intention to mislead (Miller & Stiff, 1993; Ekman, 2001; Bok, 1999). Concealment or falsification of information is also considered deceptive (Ekman, 2001). Additionally, definitions may include using deception as a persuasive strategy in order to influence others' beliefs, attitudes and behaviors through intentional misinformation (Miller & Stiff, 1993). Thus, deception is rarely the persuader's goal but a means for achieving another persuasive objective (Miller & Stiff, 1993).

Researchers in the area of deception have mainly focused on topics such as detecting deception with nonverbal cues like facial expressions (Ekman, 2001) or other body movements (Buller, Burgoon, White, & Ebesu, 1994). The research method in detection experiments limits their external validity. It presents conversations as being either entirely truthful or entirely deceptive (McCornack, Levine, Solowczuk, Torres, & Campbell, 1992). This method does not reflect actual conversations, which can include messages that may be a combination of both truth and deception (McCornack, 1992). This lack of external validity stems partly from the fact that researchers often use recall methods to generate deceptive messages as falsification of information ignoring more nuanced deceptive messages (McCornack, 1992).

To overcome deficiencies in existing deception research, McCornack (1992) developed Information Manipulation Theory (IMT). IMT describes how information can be manipulated in deceptive messages. It provides a framework for the ways in which people create deceptive messages by describing the manner in which information can be manipulated. IMT is based on Grice's (1989) theory of conversational implicature. The theory posits that conversations are built on reciprocated and assumed maxims of conversation, labeled the cooperative principle (CP). According to Grice, conversations are, to some extent, cooperative endeavors with implicit rules that both parties should oblige. These include appropriate contributions of required length at the proper time.

Grice (1989) offers four maxims for the CP. Obedience to these maxims indicate adherence to the CP. These maxims are: *quantity*, *quality*, *relation*, and *manner*. *Quantity* refers to the amount of information provided; contributions are expected to include as much information as is required, no more or less. *Quality* concerns

expectations about the truth of the information provided. *Relation* assumes participants will offer appropriate contributions to the conversation. Finally, *manner* refers to expectations about the way in which information is presented. Specifically, conversational partners should avoid information that is ambiguous and obscure.

Grice's (1989) maxims serve as the basis for IMT. IMT posits that messages are perceived as deceptive when they covertly violate these conversational maxims. What makes messages deceptive is that these violations remain undetected by conversational participants while they believe that the maxims are still being observed (McCornack, 1992). IMT assumes people have expectations about the way information is communicated including expectations about the relevance, manner, quantity, and quality of the information. When engaging in a conversation a speaker can covertly manipulate all or some of these expectations to deceive a listener. Thus, IMT provides a framework for assessing the variability in deceptive message design. It recognizes that deceptive messages vary in identifiable and methodical ways.

A number of studies have tested the assumptions of IMT. The first was McCornack et al.'s (1992) seminal experiment designed to code lies and examine people's perceptions of these lies. In the first stage of the study, coders categorized 30 messages generated by participants in the McCornack (1992) study, which involved lies told to dating partners. These messages were placed into six categories: completely disclosive or baseline messages, manipulations of quantity, manipulations of quality, manipulations of relevance, manipulations of manner, and a combination of manipulations. Combination manipulations were not used in this study. Two sample messages were selected from each category, for a total of 10 messages.

Once coded, two situations, "Committed Chris" and "Upstate Terry," were selected from those generated in the McCornack study (McCornack et al., 1992, p. 20). The 10 sample messages from stage one where then crossed with each of the situations (Chris/Terry), producing a total of 40 different situations (two base situations x prompt/no prompt x two message examples x five different message forms). Participants were randomly assigned to read and evaluate the messages in these situations for violations of the maxims. McCornack et al. (1992) found that all messages involving manipulations of these maxims were seen as more deceptive than messages not involving any manipulations. Quality violations were viewed by participants as more deceptive than messages involving manipulations of quantity, relevance, and manner. All maxims were individually manipulated. That is, each type of manipulation influenced the perceived message along the dimension it was designed to manipulate.

Other scholars have also replicated McCornack et al.'s (1992) finding that messages manipulating the four maxims are perceived as more deceptive than those that do not. Jacobs, Dawson and Brashers (1996) posited that IMT made assumptions about messages that were not consistent with Grice's (1989) theory of conversational implicature. They argued that deception occurs as a result of inviting false implicatures in a conversation. Specifically, deception occurs because listeners assume additional false information from what is being said, which involves quality violations. To test this Jacobs et al. (1996) used the same methods as McCornack et al. (1992) but changed the scenarios slightly. McCornack et al. (1992) provided respondents with all the information in a given situation so they could assess the degree of the manipulation in the message. In addition to this "open" condition, Jacobs et al. (1996) added a "closed" condition that

removed the baseline information and did not give participants access to all the information in the scenarios.

Jacobs et al. (1996) found that manipulations of quality, quantity, relevance, and manner were seen as more deceptive than baseline messages but they found that these maxims influenced each other. Thus, manipulations of quality affected judgments of quantity, relevance, and manner. They found the closed condition resulted in significant differences between messages that violated the maxims and those that did not violate the maxims. The authors found, like the McCornack et al. (1992) study, that manipulations of quality were perceived as the most deceptive messages.

Data consistent with the predictions of IMT has been found in intercultural research. Yeung, Levine, and Nishiyama (1999) found support for the deceptiveness of maxim manipulations in Hong Kong. The researchers replicated the method used by the McCornack et al. (1992) study and found that although only violations of relevance and quality were found to be more deceptive than messages involving no manipulation; all the maxims were significantly related to perceived deceptiveness, perhaps indicative of differing definitions of deception in these cultures (Yeung et al., 1999).

Other researchers have also examined cultural differences in deception by examining how self-construal interacts with perceptions of deceit and these findings indicate manipulations of IMT maxims were more deceptive than truthful messages (Lapinski & Levine, 2000) and omission was the most common form of lies (Levine et al., 2002). Although IMT has been used to understand deception in interpersonal settings, its principles can also be applied to deception in green advertisements.

The Deceptive Nature of Green Advertising

Given the prevalence of green advertising, misleading environmental advertisements continue to be an important issue for businesses and consumers (Schlossberg, 1993). Companies such as Ford Motor Company and General Electric are increasingly promoting their products as 'environmentally-friendly' and spending significant amounts of the their advertising budgets on green advertising (SourceWatch, 2006; Johnson, 2004). Although there are a few problems with the research in green advertising, such as categorizing messages that fall into multiple environmental categories (Kilbourne, 1995), it has shown green advertisements can be deceptive. Kangun et al. (1991) examined the occurrence of deception in print advertisements. The authors had researchers search through 18 magazines from the popular and environmental magazines for green advertisements they perceived as deceptive. These searches produced more than 200 environmental advertisements. Advertisements with no explicit environmental claims were eliminated for a total of 100 environmental advertisements. Kangun et al. (1991) employed three expert judges (three doctoral candidates from environmental systems engineering) and three non-expert judges (three faculty/staff members with no environmental background). The judges were asked to determine the incidence and type of potentially deceptive environmental claims. The authors provided the judges with a topology to aid them in this process. The topology included five categories: ambiguous or vague claims, claims that omit information necessary to judge the truthfulness of an advertisement, claims that were outright lies, claims that fell into multiple categories, and claims that were true. The study found that non-expert judges identified more claims as deceptive than did the expert judges. The study also found

expert judges classified more advertisements as vague/ambiguous and as including omissions than containing outright lies. The non-expert judges classified more advertisements as vague/ambiguous than having omissions or outright lies.

