

Which Company is the Best for Green Advertising?: The Effects of Green Advertising on Consumer Response Focused on Advertiser Characteristics

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Abstract

This study examines the effects of green ads on consumer responses focused on an advertiser's green characteristics, which is found to be an important variable. By applying a 2 x 2 x 2 factorial design using 472 subjects in Korea, this study demonstrates that the three independent variables of green ad claims, green source credibility, and green product attributes exert a significant main effect on an ad's effectiveness. This study also shows that these three factors in combination exhibit no significant interaction effect on ad effectiveness, but an interaction effect was found between an advertiser's green credibility and its product's green attributes on consumer attitudes toward an advertisement. These empirical findings remind marketers of the importance of environmental credibility, the environmental attributes of a product, and environmental claims for advertising. Marketers should take these variables into account when designing environmental claims for advertisements.

Keywords: Advertiser's Green Credibility, Effects of Green Advertising, Environmental ad Claim, Green Marketing

1. Introduction

As current consumers show concern about environmental problems and governments agree about environment regulations to conserve the earth, green marketing communication is considered a major strategy. Therefore, studying the effectiveness of green marketing communications has become a dominant issue for corporations. Green appeal ads do not always work for all companies. Chang¹ categorized green-related variables into product-related determinants and consumer-related determinants to explain ambivalent attitudes toward buying green. Previous research on green marketing communication has mostly focused on consumers' green consumption behavior or consumer characteristics, such as environmental concern. Thus, here we focus on how advertisers' environmental characteristics affect consumer response, which could help practitioners fine-tune how they use green appeal advertisements.

As the purpose of this study is to examine which company is best-suited for certain types of green claims in advertisements, we adopted an advertiser's green credibility as source-related, a product's green attributes as product-related, and green ad claims as message-related variables from previous studies on green marketing and communication. In addition to examining the effect of independent variables on traditional effectiveness measures, such as attitudes toward the advertisement, attitudes toward the product, and purchase intentions, we also investigate Perceived Consumer Effectiveness (PCE) and Perceived Emotional Benefit (PEB) as dependent variables. Despite finding significant predictors for a variety of ecologically conscious and pro-environmental consumer behaviors¹, research on the subject remains insufficient. Here, we not only do repeat research, but also extend the effects of our claims by adding the dependent variables PCE and PEB. The definition of a green ad could vary within the wide scope of "green". This study defines green

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advertising as advertising that claims that the advertised products are environmentally friendly or that their production process conserves resources or energy¹. The effect of source credibility, which consists of ability and trustworthiness², has been already proved by many studies in persuasive communication. Lee and Jeong³ adapt it to green ads, call it an advertiser's green credibility, and define it as perceived trust or belief in the advertising company. Chan⁴ finds that as consumers perceive a product's country-of-origin to be eco-friendly, they have more positive attitudes toward an environmental claim ad and the brand it represents and greater purchase intention than they do if they perceive the country-of-origin to be ecologically unfriendly. Thus, the consumer perception of the communicator's green credibility is an important variable. Therefore, hypothesis 1 is that green ads will be more effective for advertisers with high green credibility than for advertisers with low green credibility. The multi-attribute attitude model explains that consumers decide to purchase a product by assessing the importance and preference of each of its attributes. For a green product, its environmental attributes can be determinants to purchase. Song⁵ adapted the concept of product involvement to green products, presenting the concept of perceived importance as an element of green product involvement models. This study defined the importance of a product's environmental attributes as perceived personal relevance and importance of a product's green attributes. Thus, hypothesis 2 is that green ads will be more effective for products for which the importance of green attributes is high than for those for which the importance of green attributes is low. Green claims differ in their focus: recyclable packaging, biodegradable raw materials, or perhaps energy conservation achieved in the production process^{1,6}. A number of researchers have proposed classification systems for green advertising and ad claims⁷. Carlson, Grove and Kangun⁸ classify environmental advertising claims as (1) product orientation claims focused on the environmentally friendly attributes that a product possesses (e.g., 'This product is biodegradable'), (2) process orientation claims regarding an organization's internal technology, production technique, and/or disposal method that yields environmental benefits (e.g., 'Twenty percent of the raw materials used in producing this good are recycled'), (3) image orientation claims that associate an organization with an environmental cause or activity for which there is broad-based public support (e.g., 'We are committed to preserving our forests'),

