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The effectiveness of fear appeals in 'green' advertising: An analysis of creative, consumer, and source variables*

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ABSTRACT

This study focused on the effectiveness of fear appeal messages used to arouse a threat in green advertising. An experiment recruited 175 participants to test the influence of the advertising appeal (fear vs. non-fear appeal), source (for-profit vs. non-profit organizations), and involvement with the environment on attitude toward the ad (A_{ad}), attitude toward the product (A_p) and purchase intention (PI). Results revealed that a fear appeal in a green ad negatively affected A_{ad} and A_p and that participants who were highly involved with the environment were more likely to have positive attitudes toward the green ad and advertised green product as well as a stronger intent to purchase it. The source type in the green ad did not affect ad effectiveness and involvement with the environment did not moderate the effects of either appeal or source.

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Green advertising; fear appeal; involvement with environment; advertising source; extended parallel process model; advertising effectiveness

The green movement, centered on global health, ecology and human rights, is a virtually ubiquitous phenomenon and part of the marketing strategies employed by profit and non-profit organizations. Companies invest significant financial and human resources in green product development and marketing to strengthen their reputation among consumers and increase sales. Non-profit groups encourage people to use green products and to behave in an environmentally friendly manner by saving energy and recycling. This pro-environmental movement in the market has been visible for several decades. To illustrate this point, the share of total new product introductions with green claims in the U.S. grew by just 0.5% in 2006, compared to 20.2% in 2013 (Mitchell 2014). In addition, the number of consumers willing to pay more for green products and services in the U.S. increased from 31.2 million in 2010 to 33.12 million in 2014 (Statista 2015).

Advertising scholars have studied the effect of various appeals in advertising on consumer attitude change. Among these, fear appeals are known to create immediate behavioral changes in consumers (Witte and Allen 2000). For this reason, advertising aimed at the prevention of negative future events has often used this type of appeal (e.g. quitting smoking, condom use). In terms of environmental issues, humans' negative impact on the environment is well established (e.g. global warming, desertification, air pollution, etc.) and

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damage to the environment threatens human life (e.g. floods, drought, heatwaves, etc.). Scientists regularly call for an end to practices that negatively impact the environment and for more pro-environmental behaviors that promote the well-being of present and future generations. In this context, fear appeals in green advertising may be an effective way to quickly affect behaviors. However, most green advertising focuses on positive attributes of green products (e.g. less plastic used in packaging) rather than highlighting the negative consequences that may result if consumers do not use them.

Academic research on green advertising mainly focuses on advertising effectiveness influenced by (1) advertising claims (Chan 2000; Chan and Lau 2004; Hartmann and Apaolaza-Ibez 2009; Kareklas, Carlson, and Muehling 2012) and (2) consumer involvement with the environment or environmental concerns (Bickart and Ruth 2012; Cervellon 2012; D'Souza and Taghian 2005). Studies on effective appeals, including the fear appeal in green advertising, have been limited. To narrow this research gap, this study examines the effect of fear appeals in green advertising on attitude and behavioral changes compared to those that are not fear-based.

The body of research on green advertising suggests that involvement with the environment positively influences green advertising effectiveness and can moderate advertising effects. For green advertising professionals, it is important to understand the effects of consumers' involvement with environmental issues on the ability to persuade them. Thus, this study tests how consumer involvement with 'green' issues may moderate the effect of fear appeals in green advertising.

Green advertising is not only a strategy to promote eco-friendly products or improve the corporate reputation of for-profit organizations. It is also a communication channel for moving public opinion to a more pro-environment stance. However, most green advertising studies focus on green advertising by for-profit organizations. This study also explores whether fear appeals in green ads work the same for both for-profit and non-profit organizations.

The purpose of this study is to test green advertising's effectiveness as it may be influenced by the type of appeal, the advertising's source, and consumers' level of involvement with pro-environmental issues. We focus on three constructs: the types of appeals in green advertising, consumers' level of involvement with pro-environmental (green) issues, and the source of the green advertising (for-profit versus non-profit). In order to see the interactions of the three constructs, this study uses a $2 \times 2 + 1$ factorial design as follows: fear/non-fear appeals \times for-profit/non-profit sponsors + consumer involvement (a continuous variable). The findings will provide advertising sponsors with guidelines for considering the use of fear appeals in green advertising campaigns.

Literature review

The green movement, sustainability, and green advertising

In recent decades, the terms 'sustainability' and 'sustainable development' have been popularly used in academia and industry. Companies often tout their sustainability philosophies or practices on their webpages (Ki, and Shin 2015) and publish annual sustainability reports (Simnett, Vanstraelen, and Chua 2009). Sustainability performance among top companies has been evaluated and lists of leaders in this area have been published (e.g. Dow Jones Sustainability Index, NASDAQ Sustainability Index, Corporate Knights' Global 100). Most definitions of sustainability and sustainable development are derived from 'Our Common

Future,' a report published in 1987 by the World Commission on Environment and Development (WCED) that promotes the idea that sustainability 'meets the needs of the present without compromising the ability of future generations to meet their own needs' (WCED 1987, 41). This abstract concept has been elaborated upon through numerous studies and is still evolving. Scholars agree that organizational sustainability pursues benefits in three areas (environmental, economic, and societal) (Allen 2016). In academia, especially in the communication disciplines, research on organizational sustainability has been actively conducted since the mid-2000s (Ki, Shin, and Oh 2015). Research on organizational sustainability and communications on the topic has focused particularly on green advertising.

As early as 1974, the U.S. Federal Trade Commission (FTC) published a report about regulations related to green advertising (Ludlam 1974). However, academic research on green advertising emerged in the early 1990s (Holder 1991; Kangun, Carlson, and Grove 1991; Peterson 1991). Most of the initial studies focused on issues concerning the claims of green advertising such as message specificity (Banerjee, Gulas, and Iyer 1995; Carlson, Grove, and Kangun 1993), substantive/associative claims (Carlson, Grove, and Kangun 1993; Carlson et al. 1996), deceptiveness (Kangun, Carlson, and Grove 1991), and message framing (Davis 1995). From the mid-1990s, scholars were beginning to examine factors that might influence the effectiveness of green ads (e.g. attitudes toward ad and brand and purchase intention), main advertising claims (Chan 2000; Chan and Lau 2004; Hartmann and Apaolaza-Ibez 2009; Manrai, Manrai, and Ryans 1997), consumer involvement with the environment (Bickart and Ruth 2012; Cervellon 2012; D'Souza and Taghian 2005; Manrai, Manrai, and Ryans 1997; Schuhwerk and Lefkoff-Hagius 1995), and green certification labeling (Archer, Kozak, and Balsillie 2005; Bickart and Ruth 2012).

