

Attribution and attributional processes of organizations' environmental messages

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Abstract

This experimental study, guided by attribution theory, investigated the impact of the substantiation and specificity of organizations' environmental messages on perceived communication motivation and how this perception prompts audiences' affective and cognitive responses. Findings showed that specific messages increased perceived intrinsic motivation, whereas vague messages increased perceived extrinsic motivation; in turn, perceived intrinsic motive positively influenced audiences' message attitude, organization attitude, message credibility, organization credibility, and organization's green image, whereas perceived extrinsic motive negatively influenced these aspects.

Keywords

attribution theory, environmental issue, perceived motivation, social media

Introduction

Organizations discuss their pro-environmental philosophy, plans, products, and achievements with the public via their social media channels (Shin & Ki, 2017). However, environmental messages can leave negative impressions in media users' mind when the message tries to mislead audiences. Some organizations produce environmental messages without engaging in any actual pro-environmental initiatives, exaggerate their pro-environmental actions, and/or intentionally conceal environment-harming deeds (Allen, 2016). These intentionally misleading environmental communications are called "greenwashing." Greenwashing is a societal problem because it can

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increase publics' skepticism about environmental messages in general regardless of whether they are innocent or deceptive, and this negative perception interrupts organizations' active discourse on environmental issues (Allen, 2016). To address this issue, the current study deductively explored how individuals appraise organizational green messages adopting attribution theory.

Attribution theory explains the underlying mechanism of message effects on audiences' thoughts and feelings. The theory posits that individuals attempt to infer the motivations for others' behaviors based on past and current behaviors and situations (Heider, 1958; Kelley, 1967). Thus, individuals judge an environmental message sender (in this case, an organization) to be intrinsically or extrinsically motivated¹ based on the sender's past and current environmental communication and situations (attribution process); in turn, the perceived motivation may influence audiences' responses about the message and organization (attributional process). This study examines this two-step process.

To define the organizational environmental messages, this study adopted two message classification systems: (1) substantive versus associative messages and (2) specific versus vague messages. Substantive messages provide factual evidence for past green initiatives, whereas associative messages emphasize organizations' intangible thoughts, ideas, and philosophy (Carlson et al., 1996). Based on the environmental orientations on which a message focuses, substantive messages are categorized as *product* or *process* and associative messages as *image* or *environmental fact*. For example, a message in the *product* category emphasizes pro-environmental features of the product (Carlson et al., 1993). Message specificity is divided into two categories: vague (abstract assertion) and specific (numerical support) (Davis, 1993).

Using the two environmental message classification systems, Shin and Ki (2017) investigated organizations' environmental messages on Twitter and revealed that the messages are mostly associative (70.7%) and vague (80.0%). Considering that an associative or vague green message may lead a media user to consider the message a greenwashing message (Allen, 2016; Carlson et al., 1996), the dominance of associative and vague messages on social media is also a problem. Shin and Ki (2017) pointed out the green message trends on social media but did not show how and why associative and vague messages negatively affect a user's thoughts and feelings. Furthermore, few studies have investigated the mechanism of communication that goes from environmental messages to end-user cognitive and affective responses. This study will fill this research gap.

The context of this research is social media,² concentrating on social networking sites (SNSs) (Kaplan & Haenlein, 2010). Social media has become one of the most common media platforms (e.g., there are more than 145 million active daily Twitter users) (Twitter, 2019) for both individuals and organizations (Case et al., 2015). Scholars have analyzed organizations' message content and consumers' responses on social media regarding various topics such as nonprofit organizations' environmental communication (Lovejoy & Saxton, 2012; Saxton & Waters, 2014; Waters et al., 2009), crisis communication related to environmental issues (Liu & Kim, 2011; Muralidharan et al., 2011), and relationship-building through environmental issues (Rybalko & Seltzer, 2010). However, research on organizational environmental communication on social media is still embryonic. Thus, this study will deepen the knowledge about this research area. In addition, this study extends the applicability of the environmental message classification systems from the traditional media environment (Alniacik & Yilmaz, 2012; Carlson et al., 1993, 1996) to the new media environment (e.g., social media). These are noticeable contributions of this study.

The goal of this study is to understand the underlying mechanism of how a green message influences an audience's thoughts and feelings. To achieve the goal, this study conducts an online experiment with a between-subjects 4×2 factorial design: 4 message orientations (product, process, image, and environmental fact) \times 2 degrees of message specificity (vague and specific). This study measures subjects' perceived intrinsic motivation, perceived extrinsic motivation, attitude toward

the message, attitude toward the organization, credibility of the message, credibility of the organization, and perceived green image. The literature review discusses environmental message categorization systems (message orientation and message specificity), theoretical frameworks (attribution and attributional processes), and consumer responses toward organizations' green messages.

Literature review

Environmental message categorization systems

Message substantiation (substantive vs associative messages). Message substantiation is the extension of the concept of message orientation (Carlson et al., 1996). Message orientation refers to the object an environmental message mainly describes (Carlson et al., 1993). Message orientation has four categories: (1) *product*, which emphasizes that a product is environmentally friendly (e.g., this product is biodegradable); (2) *process*, which asserts that a manufacturing process or work environment is environmentally friendly (e.g., we produced 70% less greenhouse gases to make this product compared with last year); (3) *image*, which focuses on the organization's philosophies and future sustainability plans (e.g., all employees aim to contribute to environmental protection); and (4) *environmental facts*, which refer to the degraded status of the environment (e.g., numerous wild animals are suffering from environmental pollution). Carlson et al. (1996) expounded that *product* and *process* are substantive messages describing concrete pro-environmental benefits, and *image* and *environmental facts* are associative messages that intend to make a connection between the organization and a green image or the environment itself without using visible pro-environmental outcomes. They also noted that associative messages could evoke deceptive green communication.

This message classification system was created more than two decades ago, but it is still useful to categorize green messages. For example, a study (Yu et al., 2013) used the system to investigate green advertising messages in *National Geographic*. However, previous studies that adopted the system focused on conventional media channels; the applicability of the system on the new media environment has not been investigated yet.

Message specificity (specific vs vague messages). Researchers have also studied message specification (Alniacik & Yilmaz, 2012; Davis, 1993). Depending on the degree of message specificity, environmental messages can be categorized as vague or specific. For example, a specific message is "This product is made of 95% recycled materials including cardboard, newspaper, and paper," and a vague message would say, "This product is environmentally friendly." Message specificity is an important point for organizations because vague environmental messages could make publics perceive the message as deceptive and manipulative even though it is really not (Allen, 2016). This experimental study assumes that the substantiation and specificity messages may influence an audience's affective and cognitive responses.

