# "Thinking outside the packaging box":

# should brands consider store shelf context when eliminating overpackaging?

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**Abstract:** Governmental policies are encouraging companies to reduce the environmental impact of their packaging and particularly overpackaging, which raises a broad range of ethical considerations. However, experiments comparing an overpackaged product with a non-overpackaged product have shown that eliminating overpackaging may have a negative influence on brand image and consumer purchase intention. In this paper, we draw on attribution theory to examine the influence of the absence (*vs*. presence) of overpackaging on consumers' response, depending on their environmental consciousness and the absence (*vs*. presence) of overpackaging on the competing product. An experiment conducted on 218 consumers demonstrates that non-overpackaging for a target product only adversely affects purchase intention among non-environmentally conscious consumers when competing products are overpackaged. These results lead to optimistic recommendations for marketing managers and public policy makers to help them solve the ethical dilemma linked to overpackaging.

**Keywords:** Consumer behavior; Ethical dilemma; Overpackaging; Environmental consciousness; Context effects; Attribution.

**"Thinking outside the packaging box":**

**should brands consider store shelf context when eliminating overpackaging?**

Eurostat (2015) recently reported that 156.9 kilos of packaging waste had been generated per inhabitant in the 28 European Union (EU) Member States, or a total of 79.1 million tonnes for 2013. Governmental policies are increasingly encouraging companies to reduce the environmental impact of their packaging. European directive 94/62/EC, for example, states that "the best means of preventing the creation of packaging waste is to reduce the overall volume of packaging". Its numerous amendments, including the recent Directive (EU) 2015/720 on the reduction of lightweight single-use plastic carrier bags, further stress the importance of preventive measures and waste recycling. In this context, overpackaging, i.e. outer packaging designed to surround the product without any grouping of primary units, has become a symbol of the battle against environmentally-unfriendly packaging. In recent years many manufacturers have been working on ways to reduce overpackaging, considering environmentally-friendly packaging design as an integral part of green product innovation and sustainable development (Dangelico and Pujari, 2010). As an illustration, Dannon (or Danone in Europe) has removed overpackaging for four-yogurt packs on 52 Activia and Taillefine brand products, saving 1600 tonnes of cardboard (Dannon, 2011). Dannon has also taken a half-way position with Les2Vaches (the French brand from the partnership between Dannon and Stonyfield farm) by deciding to get rid of overpackaging but only once consumers are sufficiently aware of new products. But many other brands are still reluctant to engage in large-scale overpackaging elimination programs. For example, Yoplait from General Mills has decided to keep overpackaging on its four-yogurt packs on Panier de Yoplait brand products.

Doubts about the effects of overpackaging elimination may explain the hesitancy visible in current brand strategies. As a fact, recent research tends to show that it could have a negative

impact on brand image and purchase intention (Monnot et al., 2015). Keeping overpackaging to avoid such negative consequences, manufacturers contribute to packaging waste and actually subordinate the interest of the planet and future generations to business objectives. As such, the decision to keep overpackaging has the potential to diminish societal well-being and harm others and cannot be strictly considered anymore as a "business decision" (Bone and Corey, 2000). For manufacturers, it actually raises an ethical dilemma, "where moral certainty is compromised by rational cognition" (McCullough and Faught, 2005, p. 195). In this perspective, the present paper aims to explore the boundary conditions of this ethical dilemma. More specifically, it invites to consider that this ethical dilemma might actually vanish depending on individual and contextual variables.

The research on consumer choice behavior shows that decisions are largely influenced by choice context (Bettman et al., 1998) and calls have been made for new research considering context effects, in order to better understand the impact of overpackaging elimination and the psychological mechanisms involved in the consumer responses to it. This article fills that gap by drawing on attribution theory (Heider, 1944; Kelley, 1973) to explore the moderating influence of the store shelf context on the advisability of overpackaging elimination. Our assumption is that consumers' assessment of a target product will differ depending on whether competing products display the same amount of packaging (*homogeneous context*) or whether there is a dissimilarity between the brands in terms of overpackaging (*heterogeneous context*). Also, to extend study of the boundary conditions of the potentially negative influence of overpackaging elimination (Monnot et al., 2015), this article examines the potential moderating effect of consumers' environmental consciousness that has been shown to influence consumers' response to green packaging (Schwepker and Cornwell, 1991; Thøgersen, 1999). To sum up, in this article we examine whether the absence (*vs*. presence) of overpackaging on a target product has an influence on consumer purchase intention in a context that takes into account the absence (*vs*. presence) of overpackaging for competing in-

store products, and whether the consumer response differs according to consumers' environmental consciousness.

