

Going Green to Look Good: The Role of Impression Management in Environmentally Friendly Consumption

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Abstract

Drawing from the two-factor model of impression management and costly signaling theory, this research assesses the role of setting type, individual difference, and product type in the efficacy of advertising appeals (other-benefit appeals versus self-benefit appeals). Two experiments show that although individuals tend to establish positive impressions when they know their behaviors are visible to others, individuals are more driven to endorse an expensive eco-friendly product with other-serving benefits than to support an inexpensive eco-friendly product with other-serving benefits. However, when individuals care about how others view them in a public setting, they will be likely to endorse an inexpensive eco-friendly product with other-serving benefits.

Consider the following eco-friendly product: an energy-efficient light bulb. While the initial price of an energy-efficient bulb is typically higher than a traditional incandescent bulb, the former will save you money over the long course for it lasts significantly longer and uses much less energy than a traditional bulb. Moreover, an energy-efficient light bulb is an eco-friendly product because it reduces carbon dioxide and sulfur emission. Therefore, one customer may purchase energy-efficient light bulbs for self-benefit reasons, such as saving money. However, another customer may choose energy-efficient lightbulbs for other-benefit reasons, such as protecting the environment.

In another case, customers need to choose between a hybrid car and a conventional fuel-efficient sedan. For instance, the Toyota Prius, a hybrid gas-electric vehicle, costs several thousands of dollars more than a conventional fuel-efficient sedan such as Honda Civic and Toyota Corolla. However, purchasing a hybrid vehicle, such as Prius helps customers save money on fuel. Another reason for customers to choose a hybrid vehicle is that it has lower greenhouse gas emissions, making it an eco-friendly product. Although many individuals claim that they are willing to spend more for a hybrid vehicle to help protect the environment, sales data indicate that demand for hybrid vehicles declines when gas price remains low [1].

Regarding that consumers are generally motivated by two types of benefits (economic benefits and environmental benefits) to engage in environmentally friendly consumption, green marketers use either self-benefit appeals (i.e. save cost) or other-benefit appeals (i.e. protect the environment) in advertisements [2,3]. To date, research examining the efficacy of each type of appeals has documented mixed results [4-6]. One explanation for the inconsistency among previous studies is that they did not examine the boundary condition for the efficacy of appeals. For instance, being green is often equated with being moral and consumers are eager to demonstrate to others that they care about the environment [3,7]. As a result, when shopping in public settings under the scrutiny of others, customers will tend to choose a product that emphasizes protecting the environment. In contrast, when shopping in private settings without the scrutiny of others, customers will tend to select a product that emphasizes saving money. To our knowledge, there were only two published studies that examined the role of setting type in the efficacy of appeals [2,8]. These studies noted that in public settings, customers are more susceptible to other-benefit advertising appeals, whereas in private settings, customers are more influenced by self-benefit appeals.

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One limitation of these two studies is that they examined offline advertising but did not explore social media-based advertising. Previous studies noted that companies endeavor to increase spending on environmental or green marketing online in response to the popularity of social media, such as Facebook, among consumers [9]. Therefore, an understanding of consumer responses to advertisements for eco-friendly products, especially in the social media environment, is particularly helpful for the future success of businesses. Notably, Green and Peloza [2] called for more future research on Facebook advertising because Facebook allows for “public” behaviors and enables users’ behaviors to be scrutinized by others. Therefore, this research extended Green and Peloza’s [2] study and examined the effectiveness of Facebook advertising for eco-friendly products.

On the basis of the two-factor model of impression management and costly signaling theory, this research proposed a conceptual model (Figure 1) to explore how the setting type affects consumers’ responses to ad appeals for eco-friendly products. Especially, this research focused on Facebook advertising. As the most popular social networking site (SNS), Facebook has created a brand-friendly environment [10,11]. To provide empirical evidence for the theoretical model, we conducted two experiments. First, our results revealed that it is important for social media marketers to consider the role of impression management in the persuasive effectiveness of social media advertising. Second, our results indicated that it is crucial for social media marketers to consider the role of product type and the role of individual differences (public self-consciousness) when using strategies to address consumers’ public self-image concerns.

Literature Review

Motivation and environmentally friendly consumption behavior

Given the detrimental environmental conditions, numerous scholars and public officials have encouraged people to engage in pro-environmental behaviors [3]. One significant way for consumers to

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reduce their environmental impact is to purchase environmentally friendly products. With the rise of green consumption, researchers have started investigating strategies that increase the effectiveness of advertising for eco-friendly products. Developing an effective strategy, however, requires understanding of the underlying motives for purchasing eco-friendly products. To date, two motives have been identified, each proposing different strategies for encouraging green purchase: environmental concern and economic advantage [12,13].

According to environmental concern perspective [14,15], consumers are driven to engage in environmentally friendly consumption because they, to some extent, intrinsically care about the well-being of the earth. To motivate green purchase behavior from this perspective, an effective strategy involves informing people of the social benefits of the green products (i.e. protect the environment) [16]. This advertising strategy is termed “other-benefit appeals” and is defined as advertising messages that “focus on the benefits received by others or, more broadly, by society” [2, p.129].

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Different from the environmental concern perspective, a rational economic perspective suggests that green product consumption is primarily propelled by economic reasons [17,18]. In response to the economic perspective, an effective way to propel people to purchase green products is to emphasize the economic benefits of green products (i.e. save cost) and to provide consumers with financial incentives (i.e. lower annual tax) [13,19]. This advertising strategy is termed “self-benefit appeals” and is defined as advertising messages that “focus on the benefits the product or service provides to the consumer” [2, p.129].

Impression management and environmentally friendly consumption behavior

Motives related to environmental concern and economic advantages can certainly encourage environmentally friendly consumption behavior. However, recent research suggested that other more socially oriented motives, such as social norms, may be even more effective in engendering consumers’ green purchase behaviors [2,3,20]. For instance, previous research noted that environmental conservation behaviors in hotels are aroused by appeals that reveal the conservation behaviors of other hotel guests [20]. Social norms are defined as values, attitudes, and behaviors that are acceptable in others’ eyes and expected by others [21]. The impression management literature suggests that, in general, individuals seek to perform pro-social behaviors consistent with the prevailing social norms in order to obtain social approval and to leave a favorable impression on others [7,8].