Similarly, Carlson et al. (1993) performed a content analysis of green print advertisements. The researchers first generated a classification system covering both type of claim and deceptive content by examining a broad sample of environmental advertisements. The researchers decided on five types of environmental advertising claims: product orientation, process orientation, image orientation, environmental fact, and combination. They also developed a set of categories for deceptive claims. The categories were: vague/ambiguous, omission, false/outright lie, and combination. Vague/ambiguous category contains a phrase or statement that is too broad to have a clear meaning. This is similar to the IMT maxim of manner. Omission category omits information necessary to judge the truthfulness of the advertisement. This is related to the IMT maxim of quantity. False/outright lie is a claim that is completely inaccurate. This also is similar to the quality maxim. Finally combination refers to claims that contain more than one of these elements.

The study used three student judges to select advertisements from popular magazines who selected 100 advertisements. Three different judges, professors and instructors from various fields, where briefed on environmental advertising and given written descriptions of the categories. They evaluated the 100 advertisements and classified them into deceptive categories. The study found that claims which emphasize the environmental benefits of products and those that enhance the environmental image of a company are the most prone to be misleading or deceptive.

Polonsky et al. (1998) found further support for the idea that green advertisements can contain content that misleads. This study examined the extent to which environmental claims on packaging are misleading. The researchers conducted a content analysis and used two sets of judges to evaluate the environmental information. From this information the researchers developed seven categories to categorize the environmental information in the advertisements, similar to the categories used in Carlson et al. (1993). Polonsky et al. (1998) developed four categories for the accuracy of the information: acceptable, poor explanation, no explanation, and meaningless. Acceptable meant there was adequate justification explaining the reason behind the claim. The poor information category meant the claim was not justified. In the no explanation category, the claim did not include the necessary information to evaluate its validity. The final category, meaningless, consisted of claims that were too broad to have an obvious meaning. The study had judges rate packaging on 20 brands of dishwashing liquid to place them into the aforementioned categories. The study used three environmental science students (expert judges) and three non-environmental science students (non-expert judges) to rate the labels. The researchers found that the majority of packaging information cannot be classified as accurate.

Hypotheses and Research Questions

The research reviewed here suggests some limitations of the existing literature on green advertising. The large majority of this literature is atheoretical; it lacks a guiding theory to drive hypothesis development and uses content analysis and expert judges to describe deceptive content (Kangun et al., 1991; Carlson et al., 1993). It does not examine the extent to which consumers, the people to whom the advertisements are

targeted, find claims made in advertisements deceptive (Polonsky et al., 1998). The proposed project has been designed to overcome the deficiencies in past research by using IMT as a theoretical framework for understanding consumer perceptions of deceptive advertisements. Although IMT has only been studied in an interpersonal context, it can reasonably be applied to green advertising content. IMT explains more than just messages with conversational partners. It describes how messages are created and manipulated and how messages are perceived as deceptive. This information can be applied to perceptions of green advertisements. Previous research in IMT and in the environmental marketing literature informs the research questions and hypotheses for this paper.

Past studies of IMT found messages that violated IMT's maxims were seen as more deceptive than messages adhering to the maxims (McCornack, 1992). IMT research has found that messages with quality violations were perceived as the most deceptive (McCornack et al., 1992; Jacobs et al., 1996). Furthermore, quality violations parallel what people commonly consider a 'lie' (McCornack et al., 1992). Therefore the following hypothesis is proposed:

H1: Perceived violations of quality will be rated as more deceptive than other violations.

If consumers do perceive violations of quality, quantity, manner, and relevance in green advertisements, this should influence their attitudes toward the advertisement and the company. Thus, the extent to which adherence to the maxims is perceived will be positively associated with attitudes toward the advertisement and company.

H2: Attitudes toward the advertisement will be positively associated with perceived adherence to quality, quantity, manner, and relevance.

H3: Attitudes toward the company will be positively associated with perceived adherence to quality, quantity, manner, and relevance.

Corporate concern for the environment is defined as the amount of perceived interest a corporation has in pro-environmental policies or products. Research has shown that positive pre-existing attitudes toward a company's environmental image impacts consumer perceptions of their advertisements and products (Davis, 1994). Green advertisements are also perceived as more truthful when consumers have positive pre-existing attitudes toward the company (Davis, 1994). For the current study, a fictional company was created and participants were given information about the company indicating either a pro-environmental (high environmental concern), non-environmental stance (low environmental concern), or control. Consumers should have a more negative attitude toward the advertisement and toward companies perceived as low on environmental concern as opposed to companies perceived to have high environmental concern. In addition, there is a predicted interaction between corporate environmental image and green advertisement use on evaluation of the advertisement, perceived corporate environmental concern, and the deceptiveness of the advertisement. Thus, the following three hypotheses are proposed:

H4: Green advertisements from a company that has low environmental concern will be rated as more deceptive than green advertisements from a company that has high environmental concern; for non-green advertisements, level of corporate environmental concern will not impact honesty ratings.

H5: Green advertisements from a company that has low environmental concern will be evaluated more negatively than green advertisements from a company that has high environmental concern; for non-green advertisements, level of corporate environmental concern will not impact advertisement evaluations.

H6: A company with low environmental concern that uses green advertisements will be evaluated more negatively than a company that uses green advertisements and has high environmental concern; for non-green advertisements, companies high in environmental concern will be rated more positively than those with low concern.

Method

Overview and Design

The study involved a 2 x 3 independent groups factorial design with two levels of advertisements (green/non-greened) and three levels of company information (green/non-greened/no information control); the control condition was included to allow for assessments of the extent to which an advertisement was viewed as green without information about corporate concern. Perceived level of corporate concern and the extent to which the advertisements were viewed as green were measured as checks on the effectiveness of the inductions. Violations of quality, quantity, manner, and relevance were measured dependent variables, as were general honesty, attitude toward the advertisement, and attitude toward the company.

Participants

Participants included 138 undergraduates enrolled in undergraduate communication courses at a large Midwestern University. Participation was voluntary and students received extra credit for their involvement. Participants were recruited using the Department of Communication's participant pool and introductory classes in the College of Communication Arts and Sciences. The age of the participants ranged from 18 to 27, (M = 20.42, SD = 1.37). Most were Caucasian (80.4%), African Americans, Hispanics, and Asians comprised 3.6%, 1.4%. and 8.0% of the sample respectively, with 2.9% of the participants classifying their ethnicity as other. Almost two-thirds of the participants (65.2%) were male.

Messages

Automobile advertisements were sampled from the top ten magazines read by full-time college students as identified by the Simmons Market Research Bureau. Only magazines read by both men and women were used for the purposes of this study. Magazine inserts in newspapers were also eliminated. In descending order the top magazines read by both male and female college students are as follows: *People, Time, National Geographic, Rolling Stone, Reader's Digest, Entertainment Weekly, Newsweek, TV guide, US weekly and Fitness* (Simmons, 2003). Advertisements were selected via searching recent issues of these magazines.

From these advertisements, one green advertisement was chosen as the stimulus material. This advertisement had both picture and message content, and the content was manipulated in the green advertisement to create the non-greened advertisement. An automobile advertisement was chosen as the stimulus material because these advertisements market a product that the participants selected for this study purchase.

For both advertisements, a fictitious name (Maren) was created for the car company. The green advertisement, selected based on the criteria above, was kept intact but edited to remove all evidence of the brand of the automobile. To create the non-green advertisement, the green advertisement was manipulated in Photoshop to produce an identical, but non-greened advertisement. This was done by removing the greened message from the advertisement. For example, a greened message is: "Maren has always been committed to developing environmentally responsible technology." A non-greened message is: "Maren has always been committed to developing new technology." The advertisement content is presented in Appendix B.