Affective and cognitive responses

Individuals experience psychological responses to a person, object, idea, event, or situation related to themselves (Allport, 1935). These psychological responses involve three components: affective, cognitive, and conative. The affective response is an emotion toward an entity, the cognitive response is a belief related to the entity, and the conative response is a behavioral intention evoked by the entity (Rosenberg & Hovland, 1960). These psychological responses have been examined as highly explanatory and predictive constructs (Eagly & Chaiken, 1993; McGuire, 1969; Petty &

Cacioppo, 1986). In particular, scholars in mass communication have studied these responses to messages as important indicators to understand message effectiveness. This study focuses on situations in which messages directly influence affective and cognitive responses that subsequently drive conative responses (Lavidge & Steiner, 1961; Zajonc & Markus, 1982). Two variables represent affective responses (attitude toward the message and attitude toward the organization) and two represent cognitive responses (credibility of the message and credibility of the organization). In terms of organizations' environmental messages, Zhu (2013) indicated that message attitude and credibility of the green message positively affect purchase intention.

Predicting attitude toward both the message and the organization is important because favorable or unfavorable emotion about a message or organization is likely to affect behavioral intention (e.g., intention to purchase a product or service of the organization) (MacKenzie & Lutz, 1989). This study defines attitude toward the message as a predisposition to respond in a favorable or unfavorable way to a particular message stimulus; similarly, attitude toward the organization is a predisposition to respond in a favorable or unfavorable way to the organization that sent the message (MacKenzie & Lutz, 1989).

It is critical for organizations to figure out message and organization credibility because such credibility is positively associated with purchase intention as well as active engagement behaviors with the organization (Van Doorn et al., 2010). This study defines credibility of the message as the extent to which the consumer perceives claims made in a social media post to be truthful and believable, whereas credibility of the organization is the perceived truthfulness or honesty of the social media message sender (MacKenzie & Lutz, 1989).

Green image

Organizational image is the instant mental picture that a consumer has of an organization and can be formed by the organization's message (Gray & Balmer, 1998). When one sees or hears an organization name or logo, what comes into one's mind is the organization's image. If a company has a green image, a consumer could come up with images related to the environment when he/she sees or hears the organization's name or logo. Organizational green image is a consumer's set of perceptions connected to the environmental commitments and concerns of an organization (Chen, 2010). Green image could be positively associated with green satisfaction (i.e., meeting a consumer's environmental expectations), green trust (i.e., the trustworthiness of a product, service, or brand of the organization), and green brand equity (i.e., a set of brand assets and liabilities about green commitments and environmental concerns linked to the organization) (Chen, 2010).

Attribution theory

People communicate with others including individuals and organizations in everyday life, observe others' behavior, and determine whether their behavior is deliberate (Heider, 1958). Attribution theory explains the cognitive process by which people attribute others' behavior to a cause (McDermott, 2009). There are two basic attribution processes: internal and external. When an observer infers that another's behavior is intrinsically motivated, internal attribution occurs, whereas when the observer considers the cause of another's behavior to be a situational factor, external attribution occurs. The other's past and current behaviors and situations are important factors that influence the internal or external attribution process. Kelley (1967) proposed three guidelines to determine attributions: consensus, consistency, and distinctiveness. Consensus focuses on how other people behave in the same situation compared with the observed person. Consistency refers to whether an observed person behaves the same way in

the same situation over time. Distinctiveness involves how an observed person behaves in different situations.

Understanding the attribution process is especially important in organization-public environmental communication. Sustainability development has become a social trend; it is now a norm that protecting the environment is expected. Organizations behave in line with the environmental legitimacy their consumers seek. Consumers may determine if organizational actions are legitimate and infer what causes motivate the actions (attribution process) by comparing current actions with those of other organizations (consensus), previous performances (consistency), and other situations (distinctive). If publics perceive that an organization's environmental message is motivated by strong environmentalism, then an internal attribution process occurs. If publics conclude that an organization's environmental message stems from social trends, then an external attribution process occurs. Attribution theory accounts for two different but related processes: attribution process and attributional process.

Attribution process

In the attribution process, an observer determines whether an object's behavioral motivation is intrinsic (internal attribution) or extrinsic (external attribution) (Kelley & Michela, 1980). Parguel et al. (2011) conducted an experiment to see if independent sustainability ratings affect the attribution process and if the internal and external attributions influence organization evaluation at the website level. They demonstrated that sustainability ratings could be a cue to determine intrinsic motives of the environmental messages. Specifically, if the organization makes claims about its environmental initiatives but provides no other information, consumers may attribute the message to extrinsic motives. Their results indicated that the higher a company's ratings, the stronger the internal attribution; and the stronger the internal attribution, the higher the brand equity.

Message orientation may affect an individual's perceived motivation about an organization's environmental communication. In the attribution process, a consumer determines the reasons the organization is sending an environmental message by comparing the organization's past and current behaviors (Kelley, 1967). When both are environmentally friendly (substantive claims: a green message oriented in a green product or a green process), the recipient may attribute the current behavior (a green message) to internal reasons such as strong organization environmentalism. However, when only the current behavior is related to the environment, without sufficient evidence of past green behaviors, the recipient may attribute the current behavior to external reasons such as sustainability trends. The expected attribution process by message substantiation is described in the following hypothesis:

H1. When the organizational green message is substantive, (a) perceived intrinsic motivation is significantly higher and (b) perceived extrinsic motivation is significantly lower than when the message is associative.

Message specificity may also have an impact on the attribution process. A message receiver may perceive a specific message as evidence of environmentally sincere organizational behaviors and attribute the environmental message to an intrinsic motive such as notifying consumers about environmental initiatives. However, when a message is vague, a message receiver may suspect a hidden purpose of the message and attribute it to an extrinsic motive such as greenwashing. Thus, the following hypothesis is proposed:

H2. When the organizational green message is specific, (a) perceived intrinsic motivation is significantly higher and (b) perceived extrinsic motivation is significantly lower than when the message is vague.

This study explores these effects by combining message substantiation and specificity. When the green message is oriented to green products or processes and the description of the green products or processes is very specific, the effectiveness of the message may be the best among any of the other possible combinations (synergy effect). By contrast, when the organization sustainability message is oriented to organization image or environmental facts and the explanation is vague, the effectiveness of the messages should be poor (reverse synergy effect). The following research question is posed:

RQ1. When the organizational green message is both substantive and specific, are (a) perceived intrinsic motivation significantly higher than when the message is associative or vague and (b) perceived extrinsic motivation significantly lower than when the message is substantive or specific?

