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Signaling the Green Sell: The Influence of Eco-Label Source, Argument Specificity, and Product Involvement on Consumer Trust

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Consumers cannot verify green attributes directly and must rely on such signals as eco-labels to authenticate claims. Using signaling theory, this study explored which aspects of eco-label design yield more positive effects. The study uses a 2 (argument specificity: specific versus general) × 2 (label source: government versus corporate) × 2 (product involvement: low versus high) experimental design ($n = 233$). Specific arguments consistently yield greater eco-label trust and positive attitudes toward the product and label source, but only with low-involvement products is source important, with corporate labels yielding more positive attitudes. Findings are discussed in terms of theoretical and managerial implications.

Green advertising—the inclusion of environmentally friendly features and attributes as a persuasive selling point—is increasingly commonplace, with a sizable number of consumers who report a willingness to buy green products (French and Showers 2008) and a growing number of marketers who are eager to distinguish their products and services as green (Hartmann and Apaolaza-Ibanez 2009, 2010; Iyer and Banerjee 1993; McEachern and Warnaby 2004). Marketers see the potential benefits of promoting their products and services as green (Lacy et al. 2010), yet many consumers remain unconvinced about the truthfulness of green claims and whether green products offer meaningful environmental improvements over nongreen products (Bonini, Hintz, and Mendonca 2008; Kalafatis and Pollard 1999; Peattie 2010).

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At the heart of this process lie issues of trust and credibility (Moussa and Touzani 2008). For consumers, the desire to make sustainable purchases is forestalled by what many perceive to be a lack of credibility and honesty in advertising in general and in environmental claims in particular (Crane 2000; Hulm 2010; Leire and Thidell 2005). Eco-labels are one way that advertisers attempt "to provide relevant, accurate, and meaningful information to allow purchasers to incorporate human health and environmental considerations as part of the routine purchasing decision" (Case 2004, p. 32).

Despite the centrality of trust and credibility to issues of sustainable consumption, there is insufficient rigorous empirical work testing these relationships (McEachern 2008), and the fields of marketing and consumer psychology are fairly silent on the interrelated roles that consumer trust and advertising credibility play in the push for meaningful consumer sustainability. Likewise, with just a few exceptions (Hartmann and Apaolaza-Ibanez 2009, 2010; Manrai et al. 1997; Obermiller 1995; Schuhwerk and Lefkoff-Hagius 1995), there is a shortage of studies looking at how the design and copy of green marketing messages influence consumer attitudes, such as trust and product attitude. The present study fills this gap by examining what kinds of green advertising claims consumers deem most credible and are most likely to lead to purchase. This study focuses on green advertising in the form of eco-labels, or third-party certification seals, to test the influence of three message factors (argument specificity, argument source, and product involvement) on consumer trust, product attitude, label source attitude, and purchase intent.

LITERATURE REVIEW

Consumer Trust and Signaling

Consumer trust has been shown to have a powerful impact on marketplace attitudes and behaviors, with a long tradition of scholarly work demonstrating that persuasion depends on trust

(Boush et al. 1993; Hovland and Janis 1959; McGuire 1968). When consumers do not trust the content of the marketing claims or suspect an advertising message of deception or "greenwashing," they are much less likely to purchase the product or adopt a favorable attitude toward it (Kangun, Carlson, and Grove 1991; Thøgersen 2002). Perceived credibility is an important dimension of consumer trust (Du, Bhattacharya, and Sen 2007), and its conceptualization in this study is drawn from Ganesan's (1994) definition to reflect the extent to which consumers believe the advertiser has the required expertise to provide the product or service effectively and the belief that the advertiser's "word or written statement can be relied on" (p. 3). Credibility is particularly salient in environmental product claims, which are viewed with suspicion by consumers (Crane 2000; Hulm 2010; Kalafatis and Pollard 1999; Leire and Thidell 2005; Manrai et al. 1997). Fewer than half of U.S. consumers say they believe that corporations' environmental messages are truthful (Nielsen 2011).

Consumer trust and message credibility are central to issues of green consumption and green product claims, because these kinds of claims fall under the category of credence claims (Darby and Karni 1973; Nelson 1970, 1974). Whereas many product attributes can be verified through personal experience or information search, credence claims must be accepted at face value as truthful. For example, Nelson (1970, 1974) argues that consumers buying a can of tuna can verify claims about the cost of a can of tuna by checking the price at the supermarket and can verify claims about the favorable taste of the tuna by consuming it. However, consumers cannot directly verify a credence attribute of the product, for example, claims that the way the tuna is caught is safe to dolphins (Bottega and De Freitas 2009). Instead, they must choose to trust, or not trust, the claims being made. In these moments of consumer uncertainty, trust acts as a lubricant and simplifying strategy for consumers. If consumers trust the brand or source of a claim, they are more likely to accept the claim as credible and honest.

Signaling theory offers an explanatory mechanism for the way in which certification seals or eco-labels can work to affirm the credibility of an advertiser's environmental claims and, in so doing, improve consumer attitudes toward the product and the source of the claim (Erdem and Swait 1998). Based on work in the economics of information (Spence 1973), signaling theory argues that individuals in the marketplace (buyers) are at a disadvantage compared to manufacturers (sellers). Consumers face an information deficit in which they must assess products and services based on incomplete, misleading, or otherwise imperfect information. In this asymmetric information environment, in which one side holds more or better information than the other, consumers rely on cues or signals as a means of evaluating product quality (Darby and Karni 1973; Kirmani 1997; Kirmani and Akshay 2000; Nelson 1970, 1974).

A signal represents "a marketer-controlled, easy-to-acquire informational cue, extrinsic to the product itself, that consumers use to form inferences about the quality or value of that product" (Bloom and Reve 1990, p. 59). Signals can be in the form of actions or strategies employed by the seller, such as product warranties, advertising, price, brand name, brand equity, and brand allies (Bloom and Reve 1990; Boulding and Kirmani 1993; Cason and Gangadharan 2002; Erdem and Swait 1998; Ford, Smith, and Swasy 1990; Kirmani and Akshay 2000; Nelson 1970, 1974; Rao, Qu, and Ruekert 1999). Effective signals work only to the degree that consumers deem them both useful and credible (Boulding and Kirmani 1993). That is, consumers will search for information about products, but only as long as the effort or cost of doing so does not exceed the marginal expected return. Advertising works as a signal because it minimizes the cost of search and reduces consumer ignorance (Stigler 1961), but when the credibility of the signal is called into question, consumers are less likely to rely on it as an important informational cue (Boulding and Kirmani 1993). Endorsement of signals in the form of an eco-label or certification can offer consumers some degree of confidence in the credibility of the claims and help engender consumer trust (Hansen & Kull 1994), but such confidence largely depends on the source of the eco-label and the content of the claim.