Procedures

Two pilot tests were conducted. The first pilot test was done to assess scale reliability and establish the extent to which the baseline information was seen as exhibiting high or low corporate environmental concern. The first pilot test did not yield a clean manipulation of baseline information because the advertisement was included. In order to receive a clean manipulation, a second pilot test was conducted where participants were only given baseline information to determine if the baseline inductions portrayed a company that was perceived as high or low on corporate environmental concern.

Following the pilot test the final study was conducted. After completing informed consent procedures, participants were randomly assigned to one of the five experimental conditions. Participants were given baseline information about a fictitious company that was portrayed as having either high in corporate environmental concern or low in corporate environmental concern. That is, the baseline information either extolled the

environmental record of the company and its products or criticized the company's environmental practices and its products. The no baseline information condition served as the control. The baseline information about the companies is based on information from real companies known for greenwashing as identified by Green Life, an environmental organization that advocates against greenwashing (Johnson, 2004). This information is presented in Appendix C and Appendix D. Participants were next given one of the advertisements and asked to rate how deceptive they found the advertisements along the IMT maxims and a general measure of honesty. After participants rated the advertisements they completed the induction checks and were asked questions about their attitude toward the advertisement and their attitude toward the company.

Measurement

Perceptions of message honesty, adherence to the maxims of quantity, quality, manner, and relevance were measured using a series of four-item semantic differential scales with a seven-point response format (7=most honest) developed by McCornack et al. (1992). McCornack et al. (1992) provide support for the reliability, validity, and dimensionality of the scales. These measures are presented in Appendix E.

Attitude toward the advertisement and attitude toward the company was measured using modified items used in previous studies (Davis, 1994; McCroskey, 1966, McCroskey & Richmond, 1989; McCroskey & Richmond, 1996). Attitude was assessed using a six-item semantic differential scale with a five-point response format. Higher scores represent more positive attitudes. These measures are presented in Appendix F and Appendix G.

An induction check was designed to assess the extent to which the baseline information was perceived as portraying a company with high versus low concern for the environment. This was measured using modified items described by Dietz, Fitzgerald and Shwom (2005). Participants responded to six Likert-type items with a five-point response scale with five indicating greater concern for the environment. Example items included: "Maren is interested in protecting the environment" and "Maren's corporate philosophy involves respecting the earth's resources." These measures are presented in Appendix H.

An induction check was designed to assess the extent to which advertisements were perceived as being green versus non-greened. Participants responded to five Likert-type items with a five-point response scale with five indicating greater concern for the environment. Example items included: "This advertisement promotes the environmental benefits of this product" and "From the advertisement, it is clear that this product has environmental benefits." These measures are presented in Appendix I.

Results

Pilot Studies

The first pilot test included 82 participants recruited from the Department of Communication participant pool and from introductory classes within the College of Communication Arts of Sciences. The age of the participants ranged from 18 to 23. The mean age of the participants was (M = 19.73, SD = 1.10) years. Most were Caucasian (85.4%), African-Americans, Hispanics, and Asians comprised 3.7%, 2.4%, and 3.7% of the sample respectively, with 1.2% of the participant classifying their race as other. The majority of the participants were female (62.2%). All multiple-item measures were screened for positive contribution to scale reliability, item-total correlation, and overall

scale reliability. The scale means, standard deviations, and scale alphas are presented in Table 1.

An induction check was performed to determine if participants viewed the baseline information as exhibiting high versus low corporate environmental concern. The data indicated that the company with high corporate environmental concern baseline information (M = 3.75, SD = .75) was perceived as demonstrating more concern for the environment than the company with low corporate environmental concern baseline information (M = 2.49, SD = .74), $F(1, 80) = 63.03$, $p = .001$, $\eta^2 = 0.44$. There was also a significant interaction between baseline information and advertisement $F(1, 80) = 4.16$, $p = .05$, $\eta^2 = 0.03$. There was no main effect for green advertisement on perceptions of corporate environmental concern.

An induction check was also performed for greenness of the advertisement, which contained content about the environmental attributes of the advertised product. The green advertisement (M = 3.28, SD = .83) was perceived as more green than the non-greened advertisement (M = 2.83, SD = 1.11), $F(1, 80) = 4.70$, $p = 0.03$, $\eta^2 = 0.06$. There was a significant main effect for baseline information on perceived greenness $F(1, 80) = 7.50$, $p = 0.01$, $\eta^2 = 0.08$, the baseline information showing a company with low environmental concern resulted in lower ratings of the greenness of the advertisement (M = 2.79, SD = 1.05) and the high environmental concern baseline resulted in higher evaluations of greenness (M = 3.35, SD = .85). There was not a significant interaction between the baseline information and the advertisement on perceived greenness $F(1,80) = 0.06$, p = *ns*, $\eta^2 = 0.01$. Because participants in the first pilot responded to induction check questions about environmental concern after viewing both the baseline information and

the advertisement, a second pilot test was conducted to determine the effects of baseline information on perceived environmental concern.

A second pilot test was performed to ensure participants perceived the baseline information in the two conditions as differing on environmental concern. The test included 25 participants recruited from a class in the Department of Communication. The data showed support for the induction such that the company with high corporate environmental concern baseline information ($M = 3.73$, $SD = .88$) was perceived as more concerned for the environment than the company with low corporate environmental concern baseline information ($M = 2.19$, $SD = .53$). This difference was statistically significant $t(23) = 5.43$, $p = .001$, $r = .75$. Participants also had a more favorable attitude toward the company with high corporate environmental concern baseline information ($M = 3.72$, $SD = .77$) than the company with low corporate environmental concern baseline information ($M = 2.45$, $SD = .71$). This difference was statistically significant $t(23) = 4.30$, $p = .001$ $r = 0.66$.

Final Study

All multiple-item measures were screened for positive contribution of items to scale reliability, item-total correlations, overall scale reliability, and the extent to which the distributions approximated normality. The scale means, standard deviations, and alphas are presented in Table 2.

The results in Table 3 reveal that the data are consistent with hypotheses one through three. The first hypothesis predicted perceived violations of quality would be rated as more deceptive than other violations. The data indicated that all of the maxims

were positively and significantly related to honesty. Honesty was significantly and positively correlated with quality $r = 0.85$, followed by relevance $r = 0.64$, manner $r = 0.54$, quantity $r = 0.52$. The strongest of the correlations was between quality and honesty. A t-test to test for the differences between correlations revealed the correlation between honesty and quality was significantly different from the correlation between honesty and relevance, the correlation closest in magnitude $t(135) = 10.47, p = .001$.

The second hypothesis predicted that attitudes toward the advertisement would be positively associated with perceived adherence to quality, quantity, manner, and relevance. The data were consistent with this prediction. All of the maxims were positively and significantly related to attitude towards the advertisement. Attitude toward the advertisement was highly correlated with quality $r = 0.72$, relevance $r = 0.72$, honesty $r = 0.68$, quantity $r = 0\ 65$ and manner $r = 0.63$.

The third hypothesis predicted that attitudes toward the company would be positively associated with perceived adherence to quality, quantity, manner, and relevance. All of the maxims were positively and significantly related to attitude towards the company. Attitude toward the company was positively associated with quality $r = 0.69$, honesty $r = 0.65$, relevance $r = 0.59$, quantity $r = 0.55$, and manner $r = 0.53$.

