

How Green Should You Be: Can Environmental Associations Enhance Brand Performance?

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Although few studies have empirically verified the trend, environmental associations seem to have become a generally accepted way of enhancing brand equity. This study used an experimental design (with a sample of 828 adult shoppers) to investigate the relevance of information about environmental performance to the improvement of attitudes toward a brand. According to the Elaboration Likelihood Model, the study shows that the relationship between environmental associations and attitudes toward a brand are conditioned in part by the product category and the brand. As such, the usefulness of environmental associations to improve attitudes toward a brand should not be generalized.

INTRODUCTION

As concern about environmental deterioration has increased, much has been published on the advantages of including environmental information in marketing strategies. Most of that work, however, concentrated on good-will efforts or generalized responses to public opinion publications, rather than scientific studies.

There is little scientific literature dealing with the experimental study of the impact of environmental information and associations on the formation of new attitudes toward products or brands. A number of studies examine how new environmental information can affect price points (Kassarjian, 1971), the market share (Henion, 1972), or brand perceptions (Kinneer and Taylor, 1973). Another set focuses on the relative importance of environmental benefits in comparison with functional benefits (Montoro, Luque, Fuentes, and Canadas, 2006; Newell, Goldsmith, and Banzhaf, 1998; Niva, Heiskanen, and Timonen, 1998; Stisser, 1994), and some researchers have examined the role of environmental certifications in the reinforcing of confidence in environmental associations (Roe, Teisl, Rong, and Levy, 2001; Scarnmon and Mayer, 1993, 1995). None of these studies, however, examined the underlying mechanism operating in environ-

mental associations with real market brands that are not equal in cognitive or affective terms, for example, brands that are more or less known, or belong to product categories that are more or less relevant for consumers.

This research analyses how a consumer processes environmental information about particular brands and the relative effect of this information on that consumer's attitude. Using the dual mediation model (Lutz, MacKenzie, and Belch, 1983; Mackenzie, Lutz, and Belch, 1986) and the elaboration likelihood model (ELM; Petty and Cacioppo, 1981) as theoretical bases, we study the moderating roles of purchase-decision involvement and purchase frequency in the formation of attitudes toward a brand.

Petty and Cacioppo (1981, 1986) and Petty, Cacioppo, and Schumann (1983) state in the formulation of the ELM that the message-recipient uses a central route to persuasion when motivation and ability are high. When these drivers are not as high, individuals will use peripheral routes of persuasion. The distinction is important because the use of central or peripheral routes influences buying behavior (Scholten, 1996).

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brands depends on the type of product and the previous relation of the client to the brand. This article demonstrates that these kinds of associations are more useful when the brand is well known by the individual, and when she or he has a high involvement with the purchase decision.

The final piece of practical advice deriving from the study is that the use of environmental associations should not be interpreted as a panacea that will increase brand equity for all products, but that it can add value to a product—an advantage that should be analyzed on a case-by-case basis.

This article first discusses the theory behind three key issues in the communication of environmental information: its potential to improve attitudes toward the brand, its reliability and the mechanisms the consumer uses to process the information. Next, the article discusses the experimental design, materials used, and sample used for testing the hypothesis. Finally, the article analyzes the data and presents findings and conclusions.

BACKGROUND AND HYPOTHESIS

Adding value to a brand by environmental associations

Brand associations are classifiable from least to most abstract as attributes, benefits, and attitudes (Keller, 1993, 1998). This study analyzes the consumer's evaluation process on the environmental benefits of a brand. The underlying hypothesis,

therefore, relates to the improvement in attitudes toward the brand after it has incorporated these types of associations. Kinnear and Taylor (1973) tested this kind of relationship, inferring that the more ecofriendly the product, the closer the product is to the consumer's ideal brand. Similarly, but indirectly testing the positive effect of environmental benefits on attitudes toward the brand, Kassarian (1971) found a direct effect between the information on a specific environmental improvement in a product (a new gasoline additive that reduced emissions) and the sales of the product. Henion (1972) noted an increase in a brand's market share when some environmental information was provided. More recently, Lafferty and Goldsmith (2005) found that an alliance between the brand and a social cause improved the attitude toward such brand—a finding that did not relate directly to environmental issues, but tapped into a similar consumer mindset.

H1: The association of environmental benefits to the brand improves attitudes toward the brand.

Providing confidence in environmental associations

An individual's belief that an environmental claim lacks candor can have a negative effect on attitude toward a brand (Newell, Goldsmith, and Banzhaf, 1998). If, on the other hand, the consumer grants cred-

ibility to the claim, the individual will behave more respectfully toward the environment (Craig and McCann, 1978).

The problem in extending that credibility to a brand is that consumers interested in ecological products generally are skeptical of commercial advertisements (Shrum, McCarty, and Lowrey, 1995). This skepticism is due to various factors such as lack of language, the absence of scientific knowledge necessary to decipher advertising meaning, and, in particular, the falsehoods and exaggeration of some advertising techniques (Carlson, Grove, and Kangun, 1993; Fay, 1992; Scammon and Mayer, 1995).

To resolve this problem, independent organizations may choose to guarantee messages on the environmental benefits of brands (Scammon and Mayer, 1993, 1995) with environmental labeling systems sponsored by independent organizations. This practice attempts to diminish perceived biases in environmental information by promoting standardization of the information (Roe, Teisl, Rong, and Levy, 2001) with the aim of improving confidence in the evaluation of environmental benefits of products—all of which should positively affect the purchase intention. Therefore, a second hypothesis relates independent certification with an improved attitude toward the brand.

H2: Attitude toward the brand improves with the inclusion of environmental information from an independent organization.

Processing environmental information

The empirical contrast of these first hypotheses explains the relevance of environmental associations in the formation of attitude toward a brand. It also provides clues as to how to best communicate the environmental benefits of products. Even with that perspective, however, it is

important to better understand the mechanisms that control the processing of environmental information.

These mechanisms may be no different than the set of drivers that people use to process other information related to a brand. In fact, this study uses theories that are most often used in marketing and consumer behavior experiments to examine the causal relationship between the attitude toward the message and the attitude toward the brand.

Of all the alternatives used to analyze consumer response toward advertising in the general theory of the hierarchy of effects, the model providing the best adjustment indexes is the dual-mediation model (Brown and Stayman, 1992; Lutz, MacKenzie, and Belch, 1983; Mackenzie, Lutz, and Belch, 1986), according to which attitude toward the advertisement determines attitude toward the brand, as well as cognitive thoughts about the brand. Similarly, attitude toward the brand determines purchase intention.