Eco-Labels

Eco-labels work like certification marks or seals of approval to cue consumers about the environmental qualities of a product or service while assuring consumers of the truthfulness of these claims. They are information tools that "aim to internalize the external effects on the environment of the production, consumption and disposal of products" (Bougherara and Combris 2009, p. 321). Eco-labels are commonplace in Europe (e.g., the Blue Angel in Germany and the Nordic Swan in Scandinavia) but are growing in use in the United States (Bounds 2009), where consumers regularly encounter eco-labels from different and often competing interests, such as those of nonprofit groups (e.g., the Fair Trade Certified logo of TransFair USA), consumer advocacy groups (e.g., the Leaping Bunny logo of the Coalition for Consumer Information on Cosmetics), government agencies (e.g., the organic label of the U.S. Department of Agriculture), and for-profits (e.g., Hewlett-Packard's Eco Highlights label).

Eco-labels emerged in the U.S. mainstream in the 1990s partly as the result of the 1992 United Nations Conference on Environment and Development, which pushed for sustainable development. One of the first labels to appear was Energy Star, developed by the Environmental Protection Agency (EPA) to identify and promote energy-efficient products (EPA 2012). The Energy Star label appears on more than 40,000 products in 60 product categories from nearly 3,000 manufacturers (EPA 2010). Today, there are more than 300 eco-labels of varying degrees of credibility and rigor that remain largely unregulated (see Case 2004 for a detailed breakdown of the different kinds of eco-labels based on classifications made by the International Organization for Standardization). While the Federal Trade Commission (FTC) oversees eco-labels insofar as false claims represent deceptive or misleading advertising, the commission's role is largely retroactive, dealing with products only after they

come to market (Clarren 2009). Recently, the FTC has fielded complaints from environmental groups about misleading or deceptive green certification labels (Broder 2013). Specifically, the FTC is considering a case against the Sustainable Forest Initiative and criticisms that some timber companies using its logo engage in clear-cutting, pesticide overuse, and destruction of rare species' habitats (Broder 2013).

Past work has demonstrated that seals and certification labels are well received by consumers. One of the earliest studies (Parkinson 1975) to look at consumer perceptions of seals of approval found that, compared to other sources of product information (friends, salespersons, and advertisements), third-party seals, such as the Good Housekeeping Seal, were ranked highest on dimensions of expertise and impartiality and second only to friends on perceived trustworthiness. The study also demonstrated that products with seals were evaluated more favorably than products without seals. However, Parkinson's (1975) findings do not differentiate or compare different label components. For example, Parkinson identified different sources of seals of approval (consumer publications, independent testing groups, professional associations, and governmental agencies) but did not compare how consumers perceive these different sources, nor could he account for the influence of different label aspects, such as argument specificity. The present study seeks to fill this gap and takes a more focused look at eco-labels, examining the influence of argument specificity, label source, and product involvement on consumer trust and attitudes.

Argument specificity. Eco-labels exist in various formats, with some containing more detailed information claims than others. For example, the EPA's fuel economy label provides consumers with detailed information about fuel efficiency and cost. Other labels, though, are much more generic—for example, unsubstantiated claims on various food items to be "natural" or "healthy."

Past research suggests that the way the arguments are presented matters. Cason and Gangadharan (2002) have shown experimentally that product certification can increase sales. Their results suggest that people are willing to pay more for products that come with a seal of quality than they will for products with less stringent quality signals. Manrai and colleagues (1997) demonstrated that consumers prefer more detailed or specific information to support green claims, and the more tangible and concrete the claim, the more positive the consumer's assessment of the product and brand. Kangun, Carlson, and Grove (1991) have argued that consumers can differentiate between vague and specific claims, and Davis (1993) has shown that specific environmental claims lead to more positive perceptions of the product and the advertiser than do vague claims. Labels that include a simple logo or graphic are seen as little more than a gimmick or a marketing ploy (Teisl et al. 2002). Although marketers need to be wary of overloading the consumer with information (Scammon 1977), it seems those claims that incorporate some substantiation of green attributes are more persuasive and more trustworthy than less substantiated claims. Naturally, argument specificity is a continuum, but specific arguments are those that contain sufficient detail to substantiate claims in concrete terms.

We propose the following hypothesis regarding eco-label argument specificity:

> **H1**: Specific (general) arguments will lead to (a) greater (less) trust in the eco-label; (b) more (less) positive attitude toward the eco-labeled product; (c) more (less) positive attitude toward the source of the eco-label; and (d) greater (less) likelihood of purchasing the eco-labeled product.

Eco-label source. Eco-labels in the United States come from a variety of sources, but little is known about which source consumers find most credible or persuasive. Two common label sources are government agencies, such as the U.S. Department of Agriculture, and manufacturers. Past research suggests consumers interpret messages from corporations and government agencies differently, but the results are inconsistent. For example, Dyer and Kuehl (1974) demonstrated that corrective advertising that protects consumers against false advertising is more effective when it comes from a government source, in this case the FTC, than when it comes from the company itself because the FTC is seen as more credible. Similarly, one study that assessed the believability of safety hazard information suggests that consumers are more likely to believe the information when it is issued by a government agency or an independent testing agency than by the manufacturer (Lirtzman and Shuv-Ami 1986). Similar patterns were found for credibility of forest-product certification seals (Ozanne and Vlosky 1997).

However, in another study that looked at advertising claims about product performance (Sheffet 1983), claims made by a manufacturer generated more favorable attitudes toward the product than claims made by the FTC. However, this effect held only for claims about experience attributes, not credence attributes. In the area of sustainable wood and forest products, studies suggest that consumers are less trusting of government-sourced labels (Ozanne and Vlosky 1998; Teisl et al. 2002). Still other studies have found no source effects for corrective messages (Hunt 1973; Mazis and Adkinson 1976) or seals of approval (Beltramini and Stafford 1993).