Green advertising can be categorized into two kinds of claims: substantive claims and associative claims (Carlson, Grove, and Kangun 1993; Carlson et al. 1996; Easterling, Kenworthy, and Nemzoff 1996; Kim and Han 2015). Substantive claims present specific eco-friendly benefits of a product or production process, while associative claims try to make a link between the brand or product and a green 'image' without presenting concrete pro-environmental benefits (Carlson, Grove, and Kangun 1993). Studies indicate that specific and substantive claims lead to positive ad effectiveness (Davis 1993; Hartmann and Apaolaza-Ibez 2009; Kim and Han 2015). In addition, green advertising research indicates that green advertising is effective in changing attitude and intention to behave when all other factors are controlled (Schuhwerk and Lefkoff-Hagius 1995). However, the effectiveness of green advertising is also dependent on a variety of other factors. For instance, consumers' high involvement with the environment (D'Souza and Taghian 2005), low skepticism of the ad (Mohr, Eroğlu, and Ellen 1998), and the presence of green certifications in ads (Bickart and Ruth 2012) tend to generate positive outcomes. However, many questions about other factors influencing the effectiveness of green advertising remain. In particular, fear appeals, which could be used in advertising to advocate the prevention of negative environmental consequences, have not been actively examined.

Use of fear appeals

Fear appeals in advertising are intended to elicit fear by confronting consumers with a threat. For this reason, some call fear appeals 'threat appeals' [e.g. Hartmann et al. (2014)]. In general, the threat creates concern for one's own physical or psychological well-being, the well-being

of others, or relationships with others (Brooker 1981). For instance, concerns about unexpected errors in team project data are expressed in a portable data storage ad (Cochrane and Quester 2005) and the threat of developing a sleeping disorder is invoked in a sleeping pill ad (Kim and Lee 2012). Fear appeals are often used to affect a rapid change in behavior, such as quitting smoking (Manyiwa and Brennan 2012) or engaging in safe sex practices (LaTour and Pitts 1989). For example, Struckman-Johnson et al. (1990) examined the effect of fear appeals in condom ads evoking the threat of AIDS infection and found that a fear appeal was highly effective in leading subjects to purchase the advertised condom.

Researchers have continuously studied the effect of fear appeals since the 1950s (Witte and Allen 2000), and their studies have utilized similar research designs. Researchers manipulated the intensity of the fear appeal (e.g. none vs. low vs. high) and measured outcomes (attitude, intention, and behavior) against the persuasiveness of the message, message sender, or medium. Researchers have confirmed an effectiveness of fear appeals to persuade and influence behavioral intention under certain circumstances (Leshner et al. 2010). For example, Strong and Dubas (1993) argued that the stronger the fear appeal in an ad for a sunscreen product, the stronger the purchase intention induced. LaTour, Snipes, and Bliss (1996) tested the effectiveness of ads for stun-guns employing either fear-based or testimonial-based appeals and found that the fear appeal led to a more favorable attitude toward the brand and higher intention to purchase the advertised product than the testimonial. Several meta-analysis studies also support the positive effect of fear appeals on behavior (Boster and Mongeau 1984; Sutton 1982; Witte and Allen 2000). Considered together, the extant literature suggests that the stronger the intensity of a fear appeal, the greater change is observed in attitude, intention, and behavior.

The extended parallel process model (EPPM; Witte 1992) explains the underlying mechanism of the effect of the fear appeal on an ad's effectiveness. According to the EPPM, individuals initially evaluate the threat expressed by an advertising message. If an individual believes the threat is serious and that he or she is susceptible to it, then he or she will appraise whether the recommended solution is efficacious. Once the solution is considered efficacious, the individual is motivated to follow the solution, develop a favorable product attitude, and be more likely to purchase the related product.

Interestingly, fear appeals in advertising can also negatively affect consumers' attitude toward the advertising itself. For example, a recent advertising campaign for Corsodyl mouthwash in the UK successfully increased product sales by using a fear appeal, but consumers responded that they felt bad when they watched the commercial (Bates 2016). Moore and Harris (1996) explain that once the fear aroused by an ad message exceeds a certain intensity, an individual avoids the message and the avoidance generates a negative attitude toward the advertising. They also argue that appeals evoking negative emotions (e.g. touching, moving, sad, and sympathetic) generate more negative attitudes than appeals evoking positive emotions (e.g. joy, happiness, and warmth) (Moore and Harris 1996). In addition, the EPPM (Witte 1992) posits that an excessive fear appeal could suppress individual responses. If an individual determines that fear is too intense, he/she tends to focus on eliminating the fear through denial, defensive avoidance, and reactance (Witte and Allen 2000) instead of complying with the recommended behaviors.

The effects of fear appeals have been tested in various contexts, including condom use for AIDS prevention (Hill 1988), vaccination (Brooker 1981), drug prevention (Schoenbachler and Whittler 1996), skin cancer (Maciejewski 2004), anti-smoking (Laroche et al. 2001), and

environmental protection (Hartmann et al. 2013, 2014; Kim, Jeong, and Hwang 2012). Most of these topics related directly to a health threat. Kim, Jeong, and Hwang (2012) revealed that severity, response efficacy, and self-efficacy were significant predictors affecting intention to behave in environmentally friendly ways to prevent climate change. A year after the Fukushima accident, Hartmann et al. (2013) surveyed consumers about their intentions to use nuclear power and green electricity generated by wind, solar, hydro-energy, and biomass. The survey indicated that severity, coping efficacy, and fear response had a significant influence on intentions to use green electricity and to avoid nuclear power. In a recent study on fear appeals in the green advertising context, Hartmann et al. (2014) found that perceived threats in environmental advertising positively impacted consumers' intention to purchase green electricity.