According to Leary and Kowalski’s [22] two-factor model of impression management, impression management consists of (1) impression motivation (i.e. the degree to which the desire to manage one’s self-image presented to others is activated) and (2) impression construction (i.e. the adoption of an appropriate impression to convey to others and how to convey that image). Previous research noted that factors (i.e. public settings) that boost public self-image concerns activate impression motivation [2,8]. For instance, in contexts where individuals know their behaviors are visible to others and are available for public scrutiny (public settings), individuals will be driven to create a positive self-image and to make a favorable impression on others [23].

In addition, previous literature posited that consumers use prevailing social norms as the standard to construct the appropriate impression on others [2,8]. In terms of environmentally friendly consumption, it is noted that purchasing green products for other-serving reasons (and not for self-serving reasons) is normatively approved of and is often equated with being moral [2,7]. Therefore, individuals will engage in impression construction by appearing to purchase environmentally friendly products for other-benefit reasons in contexts where

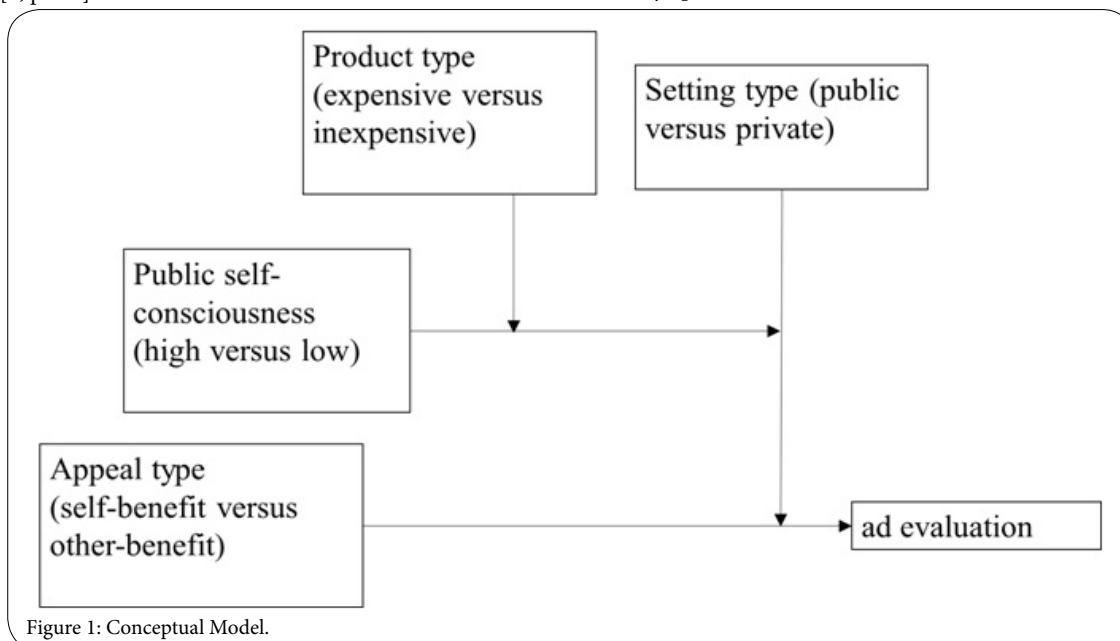


Figure 1: Conceptual Model.

individuals know their behaviors are visible. As a result, in a public setting, individuals will be more likely to endorse a green product with other-serving benefits (i.e. protect the environment) than to endorse one with self-serving benefits (i.e. save money), and therefore an ad with other-benefit appeals will be persuasive. On the contrary, in contexts where individuals know their behaviors are invisible to others and are not available for public scrutiny (i.e. in a private setting), individuals' public self-image concerns are not activated and will not be motivated to use the prevailing social norms as the standard to construct an appropriate impression on others [23]. As a result, when individuals know their behaviors are not scrutinized by others, they will prefer a green product with self-serving benefits (i.e. save money) to one with other-serving benefits (i.e. protect the environment), and therefore an ad with self-benefit appeals will be persuasive.

Public behavior on facebook

Defined as Internet-based services, social networking sites (SNSs) enable individuals to manage relationship with others by allowing individuals to share information with a list of users, and to browse information shared by users both inside and outside their network [24,25]. The growing popularity of SNSs provides opportunities for companies to expand their social presence and to build relationships with consumers in an engaging way [26,27]. Noticeably, SNS-based advertising expenditure is predicted to reach \$23.68 billion by 2015 worldwide [28]. As the most popular SNS, Facebook has been vigorously developing advertising business, and one of the popular advertising practices is to allow brands to construct a sponsored post on target audience's News Feed, which blurs the distinction between social circle information and commercial information [10,11].

According to Minton and colleagues [9], SNSs have supported companies' green marketing practices by revealing their sustainability efforts to their stakeholders. For instance, any brands that endeavor to promote their eco-friendly products can create a sponsored post on target audience's News Feed. One measure of Facebook advertising engagement is to count the number of "likes" an advertisement has gained. Previous research noted that the number of "likes" provides the social context for a Facebook ad and serves as a signal of an ad's popularity and importance [29,30].

In particular, the "like" indicates one's positive attitude toward a Facebook ad and Facebook users can publicly indicate their affective responses to an ad by liking it on Facebook [29]. For instance, once a user clicks the "like" button of a sponsored post, the user's like can be visible to his/her friends on Facebook in a way that his/her friends are exposed to the same sponsored post with a message saying "[friend name] liked this". Moreover, any user can check to see who has "liked" a sponsored post on Facebook even though the likers are outside the user's network. Therefore, Facebook provides a public setting for users to indicate their preference, and "liking" a Facebook ad reflects one's public endorsement of the ad. Given that the number of likes serves as a signal of a Facebook ad's popularity and provides social context for audience to judge a Facebook ad [29,30], it is necessary to use an appropriate appeal that helps a Facebook ad gain "likes". In fact, we hypothesize that on Facebook, a public setting, individuals will be more likely to show preference to an ad with other-benefit appeal (i.e. "like" an ad) because they endeavor to construct a positive public self-image by being altruistic. On the contrary, in a private setting, individuals' public self-image concerns are not activated and will not be motivated to appear altruistic.