Attributional process

The concept of attributional process focuses on the link between internal/external attributions and their consequences (e.g., behaviors, affect, and expectancies) (Kelley & Michela, 1980). The literature indicates that internal or external attribution makes a difference in attitude and credibility toward the observed person or behavior. Kelley (1972) asserted that an observer more warmly appraises an internally justified action that is helpful to the observer than an externally attributed action. In addition, Kelley (1967) stated that apparently consistent behaviors, regardless of situations (internal attribution), evoke confidence in the person's truthfulness. Strickland et al. (1976) indicated that an observer was less trusting of a worker who was monitored by a supervisor than another worker who was not monitored, implying that an externally attributed action could produce low credibility of the observed person. In addition, corporate social responsibility (CSR) researchers argue that value-driven attribution (internal attribution in this study) more positively affects consumer attitude toward organization than strategic- or profit-driven attribution (external attribution in this study) (Nyilasy et al., 2013; Walker, 2010).

The internal attribution process may generate positive influences on the recipient's perceptions about the received message and the organization because perceived intrinsic motivation may satisfy the desired ideal image of an organization. In other words, people generally want organizations to be ethical and socially responsible, and they have favorable attitudes and strong trust toward such organizations (Castaldo et al., 2009). However, the external attribution process may lead to negative outcomes for the same reasons. This study tests the attributional process with the following hypotheses:

H3. Perceived intrinsic motivation is significantly positively associated with (a) attitude toward the message, (b) attitude toward the organization, (c) credibility of the message, (d) credibility of the organization, and (e) perceived organizational green image.

H4. Perceived extrinsic motivation is significantly negatively associated with (a) attitude toward the message, (b) attitude toward the organization, (c) credibility of the message, (d) credibility of the organization, and (e) perceived organizational green image.

The proposed model depicted in Figure 1 shows the relationships among the key variables in the four hypotheses.

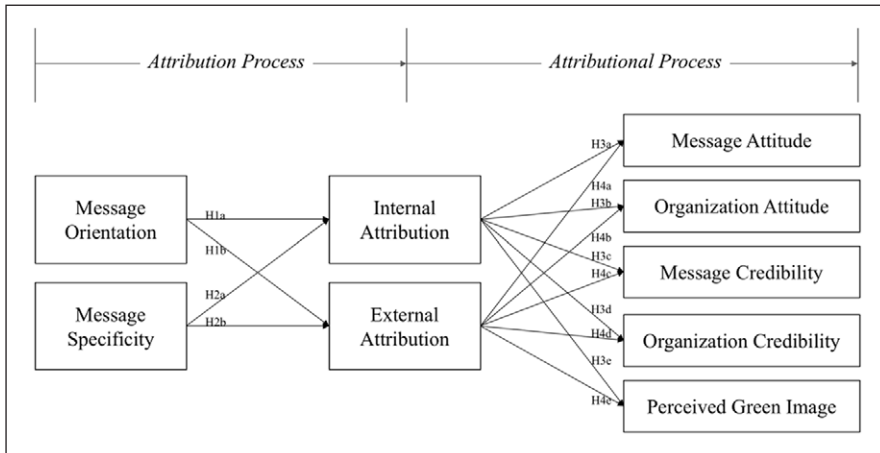


Figure 1. Proposed model.

Methods

To test the proposed hypotheses, this study conducted an online experiment. An experiment is appropriate to examine message effects on subjects' psychological outcomes (Hovland et al., 1949). This study builds up a 4 (product orientation, process orientation, image orientation, or environmental fact) \times 2 (specific or vague) between-subjects factorial design.

Stimuli

This study used an existing organization, Johnson & Johnson (J&J). Although J&J is well known, it is not associated with an environmentally friendly product or brand. A hygiene product manufacturer was chosen because such products are familiar to people in general (Chan, 2000; Davis, 1994) and people use them on a daily basis. Before exposing the subject group to a green message stimulus, the subjects read basic information about the organization and a short scenario to help them engage in the experimental condition. The scenario statement was adapted from Chan (2000) and revised for this study (see Appendix 1).

The message stimuli were adapted from Chen (2010). Chan created four types of claims by message orientation. This study manipulated the degree of message specificity on top of the original stimuli. A total of eight (4 \times 2) stimuli were made: (1) product \times vague, (2) product \times specific, (3) process \times vague, (4) process \times specific, (5) image \times vague, (6) image \times specific, (7) environmental fact \times vague, (8) environmental fact \times specific. Subjects were randomly assigned to one of the eight stimuli. Although the experiment design is 4 \times 2, the collected data will be analyzed as 2 (substantive and associative) \times 2 (specific and vague) because of the similarity between product and process and between image and environmental fact. Originally, product and process were grouped as substantive messages because they claim factual green initiatives; image and environmental fact were grouped as associative messages because they emphasize an organization's pro-environmental ideas. To test the similarity, post hoc tests will be executed. All the messages were short in consideration of the social media context (see Appendix 2). To increase ecological validity, the messages were displayed on a background that looked like the actual Facebook interface. Figure 2 shows an example of the message stimuli on the Facebook interface.

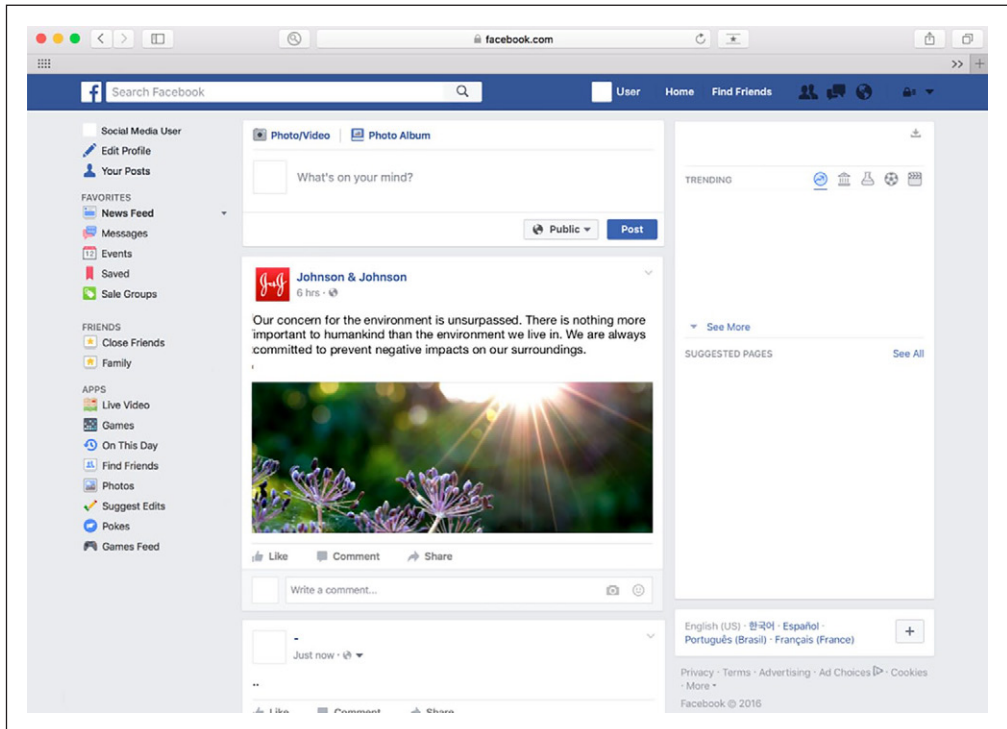


Figure 2. Example stimulus (image orientation \times vague message).