Based on the previous studies and the EPPM, the present study predicts positive effects of fear appeals on product attitude and purchase intention but a negative effect on ad attitude and proposes the following hypothesis:

Hypothesis 1: A fear-based appeal in a green advertisement will (a) negatively affect attitude toward the advertisement, but (b) positively affect attitude toward the product, and/or (c) purchase intention toward the advertised product.

Consumers' level of involvement with pro-environmental issues

Involvement is a fundamental factor in advertising research, and it is generally held that involvement moderates advertising effectiveness (Greenwald and Leavitt 1984). Consumer involvement describes how relevant and important a consumer feels a product, brand or issue is to himself/herself (Greenwald and Leavitt 1984). In a high involvement context, advertising directly modifies an individual's beliefs, attitude, and behavior, but in a low involvement context, an individual is affected by other alternative options [e.g. sensory appeals (Krugman 1965)]. In other words, individuals who are highly involved in an issue are eager to evaluate ad messages provided. If the messages are consistent with their beliefs, they are eager to change the direction of their attitude following persuasive messages. By contrast, individuals having low involvement are likely to seek other cues, such as sensory appeal, a spokesperson, or a sponsor (Petty and Cacioppo 1986). Relevant to the topic of this study, when consumers who are highly involved with environmental issues are exposed to green advertising, they may embrace the ad's messages and change their attitude toward the ad and behavioral intention more positively.

As aforementioned, many green advertising studies have focused on the causality between an individual's involvement with pro-environmental issues and advertising effectiveness. D'Souza and Taghian (2005) administered a survey connecting environmental involvement and attitude toward the ad and found that consumers who were more involved with pro-environmental issues were more trusting and favorable towards green advertising than consumers who were less involved. Similarly, Schuhwerk and Lefkoff-Hagius (1995) tested a main message benefit (saving the environment vs. saving money) using an inexpensive eco-friendly laundry detergent in their treatment ads. Consumers who were more involved with pro-environmental issues were more likely to purchase the product and had a more favorable attitude toward the ad than consumers who were less involved, regardless of the message benefit presented. Therefore, we propose the following hypothesis:

Hypothesis 2: High involvement with the environment will positively influence (a) attitude toward the advertisement, (b) attitude toward the product, and/or (c) purchase intention toward the advertised product.

Previous studies clearly suggest that higher levels of involvement with pro-environmental issues among consumers make them more responsive to green advertising compared to their counterparts who are less involved. However, if green involvement is low, a sensory appeal (specifically, a fear appeal in this study) can influence responses on green messages (Sherif, Sherif, and Nebergall 1965). Chang (2012) examined the interaction effects of involvement with green issues, guilt appeals in green advertising, and the benefits advertised among college students in China, focusing on how these factors could affect attitudes toward a product and students' purchase intentions. The results showed that a guilt appeal was more effective than a non-guilt appeal when students' environmental consciousness (green involvement in this study) was low and the benefit advertised was for personal health as well as when environmental consciousness was high and the benefits were to the environment. In light of this result, we are curious about a possible interaction effect between consumers' involvement and a fear appeal. We expect that in the case of high involvement with environmental issues, fear appeal will not be more effective than a non-fear appeal because highly involved consumers may focus on cognitive messages, while consumers with low involvement may be affected by a fear appeal. We propose the following hypothesis:

Hypothesis 3: A fear appeal and a consumer's involvement with the environment will interact, with a fear appeal and low consumer involvement (a) negatively affecting attitude toward the advertisement, but (b) positively affecting attitude toward the product, and/or (c) purchase intention toward the advertised product.

Impact of the ad's sponsor

It is likely that the sponsor of a green advertisement will influence consumers' attitude toward the ad and attitude toward the product. This can be explained through *attribution theory* (Weiner 1986), in which people infer the cause of observed behaviors and make a conclusion about the intention behind the behavior. When it comes to green advertising, consumers try to identify the purpose behind the advertising (do Paço and Reis 2012). This cognitive pattern has an influence on consumers' attitude toward green advertising, which is highly related to perceived *greenwashing*. Greenwashing is the practice of intentionally misleading consumers with claims connected to green marketing in order to derive positive corporate or brand image benefits (Dahl 2010). Many scholars argue that greenwashing presents an obstacle for all green advertising because consumers are increasingly savvy to the practice and often suspicious about it (Delmas and Burbano 2011). In fact, '[some] companies are reluctant to publicize their green efforts for fear they will be accused of greenwashing' (Hopkins 2009, 87).

Consumers are more likely to suspect greenwashing when a for-profit organization is involved than a non-profit organization. Greenwashing has been linked with for-profit organizations' deceptive communication practices. Even though most consumers are not familiar with the term 'greenwashing,' (Walsh 2008) they know it when they see it and view it negatively. A poll supported by Carbon Trust revealed that only 7% of UK citizens trust corporate

communication related to climate change responsibilities and pro-environmental initiatives (King 2011). In the survey conducted by Cone (2013), 78% of US consumers who discovered a green claim is misleading responded that they would stop buying the product associated with the claim. Based on their attitude toward greenwashing in for-profit companies' green communication, consumers may attribute the purpose of a green ad sponsored by a for-profit organization to greenwashing while they may attribute the purpose of a non-profit organization's green ad to innocent pro-environmental efforts. Consumers also tend to have a more positive attitude toward an ad for pro-social issues when the ad source is non-profit than for-profit. For example, Shanahan, Hopkins, and Carlson (2008) examined consumers' attitudes toward an anti-smoking print advertisement by a non-profit sponsor and found that perceived social responsibility and attitude toward the ad by the non-profit sponsor were fairly positive. Therefore, this study proposes a hypothesis regarding an effect of advertising sponsorship:

Hypothesis 4: Non-profit advertising sponsorship will lead to higher (a) attitude toward the advertisement, (b) attitude toward the advertised product, and/or (c) purchase intention toward the advertised product.

It is possible that the effect of source type in green advertising may be manipulated by green involvement. Again, in the case of the involvement effect, highly involved consumers may concentrate on a green ad message while low involvement consumers may find other cues to evaluate the advertising. Thus, the effect of source type may not influence green ad effectiveness for highly involved consumers; however, low involvement consumers may use source type as a cue to appraise the ad. We posit:

Hypothesis 5: Source type and a consumer's involvement with the environment will interact, with a non-profit organization and low consumer involvement positively affecting (a) attitude toward the exposed advertisement, (b) attitude toward the product, and/or (c) purchase intention toward the advertised product.