Study 1: Expensive Eco-Friendly Product

According to Leary and Kowalski's [22] two-factor model of impression management, individuals tend to be more concerned with impression management when they are in public settings than when they are in private settings. This is because boosting public self-image concerns through publicizing people's behaviors can activate impression motivation and individuals will be driven to conform to the prevailing social norms in order to construct an appropriate impression on others [31,32]. Even though individuals can perform a pro-social behavior for different reasons (self-serving, other-serving), the social norms are that one should not only act in a normatively approved manner (i.e. purchase eco-friendly products) but also perform such behavior with the normatively approved motive (i.e. benefit others) [2,8]. Therefore, it is anticipated that consumers will show more positive attitudes toward green products with other-serving benefits than those with self-serving benefits when their responses are visible to others.

In line with Green and Peloza's [2] study, we posited that appeals used in advertising serve as cues for individuals to evaluate the benefits that the advertised product provides. Also, individuals will take into account the advertising appeals when engaging in impression management in a public setting. In particular, we expected that consumers will prefer an ad with other-benefit appeals to one with self-benefit appeals when they know their preferences are under public scrutiny. Because a user can publicly indicate his/her affective response to an ad by liking it on Facebook, we predicted that Facebook users will be more likely to "like" an ad with other-benefit appeals than to "like" an ad with self-serving appeals. In private settings, consumers know their behaviors are not scrutinized and therefore have more opportunity to consider the benefits of eco-friendly consumption to oneself (i.e. save money). Moreover, the use of other-benefit appeals for an eco-friendly product may create perception of lower product quality because consumers may infer that product performance will be sacrificed for the environmental qualities of the product [3,33]. Therefore, consumers will evaluate an ad with self-benefit appeals more positively than one with other-benefit appeals in a private setting. Thus, we constructed the following hypotheses:

H1a: When asked in private, consumers will exhibit more positive ad attitudes and higher purchase intentions toward an ad with self-benefit appeals than one with other-benefit appeals.

H1b: Consumers will be more likely to "like" an ad with other-benefit appeals than to "like" one with self-benefit appeals on Facebook.

Previous research noted that in addition to situational factors (i.e. setting type) that can influence people's tendency to focus attention on personal attitudes or on external social norms, there are individual differences in the tendency to focus internally on the self or on the external social environment [34,35]). Therefore, we also examined the role of public self-consciousness, an individual factor defined as "the tendency to think about those self-aspects that are matters of public display and to be concerned with the qualities of the self from which impressions are formed in other people's eyes" [34]. According to previous studies [32,34], public self-consciousness more directly taps into public self-image concerns, such that people high in public self-consciousness will react more positively to other-benefit appeals than to self-benefit appeals when they know

their behaviors are under scrutiny in a public setting. However, in a private setting, people know their behaviors are not visible to others and therefore the level of public self-consciousness will not affect their ad responses. Therefore, we constructed the following hypothesis:

H2: The predicted effect in H1b is moderated by public self-consciousness. In particular, Facebook ad with other-benefit appeals leads to higher intention to click the “like” button than Facebook ad with self-benefit appeals when consumers are high in public self-consciousness than when consumers are low in public self-consciousness (H2a). However, when asked in a private setting where individuals know their behaviors are not scrutinized by others, consumers’ level of public self-consciousness will not affect their reactions to an ad with other-benefit appeals versus one with self-benefit appeals (H2b).

Method

Pretests: First, we conducted a pretest to measure the prevailing norms regarding general environmentally friendly consumption. Participants were 29 Amazon Mechanical Workers ($M_{age} = 37.17$, $SD_{age} = 11.19$), and they completed four items adapted from Green and Peloza’s [2] study on a seven-point continuum, with higher (lower) scores indicating other-benefit (self-benefit) motivations for eco-friendly product consumption are normatively acceptable (Cronbach’s $\alpha = .73$). The pretest confirmed that participants believe it is more normatively appropriate to consume an environmentally friendly product to benefit others than to purchase an eco-friendly product to benefit self ($M = 5.31$, $SD = 1.26$; one sample t test against the scale midpoint, $t(df = 28) = 7.75$, $p < .001$).

Next, we selected a hybrid vehicle (Toyota Prius) as the product (background: blurry city image; foreground: Toyota Prius) (see Appendix 1 for the stimuli in Study 1) for three reasons. First, previous research that compared different ad appeals in green advertising has adopted car [2,3]. Second, the fuel-efficiency feature of a hybrid vehicle can be positioned as either a self-benefit (save fuel cost) or an other-benefit appeal (reduce emission). Third, the consumption of automobile products has a well-known impact on the environment through air pollution. Also, to measure the prevailing norms regarding hybrid vehicle consumption, a second pretest was conducted with 42 Amazon Mechanical Workers ($M_{age} = 36.65$, $SD_{age} = 11.54$) based on the same four items used in the first pretest (Cronbach’s $\alpha = .83$). The second pretest confirmed that participants believe it is more normatively appropriate to consume a hybrid vehicle to benefit others than to purchase a hybrid vehicle to benefit self ($M = 5.03$, $SD = 1.27$; one sample t test against the scale midpoint, $t(df = 41) = 5.27$, $p < .001$).

Previous research noted that purchasing a green product often costs more than a conventional product and adding a green appeal may enhance the perceived luxuriousness of product [3,36]. To explore

this alternative explanation for the difference in effects between the ad using other-benefit appeal (green appeal) and the one with self-benefit appeal (non-green appeal), we conducted a third pretest with 55 Amazon Mechanical Workers ($M_{age} = 37.73$, $SD_{age} = 10.59$). Participants completed three items adapted from Vigneron and Johnson’s [37] study (Cronbach’s $\alpha = .84$). This pretest indicated no significant difference in perceived luxuriousness of product between the ad using other-benefit appeal ($M = 4.92$, $SD = 1.07$) and the one with self-benefit appeal ($M = 4.72$, $SD = 1.43$) ($t(df = 53) = .60$, $p = .55$). Moreover, Toyota Prius in both ads tended to be perceived as a luxurious product (ad with other-benefit appeal: one sample t test against the scale midpoint, $t(df = 28) = 4.64$, $p < .001$; ad with self-benefit appeal: one sample t test against the scale midpoint, $t(df = 25) = 2.57$, $p < .05$).