Unlike Petty and Cacioppo's (1981) initial thesis proposal, the validations and amplifications that develop the dual-mediation model (Homer, 1990; Lord, Lee, and Sauer, 1995; Miniard, Bhatla, and Rose, 1990; Mittal, 1990; Yoon, Laczniak, Muehling, and Reece, 1995) demonstrate that, in the ELM, both the central and peripheral routes can act together processing information and changing attitudes.

With the derivations of the ELM in the present study, the weight of one route over another will depend on the degree of elaboration carried out by the individual. The elaboration route depends on the consumer's degree of motivation and ability: When motivation and ability are high, the consumer consciously and meticulously analyzes the information contained in an advertisement, giving more priority to thoughts about the brand (central route)

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than to secondary factors (peripheral route) in the advertisement.

Further analysis demonstrates that one of the most influential factors on information processing is the consumer's level of involvement. When the level of involvement with a product is high, consumers pay more attention to commercials and are more motivated to process the message in depth. In this case, persuasion occurs preferably through the central route (Petty, Cacioppo, and Schumann, 1983).

Similarly, ability—another determining factor in the probability of elaboration—can be found in familiarity with the brand, among other variables. In this case, some researchers find that when brands are familiar and there is well-established knowledge, the attitude toward advertising plays a secondary role in the formation of brand attitudes (Cox and Locander, 1987; Machleit, Allen, and Madden, 1993; Machleit and Sahni, 1992; Machleit and Wilson, 1988; Mitchell, 1993; Smith, Feinberg, and Burns, 1998).

Following the principles of the dual-mediation model and the ELM, this article proposes that in situations with a high level of involvement with the decision to buy and high familiarity with the brand, the importance of beliefs about the ecological performance of the brand in the formation of brand attitude will be higher than in situations with low involvement and/or low familiarity with the brand.

H3: Beliefs about environmental performance have a significant effect on brand attitude when the consumer is involved with the product and frequently purchases it.

The relationship between beliefs about environmental performance and brand attitude is expected to be significant when involvements with the decision to buy (motivation) and purchase frequency (ability) are high (see Figure 1). In other situations, the relationship is expected to be insignificant.

METHOD

Experimental design

To evaluate improvement in attitude toward the brand as a consequence of the association of environmental benefits (H1), as well as a result of the incorporation of independent certifications (H2), our research team developed an experimental design (see Table 1) consisting of three groups. One experimental group (EG1) was stimulated with information about the brand unrelated to its environmental performance. A second experimental group (EG2) received the same information as well as information about environmental performance. Finally, to contrast the incremental effect of the incorporation of independent certification on attitude toward the brand, a third experimental group (EG3) was given the same information as

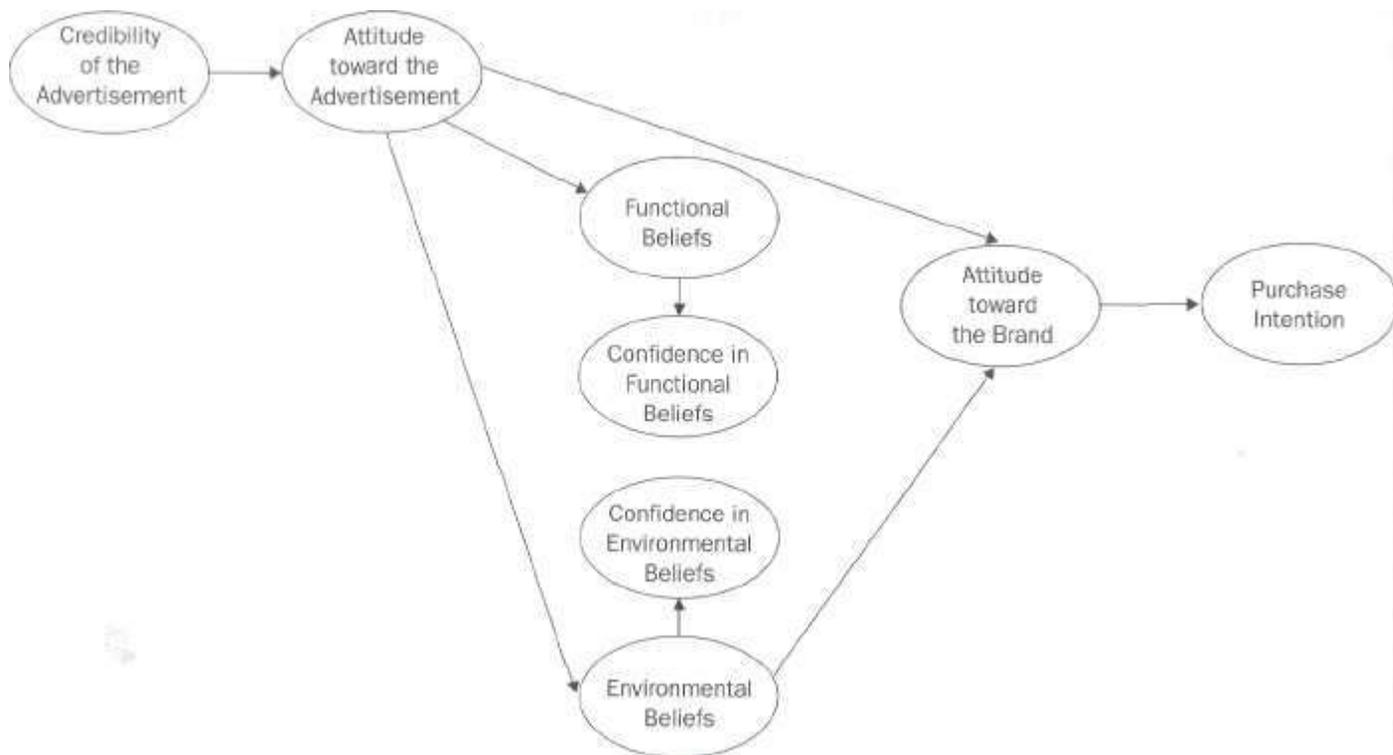


Figure 1 Environmental Information Processing by the Dual Mediation Model

TABLE 1
Experimental Design

Group			
Generic	Milk	Detergent	Description
EG1	EGM1	EGD1	Generic information on the brand (INF ₁)
EG2	EGM2	EGD2	(INF ₁) + information on the environmental performance of the brand (INF ₂)
EG3	EGM3	EGD3	(INF ₁) + (INF ₂) + environmental label (INF ₃)
CG	CGM	CGD	No information

the second group and an independent certification.

Thus, three levels of information were prepared: EG1 with generic information about the brand; EG2 with generic information, accompanied by information regarding environmental performance of the brand; and EG3 with all of the previous

information, plus an independent environmental certification. Murphy, Kangun, and Locander (1978) used a similar design.