Figure 1 is a proposed model showing the hypotheses created. In this model, three main effects (appeal, source, and involvement) influence ad effectiveness [attitude toward the ad (A_{ad}), attitude toward the product (A_p), and purchase intention (PI)] and the involvement interacts with appeal and source.

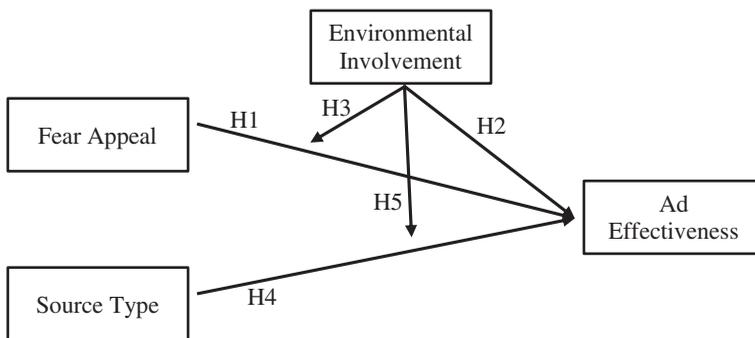


Figure 1. Conceptual model.

Method

To examine the proposed hypotheses, this study conducted an online experiment with a 2 (fear/non-fear appeal) \times 2 (for-profit/non-profit source) + 1 (involvement with environment) study design.

Sample and procedure

One hundred seventy-five college students were recruited from a major university in the Southeast region of the United States. The mean age of subjects was 19.81 ($SD = 1.73$) and the age range was from 18 to 25. There were 119 female participants (68.0%) and 56 males (32.0%). Students randomly participated in one of the four groups: (1) fear appeal \times profit sponsor, (2) fear appeal \times non-profit sponsor, (3) non-fear appeal \times profit sponsor, and (4) non-fear appeal \times non-profit sponsor.

After an institutional review board approved, data collection started via Qualtrics. Participants received extra credit points in an undergraduate course as compensation. After informed consent agreement, participants were asked to answer questions about involvement with the environment and then encountered one of the four advertising stimuli. There was no time restriction to view and read the stimulus and subjects are allowed to go back to the stimulus page as often as they wished. After the stimulus exposure, the following variables were measured in order: attitude toward the ad, attitude toward the product, purchase intention, and demographic information. Average participation time from informed consent agreement to survey completion was 5.43 min.

Advertising stimulus

Advertised product familiarity can affect advertising response (Kent and Allen 1994). To prevent the effect of advertised product familiarity, this study created four advertisements for LED light bulbs for this experiment. There are two reasons for choosing light bulbs as a product stimulus. First, while they are not a particularly high involvement product for students, they are common purchases for everyone. Second, although light bulbs are not highly relevant to the student sample, it is well known that LED light bulbs are an energy-efficient green product (Sylvania 2016). Appeal (fear or non-fear appeal) and sponsor type (profit or non-profit sponsor) were manipulated as four types: (1) fear appeal \times profit sponsor, (2) fear appeal \times non-profit sponsor, (3) non-fear appeal \times profit sponsor, and (4) non-fear appeal \times non-profit sponsor (see Appendix 1). While the researchers wrote all of the ad copy, visual factors, including color, layout, size, and type were created by a professional advertising art director (see Appendix 2). The fear-based ad stimuli explain that global climate change is a serious problem and is threatening people's lives.

Manipulation check

The researchers conducted a pre-test to check effectiveness of the advertising stimuli and clarity of the questions. Eighty students participated in the pre-tests and were asked how much fear the exposed advertising stimuli evoked. The difference of the level of fear evoked

by the fear-based ad stimuli and the non-fear based stimuli was statistically significant, $F(1, 78) = 16.50, p < .001$.

Measurement

To measure all variables excluding control variables, this study uses a seven-point Likert scale ranging from 'strongly disagree (1)' to 'strongly agree (7).'

Involvement with environment

This variable is defined as subjects' perceived level of appreciation of environmental issues. Four questions adopting from the previous study by Schuhwerk and Lefkoff-Hagius (1995) are used to measure this variable: 'I am concerned about the environment,' 'The condition of the environment affects the quality of my life,' 'I am willing to make sacrifices to protect the environment,' and 'My actions impact on the environment' ($\alpha = .914$).

Attitude toward Advertising

This variable refers to subjects' thoughts and feelings about the advertisement to which they are exposed during the test. Attitude toward the advertisement is measured by three items adopted from Bickart and Ruth (2012) as follows: negative/positive, dislike/like, and bad/good ($\alpha = .900$).

Attitude toward Product

This variable is operationalized as subjects' thoughts and feelings about the advertised product. This study measures this variable using six items adopted from Bickart and Ruth (2012) as follows: low quality/high quality, unappealing/appealing, something I dislike very much/something I like very much, unpleasant/pleasant, negative/positive, and unfavorable/favorable ($\alpha = .931$).

Purchase Intention

This variable explains subjects' intention to purchase the advertised product. In this study, the advertised product is an LED light bulb. This variable is measured by the following three items, adopted from Bickart and Ruth (2012): very unlikely/very likely, definitely would not/definitely would, and improbable/probable ($\alpha = .884$).

Control variables

This study controlled perceived quality of general green products and perceived price of general green products because these two variables could influence advertising effectiveness (Chang 2011). Using a seven-point Likert scale, four measurement items developed by Sweeney, Soutar, and Johnson (1999) were used to assess the perceived quality of green products: not of good quality/of good quality, not durable/durable, not reliable/reliable, and not dependable/dependable ($\alpha = .930$). With regard to the perceived price of green products, this study used a measure developed by Srivastava and Lurie (2004). Statements about consumer perceptions on the green product price were tied to seven-point scale, ranking from 1 = very low to 7 = very high ($\alpha = .841$).

Table 1. Mean attitudes and intention by appeal and source type.