Measurement

This study measured attribution process and message effectiveness. The attribution process was operationalized into two variables: perceived intrinsic motivation and perceived extrinsic motivation. Message effectiveness consists of five variables: message attitude, organization attitude, message credibility, organization credibility, and perceived green image.

Perceived internal motivation. This variable explains a subject's perception of the extent to which the organization in the experiment was internally motivated to send the green message. This variable was measured with three items adapted from Parguel et al. (2011). For the question, "In your opinion, why does J&J communicate about its environmental issue?," respondents were asked to use a 7-point Likert-type scale (1 = *strongly disagree* to 7 = *strongly agree*) to rank the following three statements: (1) "Primarily because J&J is really conscious of the importance of ecological issues," (2) "Primarily to put forward a genuine consciousness regarding ecological problems," and (3) "Primarily to make consumers aware of ecological issues" (three items, $\alpha = .906$).

Perceived external motivation. This variable's operational definition is respondents' perception of how much the organization is affected by external motivation to send the green message. Three items adapted from Parguel et al. (2011) were used to measure this variable. The same question and 7-point Likert-type scale (1 = *strongly disagree* to 7 = *strongly agree*) were used as for the perceived internal motivation question, but participants were asked how much they agreed with the following three statements: (1) "Primarily because J&J wants to improve its image amongst consumers," (2)

“Primarily because it is fashionable to do so nowadays,” and (3) “Primarily to be likeable to consumers” (three items, $\alpha = .864$).

Attitude toward the message. Attitude toward the message refers to the overall feeling about the message viewed during the experiment. To measure this variable, this study adopted a measurement from Chan and Lau (2004) that included four bipolar items (bad/good, dislike/like, irritating/not irritating, and uninteresting/interesting) measured on a 7-point scale (four items, $\alpha = .873$).

Attitude toward the organization. Attitude toward the organization is operationalized as the overall feeling about the organization in the experiment. A measurement adopted from Chan and Lau (2004) was used that includes three bipolar items (bad/good, unfavorable/favorable, and negative/positive) ranked on a 7-point scale (three items, $\alpha = .950$).

Credibility of the message. Message credibility is operationally defined as the extent to which the message viewed during the experiment is recognized as believable content. This variable was measured by using a 7-point scale to rank five bipolar items adopted from Lichtenstein and Bearden (1989): insincere/sincere, dishonest/honest, not dependable/dependable, not trustworthy/trustworthy, and unreliable/reliable (five items, $\alpha = .941$).

Credibility of the organization. Organization credibility is respondents' evaluation of the trustworthiness of the organization during the experiment. This study used four bipolar items from Till and Busler (2000) to measure this variable: insincere/sincere, dishonest/honest, not dependable/dependable, and not trustworthy/trustworthy (four items, $\alpha = .952$).

Perceived green image. Green image refers to the consumer's perceptions regarding overall sustainability development of the organization. This variable was measured using the following four items adopted from Chen (2010): (1) “The organization is regarded as the best benchmark of environmental commitments,” (2) “The organization is professional about environmental reputation,” (3) “The organization is successful about environmental performance,” and (4) “The organization is well established about environmental concerns” (four items, $\alpha = .888$). Participants ranked each statement on a 7-point Likert-type scale (1 = *strongly disagree* to 7 = *strongly agree*).

Covariates

This study controlled personal characteristics related to the environment that may influence the effectiveness of green messages. The control variables were attitude toward green communication and involvement with the environment. Previous studies argued that environmental involvement positively affects message effectiveness (Cervellon, 2012; Schuhwerk & Lefkoff-Hagius, 1995), so this variable was controlled in this study. Environmental involvement was measured using three subordinate variables: concern, green purchasing behavior, and green communication exposure. The demographic control variables were age, sex, education, race, marital status, and household income.

Attitude toward environmental communication. This variable refers to respondents' existing attitude toward environmental communication in general. To measure this variable, this study adopted a measurement from Schuhwerk and Lefkoff-Hagius (1995). The items were ranked on a 7-point bipolar scale and include: bad/good, unpleasant/pleasant, unfavorable/favorable, unconvincing/convincing, and unbelievable/believable (five items, $\alpha = .925$).

Environmental concern. This variable explains how much concern about the environment a respondent has. To measure this variable, seven items were adopted from do Paço and Reis (2012): (1) “We are approaching the limit of the number of people that the earth can support,” (2) “The earth is like a spaceship with only limited room and resources,” (3) “There are limits to growth beyond which our industrialized society cannot expand,” (4) “The balance of nature is delicate,” (5) “Mankind is severely abusing the environment,” (6) “When humans interfere with nature, it often produces disastrous consequences,” and (7) “Humans must live in harmony with nature in order to survive” (seven items, $a = .892$). The questions were ranked on a 7-point Likert-type scale (1 = *strongly disagree* to 7 = *strongly agree*).

Green purchasing behavior. This variable’s operational definition is a respondent’s behaviors related to purchasing green products. This variable was measured by 10 questions adopted from do Paço and Reis (2012): (1) “I try to buy energy-efficient products,” (2) “I avoid buying products that have excessive packaging,” (3) “When there is a choice, I choose the product that causes the least pollution,” (4) “I have switched products/brands for ecological reasons,” (5) “I make every effort to buy paper products made from recycled paper,” (6) “I use environmentally friendly soaps and detergents,” (7) “I have convinced members of my family or friends not to buy some products that are harmful to the environment,” (8) “Whenever possible, I buy products packaged in reusable containers,” (9) “I try to buy products that can be recycled,” and (10) “I buy high-efficiency light bulbs to save energy” (10 items, $a = .941$). Answers were ranked on a 7-point Likert-type scale (1 = *strongly disagree* to 7 = *strongly agree*).