(4) environmental fact claims involving an independent statement that is ostensibly factual about the environment at large or its condition (e.g., 'The world's rain forests are being destroyed at the rate of two acres per second'), and (5) combination claims that reflect multiple facets. Most studies categorize environmental claim types using Carlson, Grove, and Kangun's⁸ categories. In addition, some⁹⁻¹¹ categorize 4 claims into 2 types: considering product and process claims as substantive claims and image and environmental fact claims as associative claims. Substantive claims present tangible benefits, whereas associative claims are intangible and unrelated to the product⁷. Also, some research has examined the effects of green claims. Davis¹² demonstrates that specific environmental claims result in more favorable consumer responses (attitude toward advertiser, attitude toward product, purchase intention, and specific product attributes), explaining that consumers appear able to discern the difference between vague and specific environmental claims. Lee and Jeong³ report that participants rate ads that use image claims as having the lowest believability, but they rate ads that use environmental fact claims as generating the highest attitudes toward advertising. Chan⁴ finds significant claim effects on attitude toward the ad and brand attitudes but not purchase intention. Kim⁹ finds that substantive claims generate more positive attitudes toward a product and higher purchase intention than associative claims. Therefore, hypothesis 3 is that consumers' responses will be more positive or higher with substantive environmental ad claims than with associative environmental ad claims. The relationships among the effects of green claims, source credibility, and green product attributes could be assumed based on the literature review above. With regard to the previous studies on source credibility and product involvement, a basic assumption has been that when both source credibility and product involvement are high, communication effectiveness will be maximized. Conversely, if both source credibility and product involvement are low, communication effectiveness will reach its low ebb. Furthermore, an environmental claim could moderate the effects of source credibility and green product attributes.

According to social judgment theory, consumers often perceive information in a way that conforms to their extant beliefs^{4,13,14}. In other words, when an individual is already opposed to an issue, he or she will have a narrow latitude of acceptance and a wide latitude of rejection.

It is expected, from the perspective of this theory that consumers will be more likely to accept green ad claims when they already consider the advertiser's green credibility to be high. According to the Elaboration Likelihood Model introduced by Petty, Cacioppo and Schumann¹⁵, consumers perceive persuasive messages through a central route in a condition of high involvement, whereas they use a peripheral route in a condition of low involvement. From this perspective, we suppose that people with high green-product involvement extend effort to think about product-related claims, whereas people with low green-product involvement do not. Thus, the substantive environmental claim effect is expected to be more powerful among people with high green-product involvement. Therefore, hypothesis 4 is that the interaction effect between green source credibility and the importance of a product's green attributes will be more powerful for substantive claims than for associative claims.

2. Materials and Methods

2.1 Experimental Design and Stimuli

We used a 2 (advertiser's green credibility: High/Low) x 2 (importance of a product's green attributes: High/Low) x 2 (green ad claims: substantive/associative) between-subjects design. To manipulate three independent variables, we created fictitious news articles and print advertisements. We controlled the confounding effect of prior advertiser or brand perceptions by presenting a fictitious corporation and product brand named 'Green'.

In the same way used by Lee and Jeong³, we created two types of news articles about an advertiser's green credibility: an article about a green prize and one about a penalty for greenwashing. The former refers to an advertiser with a high level of green credibility; the latter refers to an advertiser with a low level of green credibility. The results of the pre-test show significant differences between the two articles ($t = 2.784$, $p = 0.024$). The thirty participants rated green credibility higher for the company described in the articles about the green prize ($m = 4.94$, $sd = 0.90$) than for the company described in the articles about the greenwashing penalty ($m = 3.39$, $sd = 0.97$). Therefore, the test-news articles could be used. The advertisement consisted of a simple picture of a product, headline, and body copy. All elements were controlled and the same, except for the claim and product types. We manipulated the environmental claim types by one line of headline

and two lines of body copy with a picture of each product. With reference to Choi, Lee, and Yeo¹¹ test advertisement, the body copy with the substantive claims contained concrete information about how the physical characteristics of the product benefit the environment (e.g., product's material, process, using, recycle) with the headline, 'Green (product type) is an eco-friendly product.' The body copy with the associative claims contained an image-oriented environmental fact and activity related to it (e.g., concern about environmental pollution) with the headline 'Green (product type) supports the environmental movement.' To ensure that the manipulation of green ad claims (substantive versus associative) was successful, we conducted a manipulation check before the main study. It showed significant differences between the two claim types ($t = 11.132$, $p = 0.000$). The thirty participants assessed the concreteness of the product-related environmental claim in the substantive claim ($m = 5.32$, $sd = 0.90$) as higher than that in the associative claim ($m = 3.09$, $sd = 1.03$).