The remainder of the paper is organized as follows. We first present the conceptual model of this research, which draws on literature on ecologically designed packaging and ethical decision-making. Using pictures of store shelves, the experiment that aims at testing our conceptual model manipulates the absence *vs*. presence of overpackaging and the homogeneity *vs*. heterogeneity of the store shelf context. The results show that non-overpackaging of a target product only reduces purchase intention among non-environmentally conscious consumers when overpackaged competing products are present. Deepening the understanding of the under-investigated ethical issue of overpackaging elimination, they lead to optimistic recommendations for marketing managers and public policy makers.

## Theoretical Background

To identify the boundary conditions of the ethical dilemma of overpackaging elimination, we examine its effects on both consumers and manufacturers as it seems that the way consumers actually respond to overpackaging elimination contributes to manufacturers' perceived ethical dilemma. We therefore also refer to literature on consumers' responses to in-store packaging before turning to literature on business ethics to understand manufacturers' decision-making regarding overpackaging elimination.

### Effects of overpackaging elimination

The impact of packaging on solid waste growth has been acknowledged for decades (Schwepker and Cornwell, 1991). To address this environmental issue and promote "sustainable solutions that satisfy human needs and desires" (Karlsson and Luttropp, 2006, p.

1291), packagers have explored alternatives offered by ecological design, defined as a "design that promotes sustainable and ecological efficiency" (Magnier and Schoormans, 2015, p. 53). Practically, they have explored solutions in terms of the structure of packaging (e.g., size, shape, overpackaging elimination), the type of materials (e.g., recycled, recyclable, made from renewable sources), and reusability (Schwepker and Cornwell, 1991; Magnier and Crié, 2015).

Regarding more specifically overpackaging, research has studied the impact of its elimination on both consumers and manufacturers. For consumers, overpackaging elimination could simplify recycling, as they would no longer have to dispose of overpackaging, but could also be perceived as less convenient (Aydinliyim and Pangburn, 2012). In fact, the packaging holds the products and protects them against potential damage during transportation, storage and sale (McDaniel and Baker, 1977; Gonzalez et al., 2007; Wells et al., 2007; Sogn-Grundvag and Østli, 2009) as well as prevents consumers from contamination (Argo et al., 2006). Still, previous research shows that, for consumers, overpackaging serves marketing functions (visibility, attractiveness and information during purchase) more than technical functions (product preservation during transportation), since it neither contains the product nor has a grouping function (Monnot et al., 2015). Its environmental impact in terms of energy consumption and pollution during product transportation, and unnecessary waste at the disposal stage (Dangelico and Pujari, 2010) can therefore lead some consumers to consider it as superfluous (Elgaaied-Gambier, 2016). Recently, Elgaaied-Gambier (2016) shows that consumers are more likely to choose non-overpackaged products when they are dealing with a premium rather than with a budget brand, because their level of confidence for the brand in terms of image and perceived quality is higher, and when the brand explicitly communicates about overpackaging elimination.

For manufacturers, overpackaging elimination could result in savings, as overpackaging can represent up to 65% of the total cost of a product (Sevadec, 2015). It could also help

improving brands' perceived environmental friendliness (Thøgersen, 1999; Monnot et al., 2015) and, more globally, corporate image (Vercalsteren, 2001). However, some manufacturers keep doubts regarding its potential negative effects, notably because they find it too costly to test packaging changes before launch on the market (Ordabayeva and Chandon, 2013). As a fact, studying the impact of overpackaging elimination on private labels, Monnot et al. (2015) show that eliminating overpackaging is likely to produce negative effects on consumers' beliefs. Precisely, eliminating overpackaging may have a negative influence on mimic private labels' image, particularly on perceived quality and convenience, which transfers to purchase intention. Still, Monnot et al. (2015) study presents limitations as it draws on an experiment that do not consider the potential moderating influence of consumers' environmental consciousness and only exposed participants to one brand at a time, with or without overpackaging. These choice situation does not reflect a realistic store environment that would also have displayed other competing products, with and without overpackaging. Further considering the impact of in-store context is the primary focus of the present research. It could help manufacturers more clearly identify boundary conditions to the ethical dilemma they face when considering the elimination of overpackaging.