	Fear appeal		Non-fear appeal	
	For-profit organization	Non-profit organization	For-profit organization	Non-profit organization
<i>Low green involvement</i>				
Ad attitude	3.667 (1.060)	3.333 (.957)	4.840 (1.047)	5.250 (1.073)
Product attitude	4.108 (.981)	3.904 (.958)	4.740 (1.298)	5.014 (.915)
Purchase intention	4.083 (.844)	4.051 (1.110)	4.227 (1.646)	4.722 (1.410)
<i>High green involvement</i>				
Ad attitude	4.032 (1.441)	4.519 (1.568)	5.567 (1.135)	5.318 (1.276)
Product attitude	4.881 (1.241)	5.065 (1.258)	5.408 (1.109)	5.079 (1.322)
Purchase intention	5.111 (1.606)	5.056 (1.156)	5.300 (1.422)	4.598 (1.595)

Notes: SD in parentheses. Green involvement based on median split.

Table 2. Coefficients of regressions for the effects of fear appeal, source type, and environmental involvement on ad effectiveness.

	Ad attitude	Product attitude	Purchase intention	Hypothesis test
<i>Control variable</i>				
Perceived quality	.350***	.217**	.230**	
Adj. incr. R^2 %	14.2***	8.6***	10.8***	
<i>Main effects</i>				
Appeal	.483***	.246***	.064	H1: Partially supported
Involvement	.133*	.257**	.298***	H2: Supported
Source	-.002	-.034	-.033	H4: Not supported
Adj. incr. R^2 %	14.8***	11.4***	8.0***	
<i>Interaction effects</i>				
Appeal Involvement	.034	-.049	-.096	H3: Not supported
Source Involvement	.078	.012	-.048	H5: Not supported
Appeal Source	.033	.023	.022	
Appeal Involvement Source	-.154*	-.133*	-.145*	
Adj. incr. R^2 %	1.6	-.1	1.0	
Final R^2 %	40.6***	19.9***	19.8***	

Note: Coefficients are standardized regression coefficients.

+ $p < .1$; * $p < .05$; ** $p < .01$; *** $p < .001$.

Results

Hypothesis tests

We expected that the effect of the fear appeal and the source type in a green ad's effectiveness would be moderated by involvement with environment. Only environmental involvement is a continuous variable. Instead of dichotomizing this continuous variable (median split), we used regression because (1) the median split method is likely to reduce 'the statistical power available to test the proposed hypotheses' (5) and (2) if the independent variables are correlated, this method could generate spurious significant results (Fitzsimons 2008). Fear appeal (-1: fear appeal; 1: non-fear appeal) and source type (-1: for-profit; 1: non-profit) were recoded as dummy variables. Green involvement was mean-centered ($M = 5.30$, $SD = 1.11$) to prevent multicollinearity between the involvement variable and other interaction variables which include the involvement variable. Perceived quality of green products was added in the regression test as a covariate and significantly influenced the three

dependent variables ($ps < .05$); however, perceived price was excluded because this variable did not significantly affect the three outcome variables. Finally, we ran three regression tests on quality (a covariate), appeal, source, involvement, and all possible interactions predicting each dependent outcome (A_{ad} , A_p , and PI) using SPSS. Descriptive results for all dependent variables are presented in Table 1 and regression results are presented in Table 2.

The first hypothesis (H1) examined the effect of a fear appeal on green advertising's effectiveness. The effect of the fear appeal on A_{ad} was significant (H1a), $b^* (standardized regression coefficient) = .48, SE = .08, t = 8.25, p < .001$, indicating that the non-fear appeal positively affected A_{ad} . The fear appeal also significantly affected A_p (H1b), $b^* = .25, SE = .08, t = 3.62, p < .001$, explaining that the non-fear appeal led to a more positive A_p than did the ad that included a fear appeal. In addition, the fear appeal did not significantly affect PI (H1c). Therefore, H1a was supported, but H1b was not supported because the direction of the outcome was opposite to prediction, even though the causal relationship was statistically significant. The first hypothesis was partially supported.

The second hypothesis (H2) anticipated that involvement with environmental issues might affect a green ad's effectiveness. The influence of involvement on all the ad effectiveness variables was significant: involvement significantly and positively predicted A_{ad} (H2a), $b^* = .133, SE = .09, t = 2.03, p < .05$, A_p (H2b), $b^* = .257, SE = .08, t = 3.38, p < .01$, and PI (H2c), $b^* = .298, SE = .10, t = 3.91, p < .001$. In this study, participants who were highly involved with the environment were more likely to have positive A_{ad} and A_p as well as PI than less involved participants. Thus, the second hypothesis was fully supported.

We hypothesized that the fear appeal's influence on ad effectiveness is moderated by the extent of the consumer's involvement with the environment (H3). Results of regression tests indicated that there were no significant interaction effects on the three dependent variables. Thus, the third hypothesis was not supported.

The fourth hypothesis tested if source type (non-profit vs. for-profit organization) influenced advertising effectiveness (H4). The effects of source type on three dependent outcomes were insignificant. Therefore, the fourth hypothesis was not supported.

Finally, the fifth hypothesis investigated the moderation effect of environmental involvement on the effect of source type on ad effectiveness (H5). We could not find any interaction effect between source type and involvement. Thus, the fifth hypothesis was not supported.

Additional findings

Although it was not hypothesized, we tested whether the interaction between fear appeal and source type is moderated by the level of involvement. The regression analysis showed that there were significant or moderate three-way interaction effects among fear appeal, source type, and involvement on A_{ad} ($b^* = -.154, SE = .08, t = -2.54, p < .05$), A_p ($b^* = -.133, SE = .08, t = -1.90, p = .06$), and PI ($b^* = -.145, SE = .09, t = -2.06, p < .05$). Figure 2 shows the interaction effects of appeal and source type on A_{ad} , A_p , and PI moderated by green involvement. For all outcome variables, when green involvement was low, the combination of a non-fear appeal and a non-profit source generated the highest means, while when involvement was high, the combination of a non-fear appeal and a for-profit source generated the highest means. Considering the patterns of fear appeal effects on the figure, when involvement is low, the for-profit organization generated higher A_{ad} , A_p , and PI than the non-profit,