As to the importance of the product's environmental attributes, we selected the advertised product categories using the following processes. First, we chose thirteen products from previous studies on green ads and these three criteria: (1) popular product category, (2) small gap in product characteristics by age and gender, and (3) treatment maximization of environmental attributes among products. Second, forty men and women aged 20–30 were asked to rate the importance of the environmental attributes of each product. The two highest- and two lowest-scoring products were selected: tissue ($m = 5.76$, $sd = 1.22$) and hand-wash ($m = 5.31$, $sd = 1.35$) rated a high level environmental attribute importance, and badge ($m = 3.12$, $sd = 1.43$) and opener ($m = 3.00$, $sd = 1.32$) rated low. A cosmetic product ($m = 6.25$, $sd = 0.94$) was excluded, because of significant differences ($F = 4.180$, $p = 0.048$; $m_{\text{men}} = 5.81$, $m_{\text{women}} = 6.44$) between men and women. Kim⁹ finds a moderating role for gender and green involvement in environmental ad claim types.

Thus, the total number of test-stimuli is 16:2 news articles, 4 products, and 2 environmental claims.

2.2 Sample and Procedure

We recruited 472 male and female participants aged 20–49 online in Korea from 15 September to 19 September, 2014. The characteristics of respondents are: 236 men (50.0%) and 236 women (50.0%); 148 aged 20 (31.4%),

166 aged 30 (35.2%), and 158 aged 40 (33.5%). The number of samples by experimental design is shown in Table 1. The participants were instructed to first read a test-news article and then a test-ad for the corporation mentioned in the news article. Then they were asked to rate each item on a seven-point scales (1 = definitely not; 7 = definitely yes).

Table 1. The number of samples by experimental design

	High green attributes perceived		Low green attributes perceived	
	High credibility	Low credibility	High credibility	Low credibility
Substantive	Group1,2 (n=73)	Group3,4 (n=55)	Group5,6 (n=50)	Group7,8 (n=53)
Associative	Group9,10 (n=68)	Group11,12 (n=51)	Group13,14 (n=56)	Group15,16 (n=66)
Total	n=472			

2.3 Measures

This study has 3 IVs (advertiser's green credibility, importance of the product's green attributes, and green ad claim types) and 5 DVs (PCE, PEB, attitude toward advertising, attitude toward product, and purchase intention), all of which were measured on seven-point scales. Source credibility, defined as the perceived ability and goodwill of the communicator, was adapted to green communication by Lee and Jeong³. An advertiser's green credibility is consumers' belief in the greenness of the corporation or product advertised³. Based on Lee and Jeong's³, and Lee and Song's¹⁶ instrument, we used 4 items: 'I can trust the green claims of the advertiser,' 'I could trust the greenness of the advertised product,' 'I am more likely to choose a new eco-friendly product from this company than from another company,' 'I can trust the advertiser and advertised product mentioned in the news article' (Cronbach's $\alpha = .973$). In this study, we classified environmental claims into substantive claims and associative claims, following Kim⁹, Son¹⁰, and Choi, Lee, and Yeo¹¹. With reference to those previous studies, we defined substantive claims as a specific description of how the physical characteristics of a product work for the environment and associative claims as descriptions of environmental facts and support-related activities to create a better brand image. We used Chang's¹ and Son's¹⁰ 3 items:

'The ad provides specific information about how the product achieves its claims,' 'The ad provides clear evidence about how they have helped the environment,' 'The ad describes how the physical characteristics of the product work for the environment' (Cronbach's $\alpha = .960$). The importance of the product's environmental attributes indicates the degree to which consumers

