

**Can Evoking Nature in Advertising Mislead Consumers?
The Power of ‘Executional Greenwashing’.**

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Abstract This paper examines the ‘executional greenwashing’ effect, defined as the use of nature-evoking elements in advertisements to artificially enhance a brand’s ecological image. Using classic models of information processing and persuasion, the research tests whether ‘executional greenwashing’ differs as a function of consumer knowledge about environmental issues in the product category and whether environmental performance information can counterbalance the effect by helping consumers form an accurate evaluation of the brand’s ecological image. Three experiments with French consumers reveal that evoking nature does mislead consumers in their evaluation of a brand’s ecological image, especially if they have low knowledge of environmental issues. Two indicators of environmental performance, based on current international policies, are tested to counteract ‘executional greenwashing’. Whereas a raw figure is not sufficient to help non-expert consumers revise their judgment, accompanying the figure with a traffic-light label eliminates ‘executional greenwashing’ amongst both experts and non-experts. Theoretical and regulatory implications are discussed.

Keywords: Greenwashing, Advertising execution, Environmental labeling, Environmental policy

At the end of the 1980's, many managerial articles in the business press such as *Business*, *Business Week*, *Business Horizons*, *Fortune* or *Advertising Age* suggested that consumers would be ready to change their patterns of consumption and switch products and services towards more ecological alternatives (Carlson, Grove and Kangun 1993; Easterling, Kenworthy and Nemzoff 1996; Kangun, Carlson and Grove 1991). In response to this growing consumer ecological consciousness, advertisers and agencies began to use green communication more regularly to promote their products (Easterling, Kenworthy and Nemzoff 1996; Schuhwerk and Lefkoff-Hagius 1995; Shrum, McCarty, and Lowrey 1995). As Zinkhan and Carlson stated, "Consumers want to be green. Ergo, advertisers want to be green as well" (1995, 5). Twenty years later, spending in green advertising, or the act of promoting the 'greenness' of companies, products or services, has increased almost tenfold (Terrachoice 2009) and the environment continues to be a hot topic. Polls show a growing global consumer demand for green products and practitioners plan to increase their spending on green communication (Sheehan and Atkinson 2012).

In parallel, a side effect has emerged in the form of 'greenwashing' (Delmas and Burbano 2011). Introduced in 1986¹, this neologism designates "the act of misleading consumers regarding the environmental practices of a company or the environmental benefits of a product or service" (Terrachoice 2010). Early in 1991, Kangun, Carlson and Grove distinguished three categories of greenwashed advertising: 1/ those employing false claims, 2/ those omitting important information that could help to evaluate environmental claim sincerity and 3/ those employing vague or ambiguous term, which could be summed up as lying, lying by omission or lying through lack of clarity. Carlson, Grove and Kangun (1993) also focus their definition of greenwashed advertising on environmental claims, coining the term to describe the use of triv-

¹ This neologism was introduced by Jay Westerveld to describe hotel chains' hypocritical behavior, inviting clients to reuse towels to preserve the environment, whereas they just want to save money (Orange 2010; Pearson 2010).

ial, misleading or deceptive environmental claims. In line with this definition, research to date has focused on ‘*claim greenwashing*’, the use of textual arguments in the ad that create a misleading environmental claim (e.g. Laufer 2003; Lyon and Maxwell 2011; Manrai *et al.* 1997; Newell, Goldsmith, and Banzhaf 1998). It has ignored the potential ‘*executional greenwashing*’ effect, whereby nature-evoking elements in the ad execution may induce false perceptions of a brand’s greenness, whether intentionally or not on the part of the advertiser. This research addresses this gap by documenting the ‘*executional greenwashing*’ effect and identifying moderating factors that may reduce its impact on consumers.

Advertising execution refers to “how advertising messages are presented” (Stanton and Burke 1998, 7) and includes elements such as color (Gorn *et al.* 1991), visual type (Grossman and Till 1998) or picture quality (Miniard, Sirdeshmukh, and Innis 1992). In the specific case of environmental communication, executional elements can be chosen to communicate the ecological character of the product or brand through backgrounds representing natural landscapes (e.g. mountains, forests) or pictures symbolizing endangered animals (e.g. pandas, dolphins) or renewable sources of energy (e.g. wind, waterfalls). Executional elements may trigger ecological inferences subtly by activating implicit references to nature through what Hartmann and Apaolaza-Ibañez (2009) termed “nature imagery” using colors (e.g. green, blue) or sounds (e.g. sea, birds). The research presented here aims at offering empirical evidence of the potential misleading role of these executional elements evoking nature, which we refer to as the ‘*executional greenwashing*’ effect.

As advertising practices improve, and debates about the need to regulate greenwashing rise, ‘*claim greenwashing*’ has tended to diminish (Terrachoice 2010). In contrast, the use of executional elements such as nature imagery, which stems at the core of advertisers’ creativity, has not concretely been addressed until now (e.g. Gillespie 2008; Horiuchi and Schuchard 2009). Non-governmental organizations and ecological activists have made the issue of

greenwashing a matter of strategic importance and launched movements to denounce it. For instance, CorpWatch, Friends of the Earth International and Groundwork organized the Greenwash Academy Awards during the 2002 Johannesburg World summit on Sustainable Development to “honor” companies for their greenwashed marketing campaigns. Institutional stakeholders such as the European Community (EC) or the United States’ Federal Trade Commission (FTC) are also increasingly involved in matters of regulation. Some have argued that greenwashing not only misleads consumers *per se*, but may also contribute to slowing the worldwide movement towards sustainable consumption by a) discouraging sincere companies’ efforts to go green when others do just window-dressing communication (Cherry and Sneirson 2011) and b) guiding truly conscious consumers towards non-optimal choice (Chen and Chang 2013; Gillespie 2008; Polonsky *et al.* 2010).

In the public policy arena, Delmas and Burbano (2011) recognize that regulation of greenwashing is generally lax but with strong variation across countries, from extremely limited in the US to stricter rules in European countries (e.g. Norway, Netherlands, France) and Australia. In the US, the FTC is empowered to apply Section 5 of the FTC Act to environmental marketing claims, by prohibiting deceptive acts or practices but enforcement has so far been limited (Delmas and Burbano, 2011). The approach is far stricter in Norway, where no car can be “green”, “clean” or “environmentally friendly” since 2007, all such descriptors being forbidden. Within the wider EC, all manufacturers are required to display their vehicles’ average carbon emissions into the atmosphere on all promotional materials. The Netherlands further extends this requirement by also requiring on print materials a clear color-coded traffic-light label to maximize consumer understanding of the information. A recent report (Branigan *et al.*, 2011) recommends extending such regulation to all EU members and all media (not only print). Greenwashing regulation focused specifically on executional elements is scarce, because knowledge about their misleading effect is, to date, inexistent. Only the Aus-

tralian Consumer Commission (2011) and the French advertising professional authority (ADEME-ARPP 2012) have included in their recommendations not to use pictures or symbols that could suggest environmental benefits. The French code of environment goes beyond this mere recommendation by specifically prohibiting advertising visuals showing cars in a natural setting and not on roads or ways dedicated to the normal usage of motor vehicles, with the main objective to not encourage irresponsible driving behaviors. Despite these efforts and the growing debates, especially in Europe, little is known about what may be called ‘executional greenwashing’, its misleading effect and the role of public policies to deter it.

This paper addresses this open issue by first assessing whether executional elements evoking nature in advertisements artificially enhance consumers’ perception of brands as green. A second objective of the research is to offer options for regulating this potential misleading effect by identifying whether the display of environmental performance information can reduce or even remove the ‘executional greenwashing’ effect.

To answer these two interlinked research questions, we draw on the Elaboration Likelihood Model (see Petty and Cacioppo 1981) to build a conceptual framework that extends previous research on nature-evoking advertisements (Hartmann and Apaolaza-Ibáñez 2009) and then test the propositions in three experiments. Study 1 provides empirical evidence of the greenwashing effect through executional elements evoking nature on a brand’s ecological image, even among consumers who hold significant knowledge about environmental issues in the product category. Study 2 demonstrates that providing environmental performance indicators (EPI) about the product is not enough to counterbalance the ‘executional greenwashing’ effect. Study 3 reveals that the use of traffic-light type of labels to display environmental performance information is able to remove the ‘executional greenwashing’ effect. The research offers an ecologically valid test of these EPI options by drawing from policies currently being

discussed within the European Community. Hence, the paper presents implications for advertising practice as well as regulatory recommendations for policy makers.