One of the main assumptions of this theoretical framework is that there are two crucial factors in the processing of environmental information: involvement with the decision to buy and familiarity

with the brand. It is important to control the effects of each factor. The first variable was controlled by means of an experimental design in which two categories of products were considered: milk [experimental group milk (EGM)] and detergent [experimental group detergent (EGD)]. Detergents have been widely used as an object of association with environmental concern (Brooker, 1976; Henion, 1972; Henion, Russell, and Clee, 1981; Kinnear and Taylor, 1973; Mazis, Settle, and Leslie, 1973; Murphy, Kangun, and Locander, 1978; Niva, Heiskanen, and Timonen, 1998; Roozen, 1997; Schuhwerk and Lefkoff-Hagius, 1995; Tucker, 1978). Milk was chosen because it is closely associated with individual health, and because it has a more personal connection with consumers, it was expected to be of higher involvement. Two commercial brands with similar market share in Spain were selected

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for the study: PULEVA (EGMJ and SKIP (EGD).

A brochure (see the Appendix) containing written information and color pictures was used as a stimulus because written media commonly are used to communicate environmental information about a company or product (Banerjee, Gulas, and Iyer, 1995). Information about the environmental performance of the brand was included on the back cover on the right-hand side (where it was most visible). The information was selected considering that it is most effective when (1) it demonstrates significant and quantifiable benefits and is supplemental to basic information about the product or service (Davis, 1993), (2) the message refers to specific actions that the brand has taken to improve the environment (Thorson, Page, and Moore, 1995), (3) the environmental benefits are tangible and accompanied by cooperative initiatives (Otrman, 1992), and (4) it incorporates the prospect of a solution to the problem (Ellen, Wiener, and Cobb-Walgren, 1991; Obermiller, 1995; Roberts, 1996). Specifically, the texts referring to the environmental performance of the product read:

"SKIP AND THE ENVIRONMENT. The tensioactive agents used by Skip are

biodegradable and lower the average water temperature necessary to wash clothes. Product production has also been improved in the following ways: through a reduction in emissions, recycling of residue, and lower energy consumption."

"PULEVA AND THE ENVIRONMENT. The objective of the co-generation plant in Granada is to take advantage of the engine's thermal energy, resulting in less energy consumption and therefore contributing to a reduction in greenhouse gas emissions."

In the brochure provided to EGD3, a certification from the Association Internationale de la Savonnerie, de la Detergence et des Produits d'Entretien (AISE) was included on the front cover on the left-hand side, while the milk did not contain any such certification specific to the product. For both the milk and the detergent, the associations were made relative to the fulfilment of the ISO 14001 norm on certification of environmental-management systems, accompanied by an explanation of the logo. This certification was included on the center section of the front cover in both cases.

Because the experimental design included six experimental groups, it was necessary to design six different brochures. The specific brochure earmarked for each experimental group was shown to experimental subjects after asking them generic questions about the product categories and before asking them specific questions about the brand.

The factorial design (2 X 3) was carried out with two control groups (CG), one for each product category (CGM for milk and CGD for detergent), in which pertinent characteristics (i.e., brand attitudes and beliefs, purchase intentions, or commercial attitudes and credibility) were measured without prior exposure to the experimental stimulus. The goal was to test the effectiveness of the treatment and to identify any possible influence on confidence levels and beliefs about the brand motivated by the information contained in the brochure. Thus, control groups did not see any information about the brand.

Measurement scales

Once the respondents had seen the leaflet, the relevant measurements were taken (see Table 2), with measurement scales used, all formulated as semantic differentials. To ensure the reliability of scales used, they were all obtained from previous reputable studies.

To measure purchase intention, a scale of semantic differentials including one item was used (similar to the scale used by Cox and Locander, 1987; Grossbart, Muehling, and Kangun, 1986; Phelps and Grubbs, 1996) with the wording: *and in the next purchase of Idetergent/milk! . . . that you make, do you think the purchase of this brand is ... [probable-improbable].*

The measurement of brand attitude was done through a 4-item differential semantic scale (Mitchell and Olson, 1981), with the wording: *In relation to the brand, rate the following factors: good-bad; poor*

TABLE 2
Measurement Scales Used

Construct	Number of Items	References
Purchase intention (INT)	1	Grossbart, Muehling, and Kangun (1986)
Attitude toward brand (ATTBR)	4	Mitchell and Olson (1981)
Attitude toward the advertisement (ATTAD)	3	Mittal (1990)
Credibility of advertisement (CRE)	1	Prasad (1976)
Purchase-decision involvement (INVOL)	3	Mittal (1995)
Purchase frequency (FREQ)*	1	Ad hoc
<i>Brand beliefs</i>		
Gets rid of dirt/is healthy (BEL1)	1	Droge and Darmon (1987)
Is ecological (BEL2)	1	
Is gentle on laundry/is preventive (BEL3)	1	
<i>Confidence in beliefs</i>		
Confidence in evaluation of BEL1 (CON1)	1	Bruner and Hensel (1994)
Confidence in evaluation of BEL2 (CON2)	1	
Confidence in evaluation of BEL3 (CON3)	1	

*In comparison with purchase frequency of other brands in the same product category

quality-high quality; pleasant-unpleasant; dislike very much-like very much.

Beliefs about the brand were measured using a single item for each attribute in the form of a question: *On what scale do you think it is probable that brand X [benefits]. . . ?* (Droge and Darmon, 1987). Some in-depth interviews with users of both detergent and milk were conducted to determine some of the most relevant product benefits, in addition to the ecological benefit. For detergent these included: elimination of stains from clothes, ecological properties, and care of clothes. The following benefits were identified for milk: contributes to health and ecological properties. The opinion confidence score was measured through a "confidence-in-beliefs" scale (Burner and Hensel, 1994). The program allowed interviewees first to an-

swer the question about the probability of the brand having a particular attribute (beliefs about the brand) and then to determine their level of persuasion compared to their previous opinion (*not convinced-totally convinced*).

Attitude-toward-the-advertisement was measured using a 3-item semantic differential scale: *in relation to what you thought about the brochure and the information contained in it, rate the following factors: bad-good; boring-interesting; dislike-like* (Mittal, 1990). The credibility provided by the advertisement was measured using only one item: *how believable is the information contained in this brochure?* (Murphy and Admussen, 1981; Prasad, 1976).