perceive the environmental attribute of one product as more important than its other attributes or as compared with other products. We used Jeong, Han, and An's¹⁷ and Song's⁵ 3 items: 'The eco-friendly attributes of this product are important,' 'I am concerned with the green attributes of the product,' 'I am interested in the environmental attributes of the product' (Cronbach's $\alpha = .848$). PCE, first introduced by Kinneary, Taylor, and Ahmed¹⁸, refers to the degree to which consumers believe that their personal actions can benefit the environment¹. With reference to Chang¹ and Tucker, Rifon, Lee, and Reece⁷, PCE was measured by 3 items: 'An individual can protect the environment by buying this eco-friendly product,' 'I can do something about the environment by using this eco-friendly brand,' 'It is helpful for me to do conservation efforts, such as purchasing an eco-friendly product' (Cronbach's $\alpha = .950$). Hartman and Ibanez¹⁹ identified the emotional benefits of green purchasing behaviors (PEB): people feel good about themselves when they pay more for green products¹. Participants completed the following 5 items: 'I feel proud when I buy green products such as this one,' 'I feel proud when I use green products such as this one,' 'I feel I could help the environment by using this green product,' 'I feel less guilty when I buy/use this green product' (Cronbach's $\alpha = .948$). Attitude toward advertising (Aad) is defined as a psychological tendency with some degree of favor or disfavor for the ad presented. It was measured

using 4 items with reference to Mackenzie and Lutz²⁰ and Son¹⁰: 'I like this ad,' 'I feel pleasant toward this ad,' 'This ad is good,' 'This ad is favorable' (Cronbach's $\alpha = .960$). Attitude toward product (Aprd) refers to a consumer's preference for the advertised product. It was measured using 4 items with reference to Mackenzie and Lutz²⁰ and Son¹⁰: 'I like this product,' 'I feel pleasant toward this product,' 'This product is good,' 'This product is favorable' (Cronbach's $\alpha = .965$). Purchase Intention (PI) is defined as a consumer's intention to choose the advertised product from its category after exposure to an ad. It was measured using 4 items with reference to Tucker, Rifon, Lee, and Reece⁷ and Son¹⁰: 'I would consider buying this product,' 'My willingness to buy this product is high,' 'I am likely to buy this product,' 'I am willing to recommend this product to others' (Cronbach's $\alpha = .966$).

3. Results

3.1 Reliability Tests for Dependent Variables

The scales used to operationalize the five effectiveness measures were first subjected to the Cronbach's Alpha reliability test. The test rendered Cronbach's Alpha values of more than 0.80 overall, which is considered highly satisfactory²¹.

3.2 Manipulation Check

In addition to the pre-test, we conducted a second manipulation check on the main study, and all results were significant. The 472 participants rated advertisers' green credibility higher when exposed to news about green awards ($m = 4.94$, $sd = 1.02$) than when exposed to news about a greenwashing penalty ($m = 2.30$, $sd = 1.33$) ($t = 23.944$, $p = 0.000$). The environmental claim specificity was found to be higher in the group seeing substantive ad claims ($m = 4.65$, $sd = 1.12$) than in the group seeing associative ad claims ($m = 3.71$, $sd = 1.33$) ($t = 8.287$, $p = 0.000$). In term of the importance of the product's green attributes, we found significant differences ($t = 2.775$, $p = 0.006$) between the group exposed to the products found to have high environmental importance ($m = 4.77$, $sd = 1.07$) and the group exposed to products found to have low environmental importance ($m = 4.53$, $sd = 1.17$). Despite the significant differences, the mean importance

value between the two groups of products ($m_{high} = 4.77$, $m_{low} = 4.53$) was not different enough to meet the goal of this study. Therefore, we used the value participants assigned to the importance of each product's green attributes instead of using two groups of two products. To be specific, the mean values of each product were: tissue ($m = 4.89$, $sd = 1.04$), hand-wash ($m = 4.64$, $sd = 1.08$), badge ($m = 4.60$, $sd = 1.12$), and opener ($m = 4.45$, $sd = 1.22$). To maintain our 2 x 2 x 2 design, we classified the evaluation value of each product's environmental importance by the mean value of each product into high products (above mean value) and low products (below mean value).

3.3 Test Results

H1, H2, and H3 were intended to discern the differences between two levels of each independent variable. To test H1, the communication effectiveness of advertisers' green credibility, we used a t-test. As shown in Table 2, all differences were significant between the high and low levels of an advertiser's green credibility on all measures of communication effectiveness (PCE, PEB, Aad, Aprd, and PI). Thus, H1 was supported. H2, the communication effectiveness generated by the importance of a product's green attributes, was also supported, as shown in Table 3. The t-test results showed that all differences were significant between products with high and low environmental importance levels on all communication effectiveness measures (PCE, PEB, Aad, Aprd, and PI). The t-test results of H3, the communication effectiveness of green ad claims, showed it was partially supported. As shown in Table 4, all differences between the two levels of claims were significant on PCE, Aprd, and PI, but they were not significant for PEB and Aad. The mean values of all dependent variables were higher with substantive ad claims than with associative ad claims. H4 examined the interaction effect among the independent variables on the dependent variables. Thus, we used a three-way MANOVA. We found no three-way interactions on communication effectiveness: PCE ($F = 1.313$, $p = 0.252$); PEB ($F = 0.339$, $p = 0.561$); Aad ($F = 1.288$, $p = 0.257$); Aprd ($F = 0.144$, $p = 0.705$); PI ($F = 0.222$, $p = 0.637$). Instead, we found only a two-way interaction effect between an advertiser's green credibility and the perceived importance of a product's green attributes on attitude toward ad ($F = 8.531$, $p = 0.004$).