Given the variety of past research that suggests government labels are better received than corporate labels, we propose the following hypothesis:

> **H2**: Government (corporate) eco-labels will lead to (a) greater (less) trust in the eco-label; (b) more (less) positive attitude toward the eco-labeled product; (c) more (less) positive attitude toward the source of the eco-label; and (d) greater (less) likelihood of purchasing the eco-labeled product.

As well, given that eco-labels are issued by a variety of sources that use various degrees of argument specificity, we anticipate that argument specificity and source will interact. However, our review of the literature does not suggest clearly the possible nature of this interaction. Thus, we propose the following research question:

RQ1: How do argument specificity and eco-label source interact to influence (a) trust in the eco-label; (b) attitude toward the eco-labeled product; (c) attitude toward the source of the eco-label; and (d) likelihood of purchasing the eco-labeled product?

Product involvement. In many situations, consumer decision making does not involve extensive information search or evaluation of alternatives; rather, decisions are often mundane and entail considerably less cognitive action (Engel and Blackwell 1982; Zaichkowsky 1985). Furthermore, consumer involvement may engage different aspects of the consumer process, including advertising and purchase decisions (Clarke and Belk 1978; Krugman 1966), as well as involvement with the product itself (Cohen and Goldberg 1970; Howard and Jagdish 1969; Hupfer and Gardner 1971; Sheth and Venkatesan 1968). The current study focuses on the latter form of involvement, which we understand to reflect a degree of personal relevance, such that more relevant products draw consumers' attention and yield more motivated processing (Clarke and Belk 1978; Krugman 1966).

In the area of product seals, Beltramini and Stafford (1993) suggested that a label's influence on consumer evaluations might interact with product involvement, with seals working as peripheral cues for low-involvement products and as central factors in high-involvement products. Other work on involvement (Liu and Shrum 2009) suggests that in low-involvement scenarios individuals are less motivated to engage in the communication message and even weak signals can prompt more positive attitudes; whereas in high-involvement situations, individuals will engage with the arguments and claims of the message. In consequence, more detailed, meaningful messages will better satisfy information needs and lead to more positive attitudes. In other words, the effects of high and low argument specificity might not arise in instances of low product involvement but should arise in instances of high product involvement. We state this interaction in the following hypothesis:

H3: Argument specificity and product involvement will interact, with high product involvement and specific arguments leading to (a) greater trust in the eco-label; (b) more positive attitude toward the eco-labeled product; (c) more positive attitude toward the source of the eco-label; and (d) greater likelihood of purchasing the eco-labeled product. Given either low product involvement or general arguments, the interactive effects on trust, attitudes, and purchase intent will diminish.

Product involvement may also influence perceptions of eco-label source and moderate the effects of source on consumer trust and label and product attitudes; however, we predict that involvement's interaction with source will operate differently than it does with argument specificity. Petty and Cacioppo (1981) have shown it is in low-involvement conditions, rather than high-involvement conditions, that source factors such as credibility have a moderating effect. Consumers in low-involvement conditions are more likely to be concerned about who makes claims rather than the substance or merit of those claims, whereas high-involvement consumers are more likely to be swayed by the arguments being made than by the source of them. In other words, the effects of eco-label source will be more pronounced in the low-involvement condition than in the high-involvement condition. Accordingly, we make the following hypotheses:

H4: Eco-label source and product involvement will interact, with government eco-labels and low product involvement leading to (a) greater trust in the eco-label; (b) more positive attitude toward the eco-labeled product; (c) more positive attitude toward the source of the eco-label; and (d) greater likelihood of purchasing the eco-labeled product. These interactive effects on trust, attitudes, and purchase intent will be attenuated in the high-involvement condition.

METHODS

To test the influence of eco-label source, argument specificity, and product involvement on label trust, product attitude, source attitude, and purchase intent, we designed a $2 \times 2 \times 2$ between-subjects online experiment.

Sample

Participants for this study were undergraduate students enrolled in advertising classes at a university in the Southwest. Students received extra credit for participating. Although certainly a convenience sample, college students are an appropriate group to study in their own right. When it comes to issues of sustainable consumption, young people are primary stakeholders and catalysts for change (Bentley, Fien, and Neil 2004; Fien, Neil, and Bentley 2008). Young adults report high rates of environmental concern and are knowledgeable about green alternatives (International Institute for Sustainable Development 2012). These environmental values extend to all facets of their lives; for example, sustainability and environmental responsibility are important factors in their choice of jobs (Schwartz 2010). These trends are even more pronounced among teenagers (Bennett and Williams 2011). Not only are these subjects worthwhile to study now, but these young consumers will become the primary group of consumers in the future, and understanding how they react to eco-labels is important (Hume 2010).

Student participants were sent a link for the online study that included a series of pretest questions, followed by the experimental stimuli and questions about the outcome variables, and ending with questions about demographics. To ensure participants were engaged with the study, two screener questions were included to gauge attentiveness. These "instrumental manipulation checks," or attention screeners, were drawn from well-established studies and are used to weed out inattentive participants (Berinsky, Margolis, and Sances 2012). Only those participants who answered both screeners correctly were retained in the sample, for a total of 233 participants. The average age of the sample was 20 years old, 77.3% were female, 40% were non-White, and the mean household family income was \$70,000 to \$79,999.

Manipulations

The experiment used three factors, each with two levels, for a total of eight conditions. The first factor manipulated argument specificity, either specific or general; the second factor manipulated eco-label source, either government or corporate; and the third factor manipulated product involvement, either high or low. The labels were identical except for at the points of manipulation (see appendix). Participants were randomly assigned to one condition in which they read brief background information about the eco-label and its source, and then viewed a graphic of the eco-label with a generic image of the product.

Argument specificity. We manipulated argument specificity by varying the amount of information contained in the eco-label. The eco-label in the specific condition was modeled on report card–style labels (Case 2004), giving consumers detailed information about multiple environmental attributes. The eco-label in the general condition was a simple green graphic with two arrows and leaves.

Eco-label source. We manipulated label source by describing the label as being issued either by the big-box retailer Target (corporate) or by the Environmental Protection Agency (government).