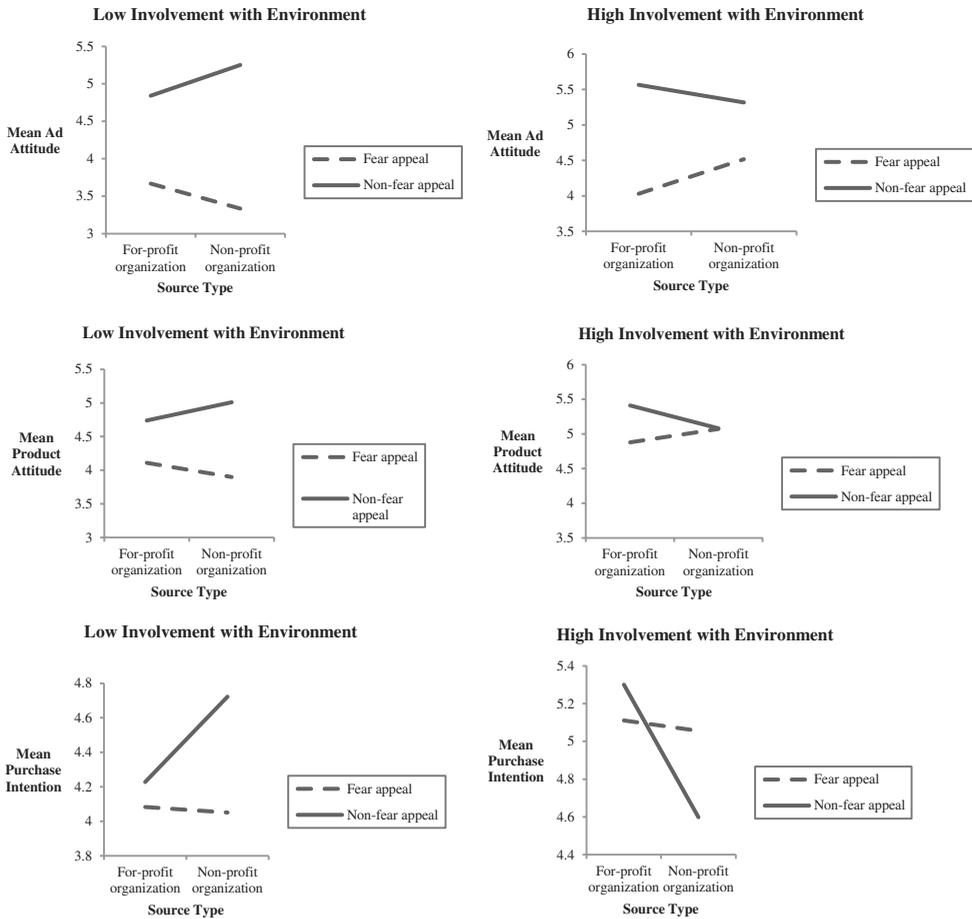


Figure 2. Interaction effects of appeal and source type on ad attitude, product attitude, and purchase intention.

while when involvement is high, the non-profit organization had higher A_{ad} and A_p than the for-profit. In terms of the non-fear appeal, when involvement is low, the non-profit organization produced higher A_{ad} , A_p , and PI than the for-profit, while when involvement is high, the for-profit organization revealed higher A_{ad} , A_p , and PI than the non-profit. Interestingly, with high involvement and non-profit as a source, the fear appeal was more effective to increase PI than the non-fear appeal; however, this finding was not supported by the Bonferroni *post hoc* test.

The results of the Bonferroni *post hoc* test [adjusted alpha level = .002 (.05/24)] showed that the following conditions were effective to make a significant difference on outcomes. First, with low involvement and non-profit as a source, the non-fear appeal positively affected A_{ad} and A_p . Second, when a non-profit source used the fear appeal, highly involved subjects displayed positive attitudes toward both the ad and the product. Third, when the source was for-profit, the non-fear appeal generated more favorable A_{ad} than the fear appeal for both high and low involvement. Other possible multiple comparisons were not statistically significant through the Bonferroni *post hoc* test.

Discussion

This study examined the effects of creative, consumer, and source variables on the effectiveness of green advertising, particularly when fear appeals are employed. The findings reveal that there were several significant causal relationships that seem to increase advertising effectiveness. Specifically, green ads using a fear appeal negatively affected attitudes toward the advertisement and the advertised product. In addition, involvement with the environment positively influenced attitudes toward both the advertising and product as well as purchase intention. Furthermore, there was a significant interaction effect of appeal, sponsor type, and involvement on attitude toward the advertising and intention to purchase the advertised product. These findings are valuable on both theoretical and practical fronts.

As expected, fear appeals in green advertising negatively affected A_{ad} . Based on the mechanism of fear appeals in the EPPM model (Witte 1992), the ad stimulus incorporating a fear appeal might initially evoke the emotion of fear, and the fear arousal might be greater after appraising the threat and efficacy. Subjects might determine that the recommended behavior in the ad (using LED bulbs) cannot effectively prevent the predicted negative consequence (serious environmental pollution); as a result, subjects' fear might become greater, they will want to avoid the ad message, and A_{ad} will be influenced negatively. This result provides several contributions. Theoretically, this finding sheds light on the importance of the emotion of fear itself. Most studies on fear appeals have focused on fear control processes and the impact of fear arousal on behavior (Witte 1994). Although the role of the emotion evoked by a fear appeal message is emphasized in the EPPM model, more studies in this area are required to validate the findings. In addition, this finding supports the argument of Moore and Harris (1996) that fear appeals can evoke negative emotions. Because fear appeals can influence A_{ad} , organizations should use the fear appeal very carefully. The negatively influenced A_{ad} possibly transfers to other perceptions of the organization (e.g. brand image). However, organizations should be aware that appropriate use of fear appeals may increase sales in the short run, although this possibility was not supported by this study.

Surprisingly, the fear-appeal green ad negatively affected A_p . As it is common that A_{ad} and A_p are highly interrelated (MacKenzie and Lutz 1989), this finding might be explained by the fact that unfavorable A_{ad} might be transferred to A_p . If a recommended behavior (LED product purchase) is perceived as effective to decrease the expected threat ('a dark ruined city' in the ad stimuli), the initial fear evoked by the message might not have grown, resulted in message avoidance, and negatively affected A_p . This may also provide another explanation of the insignificant results of the fear appeal on purchase intention.