Experiment: Participants were 192 Amazon Mechanical Workers who reside in the United States. Eight participants’ data were removed because we did not manipulate the setting successfully on them and 184 participants’ data were entered into final data analysis. Study 1 used a 2 (appeal type) \times 2 (setting type) mixed design, with participants randomly assigned to either the other-benefit appeal or self-benefit appeal and setting type as the within-subject factor. As a result, 92 were in the “other-benefit” condition and 92 were in the “self-benefit” condition. We did not counterbalance the order of setting type and each participant was first exposed to an ad in a private setting and then to an ad in a public setting, because after a participant was exposed to an ad in a public setting, his/her public self-image concerns can be boosted. We mentioned at the beginning of the experiment that responses will be anonymous and confidential. First, participants indicated whether they have heard of the product as well as their attitudes (Cronbach’s $\alpha = .94$) and purchase intentions (Pearson $r = .86$, $p < .01$) toward the product [38].

Second, participants saw an advertisement for Toyota Prius (either with other-benefit appeal or self-benefit appeal, the visual remained the same in both conditions) and answered some questions regarding their ad attitudes [39] (Cronbach’s $\alpha = .88$) and purchase intentions (Pearson $r = .87$, $p < .01$). We conducted the manipulation test and asked participants to indicate True/False for the following statement “Your responses in this survey will be anonymous and confidential.”

Third, we told each participant that Toyota has placed a sponsored post for Prius on Facebook, and informed him/her that once he/she clicks the “like” button below the sponsored post, his/her friends on Facebook will see the “like”. Followed, we presented the same advertisement that participants had just seen, but this time, the ad was in the format of a Facebook mock sponsored post. We used three questions to measure the likelihood for participants to “like” the ad (Cronbach’s $\alpha = .98$). Then we asked them to indicate True/False for the following statement “Once I click the ‘like’ button of a sponsored post on Facebook, my friends on Facebook will see my ‘like’”.

Self-benefit condition	
The headline	Reduce your fuel cost by choosing a green car
Bodycopy	Equipped with our proven Hybrid Synergy Drive System that combines a quiet electric motor and an efficient gas engine, this car gets 50 MPG and leads to a big relief on your pocketbook.
Other-benefit condition	
The headline	Reduce your environmental impact by choosing a green car
Bodycopy	Combining a clean electric motor and an efficient gas engine, our proven Hybrid Synergy Drive System betters the future of mankind. Toyota Prius owners are estimated to have reduced CO2 emission by 26 million tons. You can support this progress.

Appendix 1: Stimuli in Study 1.

Last, we gauged each participant’s demographic information (age, gender, race, income, and education), perception of the appeal type [2] (other-benefit appeal: Pearson $r = 67$, $p < .01$; self-benefit appeal: Pearson $r = 82$, $p < .01$), level of environmental concern [40,41] (Cronbach’s $\alpha = .85$), and public self-consciousness (five item adapted from White and Peloza [8], Cronbach’s $\alpha = .85$). After participants submitted their responses, they were debriefed and received the message that described the real research purpose (see Appendix 2 for measures).

Results

Test results on randomization: Chi-square results indicated no significant difference between participants in the two conditions in terms of gender (χ^2 ($df = 1$) = 1.15, $p = .28$) and race (χ^2 ($df = 5$) = 3.47, $p = .63$). T-test results indicated no significant difference between participants in the two conditions in terms of age ($t(df = 182) = .18$, $p = .86$), income ($t(df = 182) = 1.68$, $p = .09$), and education ($t(df = 182) = 1.45$, $p = .15$). The above results revealed that the randomization was successful.

Name of Scale	Items
Prevailing norms	Q1: In general, others approve more of environmentally friendly consumption [purchasing eco-friendly (vehicles/ household cleaning products)] when it is motivated by: (more egoistic [self-serving] reasons/more altruistic [other-serving] reasons).
	Q2: In general, it is considered by society to be “better” when one purchases environmentally friendly products [purchases eco-friendly (vehicles/ household cleaning products)] to achieve: (more self-serving benefits/more other-serving benefits).
	Q3: In general, society sanctions environmentally friendly consumption [purchasing eco-friendly (vehicles/ household cleaning products)] to: (help oneself/help others).
	Q4: In general: others approve of environmentally friendly consumption (purchasing eco-friendly (vehicles/ household cleaning products)) to: (further one’s own interests/help other people in need).
Perceived luxuriousness	Q1: This is a luxurious product.
	Q2: This is a superior product.
	Q3: This is a product with high quality.
Public self-consciousness	Q1: I’m concerned about my style of doing things.
	Q2: I care a lot about how I present myself to others.
	Q3: I’m self-conscious about the way I look.
	Q4: I usually worry about making a good impression.
	Q5: I’m concerned about what other people think of me.
Product attitude	Q1: The product is good.
	Q2: The product is pleasant.
	Q3: The product is favorable.
Ad attitude	Q1: I dislike this ad.
	Q2: This ad is appealing to me.
	Q3: This ad is attractive to me.
	Q4: This ad is interesting to me.
	Q5: I think this ad is bad.
Purchase intention	Q1: I would considering buying this product.
	Q2: My willingness to buy this product is high.
Likelihood to “like” a Facebook ad	Q1: very unlikely/very likely
	Q2: impossible/very possible
	Q3: no chance/certain
Environmental concern	Q1: I am concerned about the environment.
	Q2: The condition of the environment affects the quality of my life.
	Q3: I am willing to make sacrifices to protect the environment.
	Q4: Humans must live in harmony with nature in order to survive.
Appeal type	Q1: The above ad focuses on an altruistic appeal (i.e. focuses on helping others and the society).
	Q2: The above ad uses an appeal associated with looking out for the interests of others.
	Q3: The above ad adopts an egoistic appeal (i.e. focuses on helping oneself).
	Q4: The above ad uses an appeal associated with looking out for one’s own interests.

Appendix 2: Measures in Study 1 and Study 2.