Product involvement. The manipulation of product involvement is somewhat more abstract than the other manipulations, and we looked to past research for guidance. In Zaichkowsky's (1985) work on product involvement, costly and technologically advanced products, such as calculators and cars, ranked as higher-involvement products, whereas fast-moving consumer goods, such as coffee and cereal, ranked as lower-involvement products. In the current study, the high-involvement condition presented a smartphone; the low-involvement condition presented a gallon of milk. We intentionally excluded brand names, whose inclusion may have confounded the manipulation.

Prior to conducting the experiment, we conducted a pretest on 27 students to assess the suitability of four different versions of the generic label (i.e., the general structure of the label, independent of the manipulations). Students ranked the labels for overall likeability and also rated them on a series of nine-point semantic differential scales of believability, usefulness, realism, and informativeness. We selected for inclusion in the final experiment the label that had the highest likeability rank and overall scale score. An additional component of the pretest asked students to indicate products for which eco-labels would influence their purchase decisions. Food products (e.g., eggs and milk) and technology products (e.g., smartphones and laptop computers) were the two most frequently cited categories.

Manipulation Checks

To check the manipulations, we constructed dummy-coded variables for argument specificity, label source, and product involvement. Next, we conducted cross-tabulations with these dummy coded variables and the responses to the manipulation check questions. All manipulations were successful. For the argument specificity manipulation check, participants were asked whether the label they had just seen included detailed information (X^2 (1, $N = 233$) = 140.22, $p < .001$); for the label source manipulation check, participants were asked whether the label they had just seen was issued by a corporation or a government entity (X^2 (1, $N = 233$) = 182.91, $p < .001$); and for product category, participants were asked whether the label they had just seen was for milk or a phone (X^2 (1, $N = 233$) = 199.08, $p < .001$).

Tests for Random Condition Assignment

Assuming random condition assignment, subjects in each group should not differ significantly in terms of demographic characteristics. We conducted ANOVA among all four conditions and *t* tests for each manipulation to evaluate differences among groups on age, gender, ethnicity, and income. Results showed that the groups did differ significantly with respect to age, gender, and income.

Dependent Variables

Eco-label trust. Six 7-point Likert scale items measured eco-label trust ($M = 4.43$, $SD = .92$; $\alpha = .86$). These items assessed such perceived eco-label characteristics as trustworthiness, rigorousness in product testing, honesty, and legitimacy. The items were based on Moussa and Touzani's (2008) validated eco-label trust scale.

Product attitude. Five 7-point semantic differential scale items measured product attitude ($M = 2.91$, $SD = 1.08$; $\alpha = .91$). Adjective pairs included good/bad, superior/inferior, high quality/poor quality, beneficial/harmful, and works well/works poorly.

Source attitude. Five 7-point semantic differential scale items measured product attitude ($M = 2.54$, $SD = .94$; $\alpha = .84$). Adjective pairs included good/bad, innovative/old fashioned, high quality/poor quality, concerned about the environment/not concerned about the environment, and expensive/cheap.

Purchase intent. A single 4-point Likert-type item assessed subjects' intention to purchase the eco-labeled product ($M = 2.59$, $SD = .77$).

Covariates

Social desirability. Environmentally friendly purchase choices bring with them an element of social desirability, defined as the need for individuals to "obtain approval by responding in a culturally appropriate and acceptable manner" (Crowne and Marlowe 1960, p. 353). We include the widely used Marlowe-Crowne Social Desirability scale (MCSD) short form (Reynolds 1982) to guard against this effect. The short form consists of 13 true-false questions (0 = false, 1 = true) that are summed to yield a social desirability score ($M = 4.61$, $SD = 2.63$; $\alpha = .66$).

Environmental orientation. People who have greater concern for the environment and more ecologically friendly values tend to prefer green options in the marketplace. To control for this predisposition, we included questions from the revised New

Ecological Paradigm (Dunlap et al. 2000), a series of 15 items on a 7-point scale ($M = 4.64$, $SD = .79$; $\alpha = .84$).

Eco-label attitude. As a final control variable, we measured participants' attitudes about eco-labels in general, because more favorable attitudes toward eco-labels in general might lead to more favorable attitudes toward the experimental eco-labels (and vice versa), regardless of the experimental manipulations. To account for this effect, we included four questions drawn from D'Souza and colleagues (2007) on a 7-point scale ($M = 4.74$, $SD = .85$; $\alpha = .70$).

Demographics. We included age, income, and gender as additional control variables.

RESULTS

We ran a series to two-way between-subjects analyses of covariance to test the effects of label source, argument specificity, and product involvement on label trust, product attitude, source attitude, and purchase intent (see Table 1). First, we report the effect of argument specificity on the dependent variables. Results showed that, relative to subjects in the general condition, subjects in the specific condition reported greater eco-label trust, $\Delta M = .25$, F (1, 216) = 6.63, $p < .05$; more positive attitude toward the eco-labeled product, $\Delta M = .49$, F (1, 216) = 12.39, $p < .01$; and more positive attitude toward the eco-label source, $\Delta M = .30$, F (1, 216) = 5.64, $p < .05$. Argument specificity did not influence purchase intent. These findings support hypotheses 1a, 1b, and 1c but fail to support hypothesis 1d.

Second, we report the effect of label source on the dependent variables. Results showed that, relative to subjects in the corporate-sourced condition, subjects in the government-sourced condition reported greater eco-label trust, $\Delta M = .23$, F (1, 216) = 5.03, $p < .05$. Hypothesis 2a was supported. Label source did not influence the other dependent variables, which fails to support hypotheses 2b, 2c, and 2d. Third, we report the two-way interaction effects of argument specificity and label source on the dependent variables. There were no significant interactions.

Fourth, we report the two-way interaction effects of (1) argument specificity and product involvement and (2) label source and product involvement on the dependent variables. The first analysis revealed significant two-way interactions between argument specificity and product involvement for eco-label trust F (1, 216) = 8.11, $p < .01$; however, the relationship contradicted hypothesis 3a. In Figure 1, the plot of mean attitude across the four conditions shows that the effect of argument specificity on eco-label trust was positive in the low-involvement condition (versus our prediction of no relationship) and negative in the high-involvement condition (versus our prediction of a positive relationship). The analyses did not find significant interaction effects on product attitude, source attitude, or purchase intent, which fail to support hypotheses 3b, 3c, and 3d.