The purchase-decision involvement with the product category was measured using a 3-item semantic differential scale: *Rate*

the following factors, thinking about choice of a detergent/milk brand . . . : a very unimportant decision-a very important decision; a decision requiring little thought-a decision requiring a lot of thought; little to lose if you decide to buy-a lot to lose if you decide to buy (Mittal, 1995; Putrevu and Lord, 1994). Finally, purchase frequency was measured with a 1-item semantic differential: *Indicate on a scale of 1 to 5 purchase frequency of the brand, where 1 is "I buy this infrequently" and 5 is "I buy this frequently."*

Sample

The sample included only women over 18 years of age. In Spain, women purchase most home products (Luque, 1998; Martinez, 1996), do 70 percent of the shopping, make the grocery list 78 percent of

These results empirically show that information processing relative to environmental practices of a brand follows a mechanism similar to that of information processing referring to any other attribute, although with the peculiarity that environmental beliefs have less importance than other beliefs.

the time, and decide about milk brands 75.5 percent of the time.

Four cities, whose population represented an average Spanish socioeconomic profile, were chosen for selection of the sample. A convenience sample based on age quotas was drawn in high-traffic public places. To guarantee a comfortable environment a "Hall Test" was arranged in cafes and hotels with spacious interiors. Individuals were randomly distributed by experimental groups in the following manner: EGM1 = 116; EGM2 = 118; EGM3 = 117; EGD1 = 117; EGD2 = 118; EGD3 = 117; CGM = 65; CGD = 60. Finally, 47 percent of the sample consisted of people who had some university education. The average family income was about €1,500 per month. The average family consisted of slightly more than three individuals (3.4). Fifty-four percent of the participants were mothers. Political orientation was centrist, averaging 2.7 on a scale from 1 (left) to 5 (right).

RESULTS

Effectiveness of experimental manipulation

The effectiveness of experimental manipulation was controlled by examining the effect of treatment levels on CON1, CON2, and CON3 (see Table 3). In short manipulation would be successful as long as

(1) there were significant differences in CON2 across the three levels of treatment because this result implies that the environmental information was perceived; (2) there were no differences in CON1 and CONS across the three levels of treatment as this fact implied that no associations other than the environmental were significantly perceived; (3) there were no differences in CON1, CON2, and CONS between the control group and the first experimental group (EG1) because this result meant that mere exposure to the stimulus does not raise perceptions about either functional or environmental benefits; and finally (3) there were no differences in CON2 for experimental groups EG2 and EG3 between the two product categories (namely, EGD2 versus EGM2 and EGD3 versus EGM3), as this absence of differences implied that the amount of environmental information perceived was the same for those exposed to the detergent brochure as those exposed to the milk brochure—a condition that allows UK-THERESEARCHTEAM to make comparisons between both product categories.

The results show differences in CON2 between the different experimental groups (EG1, EG2, and EG3) ($p < 0.01$). The interviewees received generic information about environmental performance of the

brand, although they did not perceive the ecological certification with sufficient intensity to provoke significant differences between experimental groups 2 and 3.

Second, no significant differences occurred in CON1 and CONS for either the detergent ($p = 0.34$ and $p = 0.11$) or the milk ($p = 0.51$ and $p = 0.65$), confirming expectations for the results on judgments relative to functional associations.

The control group was used to confirm that mere exposure to a stimulus did not cause an increase in confidence related to the functional attributes. Thus, there were no differences between the control group (CGD) and the experimental group (EGD) for CON1, CON2, and COX3 ($p = 0.08$, $p = 0.16$, $p = 0.97$, respectively), nor between CGM and EGM1 ($p = 0.91$, $p = 0.12$, $p = 0.12$).

Finally, no differences occurred for CON2 when comparing the two product categories, neither for EGD2 versus EGM2 ($p = 0.15$) nor for EGD3 versus EGM3 ($p = 0.78$). So, the results for detergent and milk were equivalent in terms of the environmental information received about the brands.

Scale analysis and purchase-decision involvement control

Only three of the scales used were multi-item tests. The scale of purchase-decision involvement reached an acceptable reliability level for the whole sample ($\alpha = 0.74$), less so for the milk ($\alpha = 0.62$) and slightly more for the detergent ($\alpha = 0.79$). On the other hand, there were differences between both product categories [$t = -8.52$; $df(701)$; $p = 0.00$], implying that purchase-decision involvement with "milk" ($M_{EGM} = 10.44$) was higher than with "detergent" ($M_{EGD} = 8.50$). Because the midpoint on the involvement scale (9) showed statistical differences with the mean of involvement in both cases (milk: $r = 9.77$, $df = 350$, $p = 0.00$,

TABLE 3
Experimental Effectiveness

Effect Analyzed

In CON2 across the three levels of treatment

Results and Conclusions

$F = 5.37$; $p < 0.01$; EG1: $M_{con2} = 3.49$; $S_{con2} = 0.985$; EG2: $M_{con2} = 3.67$; $S_{con2} = 0.94$; EG3: $M_{con2} = 3.78$; $S_{con2} = 0.95$

The environmental information was perceived although the ecological certification was not perceived with sufficient intensity to cause significant differences between experimental groups 2 and 3 (Tukey test between EG1 and EG2 $p < 0.01$; between EG2 and EG3 $p > 0.42$).

In CON1 and CONS across the three levels of treatment Milk

$F_{CON1} = 0.67$; $p = 0.51$

EGM1: $M_{con1} = 4.09$; $S_{con1} = 0.79$

EGM2: $M_{con1} = 3.97$; $S_{con1} = 0.89$

EGM3: $M_{con1} = 4.01$; $S_{con1} = 0.92$

$F_{CON3} = 0.423$; $p = 0.65$

EGM1: $M_{con3} = 3.92$; $S_{con3} = 0.95$

EGM2: $M_{con3} = 3.81$; $S_{con3} = 0.94$

EGM3: $M_{con3} = 3.85$; $S_{con3} = 0.87$

$F_{CON1} = 1.11$; $p = 0.34$

EGD1: $M_{con1} = 3.75$; $S_{con1} = 0.93$

EGD2: $M_{con1} = 3.87$; $S_{con1} = 0.78$

EGD3: $M_{con1} = 3.91$; $S_{con1} = 0.87$

$F_{CON3} = 2.20$; $p = 0.11$

EGD1: $M_{con3} = 3.76$; $S_{con3} = 0.83$

EGD2: $M_{con3} = 3.92$; $S_{con3} = 0.77$

EGD3: $M_{con3} = 3.97$; $S_{con3} = 0.82$

No associations other than the environmental were significantly perceived.