Manipulation check: MANOVA results indicated a significant difference between the two groups in terms of participants' perceptions of the appeal type (Wilk's Lambda (Λ) = .91, $F(2, 181) = 9.29$, $p < .001$). Univariate results revealed that the ad that emphasized saving fuel cost ($M = 4.46$, $SD = 1.49$) was evaluated as being significantly more focused on self-benefit than the one that emphasized reducing emission ($M = 3.57$, $SD = 1.53$) ($F(1, 182) = 15.29$, $p < .001$). In addition, the ad that focused on reducing emission ($M = 5.21$, $SD = 1.04$) was evaluated as being significantly more focused on other-benefit than the one that emphasized saving fuel cost ($M = 4.66$, $SD = 1.51$) ($F(1, 182) = 8.27$, $p < .01$). In terms of manipulation on private setting, all the participants believed that their responses are anonymous and confidential. In terms of manipulation on public setting, 184 participants believed that once they click the "like" button of a Facebook sponsored post, their Facebook friends will see their "like". However, 8 participants did not believe that and therefore, we removed their data.

Hypothesis testing: There were four participants indicated they have never heard of "Toyota Prius". For the rest of 180 participants, we compared the two experimental groups in terms of pre-existing product attitudes and purchase intentions. MANOVA results indicated no significant difference in pre-existing product attitudes and in pre-existing purchase intentions between the two groups (Wilk's Lambda (Λ) = 1.00, $F(2, 176) = .21$, $p = .78$). To test the hypotheses, we conducted MANCOVA with appeal type as the independent variable, ad attitudes, purchase intentions, and intentions to "like" the Facebook ad as the dependent variables and demographic factors (age, race, income, education, and gender) and level of environmental concern as covariates. No effects of age, race, income, and gender were observed, and these variables were dropped from the model (Wilk's Lambda (Λ) = .96, $F(3, 178) = 2.60$, $p = .06$). Univariate tests indicated no significant main effect of appeal type on consumers' ad attitudes ($F(1, 180) = .09$, $p = .76$), and on purchase intentions ($F(1, 180) = 1.24$, $p = .27$). Therefore, H1a was not supported. In contrast, there was a significant main effect of appeal type on participants' intentions to "like" the Facebook ad ($F(1, 180) = 7.56$, $p < .01$). In particular, participants were more likely to click the "like" button for the Facebook ad with other-benefit appeal ($M = 3.60$, $SD = 2.06$) than to click the "like" button for the Facebook ad with self-benefit appeal ($M = 2.97$, $SD = 2.06$) ($p < .01$). Therefore, H1b was supported.

The moderating role of public self-consciousness: We adopted regression analysis to test the moderating role of public self-consciousness because public self-consciousness is a continuous variable [42]. We performed a series of hierarchical multiple regression analyses to explore how appeal type (reference group: self-benefit appeal), public self-consciousness (mean centered), and their interaction affect consumer responses to an ad. Specifically, we adopted ad attitudes, purchase intentions, and intentions to "like" the Facebook ad as the dependent variables. Demographic information was entered in the first step of the equation, environmental concern was entered in the second step, appeal type and public self-consciousness (mean centered) were entered in the third step, and the interaction term was entered in the last step. The same equations were run against each dependent variable. Regression results indicated no significant two-way interaction effect on participants' intentions to "like" the Facebook ad ($B = -.16$, $p = .46$) (see Table 1). Therefore, H2a was not supported. In addition, there was no significant two-way interaction effect on participants' ad attitudes ($B = 0$, $p = .99$) and on participants' purchase intentions ($B = .21$, $p = .36$) (see Table 1). H2b was supported.

Summary

As we anticipated, participants were more likely to favor an ad with other-benefit appeal than to prefer an ad with self-benefit appeal, when they knew their preference could be publicized on Facebook. However, different from what we hypothesized, there was no significant difference in consumer responses between the two groups when ad evaluation was made in private. These results highlighted an important boundary condition for the efficacy of appeal type for an eco-friendly product, and might provide possible explanation for the mixed results from previous literature. In line with Leary and Kowalski's [22] two-factor model of impression management, when it is salient that evaluations are observed by others, individuals' impression-management concerns are activated and they are driven to conform to the perceived social norms and to show desire for an eco-friendly product that emphasizes other-serving benefits.

In addition, results from Study 1 did not shed light on the role of individual factor in impression management. This may be due to the

Predictor	Ad attitude ^a		Purchase intention ^a		Intention to "like" the Facebook ad ^a	
	Study 1	Study 2	Study 1	Study 2	Study 1	Study 2
Step 1 :						
Gender (reference group: female)	.14*	.07	0	-.02	-.04	.03
Age	.16*	0	.05	.04	0.1	.08
Income	.08	.05	.08	.07	.02	.03
Education	-.10	.02	-.01	.01	-.33***	-.01
Race (reference group: non-white)	-.08	.02	.07	-.03	.12	-.01
Step 2:						
Environmental concern	.34***	.23***	.20**	.22***	.16*	.21***
Step 3:						
Appeal type (reference group: self-benefit appeal)	0	-.07	.08	.08	2.66**	0
Public self-consciousness	-.03	-.12	-.13	.04	.65	.02
Step 4:						
Appeal type × public self-consciousness	0	.22	.21	.26	-.16	.53**

Table 1: Regression Results in Study 1 and Study 2.
 * $p < .05$ ** $p < .01$ *** $p < .001$
^a:Standardized Beta Coefficient

fact that regardless of individual differences, a hybrid vehicle with other-serving benefits may provide an opportunity for consumers to achieve, maintain, and signal their social status conspicuously [42,43].