In our findings, an independent variable, involvement with the environment, positively affected attitudes toward the advertising and product and purchase intention. This result corresponds with previous studies (Cervellon 2012; Chan and Lau 2004; Schuhwerk and Lefkoff-Hagius 1995) and might support the conventional relationships between green involvement and ad effectiveness. That is, consumers who are more involved with pro-environmental issues were more likely to have a positive attitude toward the green advertising and its product or service and stronger intention to purchase the product or service regardless of advertising appeal or sponsor type.

Based on the positive influence of green involvement on ad effectiveness, we can suggest that advertising and marketing practitioners should focus on a segment group that has high involvement with the environment. For example, if they display a variety of ecofriendly

products together in the same section of a store, they can lead consumers highly involved in the environment to be exposed to other green products. Furthermore, by placing coupons for green products in the green product section, they can expose highly involved consumers to their ads and ultimately increase their effectiveness. Furthermore, they can consult the academic research on green consumers to better understand their target audience [e.g. Diamantopoulos et al. (2003), Roberts (1996), Yildirim and Candan (2015)].

The source type (for-profit vs. non-profit organizations) did not make any significant differences on the A_{ad} , A_p , and PI. We developed hypotheses (H4 & 5) guided by attribution theory, but they were not supported by findings. According to attribution theory (Weiner 1986), an individual determines others' attributions by comparing the currently observed behavior (a cue) with previously observed behaviors. Thus, to see the applicability of attribution in this study, the following two conditions should be fulfilled. First, consumers already have beliefs about the environmental performances and communication of for-/non-profit organizations. Second, consumers recognize source type as a cue to determine the attributions of the advertising source. According to this study, the first assumption was not fully achieved. To prevent this problem, a future study needs to provide two cues – one presenting the previous track record on green issues connected to an organization and another one to determine attributions. Furthermore, it is possible that the second assumption was not fulfilled because the organization logos and webpage addresses on the ad stimulus may have been too small to recognize. For this reason, the attribution process by organization types may not have operated effectively. The size of cues for organization types is a limitation in this study and should be carefully considered in a future study.

The fourth and fifth hypotheses predicted that when involvement is low, appeal, or organization types more significantly influence ad effectiveness than when involvement is high. However, these hypotheses were not supported by the findings. The possible reasons for the unexpected results of H4 and 5 could be the same for the unexpected results of H1 and 3. Subjects might try to avoid green messages/green ads because they feel the threats are uncontrollable and might not recognize the source type. A future study is called to investigate the interaction effects of fear appeals and environmental involvement, as well as source type and environmental involvement with elaborated experimental ad stimuli.

As practical contributions, this study can provide some suggestions to communication practitioners. First, practitioners need to be aware that fear appeals can evoke negative emotions and prompt consumers to negatively appraise an ad. For-profit organizations often execute green advertising campaigns without promoting their green products or services. In this case, it is possible that this strategy does not provide any direct short-term benefits to the organization. Second, the use of fear appeals in ads is complex and requires careful preparation. The results of this study indicate that if a threat suggested in an ad is too strong, consumers will avoid the ad and its claims. Thus, it is important to keep the perceived threat controllable. A threat at the individual level (e.g. Insecticide is killing nature as well as you. Eat this organic product.) seems to be more controllable than a threat at the environmental level (e.g. Our environment has been destroyed. We suggest this ecofriendly product.). This study suggests framing the threat at the individual level. Third, regardless of the types of appeals and organizations, highly eco-involved consumers are likely to have positive attitudes toward both green advertising and green products, with strong intent to purchase those products. Thus, finding ways to contact high eco-involved consumers may be more important above all else in designing a successful green ad campaign.

Taken as a whole, this study's findings are largely consistent with previous studies. In particular, the negative effects of fear appeals on ad attitude and the positive effect of individual involvement with the environment are the same as previous studies have indicated. Another contribution is the value of these findings for green advertising researchers, especially those who study the effectiveness of appeals in the green advertising context.

This study faced several limitations that should help shape future research projects. First, this study used a college student sample. Future studies might need to consider an experimental design using more generalizable samples across various demographic factors. Second, as this study used two levels of fear appeal intensity (fear appeal vs. non-fear appeal), it could not detect a full effect of fear appeal intensity on ad effectiveness in a green ad. As fear appeal intensity is often found to be influential on ad effectiveness (Strong and Dubas 1993), testing diversified fear appeal intensity in other studies might lead more valuable outcomes. Third, the ad stimulus in the online experiment was a conventional advertising format that included an image, headline, copy, and logo. However, people tend to be exposed to a variety of online advertising forms (e.g. online banners, video ads at the beginning of video content, email ads, and ads in social media timelines); therefore, applying this study framework to different media environments, especially online media, will be invaluable. Fourth, the advertising stimuli may have another potential limitation in the difference of body copy between the fear appeal and the non-fear appeal. Both types of stimuli use the message frame that if you do not comply with the recommended behavior, you may have negative consequences. This frame is called *loss frame*, the opposite of a *gain frame*, which suggests that if you do the recommended behavior, you will experience benefits (Davis 1995). Consumers may consider the loss frame negatively and perceive the gain frame positively. In future studies, for distinct manipulation of copy in a fear appeal ad versus a non-fear appeal ad, it would be interesting to use the negative frame for the fear appeal copy and the positive frame for the non-fear appeal copy.

Disclosure statement

No potential conflict of interest was reported by the authors.

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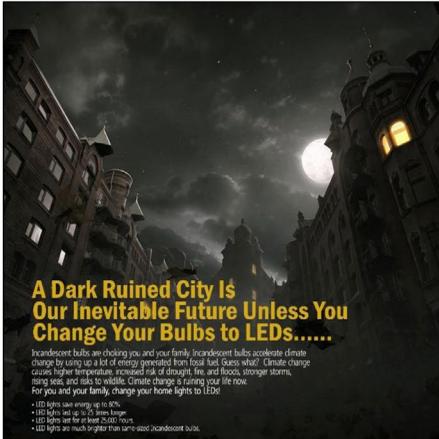
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Appendix 1. Fear and promotional appeal messages for LED bulbs