The second analysis also revealed significant two-way interactions between label source and product involvement for eco-label trust F (1, 216) = 4.00, $p < .05$; product attitude F (1, 216) = 14.47, $p < .001$; and source attitude F (1, 216) = 6.70, $p < .01$. These findings support hypothesis 1a and offer partial support for hypotheses 4b and 4c, as the low-involvement condition amplified the differential effect of source (as predicted) more so than in the high-involvement condition. In Figures 2,

TABLE 1
Summary of ANCOVA

	Eco-label trust			Eco-label product attitude			Eco-label source attitude			Purchase intent		
	df	MS	*F*	*df*	MS	*F*	*df*	MS	*F*	*df*	MS	*F*
Corrected model	12	5.57	9.35***	12	4.16	4.15***	12	2.18	2.69**	12	1.61	2.98**
Intercept	1	4.96	8.33**	1	17.60	17.56***	1	8.33	10.28**	1	2.11	3.92*
Gender (female)	1	.00	.00	1	.03	.03	1	.10	.13	1	.54	.99
Income	1	.19	.32	1	.00	.00	1	.01	.02	1	2.03	3.76
Age	1	.34	.58	1	.55	.55	1	2.14	2.64	1	.11	.19
Eco-label attitude	1	35.20	59.10***	1	2.12	2.12	1	3.14	3.88	1	5.53	10.25**
Social desirability	1	1.64	2.75	1	1.94	1.93	1	.40	.50	1	.49	.90
NEP	1	.09	.15	1	7.97	7.95**	1	3.42	4.22*	1	1.27	2.35
AS	1	3.35	5.63*	1	12.42	12.39**	1	4.57	5.64**	1	.34	.63
Source	1	3.00	5.03*	1	2.89	2.89	1	.23	.28	1	1.68	3.12
PI	1	.47	.80	1	2.92	2.91	1	.75	.92	1	.23	.43
AS × Source	1	.15	.24	1	.66	.66	1	.01	.01	1	.41	.77
AS × PI	1	4.83	8.11**	1	1.81	1.80	1	1.28	1.58	1	.07	.12
Source × PI	1	2.38	4.00*	1	14.50	14.47***	1	5.43	6.69**	1	.02	.03

Note. NEP = new ecological paradigm; AS = argument specificity; PI = product involvement. *$p < .05$; **$p < .01$; ***$p < .001$.

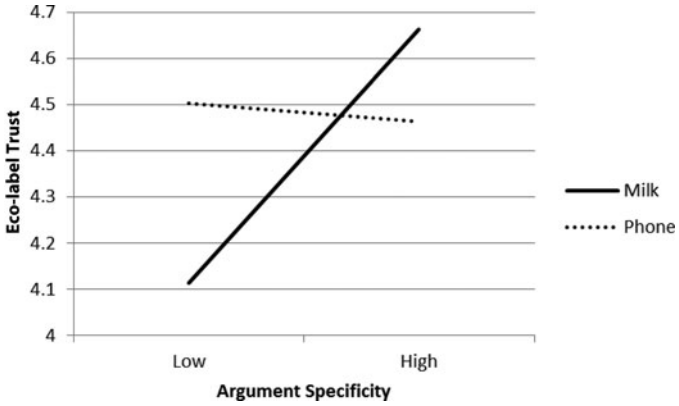

FIG. 1. Interaction of eco-label argument specificity and product involvement on eco-label trust.

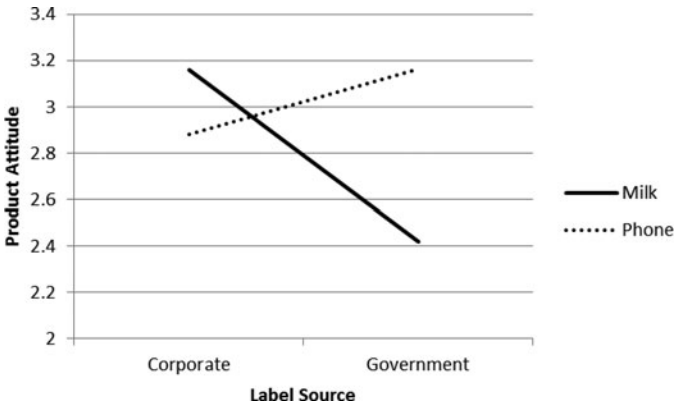

FIG. 3. Interaction of eco-label source and product involvement on product attitude.

Figures 3, and Figures 4, the plot of mean attitude across the four conditions shows that the effect of label source on attitude was greater in the low-involvement condition. However, the interaction effects on product attitude and source attitude were in the opposite direction than predicted. We find that it is in the corporate source condition, rather than our predicted government source condition, that low-involvement consumers are likely to have more positive attitudes. The analyses did not find significant interaction effects on purchase intent, which fails to support hypothesis 4d.

DISCUSSION

These findings offer useful insight into eco-label reception and help extend our understanding of green consumption. More than 30 years ago, Henion and Wilson (1976) urged marketers away from promoting green consumption to all consumers, pushing them instead to identify the specific attitudes and personality traits associated with a lifestyle of sustainable consumption and to use targeted messages to link these attitudes with behaviors (Ellen, Wiener, and Cobb-Walgren 1991). This study sought to address Henion and Wilson's (1976) challenge. Specifically, this study examined the main effects of eco-label source and argument specificity and their interactions with product involvement on eco-label trust, product attitude, source attitude, and purchase intent. Our findings suggest that, while different label formats and sources have little influence on behavioral outcomes, like purchase intent, these labels do influence attitudes toward both the product and label source, as well as trust in the label. The results indicate that while it is difficult to pinpoint factors that lead to purchase, there are certain combinations of message factors and product involvement that foster positive evaluations of eco-labels.

Argument Specificity

Statistical analyses revealed significant main effects of argument specificity on three of the four dependent variables. These effects suggest that more detailed, substantial claims may lead to higher levels of reported consumer trust and more favorable attitudes toward the product and label source. There was no influence of argument specificity on purchase intent.