LITERATURE REVIEW

Green Advertising

Despite its growth, there is a shortage of studies on green communication (Finisterra do Paço and Reis 2012). At a broad strategic level, the research addressed the ways in which Corporate Social Responsibility (CSR) engagements are communicated within annual reports, finding that communicating about ecological engagements improves companies' brand image or brand equity, contributes to differentiating products and retaining customers (Hoeffler and Keller 2002; Keller 2003; Mohr and Webb 2005; Van de Ven 2008) and, at a corporate level, boosts trust in the firm, as well as companies' reputation or legitimacy to operate (Schlegelmich and Pollach 2005; Swaen and Chumpitaz 2008; Van de Ven 2008; Vanhamme and Grobben 2009; Wæraas and Ihlen 2009).

As an indication of the importance of the applied and practical aspects of green communication, the *Journal of Advertising* devoted two special issues to green advertising in 1995 and, more recently, in 2012. The 1995 special issue lays the groundwork for further studies, offering large conceptual and philosophical frameworks for research on the topic (Banerjee, Gulas and Gulas 1995) and a theoretical essay about the compatibility between advertising and ecology (Kilbourne 1995). This special issue also clarifies the definition of "green advertising" as a promotional message that features a green attribute for a product or service (Schuhwerk and Lefkoff-Hagius 1995) or that may appeal to the needs and desires of environmentally concerned consumers (Zinkhan and Carlson 1995).

Interestingly, though Zinkhan and Carlson (1995) consider promotional messages that do not feature any environmental attribute but enhance an environmental appeal in the way it

is carried out or presented, most of the articles published in the literature rely on Schuhwerk and Lefkoff-Hagius' (1995) definition of green advertising, focusing solely on the greenness of claim (Hartmann and Apaolaza-Ibáñez 2009). Researchers have, for instance, experimentally tested the characteristics of a green claim, such as its positive or negative formulation (Obermiller 1995), its framing in terms of promotion vs. prevention (Bickart and Ruth 2012 ; Kareklas, Carlson, and Muehling 2012), its relationship with the product (being product or non-product related, Ku *et al.* 2012), its strength (Chang 2011; Manrai *et al.* 1997; Tucker *et al.* 2012), numerical preciseness (Xie and Kronrod 2012) or assertiveness (Kronrod, Grinstein, and Wathieu 2012).

Much of the extant research has addressed how consumer characteristics affect green advertising efficacy, namely skepticism (Finisterra do Paço and Reis 2012; Obermiller 1995; Schuhwerk and Lefkoff-Hagius 1995; Shrum, McCarty, and Lowrey 1995), ambivalence toward green advertising (Chang 2011), topic knowledge (Finisterra do Paço and Reis 2012; Newell, Goldsmith, and Banzhaf 1998), environmental consciousness (Bickart and Ruth 2012; Finisterra do Paço & Reis 2012; Newell, Goldsmith, and Banzhaf 1998; Obermiller 1995; Schuhwerk and Lefkoff-Hagius 1995) or the perceived importance of the environmental issues at stake (Kronrod, Grinstein, and Wathieu 2012). Although more limited, previous research has also integrated consumers' familiarity with the advertised brands (Bickart and Ruth 2012).

Notwithstanding the primary focus on green claims, a few studies have explored the influence of the greenness of advertising execution. The idea of greenness is usually conveyed through the use of a natural setting or nature imagery as to create an implicit visual association with nature and thus serve as an associative claim (Banerjee, Gulas and Gulas 1995; Fowler III and Close 2012; Hartmann and Apaolaza-Ibáñez 2009). Unlike substantive product- or process-related claims, image-related claims infer that the advertised brand is positively related to the environment (Carlson *et al.* 1993; 1996). Indeed, in their studies on the effects of na-

ture imagery, Hartmann and colleagues (2009; 2013) found that images that evoke nature are as emotionally arousing as the experience of real nature and this affective response triggers more positive attitudes toward the advertised brand. Their findings support that greenwashing can also occur via an underlying emotional process driven by affectively laden green imagery in the advertisement. The research presented here extends this emerging line of research by offering further evidence of the impact of advertising executional elements on perceptions of a brand's greenness, as well as of the potential for other advertising executional elements to alter the impact of green imagery.

The 'Executional Greenwashing' Effect and its Regulation

As a side effect of the rise in green advertising, the development of greenwashing triggered a short debate early in the 1990's about which and how public policies could regulate the phenomenon (Carlson, Grove and Kangun 1993; Greenberg 1991; Kangun, Carlson and Grove 1991; Newell, Goldsmith, and Banzhaf 1998; Scammon and Mayer 1993, 1995). Newell and colleagues (1998) call for "the need for increased monitoring of environmental advertising by government agencies and consumer groups". However, again, this debate solely addresses 'claim greenwashing'. As an illustration, Carlson and colleagues (1993) suggest that green advertisements that promote the greenness of a full organization are the most common and also the most greenwashed because they rely on generic and ambiguous claims.

Greenwashing came to the forefront of research in the late 2000's following a new surge in green advertising that had almost tripled between 2006 and 2009 (Terrachoice 2009), an increase in calls denouncing the practice (Laufer 2003; Horiuchi and Schuchard 2009; Delmas and Burbano 2011; Lyon and Maxwell 2011), and official debates about regulation (e.g. in 2010, the US FTC creates a task force to develop new guidelines; in 2011, the Australian parliament adopts the Consumer Law). But, although several recent academic articles have

focused on greenwashing (e.g. Bradford 2007; Chen and Chang 2013; Delmas and Burbano 2011; Pomeroy and Johnson 2009), there has been little research on, nor regulation on, ‘executional greenwashing’, whereby executional elements such as image, sounds, symbols evoking nature may mislead consumers as much as ‘claim greenwashing’ has.

Several countries have trialed self-regulation, focusing on how to present environmental claims through procedural instruments such as voluntary agreements and infrastructure provision. For instance, the updated 2012 version of FTC Green guides state that environmental claims should avoid vague, unsubstantiated, misleading, confusing, false or deceptive claims; they should be accurate, precise (i.e. mentioning under what conditions the performance may be obtained, which part of the product is concerned, which part of the product life cycle is impacted by the improvement), backed by scientific evidence, and clear enough for non-expert people. However, rarely do recommendations deal with advertising executional elements. One exception is France’s ‘Autorité de Régulation Professionnelle de la Publicité’ which, as mentioned earlier, has evoked the potential misleading effect of visuals and pictures and recommends not using them (ADEME-ARPP 2012).

Government regulation sets external direct pressures on advertisers to avoid that an uncertain regulatory environment leaves room for opportunistic usage of greenwashing (Delmas and Burbano 2011). Its instruments include mandatory standards, prohibitions or bans (Wolff and Schönherr 2011). For instance, Norway prohibits the promotion of cars with green claims. In the same vein, the 2011 Australian Consumer Law requires using with qualification “images or symbols that are widely accepted as having a particular meaning that could mislead consumers” and carries penalties up to 1.1 million Australian dollars for businesses that fail to meet its requirements (ACCC 2013).

However ‘executional greenwashing’ is more difficult to address through self-regulation or government regulation than the regulation of lies or misleading claims. Indeed,

the list of visuals or pictorial elements that can mislead consumers is endless, depending on each consumer's cultural background, making it impossible to provide a universal and precise recommendation. As such, it is crucial to identify alternate ways to communicate environmental information and educate the market about greenwashing (Delmas and Burbano 2011). Indeed communicative instruments that allow the accurate calibration of "consumer knowledge" (Alba and Hutchinson 1991; Press and Arnould 2009) are the preferred option proposed by the 1994 Oslo Symposium on Sustainable Consumption and reaffirmed by the 2002 U.N. World summit: the recommendation is "to develop [...] effective, transparent, verifiable, non-misleading and discriminatory consumer information tools" (UNEP 2002).