Table 1 offers an extended review of overpackaging elimination potential advantages and drawbacks.

**< Place Table 1 about here >**

**Consumers' response to in-store packaging**

In the store shelf context, consumers draw on a series of heuristics to evaluate products, in order to reduce their cognitive efforts and make choices. As packaging is the first thing they are exposed to (Orth and De Marchi, 2007), they often use its features (e.g. color, shape, volume) as cues to assess products. Previous research has studied the influence of specific packaging features on perceived product quality and purchase intention (Schoormans and

Robben, 1997; Orth et al., 2010). For example, the color of coffee packaging appears to act as an extrinsic cue for its flavor intensity (Dichter, 1964; Gordon et al., 1994) while the presence of a sustainability label on the front of a package influences consumers' product evaluations in terms of company attitude but also purchase intention and willingness to pay (Cho, 2015). Beyond, consumers may also use packaging ecological characteristics, including the mere presence of the overpackaging, as diagnostic cues when they assess products. Research has actually underlined that many consumers are aware of the benefits of environmentally friendly packaging (Schwepker and Cornwell, 1991; Bech-Larsen, 1996; Magnier and Crié, 2015) and adapt their purchasing behavior accordingly (Harrison et al., 2005; McGoldrick and Freestone, 2008).

However, consumers use extrinsic cues not in an absolute way but in a relative way, considering context effects. Indeed, a two-process model dictates the focus of consumers' attention when they evaluate store shelf display. They first observe the entire product display, then evaluate one particular display element, comparing two or three options before making their choice (Russo and LeClerc, 1994). Therefore, when they evaluate an option, they tend to refer to other options used as comparison standards, and judge the option concerned based on its own features but also the features of the other options in the choice set (Drolet et al., 2000). Deng and Khan (2009), for instance, show that the location of the product image on the package facade influences consumer assessments of packages differently depending on the store shelf context, i.e. the graphics used on other nearby packages. Specifically, this location effect is visible in a heterogeneous context but non-existent in a homogeneous context. This reasoning leads us to suggest that while overpackaging can be considered as one of the extrinsic cues consumers use to determine their preference among several products (Monnot et al., 2015), it must be considered in relation to the existence of overpackaging on other products in the consumer's choice set. In this perspective, two types of situations should be distinguished when it comes to store shelf configuration, i.e. heterogeneous contexts *vs*.

homogeneous contexts. In a *heterogeneous context*, the target product differs from the competing product in terms of overpackaging (i.e., a target product with [without] overpackaging is placed close to a competing product without [with] overpackaging). In a *homogeneous context*, the target product is the same as the competing product in terms of overpackaging (i.e., a target product with [without] overpackaging is placed close to a competing product with [without] overpackaging).

Going further, consumers do not use extrinsic cues in the same way. Some researchers have shown that consumers' intrinsic motivations, such as consumers' environmental consciousness, actually influence the perception of ecological cues and the intention to purchase environmentally friendly packaging (e.g., Schwepker and Cornwell, 1991; Thøgersen, 1999; van Birgelen et al., 2009; Koenig-Lewis et al., 2014). However, most research has suggested that consumers' preference for sustainable packaging seldom influences their actual purchasing decisions (Bech-Larsen, 1996). In a more nuanced way, van Birgelen et al. (2009) have showed that consumers trade off almost all product attributes in favor of environmentally friendly packaging, except products' taste and price. This means that consumers will only opt for ecologically packaged products when these products are as tastier as non-ecologically packaged products, and not more expensive. This also suggests to consider consumers' environmental consciousness when studying the conditions under which consumers would be more likely to switch to non-overpackaged products.

**Packaging ethical decision-making**

Packaging raises different ethical issues from the use of attractive promotional graphics on a package for a product which is potentially hazardous to a situation in which the cost of materials to package a product exceeds the cost of the product itself, or the practice of using pictures on product packages which bear little resemblance to the actual product (Bone and

Corey, 2000). In the present paper, we contend that overpackaging also represents for both consumers and manufacturers an ethical dilemma.