Study 2: Inexpensive Eco-friendly Product

Study 2 extended the findings of Study 1 by looking at a new product category. The hybrid vehicle used in Study 1 tended to be regarded as a luxurious product, the consumption of which is linked to one's social status [3]. Griskevicius and colleagues [3] noted that according to costly signaling theory, purchasing a luxurious green product for other-serving reasons (and not for self-serving reasons) signals one's willingness and ability to undertake the high costs of self-sacrifice for public welfare, indicating that customer is both caring and wealthy. In contrast, purchasing inexpensive green products for other-serving reasons (and not for self-serving reasons) is only equated with being moral [2,7]. Therefore, the perceived luxuriousness of green products may act as another useful cue (besides the prevailing social norms) that helps individuals to construct appropriate public images. Thus, in a public setting where one's behavior is under scrutiny and impression management concerns are heightened, it is possible that the person is more driven to indicate his/her preference for luxurious green products that emphasize other-serving benefits than to show his/her preference for inexpensive green products that emphasize other-serving benefits. Therefore, in Study 2, we used a new product category that is relatively cheap: cold-water laundry detergent. This product category has been adopted in Green and Pelozo's [2] study. Also, the energy-efficiency feature of cold-water laundry detergent can be positioned as either a self-benefit (save energy cost) or an other-benefit appeal (reduce emission). In addition to setting type, we examined the role of individual differences (public self-consciousness) in individuals' reaction to inexpensive eco-friendly products with different types of appeals in a public setting. Regarding the aforementioned discussion, we raised the following research questions:

RQ1: Does the predicted effect in H1b work for inexpensive green products?

RQ2: Does the predicted effect in H2 work for inexpensive green products?

Method

Pretests: We selected Tide cold-water laundry detergent as the product (see Appendix 3 for the stimuli in Study 2) (background: color towels; foreground: the product). To test the prevailing norms regarding household cleaner consumption, a pilot study was conducted with 52 Amazon Mechanical Workers ($M_{age} = 33.62$, $SD_{age} = 10.82$) based on

the same four items used in Study 1 (Cronbach's $\alpha = .79$). The pretest confirmed that participants believe it is more normatively appropriate to consume an eco-friendly household cleaning product to benefit others than to purchase an eco-friendly household cleaning product to benefit self ($M = 5.33$, $SD = 1.04$; one sample t test against the scale midpoint, $t(df = 51) = 9.21$, $p < .001$).

Next, we conducted a second pretest with 39 Amazon Mechanical Workers ($M_{age} = 35.13$, $SD_{age} = 10.87$) to explore whether there is any difference in the perceived luxuriousness of product between the ad using other-benefit appeal and the one with self-benefit appeal on the basis of the same scales in Study 1 ($\alpha = .67$). The pretest indicated no significant difference in perceived luxuriousness of product between the ad using self-benefit appeal ($M = 4.39$, $SD = 1.01$) and the one with other-benefit appeal ($M = 4.37$, $SD = .80$) ($t(df = 37) = 1.37$, $p = .95$). Moreover, participants tended not to perceive Tide cold-water laundry detergent in both ads as a luxurious product (ad with other-benefit appeal: one sample t test against the scale midpoint, $t(df = 19) = 2.05$, $p = .06$; ad with self-benefit appeal: one sample t test against the scale midpoint, $t(df = 18) = 1.67$, $p = .11$).

Experiment: Participants were 274 Amazon Mechanical Workers who reside in the United States. Two participants' data were removed because we did not manipulate the setting successfully on them and 272 participants' data were entered into final data analysis. We used the same experimental design as that in Study 1. One hundred and thirty three participants were randomly assigned to the "self-benefit" condition, and 139 participants were randomly assigned to the "other-benefit" condition. Also, we adopted the same experimental procedure and measures as those in Study 1. Reliabilities for the measured variables were: pre-existing product attitudes (Cronbach's $\alpha = .92$), pre-existing purchase intentions (Pearson $r = .69$, $p < .01$), ad attitudes (Cronbach's $\alpha = .86$), post purchase intentions (Pearson $r = .78$, $p < .01$), likelihood to "like" the Facebook ad (Cronbach's $\alpha = .97$), perception of appeal type (other-benefit appeal: Pearson $r = .79$, $p < .01$; self-benefit appeal: Pearson $r = .68$, $p < .01$), environmental concern (Cronbach's $\alpha = .90$), and public self-consciousness (Cronbach's $\alpha = .86$).

Results

Test results on randomization: Chi-square results indicated no significant difference between participants in the two conditions in terms of gender ($\chi^2(df = 1) = 3.36$, $p = .07$) and race ($\chi^2(df = 5) = 3.58$, $p = .61$). T-test results indicated no significant difference between participants in the two conditions in terms of age ($t(df = 270) = .30$, $p = .76$), income ($t(df = 270) = 1.32$, $p = .19$), and education ($t(df = 270) = .50$, $p = .62$). The above results revealed that the randomization was successful.

Self-benefit condition	
The headline:	Small changes can save you money
Bodycopy:	With bio-derived enzymes that don't need heat to dissolve organic stains, Tide Coldwater delivers powerful cleaning while using your washer's cold washing setting. You can save up to \$10 on your energy bill by switching to washing in cold water.
Other-benefit condition	
The headline:	Do the world a favor by choosing a greener detergent
Bodycopy:	With bio-derived enzymes that don't need heat to dissolve organic stains, Tide Coldwater delivers powerful cleaning while using your washer's cold washing setting. You can reduce your carbon emissions by about 1,600 pounds a year by switching to washing in cold water. Join us to create a clean home and a better planet.