In CON1, CON2 and CONS between the control group and the first experimental group (EG1)

Milk

$t_{CON1} = -0.11$; $p = 0.914$

EGM1: $M_{con1} = 4.09$; $S_{con1} = 0.79$

CGM: $M_{con1} = 4.11$; $S_{con1} = 1.09$

$t_{CON2} = 1.85$; $p = 0.06$

EGM1: $M_{con2} = 3.68$; $S_{con2} = 0.91$

CGM: $M_{con2} = 3.38$; $S_{con2} = 1.20$

$t_{CON3} = -1.54$; $p = 0.12$

EGM1: $M_{con3} = 3.92$; $S_{con3} = 1.21$

CGM: $M_{con3} = 3.67$; $S_{con3} = 1.69$

Detergent

$t_{CON1} = -1.79$; $p = 0.08$

EGD1: $M_{con1} = 3.752$; $S_{con1} = 0.93$

CGD: $M_{con1} = 4.034$; $S_{con1} = 1.10$

$t_{CON2} = 1.425$; $p = 0.156$

EGD1: $M_{con2} = 3.316$; $S_{con2} = 1.02$

CGD: $M_{con2} = 3.050$; $S_{con2} = 1.43$

$t_{CON3} = -0.041$; $p = 0.97$

EGD1: $M_{con3} = 3.760$; $S_{con3} = 0.83$

CGD: $M_{con3} = 3.767$; $S_{con3} = 1.06$

Mere exposure to the stimulus does not raise perceptions about either functional or environmental benefits.

In CON2 for experimental groups EG2 and EG3 between the two product categories

EG2:

$t_{CON2} = -1.46$; $p = 0.15$

EGM2: $M_{con2} = 3.76$; $S_{con2} = 0.90$

EGD2: $M_{con2} = 3.58$; $S_{con2} = 0.97$

EG3:

$t_{CON2} = 0.28$; $p = 0.78$

EGM3: $M_{con2} = 3.80$; $S_{con2} = 0.91$

EGD3: $M_{con2} = 3.77$; $S_{con2} = 0.99$

The amount of environmental information perceived was the same for those exposed to the detergent brochure as those exposed to the milk brochure, and therefore comparisons can be made.

detergent: $t = -2.89$, $df = 351$, $p = 0.00$), the research team concluded that milk could be classified as a product with an "upper-scale" level of involvement and

detergent as "lower-scale." This consideration controlled the level of purchase-decision involvement in the experimental design.

The 3-item scale used to measure attitude toward the advertisement shows acceptable internal consistency for the total sample ($\alpha = 0.84$), and for each of the

TABLE 4
Measurements of Global Adjustment

	Detergent _{low_freq}	Detergent _{high_freq}	Milk _{low_freq}	Milk _{high_freq}
CHI-SQUARESATORRA-BENTLER(G.L.; P)	108.19 (80; 0.02)	112.17 (80; 0.01)	141.66 (80; 0.00)	150.49 (80; 0.00)
RMSEA	0.05	0.06	0.08	0.09
NNFI	0.97	0.96	0.95	0.93
IFI	0.98	0.97	0.96	0.95
CFI	0.98	0.97	0.96	0.95

experimental groups ($\alpha_{EGD1} = 0.81$; $\alpha_{EGD2} = 0.86$; $\alpha_{EGD3} = 0.84$; $\alpha_{EGM1} = 0.82$; $\alpha_{EGM2} = 0.86$; $\alpha_{EGM3} = 0.84$). Similarly, the 4-item measurement scale for brand attitude showed high Cronbach alpha values both generally ($\alpha = 0.84$), and in the measurement of attitudes toward PULEVA ($\alpha_{EGM} = 0.82$) and SKIP ($\alpha_{EGD} = 0.85$).

The effect of treatment on brand attitude

When EG1 and EG2 were compared, no direct effect existed of the incorporation of environmental information on attitude toward the brand for either milk [$t = 1.03$, $df(230)$, $p = 0.30$] or detergent [$t = 0.67$, $df(232)$, $p = 0.50$].

As a result, H1 (the positive effect on brand attitude when environmental attributes are associated to said brand) was not supported.

Nor do the findings support H2 (the positive effect of the incorporation of environmental certifications on attitude toward the brand) because the comparison of average values of attitude between EG2 and EG3 did not produce significant differences for either milk ($t = 0.66$, $p = 0.51$) or detergent ($t = 0.31$; $p = 0.75$).

The role of involvement and purchase frequency in the formation of brand attitudes

To test H3, the study tested the information-processing model (Figure 1) through a

multigroup analysis, taking into consideration only the individuals exposed to the environmental information message (EG2 and EG3). Prior to analysis, the individuals questioned on milk and detergent were divided into two groups (high- and low-purchase frequency), according to whether the purchase frequency values were higher than the median value or equal to or lower than that value. In the case of both products, the median value was 2. LISREL 8.53 software was used for the model estimation. The matrix correlations were used to apply the robust maximum likelihood method, given the non-multi-normality of the variables included in the analysis. Excluding the cases with missing values in one of the variables, the group sizes were MILK_{LOW_FREQ} = 122, MILK_{HIGH_FREQ} = 108, DETERGENT_{LOW_FREQ} = 131, DETERGENT_{HIGH_FREQ} = 98.

The model fit well in each group (Table 4). If the chi-square test of goodness-of-fit is significant ($\chi^2_{D(LOW_FREQ)} = 108.19$, $p = 0.02$, $\chi^2_{D(HIGH_FREQ)} = 111.17$, $p = 0.01$; $\chi^2_{M(LOW_FREQ)} = 141.66$, $p = 0.00$, $\chi^2_{M(HIGH_FREQ)} = 150.49$, $p = 0.00$), the RMSEA value is adequate (RMSEA_{D(LOW_FREQ)} = 0.05, RMSEA_{D(HIGH_FREQ)} = 0.06, RMSEA_{M(LOW_FREQ)} = 0.08, RMSEA_{M(HIGH_FREQ)} = 0.09). The incremental adjustment indexes reach very high values (CFI_{D(LOW_FREQ)} = 0.98, CFI_{D(HIGH_FREQ)} = 0.97, CFI_{M(LOW_FREQ)} = 0.96, CFI_{M(HIGH_FREQ)} = 0.95). Similarly, measurement model adjustment indexes were acceptable, showing extracted variance values as well as compound reliability above the minimum recommended values (see Table 5).