As defended by Culiberg and Bajde (2013), "the decision to engage in pro-environmental behavior typically stems from the reflection on how this behaviour will affect not only the individual decision maker but also other people and the environment" (p. 449). According to them, the question to behave, knowingly and willingly, in a way that has negative consequences for the welfare of others (which include people as well as animals, plants and the environment in general) is in its essence an ethical dilemma. As developed previously, consumers and manufacturers, who are aware of the environmental impact of excess packaging, keep preferring overpackaged products because of perceived or real drawbacks that may result in a loss in packaging convenience or a dilution in product image. If they keep using overpackaging, they harm the environment; if they decide to adopt non overpackaged products, they jeopardize their own interest. As such, consumers and manufacturers' deliberate preference for overpackaged products actually compromises the ability for future generations to meet their own needs, and is neither sustainable (Brundtland et al., 1987), nor ethical (Culiberg and Bajde, 2013, 2014; Elgaaied-Gambier, 2016).

Considering that the decision to eliminate overpackaging raises ethical considerations, we now turn to literature on business ethics to understand manufacturers' decision-making regarding overpackaging. Describing an integrative framework-based model of ethical decision-making, Hunt and Vitell (1986) would suggest that marketers, in this case, packagers, engage in both deontological and teleological perspectives when deciding to eliminate overpackaging. The deontological perspective suggests to maximize the inherent total good in the decision to eliminate overpackaging. In this perspective, packagers are supposed to compare the elimination of overpackaging with predetermined deontological norms, which may be based on personal experiences and values or on organizational or industry norms (Singhapakdi and Vitell, 1993). If they do not differ from consumers with

respect to moral values, their lower ethical sensitivity (Bone and Corey, 2000) may explain the decision to keep overpackaging. Furthermore, manufacturers could be less likely to eliminate overpackaging when such elimination is not considered as a rule of behavior in their industry. When a practice which includes an ethical content becomes common within an industry, it also becomes more acceptable from an ethical point of view (Hunt and Vitell, 1986).

The teleological perspective interrogates "the amount of good or bad embodied in the consequences" (Hunt and Vitell, 1986, p. 7) of the decision to eliminate overpackaging; it is comparative in its essence. In this perspective, decision making considers the perceived consequences (probability and desirability) of each alternative for the different groups of stakeholders depending on their importance or concentration (Hunt and Vitell, 1986; Jones, 1991; Singhapakdi et al., 1996). Packagers' lower rating of the likelihood and severity of the negative consequences resulting from a packaging practice (Bone and Corey, 2000) may explain the decision to keep overpackaging. Besides, marketers exhibit a tendency to focus attention on short-term gains, which may lower their evaluation of the consequences of the elimination of overpackaging for virtual stakeholders such as the planet or future generations. Adopting changes in a domain such as the protection of the environment has actually been considered a social dilemma (Rothschild, 1979; Pieters et al., 1998) as pro-environmental behaviors benefit society in the long run but often imply sacrificing resources such as money, time, or effort in the short run, which is hardly a motivating factor.

The present paper considers and mixes both deontological and teleological perspectives. In the deontological perspective, we contend that industry norms, and more precisely whether competing in-store products are overpackaged or not, might influence consumers' ethical dilemma and their decision to select a non-overpackaged product. Following, in the teleological perspective, we suggest that packagers overestimate the potential negative consequences of the elimination of overpackaging on their sales.

## Conceptual Model

To study context effects in consumer responses to overpackaging elimination, we draw on attribution theory. This theory originated in 1944 with Heider seeks to explain how the individual makes sense of events he/she observes or in which he/she is an actor (Kelley, 1973). According to this theory, individuals make causal inferences to explain what they observe, including their own or others' behavior, in order to organize their perceptual field in a coherent, stable, meaningful way and thus avoid cognitive dissonance (Festinger, 1957; Weiner, 1979). In marketing, this theory is relevant to explain consumers' responses to product failures (Folkes, 1984; Dawar and Pillutla, 2000), their evaluations of companies that engage in social sponsorship (Rifon et al., 2004), cause-related marketing (Ellen et al., 2000; Dean, 2003; Sjovall and Talk, 2004) or CSR communication (Davis, 1994; Parguel et al., 2011).