Appendix 3: Stimuli in Study 2

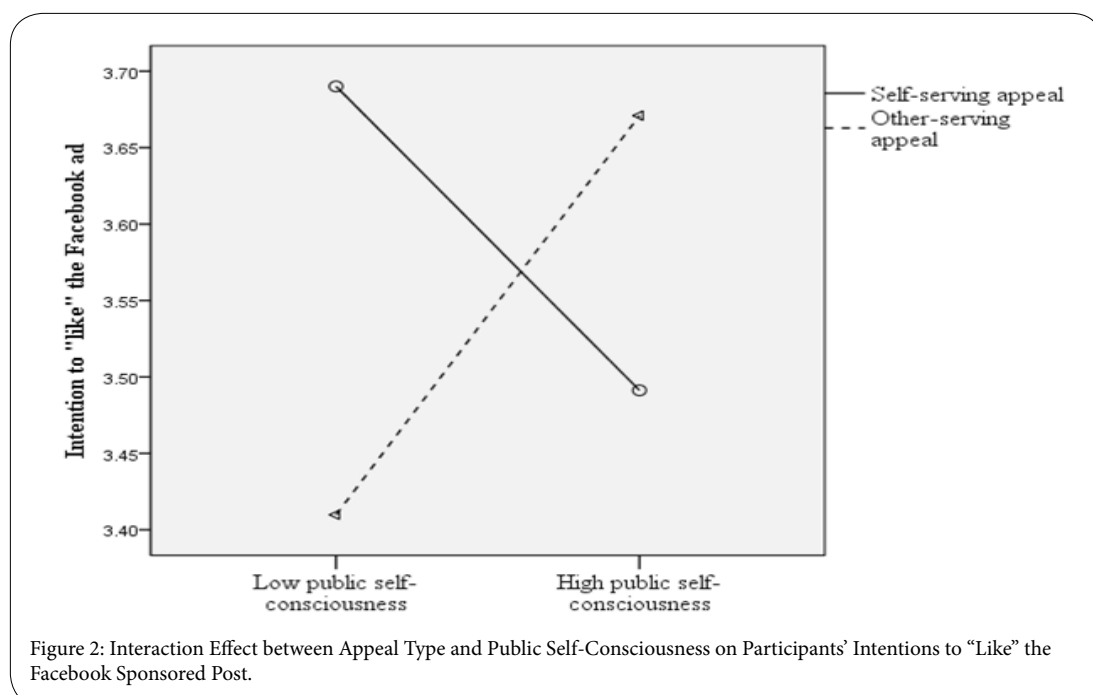
Manipulation check: ANOVA results a significant difference between the two groups in terms of participants' perception of the appeal type (Wilk's Lambda (Λ) = .77, $F(2, 269) = 41.26, p < .001$). Univariate results revealed that the ad that emphasized saving energy cost ($M = 4.63, SD = 1.50$) was evaluated as being significantly more focused on self-benefit than the one that emphasized reducing emission ($M = 3.87, SD = 1.62$) ($F(1, 270) = 16.80, p < .001$). In addition, the ad that focused on reducing emission ($M = 5.52, SD = 1.10$) was evaluated as being significantly more focused on other-benefit than the one that emphasized saving energy cost ($M = 4.02, SD = 1.68$) ($F(1, 270) = 76.37, p < .001$). In terms of manipulation on private setting, all the participants believed that their responses are anonymous and confidential. In terms of manipulation on public setting, 272 participants believed that once they click the "like" button of a Facebook sponsored post, their Facebook friends will see their "like". However, 2 participants did not believe that and therefore, we removed their data.

Hypothesis testing: Ninety eight participants indicated they have never heard of "Tide cold-water laundry detergent". For the rest of 174 participants, we compared the two experimental groups in terms of pre-existing product attitudes and purchase intentions. ANOVA tests indicated no significant difference in pre-existing product attitudes between the two experimental groups ($F(2, 172) = .12, p = .73$); also, there was no difference in pre-existing purchase intention between the two experimental groups ($F(2, 172) = 3.16, p = .08$). To test the hypotheses, we conducted MANCOVA with appeal type as the independent variable, ad attitudes, purchase intentions, and intentions to "like" the Facebook ad as the dependent variables, and demographic factors (age, education, race, income, and gender) and level of environmental concern as the covariates. Because no effects of all the demographic factors were observed, these variables were removed from the model (Wilk's Lambda (Λ) = .98, $F(3, 267) = 2.13, p = .10$). Univariate tests indicated no significant main effect of appeal type on consumers' ad attitudes ($F(1, 269) = 1.11, p = .29$), on purchase intentions ($F(1, 269) = 1.73, p = .19$), or on individuals' intentions to "like" the Facebook sponsored post ($F(1, 269) = .01, p = .94$).

Also, because there was a large number of participants who have never heard of the product, we compared people who have heard of the product and those who have never heard of the product in terms of ad attitudes, purchase intentions, and intentions to "like" the Facebook ad. MANCOVA results indicated that after controlling the level of environmental concern, there was no significant difference in consumer responses to the ad with self-benefit appeal between the two groups (Wilk's Lambda (Λ) = .98, $F(3, 128) = 1.06, p = .37$); also, there was no significant difference in consumer responses to the ad with other-benefit appeal between the two groups (Wilk's Lambda (Λ) = .97, $F(3, 134) = 1.17, p = .32$). Therefore, we confirmed that using an established brand did not influence the experimental results.

The moderating role of public self-consciousness: We adopted the same regression analysis as in Study 1 to test the moderating role of public self-consciousness. Regression results were listed in Table 1. There was a significant two-way interaction effect on participants' intentions to "like" the Facebook ad ($B = .53, p < .01$) (see Figure 2). To follow-up on this two-way interaction, we conducted a simple slope analysis using model 1 of the PROCESS macro with 2,000 bootstrap samples and a 95% confidence level (CI) [45]. For participants low in public self-consciousness (one SD below the mean; $M = 4.40, SD = 1.36$), there was a significant negative effect of appeal type on

participants' intentions to "like" the Facebook ad ($b = -.69, SE = .33, t = -2.12, p < .05$)-those low in public self-consciousness tended to "like" the Facebook ad when it used self-serving appeal. However, for participants high in public self-consciousness (one SD above the mean), there was an insignificant positive effect of appeal type on participants' intentions to "like" the Facebook ad ($b = .65, SE = .33, t = 1.94, p = .05$)-those high in public self-consciousness tended to "like" the Facebook ad when it used other-serving appeal. Therefore, H2a was supported. In addition, there was no significant two-way interaction effect on participants' ad attitudes ($B = .22, p = .23$), and on participants' purchase intentions ($B = .26, p = .16$). Therefore, H2b was supported.



Summary

Results from Study 2 indicated that when a green product is not perceived as a luxurious product, individuals are not driven to use the product to create a positive public image by conforming to perceived social norms, even though they know their evaluations are under scrutiny. One possible reason is that compared to a luxurious green product (i.e. hybrid vehicle), an inexpensive green product (i.e. cold-water laundry detergent) cannot signal the owner's ability to incur salient costs for others. Thus, an inexpensive green product may not be significant enough for individuals to establish their warm glow public self-image (wealthy and caring). Notably, results from this research were inconsistent with Green and Peloza's [2] study because Green and Peloza [2] found that in terms of cold-water laundry detergent, participants tend to choose the one with other-serving benefits when they know their behaviors are public accountable. One possible explanation for the inconsistency is that Green and Peloza [2] used a choice task in which participants were required to choose one cold-water laundry detergent (with either other-serving benefits or self-serving benefits) whereas in our research, participants were not required to choose between the two appeals.