Table 2. The communication effectiveness of an advertiser's green credibility

DV	IV	M(SD)	T	DF
PCE	High	4.98(1.06)	5.785***	403.290
	Low	4.30(1.47)		
PEB	High	4.73(0.96)	6.604***	399.649
	Low	4.01(1.36)		
Aad	High	4.86(1.02)	5.632***	395.243
	Low	4.20(1.46)		
Aprd	High	4.81(0.97)	6.143***	397.559
	Low	4.12(1.39)		
PI	High	4.43(1.15)	6.407***	401.597
	Low	3.59(1.61)		

***p<0.001

Table 3. The communication effectiveness of the importance of a product's green attributes

DV	IV	M(SD)	T	DF
PCE	High	5.23(1.12)	11.094***	470
	Low	4.03(1.22)		
PEB	High	4.94(1.11)	11.619***	470
	Low	3.79(1.03)		
Aad	High	5.05(1.11)	9.786***	470
	Low	3.99(1.25)		
Aprd	High	5.02(1.08)	11.277***	470
	Low	3.88(1.11)		
PI	High	4.66(1.31)	11.173***	470
	Low	3.33(1.26)		

***p<0.001

Table 4. The communication effectiveness of the green ad claims

DV	IV	M(SD)	T	DF
PCE	High	4.81(1.23)	2.512*	470
	Low	4.51(1.37)		
PEB	High	4.47(1.17)	1.387	470
	Low	4.32(1.27)		
Aad	High	4.65(1.25)	1.757	470
	Low	4.44(1.33)		
Aprd	High	4.66(1.16)	3.077**	470
	Low	4.31(1.28)		
PI	High	4.17(1.38)	2.074*	470
	Low	3.89(1.50)		

**p<0.01, *p<0.05

4. Conclusions

H1, H2, and H3 were intended to discern the differences between two levels of each independent variable. To test H1, the communication effectiveness of advertisers' green credibility, we used a t-test. As shown in Table 2, all differences were significant. H1, the effect of advertisers' green credibility, is

supported, which shows that when a company is perceived as eco-friendly, consumers assess perceived consumer effectiveness, perceived emotional benefit, attitude toward ad, attitude toward product, and purchase intention more positively than when a company is perceived as treacherous. Chan's⁴ results are similar, as mentioned above. H2, the effect of the importance of a product's environmental attributes, is also supported. Thus, as an advertised product's environmental attributes are perceived

Table 5. Means for interaction effect

DV	IV			M	SD	N
	product	advertiser	claim			
PCE	High	High	Sub	5.47	0.81	73
			Ass	5.40	0.88	68
		Low	Sub	4.45	1.10	50
			Ass	4.31	0.92	56
	Low	High	Sub	5.22	1.11	55
			Ass	4.65	1.56	51
		Low	Sub	3.81	1.21	53
			Ass	3.65	1.38	66
PEB	High	High	Sub	5.20	0.73	73
			Ass	5.13	0.90	68
		Low	Sub	4.21	0.93	50
			Ass	4.12	0.75	56
	Low	High	Sub	4.61	1.26	55
			Ass	4.67	1.48	51
		Low	Sub	3.56	1.06	53
			Ass	3.37	1.10	66
Aad	High	High	Sub	5.18	0.87	73
			Ass	5.15	1.07	68
		Low	Sub	4.63	0.97	50
			Ass	4.30	0.89	56
	Low	High	Sub	4.99	1.09	55
			Ass	4.80	1.41	51
		Low	Sub	3.58	1.42	53
			Ass	3.56	1.31	66
Aprd	High	High	Sub	5.30	0.82	73
			Ass	5.15	0.79	68
		Low	Sub	4.36	0.93	50
			Ass	4.15	0.86	56
	Low	High	Sub	4.88	1.16	55
			Ass	4.61	1.49	51
		Low	Sub	3.83	1.19	53
			Ass	3.35	1.14	66
PI	High	High	Sub	4.96	0.97	73
			Ass	4.90	1.01	68
		Low	Sub	3.94	1.06	50
			Ass	3.58	0.92	56
	Low	High	Sub	4.37	1.44	55
			Ass	4.23	1.74	51
		Low	Sub	3.09	1.34	53
			Ass	2.86	1.36	66