TABLE 5
Extracted Variance and Compound Reliability

	Detergent _{low_freq}	Detergent _{high_freq}	Milk _{low_freq}	Milk _{high_freq}
ATTAD				
Extracted variance	0.66	0.59	0.67	0.57
Compound reliability	0.85	0.81	0.86	0.80
ATTBR				
Extracted variance	0.53	0.63	0.55	0.46
Compound reliability	0.82	0.87	0.83	0.76

TABLE 6

Information Processing Model, According to Brand and Purchase Frequency

	CRE	CON1	CON2	CON3	BEL1	BEL2	BEL3	ATTAD	ATTBR
<i>D_{LOW_FREQ}</i>									
BEL1		0.09						0.48****	
BEL2			0.17**					0.44****	
BEL3				0.14**				0.68****	
ATTAD	0.66****								
ATTBR					-0.01	0.08	0.23*	0.45***	
INT									0.34****
<i>D_{HIGH_FREQ}</i>									
BEL1		0.25***						0.47****	
BEL2			0.26***					0.47****	
BEL3				0.54****				0.39****	
ATTAD	0.67****								
ATTBR					0.01	0.01	0.24**	0.56****	
INT									0.65****
<i>M_{LOW_FREQ}</i>									
BEL1		0.35****						0.44****	
BEL2			0.37****					0.37****	
BEL3				0.37****				0.50****	
ATTAD	0.72****								
ATTBR					0.31***	-0.03	0.08	0.50****	
INT									0.43****
<i>M_{HIGH_FREQ}</i>									
BEL1		0.49****						0.24***	
BEL2			0.43****					0.25***	
BEL3				0.42****				0.41****	
ATTAD	0.50****								
ATTBR					0.49****	0.18**	0.31***	0.05	
INT									0.44****

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$; * $p < 0.1$

The standardized coefficients of each of the proposed relationships for the four groups (see Table 6 and Figure 2) are clearly significant. The findings included

a lack of statistical significance in the first three groups in most of the relationships between beliefs and attitudes toward the brand. This affirmation was especially true

in the relationships regarding ecological performance that do not reach the most flexible limit of statistical significance ($p = 0.10$). On the other hand, in the group

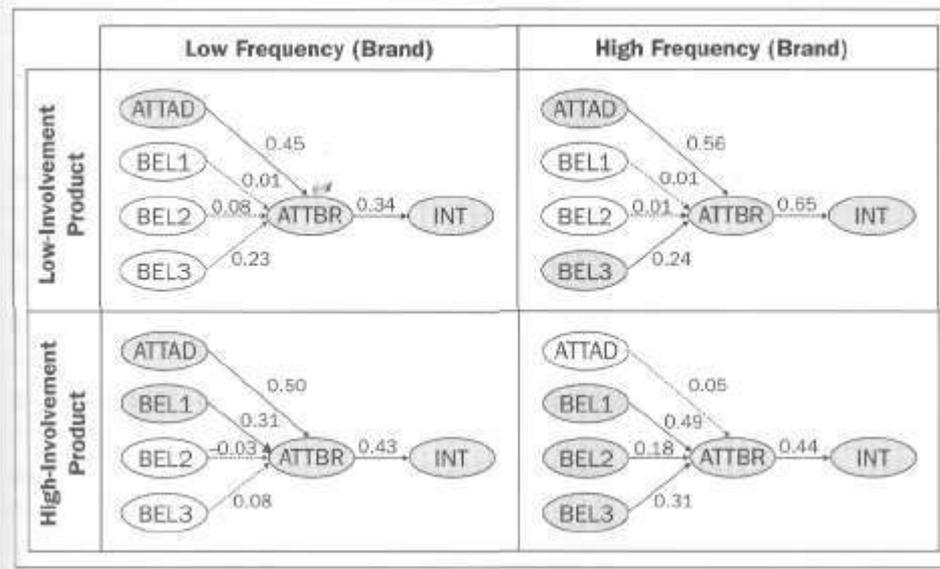


Figure 2 Environmental Information Processing in High- and Low-Involvement Situations and High- and Low-Purchase-Frequency Situations

with high involvement and a high-purchase frequency, the nonsignificant relationship was between attitude toward the advertisement and brand attitude.

A standardized loadings difference test enhanced the interpretation of the results obtained. In the first place, the strength of the relationship between confidence and the valuation of environmental practices

significantly increased with involvement and purchase frequency ($M_{\text{HIGH_FREQ}}$ versus $D_{\text{LOW_FREQ}}$; $z = 7.47, p < 0.0010$); ($M_{\text{HIGH_FREQ}}$ versus $D_{\text{HIGH_FREQ}}$; $z = 5.09, p < 0.001$); ($M_{\text{HIGH_FREQ}}$ versus $M_{\text{LOW_FREQ}}$; $z = 3.04, p < 0.01$). When both involvement and purchase frequency were low, the coefficient between confidence and the valuation of environmental practices was 0.17. When both involvement and purchase frequency were high, however, this coefficient reached a value of 0.43. On the other hand, the opposite seemed to be true of the strength of the relationship between attitude toward the advertisement and the valua-

tion of environmental practices, with significant reductions of intensity in this relationship when purchase frequency and involvement rise ($M_{\text{HIGH_FREQ}}$ versus $D_{\text{LOW_FREQ}}$; $z = -3.90, p < 0.001$); ($M_{\text{HIGH_FREQ}}$ versus $D_{\text{HIGH_FREQ}}$; $z = -5.60, p < 0.001$); ($M_{\text{HIGH_FREQ}}$ versus $M_{\text{LOW_FREQ}}$; $z = -1.44, p > 0.1$).

DISCUSSION

This study shows the absence of direct effects of environmental information on attitude toward the brand with which it is associated ($p = 0.30$ and $p \sim 0.50$ for milk and detergent, respectively). This conclusion is in full agreement with the findings of Connors (2002), but contradicts a good part of the scant literature referring to this question. Apart from Connors (2002), however, none of the other studies use a similar methodology.

Kassarjian (1971) found a positive relationship between the incorporation of a new additive to reduce atmospheric pol-

lution and the willingness to pay more, though the question was asked directly, without an intervening stimulus. Using an experimental approach in the store, Henion (1972) determined that there was a positive effect on market share of a set of detergent brands after incorporating information about their phosphate contents. Newell, Goldsmith, and Banzhaf (1998) demonstrated experimentally that correctly formulated environmental claims had a direct effect on brand attitude and purchase intention. The difference between those studies and the present one, however, is that the stimulus referred explicitly to the ecological performance of the brand and was not camouflaged inside other information.

Others have found that a relationship did exist, but only in part of the population. Kinnear and Taylor (1973) used INDSCAL to analyze how consumers perceived detergent brands with and without phosphates, reaching the conclusion that those without phosphate were closer to the ideal—a qualified finding in that it was true only for the segment of the population concerned about the environment. Henion, Russell, and Clee (1981) conclude that ecological attributes were the most important factor in detergent selection only for individuals with high environmental awareness; less aware consumers put price and cleaning capacity before environmental attributes.

Just as the data analysis in this study does not support the hypothesis of improvement in attitudes through the incorporation of environmental information (H1), neither does it uphold the hypothesis that the attitude is improved even more by the incorporation of environmental certifications (H2). This result contradicts some approaches, especially those of Scammon and Mayer (1993, 1995) who theoretically defended the incorporation of independent certifications as well as

Roe, Teisl, Rong, and Levy (2001) who, without referring specifically to independent certifications, empirically determined that environmental information is more effective when appearing in a standardized form.