Heider's (1944) framework could also been used to explain how consumer interpret elimination of overpackaging and react to it. As shown by Monnot et al. (2015), "the mere presence of overpackaging can be attributed to causes relating to perceived product quality or the aim of making it easier to transport, consume or use, while the absence of overpackaging can be attributed to causes relating to the aim of making the product more environmentally friendly or more economical" (p. 333). These attributions reflect the cognitive responses that arise spontaneously when exposed to the product. Monnot et al. (2015) showed that these attributions negatively translate into brand evaluations and purchase intention for mimic private labels. In the end, attribution theory could explain why the mere presence of overpackaging is associated with better perceived quality and top-of-the-line brands (Underwood, 2003; Elgaaied-Gambier, 2016).

Our first hypothesis aims at replicating this specific finding in the case of a general brand, before taking context effects into account. We therefore propose:

*H1: The absence (vs. presence) of overpackaging has a negative influence on purchase intention for the target product.*

As the absence of overpackaging may also be interpreted as a sign of the product's perceived environmental friendliness (Monnot et al., 2015), its influence on purchase intention could depend on the level of the consumer's environmental consciousness. Environmentally-conscious consumers tend to act in a way that is consistent with protecting the ecosystem (Kinnear et al., 1974), buying "green" products (Follows and Jobber, 2000; Olson, 2013) or ecologically-packaged products (Schwepker and Cornwell, 1991). More and more consumers are aware of the ethical implications of products and adapt their purchasing behavior accordingly (McGoldrick and Freestone, 2008). These ethical consumers are concerned with the effects that a purchasing choice has, not only on themselves, but also on the external world around them (Harrison et al. 2005). They often give consideration to the ecological dimension of packaging (Schwepker and Cornwell, 1991; Polonsky et al., 1998; Rokka and Uusitalo, 2008), and may criticize overpackaging that generates a lot of waste despite its valuable technical functions (Elgaaied-Gambier, 2016). Also, positively attributing the absence of overpackaging to the product's environmental friendliness could outweigh its potential negative associations with lower quality and convenience. Therefore, environmentally-conscious consumers' purchase intentions are likely to be less sensitive to the absence of overpackaging.

In contrast, as non-environmentally-conscious consumers are not influenced by products' environmental friendliness, they will probably associate the absence of overpackaging with exclusively negative attributions, namely lower perceived quality and convenience. Consequently, they are likely to have a stronger base preference for overpackaged products

that are more visible, provide better protection for the products and usually supply more information than non-overpackaged products. Non-environmentally-conscious consumers are consequently expected to be sensitive to the absence of overpackaging.

In other words, the absence (*vs*. presence) of overpackaging is likely to have a stronger negative influence among non-environmentally-conscious consumers. Hypothesis H2 thus postulates that consumers' environmental consciousness moderates the negative influence of non-overpackaging on purchase intention.

> *H2: The absence (vs. presence) of overpackaging has a stronger negative influence on purchase intention for the target product among consumers that are less environmentally-conscious than among consumers that are more environmentally-conscious.*

Going further into the exploration of the cognitive process involved in consumers' response to overpackaging elimination, attribution theory generally applies when the situation observed by the individuals is unusual and creates a cognitive imbalance that is significant enough to motivate them to investigate its reasons (Lichtenstein and Bearden, 1986). Individuals are thus more likely to engage in attributional reasoning when they are surprised by events that undermine their expectations (Weiner, 1986; O'Malley and Tech, 1996; Bougie et al., 2003). The most important causal agent for generating attributional processing is the disconfirmation of expectations (Pyszczynski and Greenberg, 1981). In this article, we specifically consider exposure to an unusual heterogeneous context on the store shelf as an event that does not conform to expectations and is likely to trigger the search for an explanation for that event.

In real-life situations, competing goods in the same product category are traditionally either all overpackaged, or all non-overpackaged. This leads consumers to perceive the existence of a "standard" strategy for each product category, with homogeneous contexts in terms of overpackaging considered "normal". A heterogeneous store shelf context, in which

overpackaged and non-overpackaged products coexist for the same product category (e.g., when a manufacturer suddenly decides to depart from the "standard" practice), therefore constitutes an unusual context for consumers. Attribution theory suggests that consumers will be more likely to engage in attributional reasoning when they face a heterogeneous store shelf context than when they face a homogenous store shelf context. In a heterogeneous store shelf context, consumers find their expectations regarding the existence of a "standard" strategy for each product category contradicted. This leads them to explore the reasons why some brands are not following the "standard"; they consider product quality and convenience, and the situation potentially reduces their purchase intention.