Despite rising environmental concerns worldwide, there is scarce research regarding the tools that managers or policymakers could use to mitigate greenwashing (Delmas and Burbano 2011). Principles of regulation are mainly based on intuition or professional expertise. Scientific evidence is needed to assess whether these advertising practices do mislead consumers, and to evaluate whether regulatory recommendations could counterbalance these effects. This research program addresses these needs by first presenting empirical evidence of the misleading effect of nature-evoking executional cues on consumers' brand perceptions (Study 1) and then testing the efficiency of environmental performance indicators (EPI) (Study 2) and traffic-light labels (Study 3), both easily implementable communicative instruments, to counterbalance this misleading effects. Studies 2 and 3 are highly relevant from a practical point of view, as both instruments reflect the requirements of the European Directive 1999/94/EC and its 2007 proposed amendment (Davies 2007).

STUDY 1 – DOES EVOKING NATURE IN ADVERTISING MISLEAD CONSUMERS?

Conceptual Framework

The classic Elaboration Likelihood Framework (ELM) formulated by Petty and Cacioppo (1981) is particularly suitable to understand how elements of advertising execution may influence consumers, in particular in the context of green advertising (Bickart and Ruth 2012; Tucker *et al.* 2012; Xie and Kronrod 2012). This classic model identifies two routes to persuasion, depending on consumers' motivation and ability to process the information in a message. A motivated and competent consumer follows a central route and develops attitudes based on "an active thinking about either the issue or object-relevant information provided by the message" (Petty and Cacioppo 1981, 256). A less competent and motivated consumer follows a peripheral route and the attitude is the result of simple inferences, heuristics and categorization based on ad executional elements such as colors, pictures, source attractiveness or music (Batra and Stayman 1990; Grunert 1996; Han 1992; MacInnis and Jaworski 1989).

Research on green advertising has largely drawn from the ELM to assess the impact of green cues on consumers' brand attitudes. For instance, Hartmann and Apaolaza-Ibáñez (2009) provide evidence of the peripheral route, a mostly affect-based process, by showing, in their case, that peripheral visual cues such as nature imagery led to more positive brand attitudes. However there may be consumers or types of relevant information in the advertisement that moderate the effects on brand attitudes. As summed up by Petty and Cacioppo (1986, 128), "although people want to hold correct attitudes, the amount and nature of issue-relevant elaboration in which they are willing or able to engage to evaluate a message vary with individual and situational factors." Hence a sole focus on the content of the advertising message may not be sufficient to understand consumers' responses to it.

One important individual difference moderator, in the tradition of the ELM, is consumer topic knowledge, i.e. knowledge related to the topic of the message, which influences the ability to process the message and the outcome of persuasive attempts (e.g. Alba and Hutchinson 1991; Friestad and Wright 1994; Kachersky and Kim 2011). When

assessing the ecological benefits of a specific product, consumers' knowledge of environmental issues in the product category is thus likely to affect how they process and respond to messages about brands in the category. Previous studies have already noted the role of such technical or scientific knowledge, by revealing consumers' difficulties to understand the information underlying the environmental claims (e.g. Finisterra do Paço and Reis 2012; Morris, Hastak, and Mazis 1995; Newell, Goldsmith, and Banzhaf 1998; Polonsky, Garma, and Landreth-Grau 2011; Xie and Kronrod 2012). In particular, less knowledgeable consumers are more sensitive to signaling bias based on information precision (Xie and Kronrod 2012). In contrast, knowledgeable consumers' "superior elaborative ability" should allow them to correctly process and interpret product-related assertions without relying on peripheral cues (Alba and Hutchinson 1991, 5).

In the context of 'executional greenwashing', the persuasive power of advertising executional elements representing nature may therefore differ depending on consumers' topic knowledge of environmental issues in the product category. Consumers with such topic knowledge, referred to as "expert" consumers, are less likely to rely on and be influenced by the use of advertising executional elements representing nature, whereas "non-expert" consumers, consumers without such topic knowledge, may be influenced through the peripheral route to persuasion, resulting in greater perception of the brand's ecological image. Stated formally:

H1. Advertising executional elements evoking nature have a positive influence on the brand's ecological image for non-expert consumers, but not for expert consumers.

A large stream of research has documented that attitudes are a function of beliefs. For instance, in the domain of advertising, research has demonstrated that the influence of advertisements on attitude toward the brand is mediated through brand perceptions (e.g.

Chaiken 1980; Lutz 1985; Lutz and Swasy 1977; McKenzie *et al.* 1986; Olson, Toy and Dover 1982). Within the ELM framework also, brand attitude is a function of beliefs: systematic beliefs based on an extensive processing of relevant information processed via the central route vs. more inferential and heuristic beliefs based on the signaling effects of the advertising executional elements.

Building on this mediation model, we predict that advertising executional elements evoking nature will influence overall brand attitude by altering the brand's ecological image. Considering the previous discussion about the influence of consumers' topic knowledge (Hypothesis 1), experts and non-experts should not be equally influenced. Therefore,

H2. The brand's ecological image mediates the influence of advertising executional elements evoking nature on the brand attitude for non-expert consumers but not for expert consumers.

Method

Procedures. The data collection relied on a web survey. Across all conditions, participants were invited to review a commercial website's home page, which presented a new vehicle (L3) constructed by the brand LUNA, a fictitious car manufacturer. This sector was chosen as one of the most concerned with greenwashing practices (Gillespie 2008). We selected a fictitious brand, in line with previous studies (e.g. Bickart and Ruth 2012; Brown and Dacin 1997; Ku *et al.* 2012), to invite the respondents to make judgments on the basis of the message content and execution themselves and avoid any effects of prior brand familiarity (Anderson and Jolson 1980). Participants were told that "In the context of the launch of its new vehicle, an international carmaker invites you to complete a questionnaire". The instructions explicitly stated that the carmaker's name could not be revealed for the sake of market research and had been replaced by the name Luna L3. The introduction then specified

that the study included two phases: in the first phase, the participant would see the carmaker's webpage presenting the new vehicle; the participant could stay on this page as long as they wished, and, after 30 seconds, the option to "Go to questionnaire" became available; in the second phase, the participant completed a questionnaire giving their opinion on the new model. Testing the fictional brand's commercial website increased realism in the online survey.

Experimental Design and Stimuli. The experiment follows a 2 (advertising executional elements evoking nature: present vs. absent) by 2 (topic knowledge: experts vs. non-experts) design. The presence of executional elements evoking nature was manipulated through two modalities, graphics and sound, to simulate the multimodal environment of webpages (Qualls *et al.* 1997). Specifically nature-evoking elements included a picture representing a forest, the green color in tinted areas and the auditory diffusion of a birdsong (see Appendix 1). As in previous studies (Hartmann and Apaolaza-Ibáñez 2009), the control condition displayed no picture (white background) and no sound. This simple, clean design was necessary to prevent any distracting associations that may have been induced by any other elements such as streets, roads, etc. Such a simple design is also externally valid, since it is actually used in the car industry (e.g. Dacia website², or Skoda, for the Fabia webpage³). To reinforce the nature manipulation, the auditory modality, with the birdsong, was also used in the nature-evoking condition. The nature-evoking manipulation was pretested with a sample of 143 adult members of a commercial panel, as in the main studies (30.1% male, mean age 38). Pretest participants were exposed to either the control or the nature-evoking website and asked the extent to which they felt (1 – not at all to 3 – very much) that the website evoked for them each of six topics: escape, nature, urban life, technology, pollution, sportiveness. Supporting

² See <http://www.dacia.fr/gamme-dacia/logan/> [last consulted on Jan, 10th, 2014]

³ See <http://www.skoda.fr/modele/skoda-fabia> [last consulted on Jan, 10th, 2014]

the manipulation, only nature ranked significantly different (2.50 vs. 1.97; $t(141) = 4.55, p < .05$). The execution of the manipulation was also checked in the main study, by asking respondents whether the webpage included background (yes / no) and sound (yes / no) and if yes, they selected from seven multiple-choice options, including the correct one. Only responses from panel participants who could identify the specific setting and sound were provided to the researchers and are thus included in the analyses.