To our knowledge, nonetheless, there has been no study that empirically tests the specific effect of environmental certification on brand attitude. Generic certifications meeting ISO 14001 or the AISE certification in the case of detergent may be not the most adequate. Despite this possibility, the study did find a positive effect of environmental information on consumer confidence ($p < 0.01$).

Some consideration should be given to the method and results of this study. First, in an effort to simulate reality, the environmental information was camouflaged inside other information referring to the brand because explicitly drawing attention to the ecological behavior of the brand greatly limited the validity of the experiment. This design could have limited the variation of attitude toward the brand due to the experimental treatment, something that probably would not have happened in many of the earlier studies because the environmental information was presented in an obvious way.

On the other hand, previous research did demonstrate a direct and positive relationship between environmental performance beliefs and brand attitude. Montoro, Luque, Fuentes, and Cahadas (2006) examined improvement in brand beliefs involving environmental information accompanied by certification. From this information, it could be concluded that environmental information had an effect on beliefs, even though its effect on improvement in attitude is not entirely clear and should be analyzed further.

Finally, a complementary explanation for the absence of effect of environmental associations on brand attitudes is that pre-

In situations of high involvement and high-purchase frequency, the improvement of beliefs and attitudes requires in-depth information processing, which, according to the study, is equally true in the case of environmental associations. In particular, these results show how environmental associations significantly influence attitudes toward the brand when consumers process the information through the central route.

vious studies show the relatively lower importance in attitude formation of beliefs about ecological performance of a brand in comparison with functional benefits {Montoro, Luque, Fuentes, and Cahadas, 2006} and, mainly, the price (Niva, Heiskanen, and Timonen, 1998; Roe, Teisl, Rong, and Levy, 2001; Stisser, 1994).

The absence of a significant effect of environmental information on attitudes, together with the lower importance of beliefs about the ecological performance of the brand in said attitudes, makes a deeper analysis of these relationships necessary. To that end, this study compared the moderating role of involvement and purchase frequency in the existing relation between beliefs about environmental performance of the brand and attitude toward the environment. The results were consistent with the theory: if purchase frequency and involvement are high, environmental beliefs relative to the brand have an effect on the formation of attitudes toward the brand.

These results empirically show that information processing relative to environmental practices of a brand follows a mechanism similar to that of information

processing referring to any other attribute, although with the peculiarity that environmental beliefs have less importance than other beliefs.

The central route clearly is more important in information processing for high purchase-decision involvement when the brand is frequently purchased, and the peripheral route is more important when the purchase frequency and/or involvement are lower, as suggested by ELM (Petty, Cacioppo, and Schumann, 1983). Furthermore, a gradual increase is observable in strength of relationship between judgments about the environmental performance of the brand and one's own confidence in those judgments as involvement and purchase frequency increase. Conversely, the strength of relationship between attitude toward the brand and beliefs about environmental performance decrease as purchase frequency and involvement decrease (see Figure 2).

CONCLUSIONS AND IMPLICATIONS

The study shows the absence of effect of environmental information—with or without independent certification—on brand attitude. That leads to the conclusion that

the results of this study do not show that environmental associations are useful in improving attitudes and purchase intentions. Still, some aspects of the results (i.e., the improvement in belief about environmental performance of the brand when environmental certification information is included) suggest that a deeper analysis of these relationships is needed.

The study does prove the ability of the ELM to explain information processing. The results demonstrate that the individual's knowledge about environmental benefits of the brand is relevant in the formation of attitudes only if the brand has a high-purchase frequency and fits into high-involvement product categories.

For marketing professionals, the results show the need to consider the mechanism directing formation of attitudes toward environmental practices because they depend on at least purchase frequency of the brand and purchase-decision involvement.

Understand that in situations of high involvement and high-purchase frequency, the improvement of beliefs and attitudes requires in-depth information processing, which, according to the study, is equally true in the case of environmental associations. In particular, these results show how environmental associations significantly influence attitudes toward the brand when consumers process the information through the central route. Evaluation therefore should be made of advertising formats that permit more in-depth processing of the information. The data show that environmental associations do not constitute a panacea for improvement of attitudes and brand equity, but their potential should be analyzed on an individual basis.

This finding also indicates that knowledge about the relationships between vari-

ables should be expanded by extending this study to include other product categories. More specifically, future studies should include durable goods {because product involvement is generally higher} and services, in which case defining environmental benefits seem to be a more complex task. 

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APPENDIX

Experimental Material

EGM1 FRONT COVER

Productos Puleva



En la estrategia de marketing más y después las etapas de desarrollo del producto Puleva Original, Puleva Sin Azúcar, Puleva Sin Lactosa, Puleva Sin Glucosa, Puleva Sin Fructosa y Puleva Sin Sacarosa. Todas estas presentaciones son elaboradas por el mismo equipo de producción de leche y para cumplir la idea de producción Puleva.



Puleva tiene un compromiso ineludible con la calidad

Ha obtenido el Certificado de Aprobación Científica a los productos de la familia PULEVA Sin Azúcar, Sin Lactosa y Sin Glucosa de la PULEVA de Lactancia y los productos Puleva Original, Sin Fructosa y Sin Sacarosa.

Te gusta BVL en combinación con leche? ¿Quieres saber más? ¿Quieres saber más sobre el producto? ¿Quieres saber más sobre el producto? ¿Quieres saber más sobre el producto?

01



Por tu bienestar



EGM1 BACK COVER

PULEVA. Por tu bienestar



PULEVA con la investigación

Gracias al I+D+i de nuestro equipo de Investigación y Desarrollo de nuevos productos.

La estrategia de Puleva es clara: el bienestar de tu bebé es el bienestar de nuestro equipo de investigación con BVL.



Puleva Contact

En caso de tener cualquier duda o pregunta, puedes contactar con nuestro equipo de atención al cliente. Estamos en tu idioma y siempre con la mejor actitud.



EGM2 FRONT COVER

Productos Puleva



En la estrategia de marketing más y después las etapas de desarrollo del producto Puleva Original, Puleva Sin Azúcar, Puleva Sin Lactosa, Puleva Sin Glucosa, Puleva Sin Fructosa y Puleva Sin Sacarosa. Todas estas presentaciones son elaboradas por el mismo equipo de producción de leche y para cumplir la idea de producción Puleva.