In other words, the absence (*vs*. presence) of overpackaging for the target product is likely to have a stronger negative influence on consumer purchase intentions in a heterogeneous store shelf context than in a homogeneous store shelf context. Hypothesis H3 thus postulates that the overpackaging aspect of the store shelf context moderates the negative influence of the absence of overpackaging on purchase intention.

> *H3: The absence (vs. presence) of overpackaging has a stronger negative influence on purchase intention for the target product when the competing product is overpackaged than when the competing product is not overpackaged.*

On the whole, our second and third hypotheses consider that the main negative influence of non-overpackaging has boundary conditions linked to consumers' environmental consciousness and store shelf context effects.

## Method

### Experimental design and stimuli

The experiment follows a 2 (target product overpackaging: absence *vs*. presence) by 2

(competing product overpackaging: absence *vs*. presence) between-subjects design. Across all conditions, participants were asked to observe a visual representation of shelves displaying several products for two brands of organic yogurt sold in France.

We chose yogurt as the product category to study because it is a consumer staple with very high penetration in the population (96.7% for yogurts, figures extracted from Nielsen on 9 April 2014). It also symbolically embodies the issue of reducing overpackaging (CNE, 2007). We focused on the organic market subcategory for two reasons: (1) modeling the store shelf context is easier because the organic ultra-fresh market is much smaller than the ultra-fresh market in general (only 3% in value); (2) the organic ultra-fresh market is becoming increasingly important, doubling in value in the last four years (LSA, 2013). The two brands we selected are the two main labels operating on this market subcategory in France: Les2Vaches (target product) and Vrai (competing product). We chose two real brands to favor the results ecological validity. The random assignment of the respondents to each experimental conditions guaranteed variations in terms of knowledge and attitude to be equally distributed across experimental conditions. Preliminary analyses actually showed that the four groups were homogenous in terms of familiarity with the target brand ($F(3,214)=0.18$, ns) and purchase frequency for the target brand ($F(3,214)=1.25$, ns). Still, to make sure that these variables did not explain our results in terms of purchase intention for the target product, we made sure to control them in the analyses conducted.

To make the four visual representations of the experiment, we used Spaceman Professional software. Spaceman Professional provides industrial manufacturers with an easy-to-use system to develop category merchandising plans. For this research, it was used to produce professional-quality planograms virtually depicting a realistic section of a retail environment for the two brands (see Figure 1).

**< Place Figure 1 about here >**

As can be seen from Figure 1, the prices of the products were displayed to make the picture realistic. These prices were based on real prices for this product category and were voluntarily similar between the two brands, to neutralize any potential price effect. No store-specific information was displayed.

**Measures**

The respondents first assessed their purchase intention for the target product using a single item ("If you had to choose between one of these two products, how likely is it that you would choose Les2Vaches?"). Environmental consciousness was measured using three items from Parguel et al. (2015) ("When possible, I always choose the product that has the lowest negative impact on the environment"; "I try not to buy from companies that generate a high level of pollution"; "When I have a choice between two equivalent products, I always think about which one pollutes less before buying"; $\alpha = 0.865$) and dichotomized such that respondents scoring strictly higher than 4 were tagged as "environmentally-conscious consumers". Respondents' individual characteristics were then collected for use as covariates in the analyses. Purchase frequency for the target brand was measured with the following item: "How often do you buy Les2Vaches brand yogurts?". Familiarity with the target brand was measured as follows: "Regarding the Les2Vaches brand, would you say that 1= you are not at all familiar with the brand, 7= you are very familiar with the brand?". Finally, age and gender were collected.

All constructs were measured using seven-point Likert scales. For the purpose of manipulation checks, we asked respondents whether the product they were exposed to was overpackaged and the results showed a significant difference depending on the actual presence of overpackaging ($Chi^2 = 125.34$, $p<0.05$).

**Sample**

Data collection was conducted online by a professional market research company from a diversified sample of the French population in terms of gender, age and socio-professional category (see Table 2). Subjects were randomly assigned to one of the four treatments. The analyses were run on the 218 respondents that checked manipulations. Preliminary analyses showed that the four groups were homogenous in terms of environmental consciousness ($F_{(3,214)}$=1.39, ns), age ($F_{(3,214)}$=1.90, ns), and gender ($\chi^2_{(3)}$=4.20, ns), which were included in the analyses as individual control variables, along with familiarity with the target brand and purchase frequency for the target brand.