Although argument specificity was not directly related to purchase intent, it may be indirectly related. Indeed, consumers are more likely to purchase products for which they have

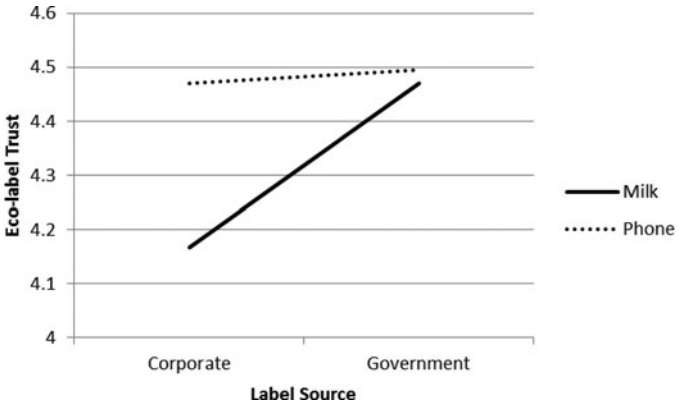

FIG. 2. Interaction of eco-label source and product involvement on eco-label trust.

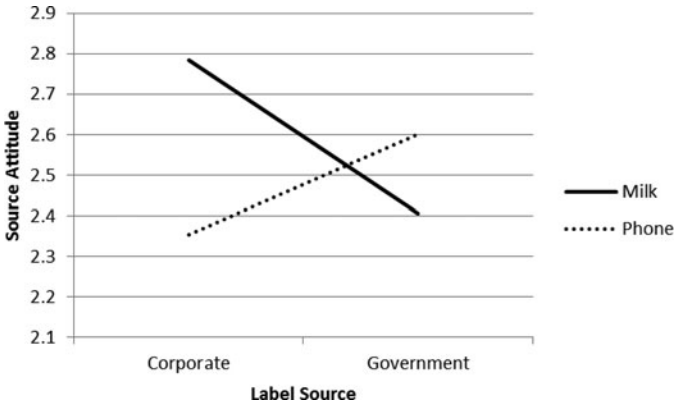

FIG. 4. Interaction of eco-label source and product involvement on label source attitude.

feelings of trust and positive attitudes (Chaudhuri and Holbrook 2001). One way to foster consumers' trust and positive attitudes is to use labels that provide detailed explanations about specific credence claims. Whereas a simple label may provide a heuristic cue about product features, such cues may be inadequate when consumer decisions weigh potential environmental impacts. Rather, a more useful and effective label will support claims with specific information. Our results support previous findings that consumers differentiate between vague and meaningful claims and prefer more detailed information in persuasive messages about green attributes.

However, we found that the effect of argument specificity on eco-label trust was not consistent between levels of product involvement. We predicted that high product involvement would amplify the effect of argument specificity and that the effect would be relatively flat for low product involvement. Results showed an opposite effect, where the relationship between argument specificity and eco-label trust was positive in the low-involvement condition and flat in the high-involvement condition. We suspect that secondary product characteristics may influence the effect of product involvement. Although consumers likely spend more time and use more information when purchasing a new smartphone than they do purchasing milk, the latter may be involving in other ways. Such involvement may reflect the fact that milk is a product that people ingest, and people likely have a heightened need for accurate information about its contents. Therefore, consumers may be more discerning when they encounter claims about food products and evaluate specific arguments as more trustworthy than general arguments. We are unsure why argument specificity was unrelated to eco-label trust in the high-involvement condition but suspect that detailed information about environmental impacts is relatively less important than is information about warranty, performance, durability, and other smartphone features. Consequently, eco-label trust may be less relevant. Future research may attempt to control for effects of such secondary product characteristics.

Eco-Label Source

Eco-label source appears to be less influential than argument specificity, at least as a main effect. Label source was significant only as a predictor of eco-label trust, where participants had greater trust in the government-sourced condition than in the corporate-sourced condition. However, this effect varied between levels of product involvement. The interaction between source and product involvement was significantly related to (1) eco-label trust and (2) attitudes toward the product and label source. Across all three dependent variables, we see that label source has a much stronger moderating impact in the low-involvement condition than it does in the high-involvement condition.

Further, within the low-involvement condition, label source yielded different patterns depending on the nature of the outcome variable. In terms of eco-label trust, low-involvement consumers were likely to see the government-sourced label as more trustworthy than the corporate-sourced label; however, when it comes to attitude toward the label and the product, low-involvement consumers find the corporate label more persuasive than the government label.

The reversed pattern of these findings might be partially explained by the different nature of each outcome variable. With respect to trust, outcomes are amplified in the government-sourced labels. Conversely, for outcomes related to general liking (both of the product and the label source), the corporate-sourced label is effective. These findings reflect that while trust and liking are correlated, they are two distinct constructs (Feng, Lazar, and Preece 2004; Patzer 1983). Liking, which in this study is conceived as a general attitude toward the product and the source of the label, is a form of emotional attachment or connection, whereas trust is more enduring, harder to engender, and related to perceived reliability and integrity (Nicholson, Compeau, and Sethi 2001).

When it comes to general liking, corporate-issued labels lead to more positive evaluations of the product and the source than government-issued labels in low-involvement conditions. Simple assessments of liking, rather than more complex notions of trust, are greater for corporate labels. The explanation might be found in terms of perceived locus of causality (Bickart and Ruth 2012). Past research indicates that behaviors are evaluated more positively when they are internally motivated rather than externally motived (Weiner 1986). For low-involvement products, consumers might reward corporations for developing their own labels, rather than being compelled to do so by the government or other external agencies. For routine, frequent purchases of low-involvement products, such as milk, the consumer has little to lose by rewarding the corporation and evaluating it positively for coming up with an eco-label and manufacturing a product that meets the label's criteria.

For more complex consumer orientations, such as trust, the patterns are different. When evaluating the trustworthiness of an eco-label for low-involvement products, consumers are much more likely to view the government-sourced label as reputable and credible. For a more serious evaluation—trust instead of liking—consumers may find more confidence in government labels than corporate ones. This may be particularly true of products that have consequences for personal health and safety. Specifically, when consumers evaluate an ingestible product—milk, for example—they may systematically attend to safety information. Because the government has the ultimate responsibility of ensuring food safety, consumers may see it as a particularly trustworthy source of information about food products. Milk producers or retailers, on the other hand, may have other interests that compete with ensuring product safety and consumers suspicious of corporate-sourced eco-labels. To be clear, this effect is simply an amplified main effect. However, the effect disappeared in the high-involvement condition. Again, we suspect that the relative importance of other product characteristics for high-involvement products may obscure the

information value of the eco-label in consumers' minds; thus, the value of its source in building trust diminishes.