Environmental communication exposure. This variable indicates how often a respondent is exposed to environmental issues through mediated or interpersonal communication. The following three questions were developed to measure this variable: (1) “On average, how often are you exposed to environmental information through TV, radio, magazines, and newspapers?” (2) “On average, how often are you exposed to environmental information through the internet?” (3) “On average, how often do you discuss environmental issues with other people (e.g., friends, family, colleagues, etc.)?” Answers have seven options: (1) every day, (2) three times or more a week, (3) once or twice a week, (4) from one to three times a month, (5) several times a year, (6) once a year or less, and (7) never (three items, $a = .711$).

Pretest

After institutional review board (IRB) approval was obtained and before the main test was administered, a pretest was conducted among about 80 people through Amazon Mechanical Turk (Mturk), which is an open online marketplace that enables task creation, labor recruitment, compensation, and data collection (Buhrmester et al., 2011). This pretest has two purposes: (1) to find any error in the questionnaire such as wording, question order, online survey system operation, and automatic data collection and (2) to examine the appropriateness of the message stimuli manipulation. The measurement scale for the manipulation check was a 7-point semantic differential scale (1 = *least substantive/very vague*; 7 = *most substantive/very specific*). The results showed that message substantiation and specificity in the stimuli were appropriately manipulated. Participants in the pretest recognized that substantive messages ($M = 4.83$, standard deviation [SD] = 1.55) were more substantive than associative messages ($M = 4.55$, $SD = 2.02$; $F[1, 78] = 10.0$, $p < .01$). Participants also thought specific messages ($M = 4.42$, $SD = 2.06$) were more specific than vague messages ($M = 3.33$, $SD = 1.87$; $F[1, 78] = 6.02$, $p < .05$). Based on these results, the message stimuli were used in the main test.

Main test

After receiving IRB approval, an online survey experiment was opened for recruiting through Mturk. Individual respondents accessed a research recruiting board in Mturk. After reading brief information about this study, each subject encountered the consent form and voluntarily decided to participate in the experiment. The subject first answered how much he/she was involved with the environment and then read a manipulated message stimulus and responded to questions about perceived communication motivation, message attitude, organization attitude, message credibility, organization credibility, and perceived green image. At the end of the questionnaire, participants were asked to provide demographic information including sex, age, education level, household income, race, and marital status. After all the questions, participants had a debriefing session noting that the product mentioned in the message stimuli was fictional for the research purpose. As compensation for participation, the respondents earned a dollar. The average time of participation was less than 10 min.

A total of 418 respondents were recruited. Subjects' ages ranged from 18 to 73, with an average of 36.6 ($SD = 12.0$). Slightly more women ($n = 228$, 54.5%) than men ($n = 189$, 45.2%) participated. Most participants were White ($n = 327$, 78.0%), followed by Black or African American ($n = 32$, 7.6%), Asian or Pacific Islander ($n = 31$, 7.4%), and Hispanic or Latino ($n = 18$, 4.3%). Approximately 65% ($n = 275$) of the total participants graduated from 2-year college or higher educational institutions. Forty-three percent ($n = 181$) of all participants responded that they have never married. Average household income was approximately US\$56,000. Table 1 shows the specific demographic information of the study participants.

Results

Covariate tests

Seven covariates (attitude toward environmental communication, environmental concern, green purchasing behavior, environmental communication exposure, age, sex, and race) were treated as control variables in the main statistical tests because education level, marital status, and household income were not significantly related to any dependent variables (perceived intrinsic motivation, perceived extrinsic motivation, message attitude, organization attitude, message credibility, organization credibility, green image). In particular, all environmental involvement variables were significantly correlated to each other, $ps < .001$, and likewise, all dependent variables were significantly correlated to each other, $ps < .001$.

Green message effects on attribution

The first hypothesis predicted that a substantive message would generate significantly higher perceived intrinsic motivation (H1a) and lower perceived extrinsic motivation (H1b) than an associative message, whereas the second hypothesis expected positive impacts of specific messages on perceived intrinsic motivation (H2a) and negative impacts on perceived extrinsic motivation (H2b). The research question wondered if there are interaction effects of message substantiation and specificity on perceived intrinsic motivation (RQ1a) and perceived extrinsic motivation (RQ1b).

To test these hypotheses and address the research question, this study used a two-way multivariate analysis of covariance (MANCOVA) with two categorical independent variables (message substantiation and specificity), two continuous dependent variables (perceived intrinsic motivation

Table 1. Demographic information of study subjects.

| Demographic information | N | % |
|-------------------------------------|-----|------|
| <i>Sex</i> | | |
| Male | 189 | 45.2 |
| Female | 228 | 54.2 |
| <i>Race</i> | | |
| White | 317 | 78.0 |
| Black or African American | 32 | 7.6 |
| Asian/Pacific Islander | 31 | 7.4 |
| Hispanic or Latino | 18 | 4.3 |
| Native American or American Indian | 2 | .5 |
| Other | 7 | 1.7 |
| <i>Education</i> | | |
| Bachelor's degree | 180 | 43.0 |
| Some college credit, no degree | 104 | 24.9 |
| Associate degree | 44 | 10.5 |
| Master's degree | 41 | 9.8 |
| High school graduate | 29 | 6.9 |
| Trade/technical/vocational training | 10 | 2.4 |
| Doctorate degree | 6 | 1.4 |
| Professional degree | 4 | 1.0 |
| <i>Marital status</i> | | |
| Married | 190 | 45.3 |
| Never Married | 181 | 43.2 |
| Divorced | 32 | 7.6 |
| Separated | 7 | 1.7 |
| Widowed | 6 | 1.4 |
| <i>Household income (US \$)</i> | | |
| Less than 10,000 | 25 | 6.0 |
| 10,000–19,999 | 42 | 10.0 |
| 20,000–29,999 | 48 | 11.5 |
| 30,000–39,999 | 40 | 9.5 |
| 40,000–49,999 | 55 | 13.1 |
| 50,000–59,999 | 49 | 11.7 |
| 60,000–69,999 | 30 | 7.2 |
| 70,000–79,999 | 30 | 7.2 |
| 80,000–89,999 | 22 | 5.3 |
| 90,000–99,999 | 23 | 5.5 |
| 100,000–149,000 | 43 | 10.3 |
| More than 150,000 | 9 | 2.2 |

and perceived extrinsic motivation), and eight covariates (attitude toward environmental communication, environmental concern, green purchasing behavior, environmental communication exposure, age, sex, and race). For the experiment, four subgroups were created based on the two categorical independent variables: green message substantiation (substantive vs associative) and green message specificity (vague vs specific). Subgroups were (1) substantive \times vague ($n=104$), (2) substantive \times specific ($n=105$), (3) associative \times vague ($n=105$), and (4) associative \times vague ($n=105$).