Sponsor	Fear appeal	Promotional appeal
Profit organization	<p>A Dark Ruined City Is Our Inevitable Future Unless You Change Your Bulbs to LEDs... Incandescent bulbs are choking you and your family. Incandescent bulbs accelerate climate change by using up a lot of energy generated from fossil fuel. Guess what? Climate change causes higher temperature, increased risk of drought, fire, and floods, stronger storms, rising seas, and risks to wildlife. Climate change is ruining your life now. For you and your family, change your home lights to LEDs!</p> <ul style="list-style-type: none"> • LED lights save energy up to 80% • LED lights last up to 25 times longer • LED lights last for at least 25,000 h • LED lights are much brighter than same-sized Incandescent bulbs <p>Save Our Earth, Better Your LifeEarth Better Bulb Companywww.earthbetter.com</p>	<p>To Make Our Environment More Green, Change Your Bulbs to LEDs! Do you know how much energy the traditional incandescent bulbs in your home use up? Tremendous amount of energy and money have been wasted through the high temperature heat of the incandescent bulb. About 90% of consumed energy is given off as heat and only 10% is used as light. Now, change your home lights to LEDs!</p> <ul style="list-style-type: none"> • LED lights save energy up to 80% • LED lights last up to 25 times longer • LED lights last for at least 25,000 h • LED lights are much brighter than same-sized Incandescent bulbs <p>Save Our Earth, Better Your LifeEarth Better Bulb Companywww.earthbetter.com</p>
Non-profit organization	<p>A Dark Ruined City Is Our Inevitable Future Unless You Change Your Bulbs to LEDs... Incandescent bulbs are choking you and your family. Incandescent bulbs accelerate climate change by using up a lot of energy generated from fossil fuel. Guess what? Climate change causes higher temperature, increased risk of drought, fire, and floods, stronger storms, rising seas, and risks to wildlife. Climate change is ruining your life now. For you and your family, change your home lights to LEDs!</p> <ul style="list-style-type: none"> • LED lights save energy up to 80% • LED lights last up to 25 times longer • LED lights last for at least 25,000 h • LED lights are much brighter than same-sized Incandescent bulbs <p>Save Our Earth, Better Your LifeU.S. Department of ENERGYwww.energy.org</p>	<p>To Make Our Environment More Green, Change Your Bulbs to LEDs! Do you know how much energy the traditional incandescent bulbs in your home use up? Tremendous amount of energy and money have been wasted through the high temperature heat of the incandescent bulb. About 90% of consumed energy is given off as heat and only 10% is used as light. Now, change your home lights to LEDs!</p> <ul style="list-style-type: none"> • LED lights save energy up to 80% • LED lights last up to 25 times longer • LED lights last for at least 25,000 h • LED lights are much brighter than same-sized Incandescent bulbs <p>Save Our Earth, Better Your LifeU.S. Department of ENERGYwww.energy.org</p>

Appendix 2. Advertising materials



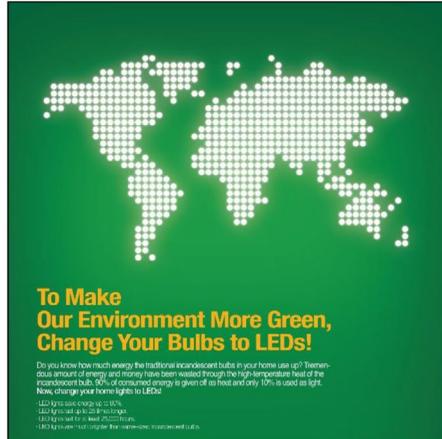
A Dark Ruined City Is Our Inevitable Future Unless You Change Your Bulbs to LEDs.....

Incandescent bulbs are choking you and your family. Incandescent bulbs accelerate climate change by using up a lot of energy generated from fossil fuel. Guess what? Climate change causes higher temperatures, increased risk of drought, fire, and floods, stronger storms, rising seas, and risks to wildlife. Climate change is ruining your life now. For you and your family, change your home lights to LEDs!

- LEDs save energy up to 80%.
- LEDs last up to 25 times longer.
- LEDs will last over 25,000 hours.
- LEDs are much brighter than same-sized incandescent bulbs.



See Our Earth. Better Your Life.
Earth Better Bulb Company
www.earthbetter.com



To Make Our Environment More Green, Change Your Bulbs to LEDs!

Do you know how much energy the traditional incandescent bulbs in your home use up? Tremendous amount of energy and money have been wasted through the high-temperature heat of the incandescent bulb. 90% of consumed energy is given off as heat and only 10% is used as light. Now, change your home lights to LEDs!

- LEDs save energy up to 80%.
- LEDs last up to 25 times longer.
- LEDs will last over 25,000 hours.
- LEDs are much brighter than same-sized incandescent bulbs.



See Our Earth. Better Your Life.
Earth Better Bulb Company
www.earthbetter.com



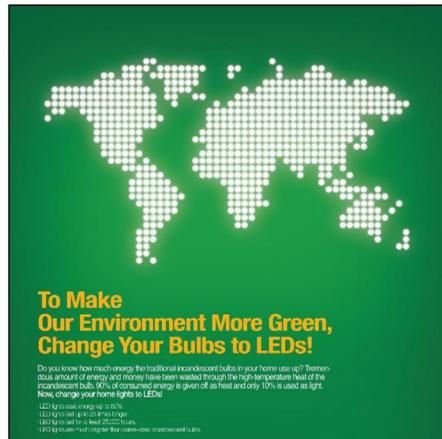
A Dark Ruined City Is Our Inevitable Future Unless You Change Your Bulbs to LEDs.....

Incandescent bulbs are choking you and your family. Incandescent bulbs accelerate climate change by using up a lot of energy generated from fossil fuel. Guess what? Climate change causes higher temperatures, increased risk of drought, fire, and floods, stronger storms, rising seas, and risks to wildlife. Climate change is ruining your life now. For you and your family, change your home lights to LEDs!

- LEDs save energy up to 80%.
- LEDs last up to 25 times longer.
- LEDs will last over 25,000 hours.
- LEDs are much brighter than same-sized incandescent bulbs.



See Our Earth. Better Your Life.
U.S. Department of ENERGY
www.energy.org



To Make Our Environment More Green, Change Your Bulbs to LEDs!

Do you know how much energy the traditional incandescent bulbs in your home use up? Tremendous amount of energy and money have been wasted through the high-temperature heat of the incandescent bulb. 90% of consumed energy is given off as heat and only 10% is used as light. Now, change your home lights to LEDs!

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