It is important to point out that while the three factors influenced eco-label trust, product attitude, and source attitude in varying ways, none of them was a significant predictor of purchase intent, either as main effects or interactions. This lack of significant findings for purchase intent reinforces previous work highlighting the attitude-behavior gap that plagues environmental consumption, whereby an overwhelming majority of consumers say they are concerned about the environment and would be willing to pay a premium for sustainable products and services, yet only a small percentage follow through on these environmental concerns when it comes time to make purchases (Bonini, Hintz, and Mendonca 2008; Kalafatis and Pollard 1999; Peattie 2010). When it comes to influencing attitudes, eco-labels are effective, but as the analyses in this study suggest, behavioral measures (or measures of behavioral intent) are much less responsive. Instead of the label alone being an effective motivator of green purchases, it suggests there are other factors that impede (or encourage) green buying. These situational factors are many and varied (Carrington, Neville and Whitwell 2010). In the actual consumption moment, ecologically minded consumers may be more influenced by price or nonenvironmental product attributes, rather than green characteristics (Belk 1975; Belk, Devinney and Eckhardt 2005; Boulstridge and Carrigan 2000; Carrigan and Attalla 2001).

Theoretical Implications

As a signaling device, then, label source and argument specificity are both useful cues, but they function in different ways. Argument specificity works as an effective signal regardless of product involvement. More detailed and meaningful labels are seen as positive signals of label trust and product and source quality.

Label source also works as a signal but primarily in low-involvement situations. In high-involvement situations, consumers respond positively to both corporate- and government-sourced labels, although these liking and trust evaluations are more pronounced in the government-sourced condition. The label introduces a pooling equilibrium and offers no clear advantage to would-be corporate or government labelers (Boulding and Kirmani 1993). That is, in high-involvement scenarios, the buyer is unable to tell, based on the source of the label, whether the product is better or worse or whether the source of the label is better or worse. In this situation, the strategy is not a signal because it does not help the consumer differentiate between different sellers or sources of eco-labels.

Conversely, in low-involvement situations, such as purchasing familiar, everyday products like milk, label source does work as a signal; however, the value of the source of a label varies depending on what qualities the signal is said to be cuing. When asked to evaluate emotional, more mutable aspects, such as product and source liking, consumers respond more strongly to corporate labels and are willing to reward their innovativeness and forward thinking. However, when asked to evaluate abstract attributes that cannot be easily verified, such as truthfulness and honesty, consumers prefer labels that are issued by government entities. These sources are perhaps seen as more reliable than corporate labels. Liking may be an orientation that is developed quickly and on the fly, while trust is something that is harder to accrue and takes longer to bolster. Consumers may have accumulated more experience and longer exposure to government-sourced labels, such as the U.S. Department of Agriculture's organic label and the Energy Star label, than to corporate labels, such that they are more trusting of them. So while consumers might like a company that produces an eco-label and also like the product it is selling, they do not find its claims about environmental sustainability as believable as those issued by government entities. A consumer who buys products labeled under Wal-Mart's proposed sustainability index (Johnson 2009) might like the company for developing the label and the product that the label promotes, but might still find the label itself to be lacking in credibility and of questionable truth. In this situation, the label acts as a signal and brings about a separating equilibrium (Boulding and Kirmani 1993), in that the signal is useful for one seller (in this case, the corporation) but not another (in this case, the government). These differences in the influence of label source help clarify previous findings that suggested inconsistencies in attitudes as a result of government or corporate labels.

Managerial and Policy Implications

The differential influence of eco-labels as a signaling device suggests important implications for managers and policymakers. From the advertiser's perspective, it seems that adding an eco-label to a product generates positive reactions from consumers, particularly when they are used with low-involvement products. For everyday, frequently purchased items, like food and other fast-moving consumer goods, companies can benefit from attaching an eco-label. When corporate entities, specifically retail brands, add eco-labels to products they sell, it generates more positive attitudes among consumers about both the product and the source. It suggests that, for some corporations and retailers, adding eco-labels to their own house-brand products (for example, Target's Up and Up and Wal-Mart's Great Value or Equate lines) could be a double win. These house brands could engender even greater return on their investment by seeing more positive attitudes toward the brand as well as more positive attitudes to the corporation when these products are promoted with eco-labels.

For policymakers, the data suggest they should focus their attention on the perceived credibility of eco-labels, the area where they have the most authority. While individuals saw corporate labels as better indicators of product and source quality, government labels hold the cards in terms of credibility and trustworthiness. If the goal is to reorient consumers to green choices and away from environmentally damaging ones, then the policy focus around eco-labels ought to shift toward helping

corporations become more credible in the green market. Corporate labels already seem to hold more sway in influencing attitudes toward the product; rather than seeking more credibility in this area, policymakers could instead see what could be done to help these entities also be viewed as more trustworthy and reliable.

Limitations

As with all empirical work, this study is not without limitations. First, a student sample was used. Although this may be viewed simply as a sample of convenience, younger people are important green consumers and represent the next wave of primary shoppers. Understanding their reactions to eco-labels is an important undertaking. While these findings might not be generalizable to the population as a whole, we sought to maximize the validity of these findings by incorporating products that young people would be interested in and able to purchase. College students frequently do their own grocery shopping, and milk represents a familiar, regularly purchased product. Smartphones are also widely consumed by this demographic and a product that would be salient to the majority of them.

Second, the study only included two kinds of labels sources, government and corporate. Eco-labels are issued by other entities as well, for example non-profit groups and consumer advocacy groups, and it would be useful to expand the variety of eco-label sources in future studies to compare their relative power as a signaling attribute. Third, this study manipulated argument specificity with two levels, either specific or general. Future studies might explore a more variegated manipulation by including a moderate degree of argument detail. This label might have greater detail than the general graphical label included here but would not include as much detail as the specific argument label. Rather than being an either/or situation, consumers might be persuaded more by middle-of-the-road, moderate arguments.