Measures. The respondents first assessed the brand's ecological image on a 3-item scale adapted from Hartmann and Apaolaza-Ibáñez (2009) and Chen (2010). The remainder of the questionnaire contained previously validated scales: attitude toward the brand (Batra *et al.* 2000), attitude toward the webpage (Ng and Chyi 2008), and environmental consciousness (Parguel, Benoît-Moreau, and Larceneux 2011). In our specific setting attitude toward the webpage is similar to attitude toward the ad, and was therefore included as a control variable in the analyses, given that the extant research has shown its role in influencing attitude toward the brand (see McKenzie, Lutz, and Belch, 1986). Environmental consciousness was also measured and controlled for as it is known to influence consumers' responses to green advertising (Chun-Tuan, 2012). Finally, respondents' topic knowledge was assessed via their knowledge of the average carbon emission required for all new passenger cars by 2015 by the European Automobile Manufacturers Association agreement. Using an objective measure is preferable when the research objective relates to consumers' ability to encode new information (Selnes and Grønhaug 1986) because it avoids several subjective biases, such as social desirability or differences in self-confidence. Respondents who gave the correct answer from multiple choice options were considered topic knowledgeable and labeled "experts". Those who indicated they did not know were considered non-topic knowledgeable and labeled "non-experts". Those who gave an incorrect answer were not included in the analyses.

With the exception of topic knowledge, all the constructs were measured on seven-point scales. We conducted unidimensionality and reliability checks for the multi-items scales and found satisfactory reliability. Appendix 2 provides the scale items, reliability information for each study and Appendix 3 provides the means for the DV (i.e. the brand's ecological image).

Sample. To ensure diversity in the sample, we recruited respondents from the panel of a professional market research institute. Composed of 110 persons (38% women, mean age = 38 years), the final sample represented various regions in France and was heterogeneous in terms of socio-economic status. Experts represented 40% of the sample (38% in the control condition, 42% in the nature-evoking condition). For a comparison, previous studies found that 37% of the Australian consumers and 40% of the US consumers could be classified as having high knowledge about carbon offsets (Polonsky, Garma, and Landreth-Grau 2011). We randomly assigned the subjects to one of the two treatments. Additional analyses showed that the two groups were homogenous in terms of gender ($\chi^2(1)=.11$, ns), age ($F(1,108)=1.56$, ns), and environmental consciousness ($F(1,108)=0.05$, ns).

Results

Controlling for attitude toward the webpage ($F(1,105)=36.10$, $p<.001$), the 2 X 2 ANOVA reveals a main effect of the presence of executional elements evoking nature ($F(1,105)=19.44$, $p<.001$) qualified by a marginally significant interaction effect between the presence of executional elements evoking nature and consumers' topic knowledge ($F(1,105)=3.04$, $p=.08$). A series of planned contrasts were used to test whether, as predicted by Hypothesis 1, the presence of advertising executional elements evoking nature only generates higher perceptions of the brand's ecological image among non-expert consumers. In line with H1, these tests indicate that the effect of advertising execution on the brand's

ecological image is significant for non-expert consumers ($F(1,63)=21.80, p<.001$), as predicted, and does not reach significance for expert consumers ($F(1,41)=3.17, p=.08$). This pattern of effects is plotted in Figure 1: the brand's ecological image rises from 4.17 to 5.44 for non-experts when they are exposed to nature-evoking executional elements, and there is a small increase amongst experts as well (4.36 to 4.88). Study 1 proves the efficiency of 'executional greenwashing' for non-expert people and, although the effect is only directional, reveals an upward trend in brand ecological image amongst expert ones as well.

INSERT FIGURE 1 ABOUT HERE

To test whether the brand's ecological image mediates the link between exposure to nature-evoking elements and consumers' attitude toward the brand (H2), we used the procedure proposed by Zhao and colleagues (2010) and Hayes's (2012) PROCESS macro (with model 7 using consumers' topic knowledge as a moderator and attitude toward the ad as a covariate). We also applied a bootstrapping procedure with 5000 bootstrapped samples to counteract the assumption of normality for the sampling distribution of the indirect effect (ab), as required by the Sobel test (Hayes 2009).

As indicated in Table 1, the bootstrap analysis shows a significant and positive indirect effect of the presence of nature-evoking executional elements on brand attitude among non-expert consumers (the 95% confidence interval does not include 0) and, in a weaker way, among expert consumers (the 90% confidence interval does not include 0).

INSERT TABLE 1 ABOUT HERE

In other words, Study 1 provides empirical evidence of the 'executional greenwashing' effect: nature-evoking executional cues affect perceptions of a brand's ecological image and in turn lead to more positive brand attitudes. The effects vary as a function of consumers' topic knowledge, with a large 'executional greenwashing' effect for non-expert consumers and a marginally significant effect on expert consumers. Nature-evoking audiovisual elements on

the webpage lead consumers to have greater perceptions of the brand as ecological and these perceptions in turn affect their attitude towards the advertised brand (considering a 90% confidence interval). The finding that even expert consumers tend to be affected by nature-evoking elements may be due to the fact that no other information was provided to evaluate the greenness of the product, leaving little opportunity to engage in a deep elaboration through the central route process. Hence, even expert consumers have little reason to question the message's sincerity, and can be marginally affected by peripheral elements, these elements being the only ones present.

The finding that 'executional greenwashing' has a misleading effect across consumers raises more sharply the question of its regulation: how to counteract the 'executional greenwashing' effect. Identifying a differential effect between expert and non-expert consumers requires messages providing environmental performance information to correct the effect of nature-evoking elements. Having provided evidence of the 'executional greenwashing' effect, we turn to a test of two communication elements that may palliate this effect in Study 2 and Study 3 by offering objective environmental information.

STUDY 2 – CAN OBJECTIVE ENVIRONMENTAL PERFORMANCE INFORMATION CORRECT THE 'EXECUTIONAL GREENWASHING' EFFECT?

Study 2 assesses whether the display of environmental performance information, which was in fact selected by the European Community to encourage a progressive reduction of greenhouse gas emissions due to passenger cars, can correct the 'executional greenwashing' effect documented in Study 1. The EC directive (called directive 1999/94/EC of December, 13 1999) requires that car manufacturers selling within European countries provide information regarding new cars' carbon emission with the aim of directing consumers' choices towards greener cars. A potential additional benefit of environmental performance information is that

this kind of objective information may also prevent greenwashing by helping consumers form an accurate perception of a brand's ecological image, regardless of the executional advertising setting. Indeed, a previous study found that displaying independent sustainability ratings of companies' environmental performance is efficient to help consumers evaluate companies' environmental claims (Parguel, Benoît-Moreau, and Larceneux 2011). Poor ratings make consumers infer opportunistic reasons why the company communicates, therefore degrading corporate brand evaluations compared to a company communicating the same way, but enjoying positive ratings. Extending this previous work, Study 2 examines whether the display of environmental performance information might reduce the 'executional greenwashing' effect, especially when they indicate poor environmental performance.

Conceptual Framework

As discussed earlier, a central premise of the ELM is that consumers' response to information differs depending on their level of knowledge about the issue at hand. Consumers who hold significant knowledge about ecological issues should be more able to treat the environmental information provided, therefore following a central route of persuasion (Alba and Hutchinson 1991). Their brand evaluation should be formed based on the objective environmental performance provided, which are strong arguments, and not from the visual and sound executional elements manipulated in the ad. Conversely, consumers with no topic knowledge, i.e. non-experts, are more likely to follow a peripheral route: less motivated and able to treat the objective information provided, they will base their brand evaluation on the executional elements and not on the objective environmental performance information. Hence executional elements that evoke nature should, as in Study 1, lead to higher brand ecological image amongst consumers with no topic knowledge regardless of the presence of environmental performance indicators. In contrast, consumers with topic knowledge, i.e.

expert consumers, should be affected by the value of the environmental performance indicator (EPI) in their evaluation of the brand's ecological image. This reasoning leads to H3.

H3a. For non-expert consumers, advertising executional elements evoking nature enhance the brand's ecological image, whereas the level of the EPI does not influence it.