In addition, results from Study 2 revealed the role of individual factor in impression management through consumption of inexpensive eco-friendly products. Results indicated that in a public setting, consumers high in public self-consciousness tended to click the "like" button for a Facebook ad with other-benefit appeal. Conversely, in a public setting, consumers low in public self-consciousness tended to click the "like" button for a Facebook ad with self-benefit appeal. These results were consistent with White and Peloza's [8] study. White and Peloza [8] posited that a public setting cues consumers high in public self-consciousness to behave in a manner congruent with normative expectations. In contrast, a public setting may cue consumers low in public self-consciousness to behave in a manner incongruent with normative expectations because these people are less concerned with how their behaviors are evaluated by others [8]. Notably, these differences between consumers high in public self-consciousness and those low in public self-consciousness are eliminated in the private setting where individuals know their ad evaluations are not visible to others.

General Discussion

Through two studies, we provided empirical evidence that the efficacy of appeal type is moderated by situational conditions and individual differences that activate public self-image concerns. Results from the two studies indicated that although individuals tend to construct positive impressions by selecting an eco-friendly product with other-benefit benefits when they know their behaviors are observed by others, individuals are more motivated to endorse a luxurious eco-friendly product with other-serving benefits than to support an inexpensive eco-friendly product with other-serving benefits. However, when individuals realize their behaviors are visible to others and they care about how others view them (high public self-consciousness), they will be likely to endorse an inexpensive eco-friendly product with other-serving benefits.

Theoretical implications

Previous studies mostly focused on intrinsic motivations (i.e. environmental concern, economic advantage) to explain consumers' environmentally friendly consumption behaviours [16]. However, another stream of research has noted that environmental concern does

not always lead to environmentally friendly consumption behaviours and that eco-friendly products are often not purchased because of pro-environmental motives [46,47]. For instance, Bamberg [14] discovered only a low to moderate association between consumers' environmental concerns and adoption of eco-friendly products. This research indicated that it is also possible that extrinsic motives (i.e. construct good impression, gain status) may be another reason for some consumers to purchase environmentally friendly products when their impression motivation is heightened in certain conditions.

Our findings provided empirical support for Leary and Kowalski's [21] two-factor model of impression management. In particular, factors (public settings, high public self-consciousness) that heighten public self-image concerns can boost individuals' impression motivation. Once an individual's impression motivation is activated, the individual is likely to use the perceived social norms as the standard to construct a positive impression on others. In addition, on the basis of costly signalling theory [3], we added one more boundary condition in individuals' impression management process: product type. We argued that the price of an eco-friendly product together with the prevailing social norms will provide information for individuals to engage in impression construction, and that purchasing expensive eco-friendly products is more likely to help an individual to construct a glowing public impression than purchasing inexpensive eco-friendly products.

Practical implications

The results from this research provided some important insights for marketers and advertisers promoting eco-friendly products. In particular, when selecting the right advertising for eco-friendly products, advertisers need to take into consideration the context where consumers' evaluations happen and also the product type. For instance, if an ad for an eco-friendly product is placed in a magazine, advertisers can utilize either other-benefit or self-benefit appeals because consumers' evaluations of the ad are private in nature. However, if an ad for an eco-friendly product is placed in SNSs, such as Facebook, and the goal is get much likes and shares, advertisers need to use other-benefit appeals to help individuals construct a glowing image on the public platform, and this is especially important for expensive eco-friendly products and for consumers high in public self-consciousness.

From the perspective of costly signaling theory, using self-benefit appeal (i.e. save money) in a Facebook ad for an expensive green product may undermine the signaling of wealth by its owner. Therefore, advertisers need to be cautious when emphasizing the economic benefits of an expensive eco-friendly product in a public setting. Also, when advertising inexpensive green products on Facebook, it is important to understand the characteristics of consumers. If most of the consumers tend to be high in public self-consciousness, Facebook advertisers for inexpensive green products need to use other-benefit appeals because these consumers' public self-image concerns are activated regardless of the low price of the products. On the other hand, if most of the consumers tend to be low in public self-consciousness, Facebook advertisers for inexpensive green products need to use self-benefit appeals because these consumers' public self-image concerns are not activated and they may not behave according to the prevailing social norms. Last, since the prevailing norms provide information for consumers to construct an appropriate impression in public settings, it is important for green marketers to monitor the current prevailing social norms.

From a standpoint of policy making, findings from this research need to be received with caution. Previous studies noted that brands can adopt deceptive green claims, such as using vague terms to describe the environmentally friendly attributes of the products [48,49], and this research suggested that the use of other-benefit appeals (environmental claims) in Facebook advertising can be persuasive. Policy makers need to monitor the use of environmental claims in Facebook advertising and to drive advertisers to validate the claims.

Limitations and Future Research Direction

Although the findings from this research are significant, there are still several limitations. First, even though our experimental results provided evidence for the two-factor model of impression management and for costly signaling theory, this study adopted a hybrid vehicle to represent all expensive eco-friendly products and used a laundry detergent to represent all inexpensive green products. Future studies can use different products to represent expensive (i.e. cellphone, laptop) and inexpensive green products (i.e. light bulb, toilet paper).

Second, this research focused on specific examples of self-serving benefits – cost saving. Previous research noted that consumption of eco-friendly products can result in other benefits to self, such as pride and self-respect [50]. Therefore, future studies can adopt other types of self-benefit appeals in advertising.

Third, to maintain realism, this research used established brands in the two experiments. Future studies can adopt new brands or fictitious brands to replicate this study, and to explore whether the same impression management mechanism works for new brands. For instance, do consumers hesitate to endorse a new brand with other-benefit appeals in a public setting because they do not believe the brand can help them construct an appropriate image in public? Or do consumers tend to endorse a new brand with other-benefit appeal in a public setting because these consumers believe that others do not hold pre-existing attitudes toward the brand and can only evaluate it through its altruistic ad claims? Despite these limitations, this research indicated that future studies on social media advertising should focus not only on intrinsic motives but also on extrinsic motives that spur environmentally friendly consumption.

Competing Interests

The authors declare that they have no competing interest.

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