The remaining hypotheses tested the relationship between the experimental manipulations and dependent variables. First, the induction checks that were tested in the pilots were examined with the larger data set. In order to assess the extent to which the green advertisement was perceived as promoting the environmental benefits of the product, the mean scores on this scale were examined with a particular focus on the control condition (where participants received no baseline information about the

company). A two-way ANOVA indicated a main effect for the advertisement on ratings of greenness such that across baseline conditions the green advertisement (M = 3.62, SD = .83) was seen as greener than the non-green advertisement (M = 2.24, SD = 1.21), $F(1, 136) = 75.47$, $p = .001$, partial $\eta^2 = 0.36$, $\eta^2 = 0.31$. An examination of the control condition means indicates the green advertisement was seen as exhibiting more green characteristics (M = 3.59, SD = 0.71) than the non-green (M = 1.67, SD = 0.81) and the confidence intervals for these means do not overlap; this effect is repeated in each condition. The means, standard deviations, and confidence intervals around each mean are presented in Table 4. The presence of baseline information (particularly that which showed the fictional company as being environmentally friendly) also had an influence on participant's ratings of the "greenness" of the product. There was a main effect for baseline information on ratings of greenness of the advertisement $F(2, 136) = 10.84$, $p = .001$, partial $\eta^2 = 0.14$, $\eta^2 = 0.09$. Participants in the high environmental concern condition rated the advertisement as greener (M =3.39, SD = 1.09) than people in the control (M = 2.59, SD = 1.23) and low environmental concern conditions (M = 2.60, SD = 1.27). The analysis also indicated a significant interaction between baseline information and advertisement $F(2, 136) = 6.25$, $p = .003$, partial $\eta^2 = 0.09$, η^2 =0.05. Measures of effect size indicate that the effect was strongest for the advertisement manipulation. The analysis also revealed that approximately 5% of participants had previously seen the advertisement used in the study. A cross tab indicated that participants who reported having seen the advertisement before were distributed across conditions. Three participants reported having seen the advertisement in the green advertisement condition and four participants in the non-greened advertisement condition, $\square^2(1, N = 138) = 0.15$,

$p = 0.70$. None of the participants in the control condition, two participants in high environmental concern condition, and five participants in the low environmental concern condition reported having seen the advertisements $\square^2(2, N = 138) = 3.58, p = 0.15$. As a check of the extent to which the baseline information portrayed the fictitious company as having high versus low environmental concern, the means for corporate environmental concern were examined via a 2-way ANOVA. An examination of these means indicates the company with high environmental concern baseline information ($M = 3.81$, $SD = 0.69$) was seen as exhibiting more environmental concern than the company with low environmental concern baseline information ($M = 2.20$, $SD = 0.93$) and the control condition ($M = 3.14$, $SD = 0.95$), $F(2, 136) = 56.53$ $p = .001$, partial $\eta^2 = .46$, $\eta^2 = 0.04$. There was a significant main effect for advertisement $F(1, 136) = 11.60$, $p = .001$, partial $\eta^2 = 0.08$, $\eta^2 = 0.01$ such that participants who saw the green advertisement ($M = 3.23$, $SD = 1.14$) rated the company as having greater environmental concern than those who saw the non-green advertisement ($M = 2.88$, $SD = 1.05$). There was a significant interaction effect $F(2, 136) = 6.29$, $p = .002$, partial $\eta^2 = .09$, $\eta^2 = 0.01$ on ratings of corporate environmental concern. Thus, the data shows there are crossover effects of the manipulations but that they are small relative to the effect size for the baseline info on perceptions of environmental concern. The means, standard deviations, and confidence intervals around each mean are presented in Table 5.

Hypothesis four predicted an interaction between green advertisements and corporate environmental concern on ratings of the honesty of the advertisement such that green advertisements from a company with low corporate environmental concern will be evaluated as more deceptive than green advertisements from a company with high

corporate environmental concern. As shown in Table 6, the data were consistent with this hypothesis. There was a significant interaction between baseline information and advertisement $F(2, 136) = 4.47, p = .013$, partial $\eta^2 = 0.06$, $\eta^2 = 0.05$. Green advertisements from a company with low corporate environmental concern were perceived as least honest, green advertisements in the control condition were seen as moderately honest, and green and non-greened advertisements from a company with high corporate environmental concern were seen as the most honest. There was a significant main effect for baseline information such that high environmental concern baseline information ($M = 4.59$, $SD = 0.76$) was seen as more honest than low environmental concern baseline information ($M = 3.61$, $SD = 1.00$) and the control condition ($M = 4.06$, $SD = 0.69$), $F(2, 136) = 18.37, p = .001$ partial $\eta^2 = 0.22$, $\eta^2 = 0.21$. There was not a significant main effect for the green advertisement ($M = 4.08$, $SD = 1.01$) the non-greened advertisement ($M = 4.11$, $SD = 0.88$) and the on perceptions of honesty $F(1, 136) = 0.33$ $p = ns$, partial $\eta^2 = 0.02$, $\eta^2 = 0.01$.

Hypothesis five predicted an interaction between green advertisements and corporate environmental concern on attitude toward the advertisement such that a green advertisement from a company with low corporate environmental concern would be evaluated more negatively than a green advertisement from a company with high corporate environmental concern. Table 7 reveals the data was consistent with this prediction. There was a significant interaction between baseline information and advertisement $F(2, 136)= 5.92$ $p = .003$ partial $\eta^2 = 0.08$, $\eta^2 = 0.06$. Green advertisements from a company with low corporate environmental concern were evaluated the most negatively, green advertisements in the control condition were seen less negative, green

advertisements from a company with high corporate environmental concern were rated as the most positive. There was a significant main effect for baseline information such that high environmental concern baseline information (M = 3.87, SD = 0.67) was evaluated more positively than the low environmental concern baseline information (M = 2.72, SD = 0.80) and the control condition (M = 3.19, SD = 0.72), $F(1,136) = 32.81$, $p = .001$, partial $\eta^2 = 0.33$, $\eta^2 = 0.31$. There was no significant main effect for green advertisements (M = 3.33, SD = 1.06) and non-greened advertisements [M = 3.26, SD = 0.80, $F(1, 136) = 1.42$, $p = ns$, partial $\eta^2 = 0.01$, $\eta^2 = 0.01$] on attitudes toward the advertisement.

Hypothesis six predicted an interaction between green advertisements and corporate environmental concern for attitude towards the company such that a company with low environmental concern that uses green advertisements would be evaluated more negatively than a company that uses green advertisements and has high environmental concern. Table 8 shows the data were consistent with this prediction. There was a significant interaction effect between baseline information and advertisement $F(2, 136) = 4.05$ $p = .02$, partial $\eta^2 = 0.06$, $\eta^2 = 0.02$. The company with low environmental concern that used green advertisements was evaluated most negatively, next was the control condition, and the company with high environmental concern that used green advertisements was rated most positively. There was a significant main effect for baseline information such that high environmental concern baseline information (M = 4.07, SD = 0.65) resulted in more positive evaluations of the company than the low environmental concern baseline information (M = 2.18, SD = 0.83) and the control condition (M = 3.32, SD = 0.70), $F(1, 136) = 97.12$ $p = .001$, partial $\eta^2 = 0.60$, $\eta^2 = 0.58$. There was not a significant main effect for green advertisements (M = 3.28, SD = 1.23) and non-greened

advertisements ($M = 3.11$, $SD = 0.10$), $F(1, 136) = 3.72$ $p = ns$, partial $\eta^2 = 0.03$, $\eta^2 = 0.01$ on attitudes toward the company.