H3b. For expert consumers, the level of the EPI damages the brand's ecological image, whereas advertising executional elements evoking nature do not influence it.

Method

Procedures and Measures. The procedure was the same as in Study 1: a web survey regarding the fictitious launch of a new vehicle, L3 by the carmaker Luna. Consumers were asked to evaluate the L3 commercial Webpage using the same measures as in Study 1.

Experimental Design and Stimuli. To test H₃, the experiment relies on a 2 (advertising executional elements evoking nature: present vs. absent) by 2 (EPI: average vs. poor) by 2 (topic knowledge: experts vs. non-experts) design, in which we manipulated the two first factors. The advertising executional elements were manipulated as in Study 1 and objective topic knowledge was measured with the same procedure as well. The EPI was operationalized as the indication of the vehicle carbon emission raw figure, as required by the European Directive 1999/94/EC. To test the inability of non-expert consumers to treat environmental performance information and the sensitivity of expert consumers to the value of the EPI, we needed two values of the EPI. Average CO₂ emissions from passenger cars is between 140 and 150 g/km in France in 2010; therefore, a rate of 149 g/km was used as a baseline, and a rate of 209 g/km, a very high carbon emission rate, was used to indicate poor environmental performance (see Appendix 1).

In addition to previous manipulation checks that were used in Study 1, respondents answered whether the CO₂ emission rate of the Luna L3 was depicted on the website (yes / no / do not know), and if so, selected from multiple choice options what range they recalled this emission rate to be (e.g. less than 120 g/km, between 121 and 180 g/km, more than 181 g/km) or 'do not know'. Those participants who could not remember any emission rate (N=58) or the correct emission rate (N=124) were excluded from the analyses.

Sample. The same recruitment method was employed as in Study 1. 188 participants (52% women, mean age = 37 years) were considered in the analyses. Experts represented 35% of the sample, with a minimum of 17 experts per condition. The sample represented various regions in France and was heterogeneous in terms of socio-economic status. We randomly assigned the subjects to the four treatments. The four groups were homogenous in terms of gender ($\chi^2(3)=1.38$, ns), age ($F(3,185)=.87$, ns), and environmental consciousness ($F(3,185)=1.04$, ns).

Results

Controlling for attitude toward the webpage ($F(1,180)=30.04$, $p<.001$), the analysis of variance reveals main effects for all three factors: advertising executional elements evoking nature ($F(1,180)=6.49$, $p<.05$), consumers' topic knowledge ($F(1,180)=23.50$, $p<.001$) and the EPI ($F(1,180)=25.85$, $p<.001$). An interaction also emerges between the EPI and consumers' topic knowledge ($F(1,180)=7.01$, $p<.01$). The other 2-way interactions are not significant (all $F(1,180)<.26$, $p>.61$) nor is the 3-way interaction ($F(1,180)=2.26$, $p=.134$). See Appendix 3 for the mean brand ecological images for each condition.

The hypotheses were tested with a series of planned contrasts. For non-expert consumers, the presence of advertising executional elements evoking nature ($M_{(\text{Absent})}=5.06$, $M_{(\text{Present})}=5.54$, $F(1,114)=4.72$, $p<.05$) and the level of the EPI ($M_{(149)}=5.55$, $M_{(209)}=5.05$,

$F(1,114)=5.13, p<.05$) influence the brand's ecological image. For expert consumers, the level of the EPI ($M_{(149)}=5.06, M_{(209)}=3.38, F(1,65)=19.82, p<.001$) influences the brand's ecological image, whereas the presence of executional elements evoking nature does not ($M_{(Absent)}=3.98, M_{(Present)}=4.46, F(1,65)=1.66, ns$). These patterns of effects are plotted in Figure 2.

INSERT FIGURE 2 ABOUT HERE

The analyses thus reveal an overall main effect of the level of the EPI such that a lower EPI leads to greater perceptions of the brand's ecological image amongst both non-expert and expert consumers, although the effect is of larger magnitude for expert consumers. Overall H3 is partially supported.

The results provide evidence of boundary conditions for the efficiency of raw environmental performance information, and therefore of the EC directive. The display of an EPI is not sufficient to counterbalance the effects of 'executional greenwashing'. Facing a very poor rate of carbon emissions, non-expert consumers' ecological perceptions of the brand still reach a level of 5 out of 7. The display of an EPI reduces expert consumers' ecological perceptions of the brand but the overall main effect of 'executional greenwashing' remained. Study 3 investigates the potential for another form of environmental performance information display to alter this greenwashing effect.

STUDY 3 - CAN A TRAFFIC-LIGHT RENDITION OF ENVIRONMENTAL PERFORMANCE INFORMATION CORRECT THE 'EXECUTIONAL GREENWASHING' EFFECT?

Study 3 proposes to test the efficiency of a specific format to display environmental performance information: the traffic-light type of label, inspired by the energy appliance label program compulsory in Europe. A similar case appears in research on nutrition labels, which also display numerical information from which consumers must infer nutritional qualities. The

label format is crucial, especially if it can reduce the perceived costs of searching and processing this information (Moorman 1996). Central to the processing of numerical nutrition information is the need for a comparison baseline, because raw figures offer no real meaning on their own and instead must be confronted against reference values (Viswanathan and Hastak 2002). Viswanathan and colleagues (2009) show that, for consumers with low literacy levels, graphic nutrition labels (e.g. showing value ranges or ratings) are more effective than those displaying raw figures or percentages in terms of aiding consumers' judgment. In the context of the EPI display, a traffic-light representation of the raw information about emission rates showing value ranges associated to color codes should help expert and non-expert consumers calibrate environmental performance information, therefore counterbalancing the 'executional greenwashing' effect. Therefore, we hypothesize:

H4. For experts and non-experts, the presence of a traffic-light label removes the effect of advertising executional elements evoking nature on the brand's ecological image.

Method

Procedures and Measures. The procedure was the same as in Study 1 using a web survey, considering the fictitious launch of a new vehicle, L3 by the carmaker Luna. Consumers were exposed to the L3 Webpage. The same measures were used.

Experimental Design and Stimuli. The experiment consists of a 2 (advertising executional elements evoking nature: present vs. absent) by 2 (topic knowledge: experts vs. non-experts) design, in which the first factor was manipulated and the second factor measured as in Study 1. All conditions included a traffic-light label graphically representing the carbon emission value of 149g/km (see Appendix 1). We purposefully selected an average performance, on the premise that if the label were efficient at this level of performance, it would be all the more efficient for highly above the norm values. The graphic traffic-light is

based on the 2007 Davies motion for a European parliament resolution to amend Directive 1999/94/EC and introduce legal requirements for the labeling, advertising and marketing of new cars within the EU internal market. Specifically, the motion proposed that a minimum of 20% of the space devoted to the promotion of new cars should provide environmental performance information in a conspicuous, user-friendly and possibly colour-coded format for the purposes of comparison. Those participants who could not remember any emission rate (N=52) or the correct emission rate (N=70) were excluded from the analyses.

Sample. The analyses are based on 125 participants (62% women, mean age = 36 years) recruited from the panel of a professional market research institute, as in the two previous studies. Experts represented 41% of the sample (39% in the control condition, 42% in the nature-evoking condition). The sample represented various regions in France and was heterogeneous in terms of socio-economic status. We randomly assigned the subjects to the two treatments. Additional analyses showed that the two groups were homogenous in terms of gender ($\chi^2(1)=.02$, ns), age ($F(1,123)=.02$, ns), and environmental consciousness ($F(1, 123)=.06$, ns).

Results

Controlling for attitude toward the webpage ($F(1,120)=12.44$, $p<.001$), the ANOVA shows no main effect of advertising executional elements evoking nature ($F(1,120)=1.06$, ns) nor any interaction effect between topic knowledge and advertising executional elements evoking nature ($F(1,120)=.33$, ns).