Table 2. *F*-values of MANCOVA for green messages influencing perceived motivation.

| | Perceived intrinsic motivation | Perceived extrinsic motivation | Supported hypotheses |
|------------------------------|--------------------------------|--------------------------------|----------------------|
| | <i>F</i> | <i>F</i> | |
| <i>Covariates</i> | | | |
| Env. comm. Attitude | 22.2*** | .023 | |
| Env. Concern | .043 | 12.6*** | |
| Purchasing behavior | .166 | .060 | |
| Comm. Exposure | 2.89 | 9.86** | |
| Age | 2.20 | 7.20** | |
| Sex | 4.41* | .799 | |
| Race | 7.32** | 4.50* | |
| <i>Main factors</i> | | | |
| Substantiation | .019 | .425 | |
| Specificity | 13.8*** | 4.71* | H2a, b |
| Substantiation x Specificity | .018 | .707 | |

MANCOVA: multivariate analysis of covariance.
 $df=1, 406$. * $p < .05$, ** $p < .01$, *** $p < .001$.

In the multivariate analysis results, message substantiation did not influence the perceived motivation variables, but message specificity significantly influenced the perceived motivation variables ($p < .01$). The univariate analysis showed that substantive and associative messages did not make significant differences of the level of perceived intrinsic motivation as well as extrinsic motivation; however, message specificity made significant mean differences of perceived intrinsic motivation ($F[1, 406]=12.72, p < .001$) and perceived extrinsic motivation ($F[1, 406]=4.21, p < .05$) (See Table 2). Specifically, in terms of perceived intrinsic motivation, the specific message ($M=4.60, SD=1.42$) was higher than the vague message ($M=4.07, SD=1.51$), whereas regarding perceived extrinsic motivation, the vague message ($M=5.81, SD=1.09$) was higher than the specific message ($M=5.64, SD=1.10$). Thus, H1 was not supported, but H2 was supported.

In addition, this study conducted post hoc tests to see the differences between product and process orientations and between image orientation and environmental facts. However, no significant differences were found. Moreover, in answer to the research question (RQ1), no interaction effects of message substantiation and specificity on the perceived intrinsic and extrinsic motivations were found.

Attributional processes

To test the third and fourth hypotheses, this study conducted a series of regressions with continuous independent variables (perceived intrinsic/extrinsic motivation) predicting each dependent variable (message attitude, organization attitude, message credibility, organization credibility, or green image) using the hierarchical method. Covariates (environmental communication attitude, environmental concern, environmental purchasing behavior, environmental communication exposure, age, sex, and race) were placed in the first block, and perceived intrinsic/extrinsic motivation variables were assigned in the second block.

The third hypothesis proposed that perceived intrinsic motivation would positively predict the five dependent variables. The regression analyses revealed that perceived intrinsic motivation significantly and positively predicted all outcome variables: message attitude ($\beta = .648, p < .001$; H3a), organization attitude ($\beta = .712, p < .001$; H3b), message credibility ($\beta = .712, p < .001$; H3c),

Table 3. Standardized coefficients of hierarchical regression analysis for variables predicting attitude, credibility, and green image.

| | Message attitude | Org. attitude | Message credibility | Org. credibility | Green image | Supported hypothesis |
|-----------------------|------------------|---------------|---------------------|------------------|-------------|----------------------|
| | B | β | B | β | β | |
| <i>Covariate</i> | | | | | | |
| Env. comm. Attitude | .385*** | .309*** | .299*** | .267*** | .259*** | |
| Env. Concern | .105 | .095 | -.012 | .017 | -.050 | |
| Purchasing behavior | -.081 | -.100 | -.034 | -.085 | -.039 | |
| Comm. Exposure | .054 | -.002 | .081 | .068 | .117* | |
| Sex | .069 | .120* | .052 | .083 | .015 | |
| Race | .053 | .056 | .053 | .058 | .081 | |
| R ² | .188*** | .123*** | .105*** | .083*** | .087*** | |
| <i>Main factors</i> | | | | | | |
| Intrinsic motivation | .648*** | .712*** | .712*** | .734*** | .700*** | H3a, b, c, d, e |
| Extrinsic motivation | -.075* | .009 | -.119*** | -.073* | -.047 | H4a, c, d |
| R ² change | .407*** | .449*** | .513*** | .515*** | .457*** | |
| Total R ² | .595*** | .572*** | .617*** | .599*** | .544*** | |

* $p < .05$, ** $p < .01$, *** $p < .001$.

organization credibility ($\beta = .734, p < .001$; H3d), and green image ($\beta = .700, p < .001$; H3e) (see Table 3). Thus, H3 was supported.

The fourth hypothesis expected a negative association between perceived extrinsic motivation and each affective and cognitive response variable. The regression analyses showed that perceived extrinsic motivation significantly and negatively predicted message attitude ($\beta = -.075, p < .05$; H4a), message credibility ($\beta = -.119, p < .001$; H4c), and organization credibility ($\beta = -.073, p < .05$; H4d) only. However, the perceived extrinsic motivation was not significantly associated with organization attitude and green image. Thus, H4 was partially supported.

The tests above included many control variables to see if the hypotheses and research questions can be supported. In addition to the tests, this study conducted the same tests without the control variables. For the attribution process, message substantiation did not significantly influence the perceived motivation type, but specific message significantly increased perceived intrinsic motivation, $F(1, 417) = 13.76, p < .001$, and message specificity did not significantly affect perceived extrinsic motivation. Comparing the results that included control variables, the uncontrolled setting highly decreased the influence of message specificity on perceived extrinsic motivation (i.e., F -values decreased from 4.71 to 2.76). For the attributional process, like the controlled setting, perceived intrinsic motivation had a significantly positive association with all of the five consumer responses. Perceived extrinsic motivation, however, significantly influenced only message credibility ($\beta = -.102, p < .01$). Thus, this comparison of the controlled and uncontrolled settings shows the control variables were appropriate to isolate the relationships of main effects.