Discussion

Previous work on the deceptiveness of green advertisements was largely atheoretical and used content analysis to classify green advertisements into categories using topologies to rate the deceptiveness of these claims. The aim of this study was to provide a theoretical framework for examining green advertisements and to determine how consumers perceive green advertisements. First, based on the results of previous work testing IMT, this study examined the extent to which ratings of quality were associated with ratings of the honesty of the advertisement. The hypothesis predicted perceived violations of quality would be rated as more deceptive than other violations. The data were consistent with this prediction. Across study conditions, quality was correlated more highly with honesty than with violations of quantity, manner, and relevance. Thus, violations of quality were seen as the most deceptive. This is consistent with the findings of McCornack et al. (1992) and Jacobs et al. (1996). Previous research with IMT has only examined the theory in interpersonal contexts (e.g., McCornack et al., 1992; Lapinski & Levine, 2000). This finding lends support for the applicability of the theory for examining deceptive messages within advertisements because the findings for the relationship between perceived violations of maxims and honesty of advertising messages parallel those found in other contexts.

The second hypothesis examined the effects of perceptions of information manipulation on attitude toward the advertisement. As predicted, attitudes toward the advertisement were positively associated with perceived adherence to quality, quantity,

manner, and relevance. In addition, the data indicated that attitude toward the advertisement was most strongly associated with ratings of quality, as compared to honesty, quantity, relevance, and manner. These data indicate that across conditions, the more participants perceived adherence to the maxims the more they evaluated the advertisement positively.

The relationship between perceptions of information manipulation and attitude toward the company was tested in hypothesis three. This hypothesis predicted that attitudes toward the company would be positively associated with perceived adherence to quality, quantity, manner, and relevance. The data were consistent with this hypothesis. Attitude toward the company was more highly associated with ratings of quality as compared to honesty, relevance, quantity, and manner. Thus, as perceived adherence increased so did ratings of the company. This relationship was strongest with quality. These findings have important implications for advertisers because they provide evidence that perceptions of deceptiveness in advertisements on the part of consumers can have substantial impacts on the ways in which both the advertisement itself and the company represented in the advertisement are evaluated.

It should be noted that the correlations among the maxims were strong and similar in magnitude and sign to one another. They also correlate similarly with other variables in this study (see Table 3). This raises the possibility that the IMT dimensions form a second order unidimensional measure of some common construct or perhaps fit some other measurement model. The possibility of this was raised in the mid-1990's by researchers who debated as to whether the data from IMT studies fit a multi-dimensional (Jacobs et al., 1996) or second-order unidimensional measurement model (McCornack et

al., 1996). McCornack et al., (1996) argue that the dimensions all measure the same underlying construct: adherence to cooperative behavior. Jacobs et al., (1996) argue that the data are consistent with a multifactor model. Both sides of the debate provide data to support their contention for using different analysis techniques. Importantly, additional research is needed with the current data to test the measurement model. The current study does not allow for conclusions about this issue because this additional analysis is necessary.

The remaining hypotheses tested the relationship between induced corporate environmental concern, greenness of advertisements, and evaluation of the advertisement and company. In terms of the inductions, the first pilot revealed strong main effects for the inductions on the induction check measures and challenges in creating clean inductions of the variables. In the second pilot test, when participants were given only the baseline information, there were clear and strong effects for the induction such that the company with high corporate environmental concern baseline information was perceived as more concerned for the environment than the company with low corporate environmental concern baseline information.

Similarly, in the final study control condition, an advertisement showing environmental products was perceived as more green than an advertisement that did not use environmental products. Outside of the control condition, there was not a clean manipulation of either variable in the actual study; a possibility considered previous to conducting the study. The greenness of the advertisement influenced ratings of corporate environmental concern and corporate environmental concern influenced ratings of the greenness of the advertisement. It is not surprising that people fail to separate the

information they use to evaluate advertisements. There are multiple factors to consider when evaluating advertisements.

Hypothesis four predicted that green advertisements from a company with low environmental concern would be evaluated as more deceptive than green advertisements from a company with high environmental concern. The data were consistent with this hypothesis; although the effect size for the interaction was relatively small. Green advertisements from a company with low environmental concern were perceived as the most deceptive, green advertisements in the control condition, where participants had no information about the company that produced the product, were seen as less deceptive than advertisements from a company portrayed as having low environmental concern. Both green advertisements and non-greened advertisements from a company with high environmental concern were rated as more honest than the advertisement in other conditions. The highest honesty ratings, however, were in the condition in which participants received high corporate environmental concern baseline information and a non-greened advertisement. It should be mentioned that this interaction superseded a substantial main effect for baseline information about the company, which indicated that positive changes in induced levels of corporate environmental concern resulted in more positive evaluations of the advertisements. This indicates that negative information about a company is seen as more honest than positive information. There was no substantial main effect for the green versus non-green advertisement on honesty ratings.

Next, in hypothesis five, there was predicted interaction between green advertisements and corporate environmental concern for attitude towards the advertisement such that green advertisements from a company with low environmental

concern would be evaluated more negatively than green advertisements from a company with high environmental concern. The data were consistent with this hypothesis. Green advertisements from a company with low environmental concern were rated the least favorably, green advertisements in the control condition were seen as more favorable, and green advertisements from a company with high corporate environmental concern were rated as most favorable. The non-greened advertisement from a company with high corporate environmental concern was evaluated more positively than the greened advertisement in the control condition. The non-greened advertisement in the control condition and the non-greened advertisement from a company with low corporate environmental concern were seen as almost equally positive. The interaction superseded a large main effect for baseline information about the company, with high levels of corporate environmental concern resulting in positive evaluations of the advertisements. There was no significant main effect for the green versus non-green advertisement on attitude ratings. Corporations should be concerned with their image on environmental issues if they intend to promote their products via green advertisements. For those companies who are viewed as having low environmental concern, people view the use of green advertisements as deceptive and have a negative attitude toward advertisement content.

For hypothesis six, there was a predicted interaction between green advertisements and corporate environmental concern on attitudes towards the company such that a company with low environmental concern that uses green advertisements would be evaluated more negatively than a company that uses green advertisements and had high environmental concern. The company, which was portrayed as having low

environmental concern and using green advertisements was evaluated most negatively, the control condition was perceived less negatively, and the company which was portrayed with high environmental concern that used green advertisements was rated the most positively. The company with high corporate environmental concern that used a non-greened advertisement was rated more positively than the greened and non-greened advertisement in the control condition. The non-greened advertisement in the control condition was rated more positively than the non-greened advertisement from a company with low corporate environmental concern. As the in the previous hypotheses, there was a substantial main effect for baseline information about the company, where high corporate environmental concern led to more positive evaluations of the company. There was no substantial main effect for the green versus non-green advertisement on attitude ratings. Thus, the effects of the use of green advertisements on attitudes toward a company is moderated by the environmental image of that company.

The findings for hypotheses four through six indicate a similar pattern. A main effect for baseline information about the company, which is superseded by an interaction between greenness of advertisement and baseline information. In each case, the effect of baseline information was substantial and the interaction effect was weak. In general, green advertisements and green companies were rated more positively than non-greened advertisements. However a greened advertisement from a company with low environmental concern was seen as the most deceptive advertisement.