Future Studies

In addition to those avenues of future research just mentioned, other areas might be fruitful for investigation. This study focused on eco-labels as consumers might see them on products in retail settings. It might be useful to explore how consumers react to eco-labels when they are presented in advertisements. In addition to different presentation formats, future studies might explore different audience predispositions, including attitude toward the government and self-reported measures of environmentally responsible behaviors. Last, it could be fruitful to explore how geography moderates these patterns. Residents in different parts of the country might have different attitudes toward eco-labels and eco-labeled products. We might also see different levels of urbanism and cosmopolitanism playing a role in eco-label acceptance and use. In terms of data collection, future studies might adopt more qualitative approaches, for example, interviews with consumers to understand their interpretations of different types of eco-labels and shopping ethnographies to explore how consumers interact with eco-labels in actual consumer environments.

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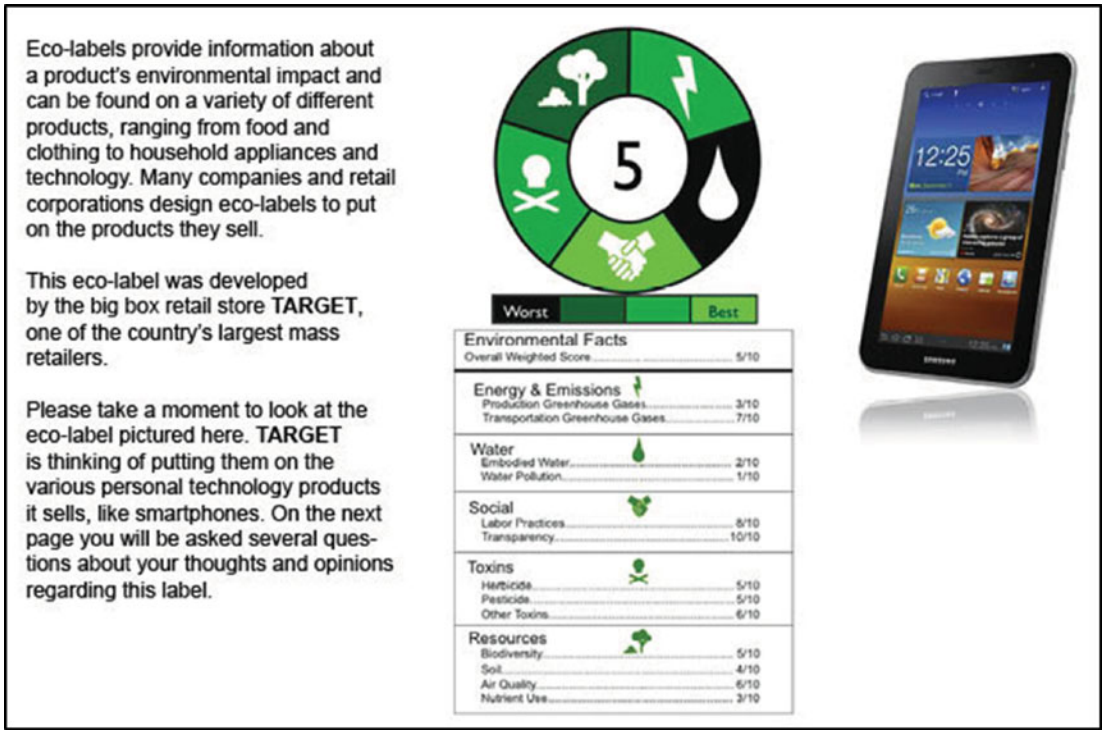
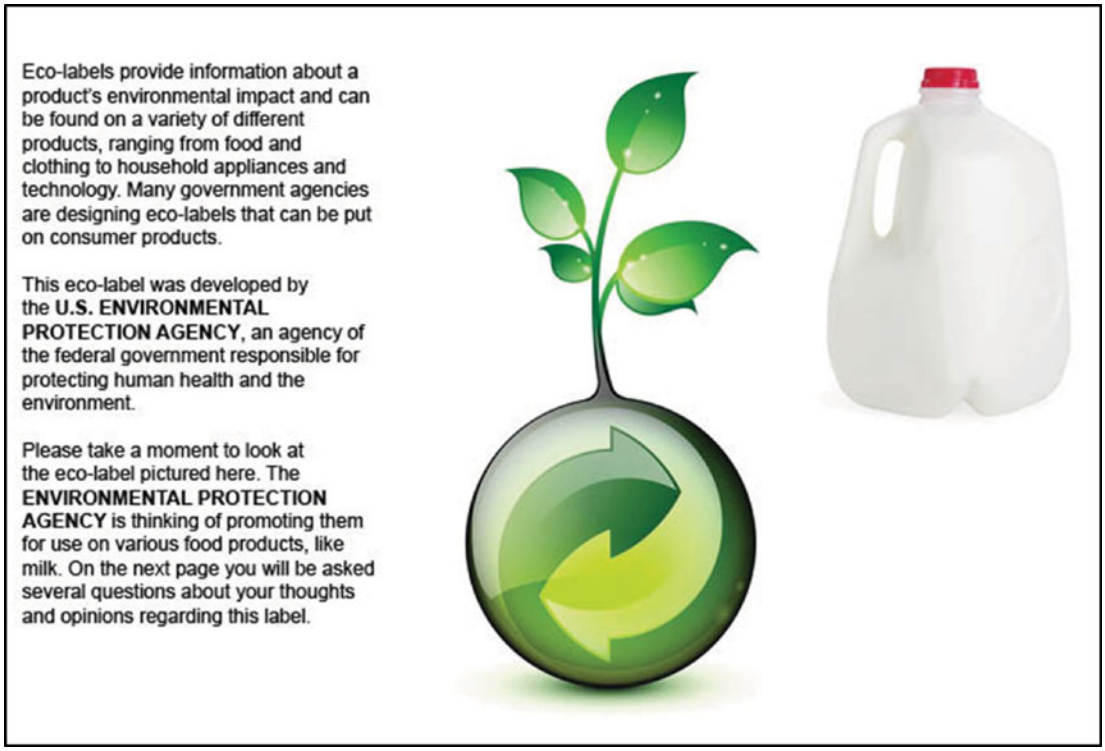
APPENDIX 1

Experimental Stimuli



Specific Argument, Corporate Source, High Product Involvement. (Color figure available online).



General Argument, Government Source, Low Product Involvement. (Color figure available online).