Mediation effects of attributions

This study executed mediation tests for all possible mediation paths to explore whether internal/external attributions mediate the effects of message types on consumer responses statistically. Table 4 shows the paths. The tests ran using the SPSS PROCESS macro (Hayes, 2013) with

Table 4. Mediation effects of attribution between message types and attributional responses.

| Mediation paths (X → M → Y) | Total effects of X on Y | Direct effects of X on Y | Indirect effects of X on Y |
|---|-------------------------|--------------------------|----------------------------|
| Substantiation → Int. Attribution → Mssg. Att. | -.369** | -.361*** | -.008 n.s. |
| Substantiation → Int. Attribution → Org. Att. | -.273* | -.265* | -.008 n.s. |
| Substantiation → Int. Attribution → Mssg. Cred. | -.322* | -.313** | -.009 n.s. |
| Substantiation → Int. Attribution → Org. Cred. | -.157 | -.148 | -.009 n.s. |
| Substantiation → Int. Attribution → Green image | -.266* | -.259* | -.259 n.s. |
| Substantiation → Ext. Attribution → Mssg. Att. | -.369* | -.397** | .029 n.s. |
| Substantiation → Ext. Attribution → Org. Att. | -.273* | -.294* | .021 n.s. |
| Substantiation → Ext. Attribution → Mssg. Cred. | -.322* | -.360** | .038 n.s. |
| Substantiation → Ext. Attribution → Org. Cred. | -.157 | -.188 | .032 n.s. |
| Substantiation → Ext. Attribution → Green image | -.266* | -.291* | .025 n.s. |
| Specificity → Int. Attribution → Mssg. Att. | .523*** | .196* | .327 sig. |
| Specificity → Int. Attribution → Org. Att. | .393** | .051 | .342 sig. |
| Specificity → Int. Attribution → Mssg. Cred. | .599*** | .208* | .391 sig. |
| Specificity → Int. Attribution → Org. Cred. | .516*** | .137 | .380 sig. |
| Specificity → Int. Attribution → Green image | .318* | -.003 | .321 sig. |
| Specificity → Ext. Attribution → Mssg. Att. | .523*** | .446*** | .076 sig. |
| Specificity → Ext. Attribution → Org. Att. | .393** | .337* | .056 sig. |
| Specificity → Ext. Attribution → Mssg. Cred. | .599*** | .498*** | .101 sig. |
| Specificity → Ext. Attribution → Org. Cred. | .516*** | .431** | .085 sig. |
| Specificity → Ext. Attribution → Green image | .318* | .251* | .067 sig. |

X: an independent variable; M: a mediator; Y: a dependent variable; Int.: internal; Ext.: external; Mssg.: message; Att.: attitude; Org.: organization; Cred.: credibility.

* $p < .05$, ** $p < .01$, *** $p < .001$.

bootstrapping. Covariates, including attitude toward environmental communication, environmental concerns, environmental purchasing behaviors, environmental communication exposures, age, sex, and race, were controlled. The results indicated the indirect effects of message substantiation on consumer responses were significant; however, those of message substantiation on consumer responses were not significant. In other words, mediation effects of internal and external attributions existed only when message specificity, not message substantiation, predicted consumer responses (See Table 4).

Discussion

This study conducted an online experiment to test the effect of green message substantiation and specificity on the attribution process as well as the influence of perceived motivation on audiences' attitude, credibility, and green image. A specific message strengthened perceived intrinsic motivation and weakened perceived extrinsic motivation. In addition, perceived intrinsic motivation was positively associated with attitude, whereas perceived extrinsic motivation was negatively associated with message and organization attitudes and message credibility.

Based on these results, green message substantiation does not appear to influence consumers' perceived motivation. This may imply that audiences do not use green message orientation as a cue to determine the hidden motivations of an organization's environmental communication. For example, although a company may insist on its greenness without evidence of actual green

performances, audiences do not attribute the green communication to extrinsic motivation. Similarly, although a company may introduce pro-environment products or manufacturing processes, audiences do not perceive the green communication to be intrinsically motivated. This result was different from the expectation and from the findings of a previous study (Parguel et al., 2011) that a third-party rating of organizational greenness is a cue to determine perceived motivation and is positively associated with perceived intrinsic motivation and negatively associated with perceived extrinsic motivation. A possible reason for the current unexpected result is that the given pro-environment product and process in the message stimuli did not play a role as a cue to attribute the green communication. Attribution theory (Kelley, 1967) explains that an observer determines whether another person's behavior is intrinsically or extrinsically motivated based on knowledge of past and present behaviors. In the setting of this study, information about the past behavior such as green product or process was limited, so the amount of information to attribute the green message might not be substantially reflected. In consideration of this limitation, other scholars might want to consider manipulating message substantiation by providing subjects with more information about the target organization's past green products and processes in substantive messages.

Although green message orientation does not influence perceived motivation of the environmental communication, firms must communicate continuously with their consumers about green issues to create a mental linkage of the brand with a green image in consumers' cognitive maps. It is important for a brand to make a strong bond between the brand and a green image, considering a brand's green image can increase a consumer's intention to purchase a product of the brand (Lee et al., 2010). Repeated exposures to the brand's green messages through various communication channels (e.g., TV, radio, magazine, newspaper, social media) may strengthen the mental linkage. For example, a firm can send supportive messages about Earth Day via Twitter, develop a news release addressing how environmentally friendly its products and manufacturing processes are, and report its philosophy about sustainability development through its website.

Not surprisingly, the specific green message generated stronger perceived intrinsic motivation and weaker perceived extrinsic motivation for the organization green message compared to the vague green message. A vague green message can trigger audiences to consider organizational green communication as greenwashing even though it is not (Davis, 1993, 1994). Thus, when discussing environmental issues, practitioners should provide audiences with specific information about the issue. It may be especially important to give supportive evidence for the greenness of the product, process, organization, and natural environment such as how much the organization reduced greenhouse gas emission in the manufacturing process, why using the product benefits the environment, what specific plans the organization has for environmental sustainability, and how serious the environmental problems are. However, social media messages are generally short, and too much specific information may not be appropriate in the social media context. Given this limitation, practitioners can use internet media creatively. For example, an attached infographic image can attract a consumer's visual attention while providing specific information, an embedded hyperlink can lead a consumer to a different webpage that present more detailed messages, and an informative video can deliver vivid and specific messages. In addition, researchers also may need to investigate the extent of green message specificity to find the optimal amount of information needed to support environmental claims.

As expected, the study findings show that perceived motivation influences affective and cognitive message responses. This significant relationship supports attribution theory (Kelley, 1967, 1972). In addition, the directions of the effects of perceived motivation are identical to those in the literature (e.g., the positive association between perceived intrinsic motivation and evaluation of the source and the negative association between perceived extrinsic motivation and evaluation of the source; Nyilasy et al., 2013; Walker, 2010). This result suggests that it is important for

organizations to make consumers think that their green communication aims to protect the environment, not just to build a green image or promote sales. Publicizing pro-environment activities in which all employees and executives participate may help lead consumers to perceive that the organization is dedicated to protecting the environment and that its green message is sincere. For example, companies can require all personnel to conserve paper, electricity, and water in their work places and participate in regional events to keep the environment clean. Communication practitioners in the organization can then inform consumers of the enterprise's green activities through media. This study tested only two factors (message substantiation and specificity) affecting the perceived motivation of green communication, but future research may consider other influential factors (e.g., third-party rating on organizational greenness; Parguel et al., 2011) and test their effects on perceived motivation.