Limitations and Directions for Future Research

There are some limitations to this study that deserve attention. This study departs from previous studies of IMT in a number of ways. All of the previous IMT studies have

used baseline information versus messages containing violations. First, in this study there was no information that was completely disclosive as it be would near impossible to present all of the information about a company relating to their environmental record in the study. The creation of a baseline/completely truthful advertisement would be a challenge. None the less, participants still reported violations of the maxims. This suggests that people viewed the information in these advertisements as less than completely disclosive. Second, violations of the maxims were not manipulated as they were in past studies. These data indicate that violations of the maxims are detected in messages that are not specifically meant to violate a certain maxim and that IMT is an appropriate framework for understanding perceptions of information manipulation in advertisements.

Another limitation of this study is participant recognition of the advertisement. Since this advertisement was adopted from an actual advertisement, participants may have already developed attitudes toward the advertisements and toward the company from which it originated. The analysis revealed that a small percentage of participants reported that they had previously seen the advertisement used in the study, but others may have been exposed to the advertisement and not recalled seeing it. Previous exposure to the advertisement could have influenced their responses to questions about their attitudes toward the company and toward the advertisement. Since most participants (95%) responded that they had not previously seen the advertisement and these participants were distributed fairly evenly across conditions, this issue is not likely to change the pattern of the findings.

Additionally this study only used college-aged participants. Persons in other age groups may have more awareness of environmental issues because they pay more attention to news media and subsequently have more awareness of these issues and the environmental record of companies. It may be the case that for this population, the effects of a corporation's environmental image and the green content of advertisements may be stronger than for other populations. Alternatively, college students may prioritize and focus more on the environmental benefits of a product or service than persons in other age groups when evaluating the content of advertisements. This limits the external validity of the study as the findings of this study may apply only to college students.

One limitation of concern was the use of only one advertisement, for one product (an automobile) in the study. It is possible that the content of this advertisement is unique from other advertisements and that the findings of this study would not generalize to other advertisements for other products. The decision was made to limit this study to one advertisement for simplicity. Moreover, a real advertisement was used here as opposed to creating a fictional advertisement in order to enhance experimental realism. Future research should examine other types of advertisements for other products.

This study indicates that the effect of green advertisements on evaluations of advertisements and the companies from which they originate is moderated by the level of environmental concern of a company. Thus, it seems a company's reputation is as important as the advertisements for a company's products. A reputation for having good environmental practices creates a positive image not only for green advertisements but non-greened as well. Given this, future marketing campaigns for companies could focus

on creating a positive and enduring environmentally friendly reputation for the company as it increases the positive attitudes toward all of the company's advertisements.

This study examined consumer's perceptions of green advertisements but did not examine their effectiveness. Past research has examined green advertisements and their influence on evaluations of companies and for profit products (Davis, 1994), a future avenue of research could examine the effectiveness of green advertisements on encouraging pro-social behaviors such as promoting recycling or biking instead of driving to work. While green advertisements are seen as more honest when they come from a company perceived as having high environmental concern than a company with low corporate environmental concern, their impact on attitudes and behaviors is less clear.

In conclusion, this study used IMT has a framework for understanding green advertisements and examined the perceptions of deceptive advertisements. Adherence to the maxims was positively associated with attitude toward the advertisement and attitude toward the company. Green advertisements from companies with high environmental concern were seen as more honest and more positive than greened advertisements from companies with low environmental concern. The advertisement that was rated as most honest, however, was a non-greened advertisement from a company with high environmental concern. Companies with high environmental concern that use green advertisements were seen as more positive than companies with low environmental concern.

Table 1

Means, standard deviations, and alphas for all scales for first pilot test

Scale	Mean	SD	α
EC	3.12	0.98	0.93
Quantity	3.93	1.25	0.84
Quality	4.02	1.51	0.93
Relevance	4.77	1.30	0.87
Manner	4.14	1.46	0.91
Honesty	3.93	1.00	0.90
Att ad	3.30	0.93	0.89
Att com	3.19	1.12	0 96
Att product	2.93	1.24	0.94

Table 2

Final study means, standard deviations, and alphas for all scales across conditions including environmental concern (EC), attitude toward the advertisement (Attad), attitude toward the company (Attcom) and attitude toward the product (attprod).

Scale	Mean	SD	α
EC	3.06	1.10	0.96
Quantity	4.02	1.26	0.84
Quality	4.22	1 38	0.90
Relevance	4.86	1.28	0.86
Manner	4.12	1.63	0.93
Honesty	4.10	0.95	0.93
Attad	3.30	0.93	0.89
Attcom	3.19	1.12	0.96
Attprod	2.93	1.24	0.94

Table 3

Final study correlation table for violations of the maxims, honesty ratings, attitude toward the ad, and attitude toward the company

			Condition				
Maxims	Quantity	Quality	Relevance	Manner	Honesty	Ad	Company
Quantity	1.00						
Quality	0.56*	1.00					
Relevance	0.67*	0.66*	1.00				
Manner	0.73*	0.56*	0.59*	1.00			
Honesty	0.52*	0.85*	0.64*	0.54*	1.00		
Ad	0.65*	0.72*	0.72*	0.63*	0.67*	1.00	
Company	0.55*	0.69*	0.59*	0.53*	0.65*	0.73*	1.00

Note: * indicates significance at $p = .001$, one-tailed test

Table 4

Means, standard deviations and 95% confidence intervals for ratings of "greenness" of the advertisement for the greened and non-greened advertisements in the high, low, and control environmental concern conditions

	Baseline Information								
	High EC			Low EC			Control		
Type of Ad	Mean	SD	95% CI	Mean	SD	95% CI	Mean	SD	95% CI
Green	3.72	0.17	3.38 to 4.07	3.52	0.18	3.16 to 3.89	3.59	0.26	3.07 to 4.10
Non-green	3.03	0.18	2.68 to 3.38	1.72	0.18	1.36 to 2.08	1.68	0.25	1.18 to 2.17

Table 5

Means, standard deviations and 95% confidence intervals for ratings of corporate environmental concern for greened and non-greened advertisements in the high, low, and control environmental concern conditions

	Baseline Information								
	High EC			Low EC			Control		
Type of Ad	Mean	SD	95% CI	Mean	SD	95% CI	Mean	SD	95% CI
Green	3.86	0.15	3.57 to 4.15	2.24	0.16	1.93 to 2.55	3.80	0.22	3.37 to 4.24
Non-green	3.76	0.15	3.46 to 4.05	2.17	0.15	1.87 to 2.48	2.51	0.21	2.09 to 2.93

Table 6

Means, standard deviations and 95% confidence intervals for honesty ratings for the greened and non-greened advertisements in the high, low, and control environmental concern conditions

	Baseline Information								
	High EC			Low EC			Control		
Type of Ad	Mean	SD	95% CI	Mean	SD	95% CI	Mean	SD	95% CI
Green	4.48	0.15	4.18 to 5.78	3.42	0.16	3.10 to 3.74	4.46	0.23	4.01 to 5.92
Non-green	4.64	0.16	4.33 to 4.95	3.78	0.16	3.47 to 4.10	3.67	0.22	3.24 to 4.12

Table 7

Means, standard deviations and 95% confidence intervals for attitude toward the advertisement for the greened and non-greened advertisements in the high, low, and control environmental concern conditions

	Baseline Information								
	High EC			Low EC			Control		
Type of Ad	Mean	SD	95% CI	Mean	SD	95% CI	Mean	SD	95% CI
Green	3.93	0.14	3.67 to 4.21	2.50	0.15	2.21 to 2.80	3.60	0.21	3.19 to 4.01
Non-green	3.81	0.14	3.53 to 4.10	2.93	0.15	2.64 to 3.21	2.81	0.20	2.42 to 3.21