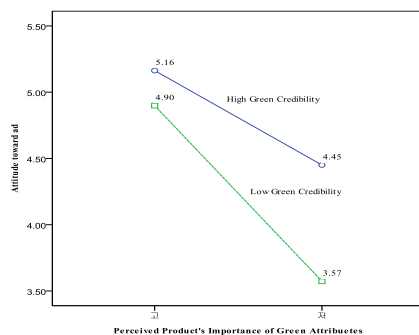


Figure 1. Interaction effects on attitude toward ad.

as more important, consumers have more positive perceived consumer effectiveness, perceived emotional benefit, attitude toward ad, attitude toward product, and purchase intention. Thus, the perceived importance of a product's environmental attributes should be considered a key element for companies wishing to advertise using green appeal. H3, the effect of environmental ad claims, is partially supported. Many previous studies^{12,22} have proved that substantive claims are more effective than associative ones, whereas other studies^{3,10} have shown that the effects of claims are moderated by other conditions. Our results show that consumers assessed perceived consumer

effectiveness, attitude toward product, and purchase intention more positively following exposure to substantive claims than associative claims. Perceived emotional benefit and attitude toward ad were excluded. Even though two dependent variables are excluded, the mean value supports the hypothesis. It could be supposed that the effect of claim types is more powerful for product-related responses than for non-product related responses, such as PCE, Aad, and PI. Our finding contrasts with Chan's⁴ finding that communication effectiveness is confined to the attitudinal level (attitude toward ad and attitude toward brand) but is similar to Kim's⁹ finding that substantive claims generate more positive attitudes toward products and higher purchase intention. H4, the interaction effect of an advertiser's green credibility and the importance of a product's environmental attributes moderated by environmental ad claims, is rejected. Instead of a three-way interaction effect, we found only a two-way interaction between an advertiser's green credibility and a product's green attributes only on attitude toward advertising. That is, unlike the results of other studies on the interaction effects of claims, we found not only no interaction effect between claims and source credibility, but also no interaction effect between claims and the importance of a product's green attributes. The difference could be explained by our classification of claims into 2 types (substantive, including product and process claims, and associative, including image and environmental fact claims), whereas previous studies used 3 or 4 types. Our way of classifying the claim types was not sophisticated, which explains differences with previous studies. According to Jo and Kim²³, who used a refrigerator as an example of a product with high involvement, environmental attributes were considered less important for high-involvement products than for low-involvement products (laundry detergent, in their case). That is, the effectiveness of green advertising could be increased significantly more in cases of low-involvement products than in high-involvement product because consumers consider the environmental attributes to be more important in the low-involvement condition. That could explain why we found no interaction effects between claim types and the importance of a product's green attributes in this study. The product categories for our test were tissue, hand-wash, badge, and opener, which are all categorized as having low involvement. To summarize, our results indicate that companies using green ads should consider their green credibility and

the green attributes of their products. A substantive environmental ad claim could be more effective than an associative one in raising perceived consumer effectiveness, attitude toward product, and purchase intention. Furthermore, even companies with low green credibility could reap positive effects if their product's environmental attributes are considered important by consumers. As shown by the means, companies with high green credibility and products with high green-attribute importance could generate positive attitudes toward green-appeal advertisements among consumers, though in the reverse case, such ads are ineffective. Our implications are summarized as follows. First, our findings provide useful insights for advertisers responsible for green marketing communications. A company with high green credibility and a high level of green attributes in its products could achieve its goals using green appeal advertisements. Thus, companies should pay attention to build their own source credibility and green attributes for their products, which increases consumer trust. Furthermore, a substantive environmental ad claim could be more effective than an associative one in raising green-product related effectiveness in measures such as PCE, Aprd, and PI. Second, the current study provides some basic data for further studies on green advertising effectiveness. So far, research has found insufficient and inconsistent results for claim effectiveness. The results of this study contribute more data to the literature on green advertising effectiveness. Moreover, this paper theoretically contributes to extending the research field of green effectiveness by considering three independent variables and five dependent variables at the same time. This research is limited in several ways. The reason for finding no interaction effects, unlike previous studies, could be limitation in claim types. Even though we found significant differences between substantive claims and associative claims, the difference of the means between the two types was small. That is, participants could not definitely identify the claim types. Thus, the gap between the two claims should be widened in a future study. Another reason for finding no interaction could be the product type. Claims effects could be much higher among products with low involvement than among those with high involvement. We used tissue and hand-wash as products for which green attributes are more important and badge and opener as products for which green