Appendix 3 provides the means for the DV (i.e. the brand's ecological image). For non-expert consumers, planned contrast tests indicate that the presence of advertising execution elements evoking nature is no longer efficient: perceptions of the brand's ecological image are not significantly different in their presence ($M_{(Present)}=4.35$) vs. in their absence

($M_{\text{(Absent)}}=3.91$, $F(1,71)=1.64$, ns). They indicate the same pattern of results for expert consumers, with similar perceptions of the brand's ecological image in the presence of advertising execution elements evoking nature ($M_{\text{(Present)}}=4.16$) or in their absence ($M_{\text{(Absent)}}=4.03$, $F(1,48)=.07$, ns). Tested against the baseline scores obtained in Study 2, where no traffic-light labels were included, brand ecological image scores are significantly lower for both non-expert ($M_{\text{(Rate)}}=5.56$, $M_{\text{(Traffic-light)}}=4.13$, $F(1,120)=34.71$, $p<.001$) and expert consumers ($M_{\text{(Rate)}}=5.01$, $M_{\text{(Traffic-light)}}=4.18$, $F(1,96)=8.04$, $p<.01$). In other words, the traffic-light label to convey environmental performance information is able to remove the misleading effects of executional elements evoking nature.

DISCUSSION

Collectively, the studies provide empirical evidence of a misleading effect from nature-evoking executional elements on the webpage. Although they rely on a fictional brand, the studies replicate a natural environment through the presentation of a complete webpage and the recruitment of real consumers. Controlling for attitude toward the webpage and relying on between-subject experimental designs offer control over the presentation of the stimuli, and maximize the internal validity of the research. Study 1 shows that non-expert but also, to a lesser degree, expert consumers with regards to the environment are affected by nature-evoking executional cues on the webpage. Compared to a webpage without green cues, an executionally greenwashed webpage generates greater perceptions of the featured brand's ecological image and in turn more positive brand attitudes. However, the main contribution of this research lies in the identification of moderators of this effect. Study 2 shows that adding environmental performance information, as advocated by the EC, can counterbalance the greenwashing effect but only among expert consumers. Study 3 offers a more hopeful set of findings in that it shows that the combination of a traffic-light representation with the raw infor-

mation about emission rates is able to counterbalance the ‘executorial greenwashing’ effect across both experts and non-experts. We further note that these studies present a rather conservative test of the hypotheses, because of the very restrictive selection criterion used: only those who recalled the exact emission rate displayed were included in the analyses.

LIMITATION AND FUTURE RESEARCH DIRECTIONS

Notwithstanding the support received for the majority of hypotheses, the studies contain several limitations. The main limitation is that they operationalize nature-evoking executorial cues only as a set of executorial elements (i.e. picture of a forest, birdsong, and green tint areas), therefore showing a global effect of ‘executorial greenwashing’. Although this enhances the external validity of the stimuli, given that commercial webpages are usually multi-sensorial, the independent effect of each element cannot be assessed. Studies should be replicated using independent executorial elements, testing separately auditory versus visual ones, the effects of which may be additive or interactive (Tavassoli and Lee 2003), as well as testing different combinations of executorial elements. Future research should also evaluate whether, as proposed in psychology, congruent audio and visual information about greenness is processed faster than incongruent cross-modal information (Frens, Opstal, and Van der Willigen 1995; Stein and Meredith 1993), and therefore leads to more heuristic processing, and in turn, greater ‘executorial greenwashing’ effects.

A related limitation is that this research focused on only two types of environmental information, a numerical rate and a traffic-light label. Future research could also attempt to provide additional process evidence of why and how labeling information of different types and formats are able to reduce ‘executorial greenwashing’. This research suggests additional work to deepen our theoretical understanding of the labels’ efficacy, perhaps based on psy-

chometric theory (e.g. anchor points, number of anchors). Testing other formats or combination of formats would be useful, both from a theoretical and from an applied standpoint.

Finally, other limitations of the research lie in the reliance on a sample of French consumers and on the operationalization of consumers' knowledge in that context. The conceptual model should be tested on samples across different countries, in particular in countries that differ in terms of their level of environmental consciousness. The fact that experts in the French samples reacted well to the rate of 149g/km, when presented without a traffic-light, despite the fact that it is merely an average rate, suggests that the EU's communicated objective for new cars of an average norm of 140g/km (goal for 2008) and 130 g/km (goal for 2015) may have inadvertently increased the level perceived as good. Additional research testing different frames and rates could illuminate this possibility.

THEORETICAL CONTRIBUTIONS

Despite the limitations, this paper contributes to a better theoretical understanding of greenwashing in two ways. First, it introduces the notion of 'executional greenwashing' and distinguishes it from 'claim greenwashing', which is based on the claim itself. The results document that executional elements in advertising can mislead consumers into perceiving the advertised brand as more ecological and in turn developing more positive attitudinal responses to the brand. Hence, this more subtle but impactful form of greenwashing should be included in greenwashing definitions or approaches to regulate the practice which have, to date, only referenced misleading verbal claims. Given that many advertisements contain both verbal claims and executional cues, future research should continue to assess the interplay between the two types of elements and their collective impact on attention, processing and persuasion. Because the different processes may reveal themselves differently in implicit and explicit re-

sponses, future research could measure both explicit attitudes, as this research did, as well as implicit attitudes (Gawronski and Bodenhasen 2006).

Beyond providing empirical evidence of the ‘executional greenwashing’ effect, this research documents the mediating process, through perceptions of the brand’s ecological image, and two important moderators of the greenwashing effect with both an individual difference, the consumer’s level of knowledge in the domain area, and via an additional set of executional elements, in the form of more cognitive environmental information. However, as this research documents, knowledge and environmental information interact in affecting the ‘executional greenwashing’ effect. Amongst non-expert consumers, the ‘executional greenwashing’ effect persists even in the presence of information showing poor environmental performance. Only in the case of two redundant cognitive cues (EPI AND traffic-light) did the ‘executional greenwashing’ effect vanish amongst both expert and non-expert consumers. The findings align with Delmas and Burbano (2011)’s recommendation to increase transparency of environmental performance through mandated or voluntarily disclosure and observation that not all type of disclosure is efficient, raw information disclosure being useless for a vast majority of consumers.

The research is anchored on the latest developments within ELM research (Petty and Wegener 1999) which emphasize elaboration likelihood as a continuum rather than a simple two-route model. Consumers, regardless of their level of expertise about an issue, react to whatever information they are given. The results of studies 1 and 2 show that, while experts do tend to be influenced by more cognitive elements, such as raw EPI, they can also be influenced by affectively laden elements such as background images or sound in the absence of any more rational information. And study 2 further shows that non-experts also appear to be affected by the EPI rate even though they have little knowledge of its meaning. These results reflect the importance of considering not only factors related to motivation, such as one’s level

of interest and involvement, but also one's ability and opportunity to process the information contained in a message (MacInnis and Jaworski 1989). This research shows that systematic processing is limited when opportunity is reduced, for instance when little information is available as in study 1, or when ability is low, such as with non-experts in study 2.

On the whole the paper contributes to the growing body of evidence on the malleability of consumers' attitudes and the substantial impact of subtle contextual cues even in the presence of more objective information. In the absence of environmental information, even knowledgeable consumers may not be able to calibrate their responses to messages in the presence of incongruous peripheral cues (Alba and Hutchinson 2000). Green executional cues, although processed more heuristically, even appear to preempt the systematic processing and impact of more objective information. Conceptually this pattern of effects is a reminder of the importance of accounting for not just consumers' ability to process the information, as predicted by their knowledge of a relevant topic but, in this case, of their ability to process cognitive information when it is presented in conjunction with affective cues (Batra and Ray 1986; MacInnis and Jaworski 1989; MacInnis, Moorman, and Jaworski 1991).

Finally, although prior research has suggested that greenwashing could increase skepticism or mistrust about green claims in general, thus undermining even sincere CSR strategies (Chen and Chang 2013; Cherry and Sneirson 2011; Lyon and Maxwell 2011), our research does not show any perception of manipulation in the case of 'executional greenwashing'. Indeed, were this the case, consumers, especially expert ones, should respond very negatively to a greenwashed advertising displaying a very poor rate of carbon emissions. Perhaps the absence of a backlash is because executional elements evoking nature are commonly used by advertisers (Hartman *et al.* 2013) and their subtlety, compared to verbal claims, does not trigger suspicion. Consumers may not perceive them as intentionally designed to convey the notion of ecology.