Table 8

Means, standard deviations and 95% confidence intervals for attitude toward the company for the green and non-greened advertisements in the high, low, and control environmental concern conditions

	Baseline Information								
	High EC			Low EC			Control		
Type of Ad	Mean	SD	95% CI	Mean	SD	95% CI	Mean	SD	95% CI
Green	4.11	0.13	3.85 to 4.37	2.10	0 14	1 82 to 2.38	3.74	0.20	3.34 to 4.13
Non-green	4.02	0.14	3.75 to 4.29	2.25	0.14	1.98 to 2.52	2.93	0.91	2.56 to 3.31

APPENDIX A

FEDERAL TRADE COMMISSION GUIDES FOR THE USE OF THE ENVIRONMENTAL ADVERTISEMENTS

§ 260.5 Interpretation and substantiation of environmental marketing claims

Section 5 of the FTC Act makes unlawful deceptive acts and practices in or affecting commerce. The Commission's criteria for determining whether an express or implied claim has been made are enunciated in the Commission's Policy Statement on Deception. In addition, any party making an express or implied claim that presents an objective assertion about the environmental attribute of a product, package or service must, at the time the claim is made, possess and rely upon a reasonable basis substantiating the claim. A reasonable basis consists of competent and reliable evidence. In the context of environmental marketing claims, such substantiation will often require competent and reliable scientific evidence, defined as tests, analyses, research, studies or other evidence based on the expertise of professionals in the relevant area, conducted and evaluated in an objective manner by persons qualified to do so, using procedures generally accepted in the profession to yield accurate and reliable results. Further guidance on the reasonable basis standard is set forth in the Commission's 1983 Policy Statement on the Advertising Substantiation Doctrine. 49 Fed. Reg. 30999 (1984); *appended to Thompson Medical Co.*, 104 F.T.C. 648 (1984). The Commission has also taken action in a number of cases involving alleged deceptive or unsubstantiated environmental advertising claims. A current list of environmental marketing cases and/or copies of individual cases can be obtained by calling the FTC Consumer Response Center at (202) 326-2222.

§ 260.6 General principles

The following general principles apply to all environmental marketing claims, including, but not limited to, those described in § 260.7. In addition, § 260.7 contains specific guidance applicable to certain environmental marketing claims. Claims should comport with all relevant provisions of these guides, not simply the provision that seems most directly applicable.

(a) ***Qualifications and disclosures*****:** The Commission traditionally has held that in order to be effective, any qualifications or disclosures such as those described in these guides should be sufficiently clear, prominent and understandable to prevent deception. Clarity of language, relative type size and proximity to the claim being qualified, and an absence of contrary claims that could undercut effectiveness, will maximize the likelihood that the qualifications and disclosures are appropriately clear and prominent.

(b) Distinction between benefits of product, package and service**:** An environmental marketing claim should be presented in a way that makes clear whether the environmental attribute or benefit being asserted refers to the product, the product's packaging, a service or to a portion or component of the product, package or service. In general, if the environmental attribute or benefit applies to all but minor, incidental

components of a product or package, the claim need not be qualified to identify that fact. There may be exceptions to this general principle. For example, if an unqualified "recyclable" claim is made and the presence of the incidental component significantly limits the ability to recycle the product, then the claim would be deceptive.

(c) ***Overstatement of environmental attribute*****:** An environmental marketing claim should not be presented in a manner that overstates the environmental attribute or benefit, expressly or by implication. Marketers should avoid implications of significant environmental benefits if the benefit is in fact negligible.

(d) ***Comparative claims*****:** Environmental marketing claims that include a comparative statement should be presented in a manner that makes the basis for the comparison sufficiently clear to avoid consumer deception. In addition, the advertiser should be able to substantiate the comparison.

260.7 Environmental marketing claims

Guidance about the use of environmental marketing claims is set forth below. Each guide is followed by several examples that illustrate, but do not provide an exhaustive list of, claims that do and do not comport with the guides. In each case, the general principles set forth in § 260.6 should also be followed

(a) General environmental benefit claims**:** It is deceptive to misrepresent, directly or by implication, that a product, package or service offers a general environmental benefit. Unqualified general claims of environmental benefit are difficult to interpret, and depending on their context, may convey a wide range of meanings to consumers. In many cases, such claims may convey that the product, package or service has specific and far-reaching environmental benefits. As explained in the Commission's Advertising Substantiation Statement, every express and material implied claim that the general assertion conveys to reasonable consumers about an objective quality, feature or attribute of a product or service must be substantiated. Unless this substantiation duty can be met, broad environmental claims should either be avoided or qualified, as necessary, to prevent deception about the specific nature of the environmental benefit being asserted.

(b) ***Degradable/biodegradable/photodegradable*****:** It is deceptive to misrepresent, directly or by implication, that a product or package is degradable, biodegradable or photodegradable. An unqualified claim that a product or package is degradable, biodegradable or photodegradable should be substantiated by competent and reliable scientific evidence that the entire product or package will completely break down and return to nature, i.e., decompose into elements found in nature within a reasonably short period of time after customary disposal.

Claims of degradability, biodegradability or photodegradability should be qualified to the extent necessary to avoid consumer deception about: (1) the product or package's ability to degrade in the environment where it is customarily disposed; and (2) the rate and extent of degradation.

*(c) **Compostable:*** It is deceptive to misrepresent, directly or by implication, that a product or package is compostable. A claim that a product or package is compostable should be substantiated by competent and reliable scientific evidence that all the materials in the product or package will break down into, or otherwise become part of, usable compost (e.g., soil-conditioning material, mulch) in a safe and timely manner in an appropriate composting program or facility, or in a home compost pile or device. Claims of compostability should be qualified to the extent necessary to avoid consumer deception. An unqualified claim may be deceptive if: (1) the package cannot be safely composted in a home compost pile or device; or (2) the claim misleads consumers about the environmental benefit provided when the product is disposed of in a landfill. A claim that a product is compostable in a municipal or institutional composting facility may need to be qualified to the extent necessary to avoid deception about the limited availability of such composting facilities.

*(d) **Recyclable**:* It is deceptive to misrepresent, directly or by implication, that a product or package is recyclable. A product or package should not be marketed as recyclable unless it can be collected, separated or otherwise recovered from the solid waste stream for reuse, or in the manufacture or assembly of another package or product, through an established recycling program. Unqualified claims of recyclability for a product or package may be made if the entire product or package, excluding minor incidental components, is recyclable. For products or packages that are made of both recyclable and non-recyclable components, the recyclable claim should be adequately qualified to avoid consumer deception about which portions or components of the product or package are recyclable. Claims of recyclability should be qualified to the extent necessary to avoid consumer deception about any limited availability of recycling programs and collection sites. If an incidental component significantly limits the ability to recycle a product or package, a claim of recyclability would be deceptive. A product or package that is made from recyclable material, but, because of its shape, size or some other attribute, is not accepted in recycling programs for such material, should not be marketed as recyclable.

(e) ***Recycled content*:** A recycled content claim may be made only for materials that have been recovered or otherwise diverted from the solid waste stream, either during the manufacturing process (pre-consumer), or after consumer use (post-consumer). To the extent the source of recycled content includes pre-consumer material, the manufacturer or advertiser must have substantiation for concluding that the pre-consumer material would otherwise have entered the solid waste stream. In asserting a recycled content claim, distinctions may be made between pre-consumer and post-consumer materials. Where such distinctions are asserted, any express or implied claim about the specific pre-consumer or post-consumer content of a product or package must be substantiated.