attributes are less important; however all those products are usually categorized as having low involvement. Therefore, a study on interactions between product involvement and green attribute involvement should be performed. Third, like almost all other studies, this experimental research is limited to a non-probability sampling procedure and only one consumer exposure to the advertisement.

5. Acknowledgement

This work was supported by the research fund of Hanyang University (HY-2014-G).

6. References

1. Chang C. Feeling ambivalent about going green. Implications for green advertising processing. *J Advert.* 2011; 20(4):19–31.
2. Kelly H. *Communication and persuasion: psychological studies of opinion change.* New Haven, CT, USA: Yale University Press; 1953.
3. Lee S, Jeong H. Effect of green advertising pattern and sponsor's reliability of greenness on advertising response. *Journal of Global Academy of Marketing Science.* 1998; 1(1):43–60.
4. Chan R. The effectiveness of environmental advertising: the role of claim type and the source country green image. *Int J Advert.* 2000; 19:349–75.
5. Song K. The integrated model of green product involvement. *Journal of Commodity Science & Technology.* 2004; 31:109–31.
6. Wagner E, Hansen E. Methodology for evaluating green advertising of forest products in the United States: a content analysis. *Forest Prod J.* 2002; 52(4):17–23.
7. Tuchker E, Rifon N, Lee E, Reece, B. Consumer receptivity To green ads. *J Advert.* 2012; 41(4):9–23.
8. Stephen L, Grove J, Norman K. A content analysis of environmental advertising claims: a matrix method approach. *J Advert.* 1993; 12(3):27–39.
9. Kim Y. The impact of environmental claim types and individual differences on advertising effectiveness. *Korean Journal of Advertising Research.* 2008; 20(4):89–103.
10. Son J. The impact of ad appeal type, environmental claim type, and environmental involvement on consumers' responses in an environmental advertising. *Korean Journal of PR and Advertising.* 2010; 18:1–25.
11. Choi S, Lee G, Yeo J. Effects of the claim types of environmental new product advertisement and self-regulatory mode on consumer evaluation. *Korean Journal of Advertising.* 2013; 11(5):168–79.
12. Davis J. Strategies for environmental advertising. *J Consum Market.* 1993; 10(2):19–36.
13. Assael H. *Consumer behavior and marketing action.* Cincinnati, OH, USA: South-Western College Publishing; 1995.
14. Schiffman L, Kanuk L. *Consumer behavior.* London, UK: Prentice-Hall; 1997.
15. Petty R, Cacioppo J, Schumann D. Central and peripheral routes to advertising effectiveness: The moderating role of involvement. *J Consum Res.* 1983; 10(2):87–96.
16. Lee M, Shon D. The effects of commercial sponsorship of power-blogs on information credibility and product purchase intention. *The Korean Journal of Advertising.* 2013; 24(7):67–86.
17. Jeong C, Han S, An, B. A study on the influence of message components of storytelling advertising and product involvement on advertising effects. *The Korean Journal of Advertising.* 2013; 24(6):7–41.
18. Kinnear J, Taylor R. Ecologically concerned consumers: Who are they?. *J Market.* 1974; 38(2):20–4.
19. Hartman P. Green value added. *Market Intell Plann.* 2006; 24(7):673–80.
20. Mackenzie S, Lutz R. An empirical examination of the structural antecedents of attitude toward the ad in an advertising pretesting context. *J Market.* 1989; 53(2):48–65.
21. Nunnally J. *Psychometric theory.* New York, USA: McGraw-Hill; 1978.
22. Xie G, Kronrod A. Is the devil in the details? The signaling effect of numerical precision in environmental advertising claims. *J Advert.* 2012; 41(4):103–17.
23. Jo G, Kim Y. The effects of product involvement on the green advertising effectiveness. *The Korean Journal of Advertising.* 1995; 6(1): 23–43.