PRACTICAL IMPLICATIONS

Given that the experiments reflect actual European Community ideas for limiting greenhouse gas emissions, the results lend themselves to concrete public policy recommendations with regards to the regulation of green advertising. The finding that nature-evoking executional cues actually mislead consumers, regardless of their level of topic knowledge, demonstrates the need to incorporate this form of ‘executional greenwashing’ into definitions of greenwashing. Furthermore, the findings show that despite being currently the regulatory option of choice, providing environmental information is not sufficient to counterbalance the effects of greenwashing when it is displayed as a raw figure only. The European Directive is not sufficient to deter ‘executional greenwashing’ unless consumers know the environmental norms very well (i.e. they are experts). Amongst the majority of consumers who are not as knowledgeable, the EPI does not correct the greenwashing effect. We posit and our findings support the proposition that EPI is too complex and unable to help diagnose a poor environmental performance unless it is accompanied by a graphic, easy to process and understand signal of environmental information, a traffic-light label. This finding is hopeful because of the simplicity of its implementation. Two arguments support the easy implementation if regulators only impose that a small space of print advertising or promotional material is devoted to show the traffic-light label, in its expanded form as tested in Study 3 for more elaborate leaflets, or in a compact ruler version for print advertising, as the one displayed in Austria. First, this kind of label has been well received in Europe on electric appliances, where it is compulsory, and in the US where the Energy star program is also a success. These programs show that consumers are already familiar with the visual label, understand the reason for their presence and the content of the information. In a similar vein, in the US, the packaged food industry and consumers alike have accepted nutritional labels. Second, this form of regulation does

not constrain advertisers' creative teams as it authorizes all forms of executional elements. Including the carbon emission label may even serve as a signal of their benevolence and protect them against accusations. The only drawback of such a form of regulation is that an independent office must be designated to perform audits of the carbon emission value declared to ensure the veracity of the information.

Other forms of regulation could also be considered, beginning with the strict forbidding of certain execution cues, following the French ban about the presentation of motor vehicles in natural backgrounds in advertisements. This would call for additional work to identify which executional elements used by advertisers are the most misleading but, in practice, such a ban may be difficult and costly to monitor. A stronger approach, such as that adopted by Norway, is the ban of green advertising for automotive. However, a complete ban on green advertising may be excessive because it may deter carmakers from making a real effort to improve their cars' carbon footprint.

CONCLUSION

The present research suggests a viable middle ground to regulate 'executional greenwashing', through the introduction of a traffic-light label displaying environmental performance information in a specific part of the ad. This option offers a consensus between the respect of advertisers' freedom to create and differentiate brands through their communications campaigns while fulfilling the need to properly inform consumers and consider them as active actors towards a more sustainable world.

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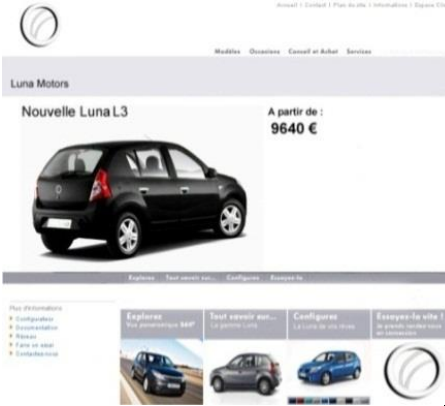
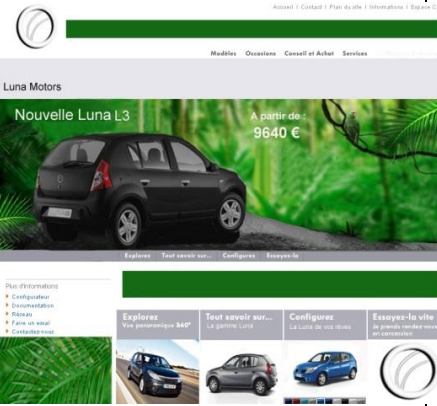

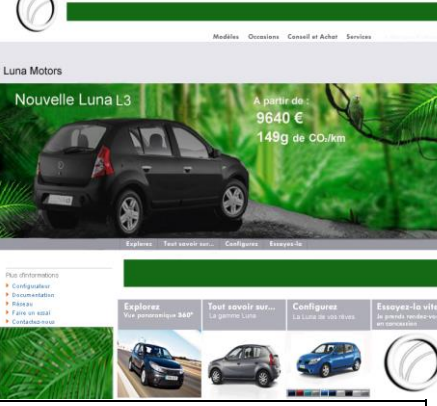


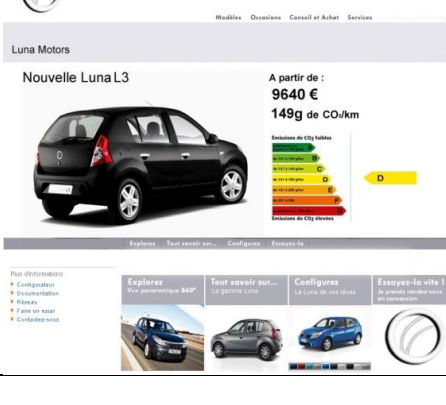
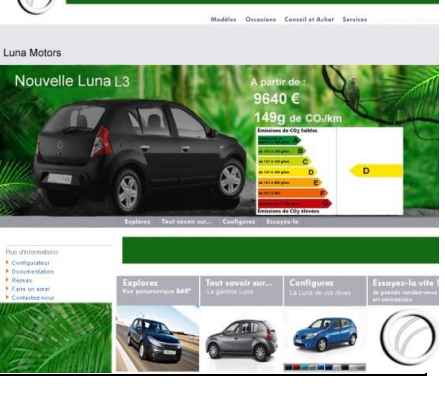

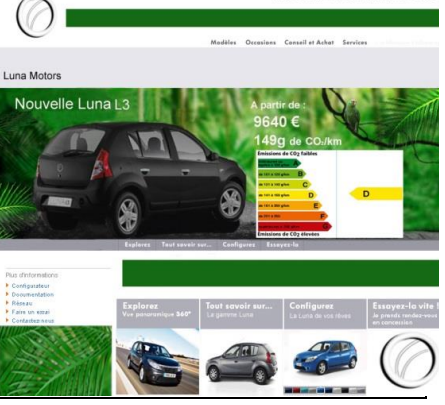
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APPENDIX 1: EXPERIMENTAL STIMULI

		Executional Elements Evoking Nature	
		Absent	Present
STUDY 1			
			
STUDY 2	149 g/km		
	209 g/km		
STUDY 3			

APPENDIX 2: SCALES

Instrument	Brand Attitude	Environmental Consciousness	Brand Ecological Image	Attitude toward the Brand's Webpage
<ul style="list-style-type: none"> • I like this carmaker. • I think this brand is good. • My opinion of this carmaker is positive. 	<p>.898</p> <p>.875</p> <p>.863</p>			
<ul style="list-style-type: none"> • When possible, I systematically choose the product that has the lowest negative impact on the environment. • I try not to buy from companies that strongly pollute. • When I have the choice between two equivalent products, I always wonder which one pollutes less before buying. 		<p>.906</p> <p>.901</p> <p>.868</p>		
<ul style="list-style-type: none"> • The carmaker Luna is concerned with respect for the environment. • I have the impression that the carmaker Luna tries to respect the environment. • Luna vehicles are environmentally friendly. 			<p>.885</p> <p>.868</p> <p>.724</p>	
<ul style="list-style-type: none"> • I do not like this webpage. • I do not enjoy reading this webpage. 				<p>.906</p> <p>.887</p>
Reliability – Study 1	.947	.949	.884	.909
Reliability – Study 2	.954	.935	.875	.782
Reliability – Study 3	.951	.952	.840	.705

**APPENDIX 3: DEPENDENT VARIABLE MEANS PER CONDITION PER STUDY
(BRAND ECOLOGICAL IMAGE)**

Study 1 (No EPI)

	No Nature Evoking	Nature Evoking
Non Experts	4.17 (1.09)	5.44 (1.00)
Experts	4.36 (1.00)	4.88 (1.14)