Puleva tiene un compromiso ineludible con la calidad

Ha obtenido el Certificado de Aprobación Científica a los productos de la familia PULEVA Sin Azúcar, Sin Lactosa y Sin Glucosa de la PULEVA de Lactancia y los productos Puleva Original, Sin Fructosa y Sin Sacarosa.

Te gusta BVL en combinación con leche? ¿Quieres saber más? ¿Quieres saber más sobre el producto? ¿Quieres saber más sobre el producto? ¿Quieres saber más sobre el producto?

01



Por tu bienestar



EGM2 BACK COVER

PULEVA. Por tu bienestar



PULEVA con la investigación

Gracias al I+D+i de nuestro equipo de Investigación y Desarrollo de nuevos productos.

La estrategia de Puleva es clara: el bienestar de tu bebé es el bienestar de nuestro equipo de investigación con BVL.



Puleva Contact

En caso de tener cualquier duda o pregunta, puedes contactar con nuestro equipo de atención al cliente. Estamos en tu idioma y siempre con la mejor actitud.



EGM3 FRONT COVER

Productos Puleva



En la estrategia de marketing más y después las etapas de desarrollo del producto Puleva Original, Puleva Sin Azúcar, Puleva Sin Lactosa, Puleva Sin Glucosa, Puleva Sin Fructosa y Puleva Sin Sacarosa. Todas estas presentaciones son elaboradas por el mismo equipo de producción de leche y para cumplir la idea de producción Puleva.



Puleva tiene un compromiso ineludible con el medio ambiente

Gracias al I+D+i de nuestro equipo de Investigación y Desarrollo de nuevos productos de la familia PULEVA Sin Azúcar, Sin Lactosa y Sin Glucosa de la PULEVA de Lactancia y los productos Puleva Original, Sin Fructosa y Sin Sacarosa. Todas estas presentaciones son elaboradas por el mismo equipo de producción de leche y para cumplir la idea de producción Puleva.

Te gusta BVL en combinación con leche? ¿Quieres saber más? ¿Quieres saber más sobre el producto? ¿Quieres saber más sobre el producto? ¿Quieres saber más sobre el producto?

01



Por tu bienestar



EGM3 BACK COVER

PULEVA. Por tu bienestar



PULEVA con la investigación

Gracias al I+D+i de nuestro equipo de Investigación y Desarrollo de nuevos productos.

La estrategia de Puleva es clara: el bienestar de tu bebé es el bienestar de nuestro equipo de investigación con BVL.



Puleva Contact

En caso de tener cualquier duda o pregunta, puedes contactar con nuestro equipo de atención al cliente. Estamos en tu idioma y siempre con la mejor actitud.



APPENDIX (cont'd)

EGD1 FRONT COVER

Producto Skip



El producto SKIP es efectivo en polvo y en líquido para limpiar cualquier superficie con total seguridad.

El grupo Unilever tiene un compromiso ineludible con la mejora continua en el área de calidad.

Por lo tanto, nos comprometimos a seguir mejorando la calidad de nuestros productos y servicios para ofrecer la mejor experiencia al consumidor.



AENOR
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La solución para una limpieza insuperable



EGD1 BACK COVER

SKIP. La solución para una limpieza insuperable

SKIP más eficaz contra las manchas.

La acción de los ingredientes activos de SKIP es altamente efectiva sobre las manchas de tipo grasa y aceites, y no que actúan a través de la acción de los surfactantes.



SKIP más eficaz en el cuidado de la ropa.

La acción agente que actúa para prevenir el deterioro, reduciendo la fricción entre las fibras de las prendas durante el lavado.



El grupo Unilever y la innovación constante.

SKIP es una marca comercializada en España por el Grupo Unilever, una de las multinacionales más importantes del mundo. La calidad de sus productos y servicios es el resultado de un proceso de innovación constante y de un compromiso con la sostenibilidad.



EGD2 FRONT COVER

Producto Skip



El producto SKIP es efectivo en polvo y en líquido para limpiar cualquier superficie con total seguridad.

El grupo Unilever tiene un compromiso ineludible con la mejora continua en el área de calidad.

Por lo tanto, nos comprometimos a seguir mejorando la calidad de nuestros productos y servicios para ofrecer la mejor experiencia al consumidor.



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La solución para una limpieza insuperable



EGD2 BACK COVER

SKIP. La solución para una limpieza insuperable

SKIP más eficaz contra las manchas.

La acción de los ingredientes activos de SKIP es altamente efectiva sobre las manchas de tipo grasa y aceites, y no que actúan a través de la acción de los surfactantes.



SKIP más eficaz en el cuidado de la ropa.

La acción agente que actúa para prevenir el deterioro, reduciendo la fricción entre las fibras de las prendas durante el lavado.



El grupo Unilever con la innovación constante.

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SKIP con el medio ambiente.

La innovación que da lugar a productos más seguros y efectivos es el resultado de un proceso de innovación constante y de un compromiso con la sostenibilidad.



El proceso de innovación de los productos Unilever se basa en un enfoque de innovación constante y de un compromiso con la sostenibilidad. La innovación de los productos y servicios es el resultado de un proceso de innovación constante y de un compromiso con la sostenibilidad.

EGD3 FRONT COVER

Producto Skip



El producto SKIP es efectivo en polvo y en líquido para limpiar cualquier superficie con total seguridad.

El producto SKIP es efectivo en polvo y en líquido para limpiar cualquier superficie con total seguridad.

El grupo Unilever tiene un compromiso ineludible con el medio del medio ambiente.

Por lo tanto, nos comprometimos a seguir mejorando la calidad de nuestros productos y servicios para ofrecer la mejor experiencia al consumidor.



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La solución para una limpieza insuperable



EGD3 BACK COVER

SKIP. La solución para una limpieza insuperable

SKIP más eficaz contra las manchas.

La acción de los ingredientes activos de SKIP es altamente efectiva sobre las manchas de tipo grasa y aceites, y no que actúan a través de la acción de los surfactantes.



SKIP más eficaz en el cuidado de la ropa.

La acción agente que actúa para prevenir el deterioro, reduciendo la fricción entre las fibras de las prendas durante el lavado.



El grupo Unilever con la innovación constante.

SKIP es una marca comercializada en España por el Grupo Unilever, una de las multinacionales más importantes del mundo. La calidad de sus productos y servicios es el resultado de un proceso de innovación constante y de un compromiso con la sostenibilidad.

SKIP con el medio ambiente.

La innovación que da lugar a productos más seguros y efectivos es el resultado de un proceso de innovación constante y de un compromiso con la sostenibilidad.



El proceso de innovación de los productos Unilever se basa en un enfoque de innovación constante y de un compromiso con la sostenibilidad. La innovación de los productos y servicios es el resultado de un proceso de innovación constante y de un compromiso con la sostenibilidad.