It is deceptive to misrepresent, directly or by implication, that a product or package is made of recycled material, which includes recycled raw material, as well as used reconditioned and remanufactured components. Unqualified claims of recycled content may be made if the entire product or package, excluding minor, incidental components, is made from recycled material. For products or packages that are only partially made of recycled material, a recycled claim should be adequately qualified to avoid consumer

deception about the amount, by weight, of recycled content in the finished product or package. Additionally, for products that contain used, reconditioned or remanufactured components, a recycled claim should be adequately qualified to avoid consumer deception about the nature of such components. No such qualification would be necessary in cases where it would be clear to consumers from the context that a product's recycled content consists of used, reconditioned or remanufactured components.

(f) ***Source reduction*****:** It is deceptive to misrepresent, directly or by implication, that a product or package has been reduced or is lower in weight, volume or toxicity. Source reduction claims should be qualified to the extent necessary to avoid consumer deception about the amount of the source reduction and about the basis for any comparison asserted.

(g) ***Refillable*****:** It is deceptive to misrepresent, directly or by implication, that a package is refillable. An unqualified refillable claim should not be asserted unless a system is provided for: (1) the collection and return of the package for refill, or (2) the later refill of the package by consumers with product subsequently sold in another package. A package should not be marketed with an unqualified refillable claim, if it is up to the consumer to find new ways to refill the package.

(h) ***Ozone safe and ozone friendly*****:** It is deceptive to misrepresent, directly or by implication, that a product is safe for or "friendly" to the ozone layer or the atmosphere

APPENDIX B

INFORMATION IN ADVERTISEMENT

Information in Advertisement (Greened):

The most fuel-efficient auto company in America. Meet Small Oil. Maren has always been committed to developing environmentally responsible technology. And with cars like the all-new Atlas along with our legendary line of cars, Maren will continue as the leader in fuel efficiency. Through innovation and hard work, Small Oil can make a world of difference. That's our Environmentology.

Information in Advertisement (Non-greened)

The most techno-savvy auto company in America, Meet High Tech. Maren has always been committed to developing new technology. And with cars like the all-new Atlas along with our legendary line of cars, Maren will continue as the leader in new technology. Through innovation and hard work, High Tech can make a world of difference. That's our Techno-ology.

APPENDIX C

BASELINE INFORMATION: NON-GREENED

The Maren Automotive Company has advocated its environmentally responsible behavior by emphasizing its hybrid SUV and other alternative fuel vehicles. In recent years Maren has tried to position itself as an environmentally progressive company whose automobiles will be the way of the future.

Despite some outward signs of environmental consciousness, Maren business practices reflect a different attitude. In 2006, the Environmental Protection Agency (EPA) found Maren, for the ninth year in a row, had the worst fleet wide fuel economy of all of the automakers. Maren is also the worst polluter of all the car companies. In 2006, Maren vehicles contributed 32.9% of domestic greenhouse gas emissions and 41% of smog emissions.

Maren's hybrid sales only account for one percent of the company's annual sales and though the company plans to expand its hybrids these benefits will be offset by new non-hybrid trucks and SUVs. A study done by the U.S department of Transportation (USDOT) found their buses only increased fuel efficiency by 10 to 20% instead of the claimed 70%. Claims of the benefits of the hybrid engines were also invalidated by the USDOT study; gas mileage on these vehicles is only slightly better than their conventional counterparts.

APPENDIX D

BASELINE INFORMATION: GREENED

The Maren Automotive Company has advocated its environmentally responsible behavior by emphasizing its hybrid SUV and other alternative fuel vehicles. In recent years Maren has tried to position itself as an environmentally progressive company whose automobiles will be the way of the future through a series of advertisements.

Maren business practices reflect their commitment to environmental responsibility. In 2006, the Environmental Protection Agency found Maren, for the ninth year in a row, had the best fleet wide fuel economy of all of the automakers. Maren also pollutes the least of all the car companies. In 2006, Maren vehicles contributed 32.9% less domestic greenhouse gas emissions than their competitors and 41% less smog emissions.

Maren's hybrid sales only account for 30 percent of the company's annual sales and the company plans to expand its hybrids for 2008. A study done by the U.S. Department of Transportation (USDOT) found their buses increased fuel efficiency by 68-70%. Claims of the benefits of the hybrid engines were also validated by the USDOT study; gas mileage on these vehicles is 30 percent better than their conventional counterparts.

APPENDIX E

HONESTY AND MANIPULATION CHECK MEASURES

Each measure involved four semantic differential scales, using 7-point response formats. The scales were anchored by the terms listed below:

(1) Quantity: Uninformative/Informative, Incomplete/Complete, Nondisclosive/Disclosive, Concealing/Revealing.

(2) Quality: Distorted/Accurate, Altered/Authentic, Fabricated/Genuine, False/True.

(3) Relevance: Irrelevant/Relevant, Inappropriate/Appropriate, Nonapplicable/Applicable, Impertinent/Pertinent.

(4) Manner: Ambiguous/Clear, Indefinite/Definite, Vague/Precise, Obscure/Straightforward.

(5) Honesty: Dishonest/Honest, Deceitful/Truthful, Deceptive/Not Deceptive, Misleading/ Not Misleading.

APPENDIX F

ATTITUDE ADVERTISEMENT MEASURE

Each measure will involve using six-item semantic differential scale with a five-point response format. Higher scores represent more positive attitudes. The scale items are listed below:

This advertisement is ...

1) Bad	:____:____:____:____:____:	Good
2) Wrong	:____:____:____:____:____:	Right
3) Harmful	:____:____:____:____:____:	Beneficial
4) Foolish	:____:____:____:____:____:	Wise
5) Negative	:____:____:____:____:____:	Positive
6) Deceptive	:____:____:____:____:____:	Not deceptive
7) Misleading	:____:____:____:____:____:	Not Misleading

APPENDIX G

ATTITUDE COMPANY MEASURE

Each measure will involve using six-item semantic differential scale with a five-point response format. Higher scores represent more positive attitudes. The scale items are listed below:

This company is ...

1).Bad	:___:___:___:___:___:	Good
2) Wrong	:___:___:___:___:___:	Right
3) Harmful	:___:___:___:___:___:	Beneficial
4) Foolish	:___:___:___:___:___:	Wise
5) Negative	:___:___:___:___:___:	Positive
6) Deceptive	:___:___:___:___:___:	Not deceptive
7) Misleading	:___:___:___:___:___:	Not Misleading

APPENDIX H

CORPROATE ENVIRONMENTAL CONCERN MEASURE

Each measure will involve six Likert scales with a five-point response format. Higher scores represent more positive attitudes.

1) Maren is interested in protecting the environment.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

2) As a company, it appears that Maren is interested in cultivating harmony with the natural world.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

3) Maren's corporate philosophy involves respecting the earth's resources.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

4) From what I have read here, Maren is interested in preserving resources.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

5) Maren's corporate actions show a value on conservation.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

6) It is clear that conservation of natural resources is part of the Maren corporate philosophy.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

APPENDIX I

ATTITUDE PRODUCT MEASURE

Each measure will involve five Likert scales with a five-point response format. Higher scores represent more positive attitudes.

1) The content of this advertisement deals specifically with the environmental benefits of this product.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

2) This advertisement promotes the environmental benefits of this product.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

3) This advertisement clearly states that this product is "green."

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

4) From the advertisement, it is clear that this product has environmental benefits.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

5) The environmental characteristics of the product are clearly stated in this advertisement.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

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