Study 2 (149 vs. 209 g/km)

	No Nature Evoking		Nature Evoking	
	149 g/km	209 g/km	149 g/km	209 g/km
Non Experts	5.23 (1.02)	4.78 (1.20)	5.87 (1.05)	5.34 (1.45)
Experts	5.10 (1.08)	2.89 (1.65)	5.10 (1.27)	3.73 (1.96)

Study 3 (149 g/km + traffic-light label)

	No Nature Evoking	Nature Evoking
Non Experts	3.81 (1.48)	4.45 (1.56)
Experts	4.08 (1.78)	4.11 (1.62)

FIGURE 1

BRAND ECOLOGICAL IMAGE PER CONDITION IN STUDY 1

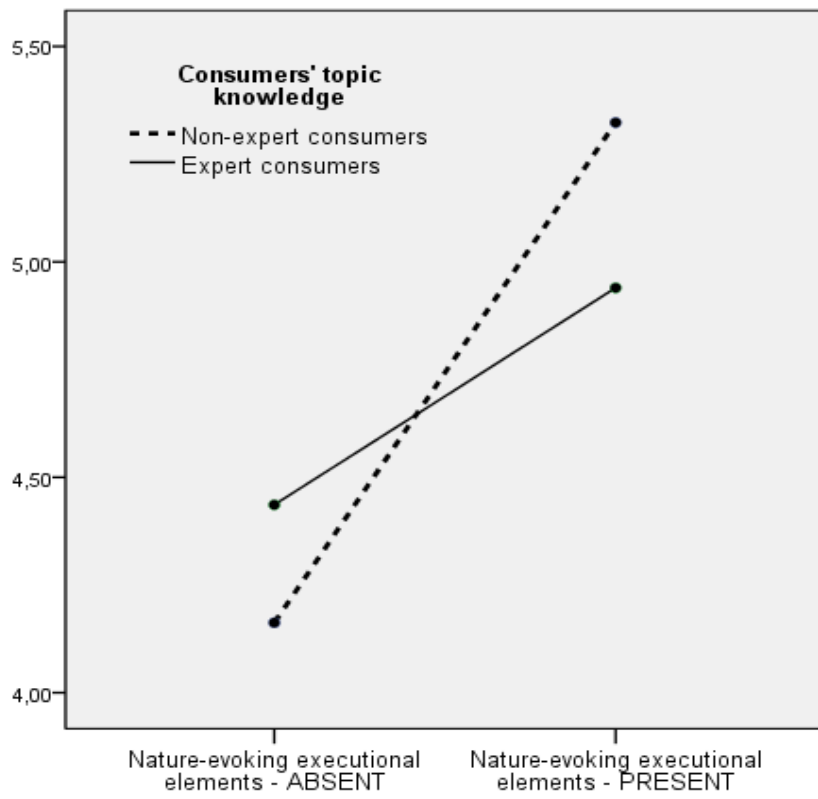
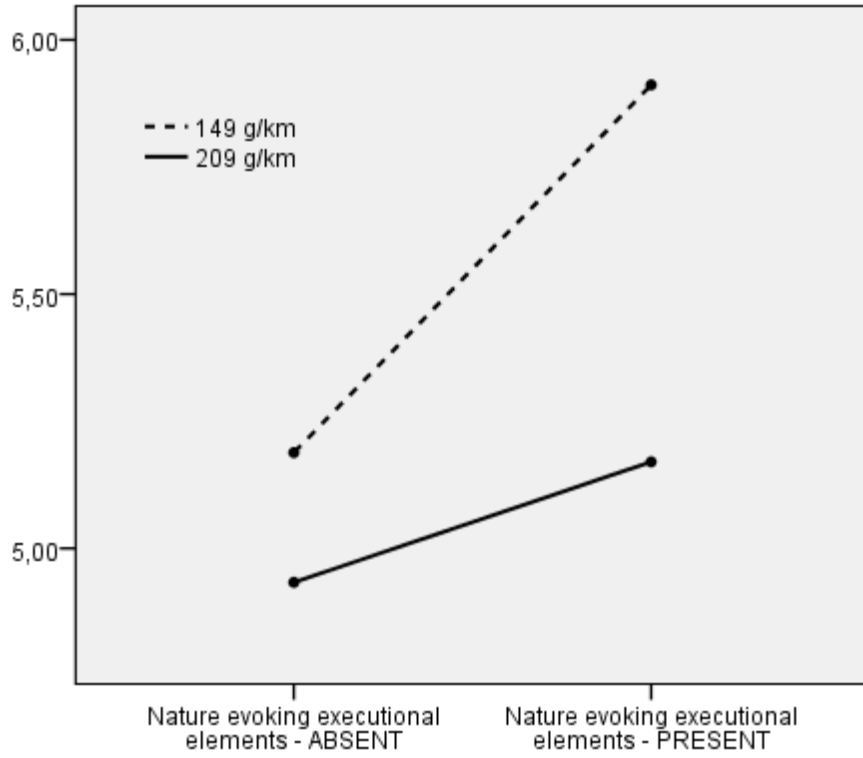


FIGURE 2

BRAND ECOLOGICAL IMAGE PER CONDITION IN STUDY 2

Non-expert consumers



Expert consumers

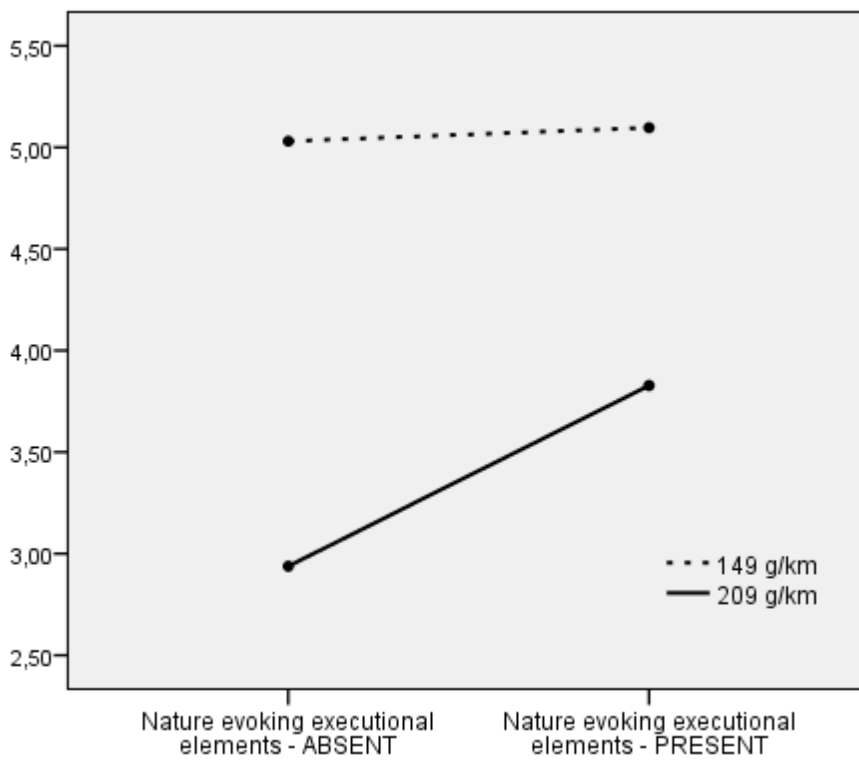


TABLE 1: MEDIATION TESTS: BOOTSTRAP RESULTS FOR INDIRECT EFFECTS (STUDY 1)

Indirect effect on brand attitude	Path from advertising exposure to mediator	Interaction effect	Path from mediator to brand attitude	Mean indirect effect (ab paths)	Bias-corrected 95% confidence interval	Bias-corrected 90% confidence interval
Brand ecological image mediating the effect of the presence of advertising executional elements evoking nature						
Among non-expert consumers	1.16*** (4.82)	-.66* (-1.74)	.44*** (4.94)	.52	[.23 ; .95]	[.26 ; .86]
Among expert consumers				.23	[-.01 ; .57]	[.03 ; .51]

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ (bilateral tests)