The findings also supported the literature asserting the significant influence of involvement with the environment on affective/cognitive responses. Although they were control variables, this study affirmed that involvement variables are highly and positively correlated with affective/cognitive responses. This finding is consistent with previous findings that environmental involvement is a significant predictor of positive attitude toward the message and of behavioral intention (Cervellon, 2012; Schuhwerk & Lefkoff-Hagius, 1995). Thus, it can be an effective strategy for organizations to focus on people who are highly involved with the environment to promote their green products and services. For example, a company might want to sponsor an environmental nonprofit organization and offer promotional activities through an on-site booth at the nonprofit's event. In addition, placing advertisements in environment-related magazines (e.g., National Geographic, National Wildlife, Mother Earth News) will also be helpful to reach out to people who are highly involved with the environment.

This study focused on the consistency situation among the three situations (Kelley, 1967) to predict the attribution process. Fully understanding the attribution process in organizational environmental communication is a valuable foundation to understand the effects of environmental messages on audiences. Additional study on the other two situations (consensus and distinctive) will provide a more comprehensive picture to understand how organizational green performances influence audiences' perceived motivation.

Another theoretical contribution of this study is its examination of the mechanism of green message effects on audiences' responses. Although previous studies adopted attribution theory to support their argument that green messages influence audiences' attitude, belief, and/or behavioral intentions (Alon & Vidovic, 2015; Chan, 2000; Kim & Han, 2015), they did not measure the attribution and attributional processes between message effects and affective/cognitive responses. Instead, they inferred the processes. However, this study directly tested the processes and showed how message types change perceived motivation and how perceived motivation affects affective/cognitive responses.

This study theoretically contributes to environmental communication research by identifying new variables. First, this study introduced an environmental involvement variable, "environmental communication exposure," and confirmed that this variable is significantly correlated with affective and cognitive responses. Its measurement scales are reliable. Second, this study adapted Chen's (2010) "green image" variable, which has not been examined thoroughly since its introduction in 2010. By analyzing how messages build up an organizational green image, this study added a layer of information regarding this variable. More studies should investigate these variables.

This study has some limitations. First, this study used a real brand, Johnson & Johnson, in the message stimuli, but audiences' familiarity with the brand was not controlled. Participants' existing perceptions about the brand might have influenced message effects on attitude and belief (Laroche

et al., 1996). Future researchers should control brand familiarity. Second, this study focused on social media messages, but the subjects in the experiment were exposed only to textual information. Real social media messages often include pictures, videos, and text with communication features (e.g., like, share, comment). Thus, to achieve ecological validity, a follow-up study needs to refine the message stimuli to look more like real social media messages. Third, although this study emphasized the relationships between messages and affective and cognitive responses, in psychology, behavioral intention is also considered a significant psychological response (Rosenberg & Hovland, 1960). Thus, a follow-up study is needed to analyze the effects of green messages on intention to engage in pro-environmental behaviors.

Regardless of the limitations, the findings of this study are valuable. This study examined how green message substantiation and specificity influence perceived motivation of the green communication and how the perception is associated with attitude, belief, and organizational green image based on attribution theory. This study is significant in the environmental communication literature because it empirically tested attribution and attributional processes beyond the limited use of attribution theory in previous studies. In particular, this study provides organizations with practical advice that specifically explaining the greenness of their products, process, and philosophy and presenting environmental facts may increase audiences' affective/cognitive responses. In addition, green image and environmental communication exposure variables were developed, making a novel contribution to the environmental communication research. This study focused on attitude and belief in terms of audiences' message responses, but a follow-up study could investigate how attitude and belief are linked with behavioral intentions.


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Notes

1. Intrinsic motivation is associated with an individual's inherent satisfaction. Extrinsic motivation is associated with external goals the individual seeks to fulfill (Kelley & Michela, 1980).
2. Social media is defined as "a group of Internet-based applications that build on the ideological and technological foundations of the Web and that allow the creation and exchange of user-generated content" (Kaplan & Haenlein, 2010). They can be categorized into six groups: blogs, collaborative projects (e.g., Wikipedia), social networking sites (e.g., Facebook, Twitter, Instagram), content communities (e.g., YouTube), virtual social worlds (e.g., Second Life), and virtual game worlds (e.g., World of Warcraft).

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Appendix 1. Product background information.

Johnson & Johnson manufactures personal hygiene products such as hand soap, facial cleanser, deodorant, toothpaste, hand sanitizer, and shampoo. J&J is a parent company of many well-known brands including Johnson's® baby, Aveeno®, Clean & Clear®, and Neutrogena®. This company is located in the U.S. and its products are distributed nationally. You can easily find the products in grocery stores. In addition, this company has actively communicated with people via social media, like Facebook and Twitter. For the purpose of this study, please imagine that you are following the company on Facebook and Twitter, so you receive occasional messages from J&J. J&J recently launched a new shampoo called *Luv Professional Moisturizing Shampoo*. Let's imagine you just got a message from J&J as follows.

Appendix 2. Eight types of green message stimuli.

| Vague | Specific |
|---|--|
| <p><i>Product orientation</i></p> <p>Our concern for the environment is unsurpassed. There is nothing more important to humankind than the environment we live in. We utilize eco-friendly formulas in the production of Luv Professional Moisturizing Shampoo.</p> | <p>Our concern for the environment is unsurpassed. There is nothing more important to humankind than the environment we live in. We utilize biodegradable formulas in the production of Luv Professional Moisturizing Shampoo and do not use petrochemicals or pesticides like parabens.</p> |
| <p><i>Process orientation</i></p> <p>Our concern for the environment is unsurpassed. There is nothing more important to humankind than the environment we live in. So, we always make our manufacturing process eco-friendly.</p> | <p>Our concern for the environment is unsurpassed. There is nothing more important to humankind than the environment we live in. So, 20 percent of raw materials used in producing our bottles are post-consumer recycled plastic, and all our containers are recyclable.</p> |
| <p><i>Image orientation</i></p> <p>Our concern for the environment is unsurpassed. There is nothing more important to humankind than the environment we live in. We are always committed to prevent negative impacts on our surroundings.</p> | <p>Our concern for the environment is unsurpassed. There is nothing more important to humankind than the environment we live in. We are always committed to making our Earth a better place for ourselves, our children, and all other creatures to live in.</p> |
| <p><i>Environmental fact</i></p> <p>Our concern for the environment is unsurpassed. There is nothing more important to humankind than the environment we live in. Plants and animals are suffering from environmental degradation.</p> | <p>Our concern for the environment is unsurpassed. There is nothing more important to humankind than the environment we live in. Our natural resources are scarce; if current consumption rates continue, all virgin tropical forests will be gone within 50 years.</p> |