**< Place Table 2 about here >**

## Results

In order to test our hypotheses, we first ran an analysis of the purchase intention variance for the target product, taking the presence of overpackaging on the target product, the presence of overpackaging on the competing product and the dichotomized version of consumers' environmental consciousness as the independent variables. Purchase of the target brand, familiarity with the target brand, age, and gender were included as covariates. Table 3 displays the results of the variance analysis. Table 4 displays the estimated marginal mean purchase intentions for the target product, for all combinations of independent variables.

**< Place Table 3 about here >**

**< Place Table 4 about here >**

In preliminary results, the variance analysis revealed the expected influence of covariates. The purchase frequency for the target product ($F_{(1,206)}$=3.98, $p$<.05) and familiarity with the target brand ($F_{(1,206)}$=13.33, $p$<.05) both increase purchase intention for the target product. The analysis also revealed the positive influence of consumers' age, which can probably be

attributed to the fact that older consumers are generally slightly more likely to consume organic food ($F_{(1,206)}$=3.69, $p$<.10) (van Doorn and Verhoef, 2011).

More interestingly, regarding the tests of our hypotheses we found that non-overpackaging of the target product has a mainly negative effect on its purchase intention ($F_{(1,206)}$=6.75, $p$<.05), corroborating H1 and replicating other research conducted in a single-product context (Monnot et al., 2015). The two-way interaction between non-overpackaging of the target product and the consumer's environmental consciousness was marginally significant ($F_{(1,206)}$=3.02, $p$<.10). A series of planned contrasts was used to test whether, as predicted by Hypothesis 2, the absence (*vs*. presence) of overpackaging on the target product reduces its purchase intention more in less environmentally-conscious consumers. In line with H2, these tests indicate that the effect of the absence (*vs*. presence) of overpackaging on the target product on its purchase intention is significant for less environmentally-conscious consumers ($F_{(1,126)}$=12.54, $p$<0.05), but not for more environmentally-conscious consumers ($F_{(1,78)}$=0.46, $p$=0.50). This pattern of effects, which corroborates H2, is plotted in Figure 2.

**< Place Figure 2 about here >**

The two-way interaction between the absence of overpackaging on the target product and the absence of overpackaging on the competing product was not significant ($F_{(1,206)}$=1.17, $p$=.280), but the analysis interestingly revealed a three-way interaction between the three independent variables ($F_{(1,206)}$=4.37, $p$<.05). For a deeper exploration of this three-way interaction, we successively considered a non-overpackaged and an overpackaged competing product and ran new variance analyses to explore the potential moderating effect of consumers' environmental consciousness on the relationship between the presence of overpackaging on the target product and its purchase intention in both cases. Following recent recommendations that continuous variables should not be discretized (i.e., Irwin and McClelland, 2001; Fitzsimons, 2008; Spiller et al., 2013), we ran floodlight analyses using

Hayes' (2013) PROCESS macro (model 1). We included the same covariates as previously and specified a 95 per cent confidence interval.

When the competing product is overpackaged, the regression of purchase intention for the target product by the presence of overpackaging on the target product (absence coded "0" and presence coded "1"), consumers' environmental consciousness and their interaction term shows a significant interaction effect ( $\beta$ =-0.55, t=-2.57, $p$<0.05). The floodlight analysis using the Johnson-Neyman technique (Johnson and Neyman, 1936) identifies the area of consumers' environmental consciousness where the presence of overpackaging on the target product significantly influences purchase intention. Among less environmentally-conscious consumers (score below 4.30, $\beta_{JN}$=0.71, t=1.98, $p$=0.05), the absence (*vs*. presence) of overpackaging significantly reduces purchase intention for the target product. This effect is not observed among more environmentally-conscious consumers. When the competing product is overpackaged, the regression of purchase intention for the target product by the presence of overpackaging on the target product (absence coded "0" and presence coded "1"), consumers' environmental consciousness and their interaction term does not show any significant interaction effect ( $\beta$ =-0.06, t=0.27, $p$=0.789). This pattern of effects, which gives partial support to H3, is plotted in Figure 3 using the dichotomous version of consumers' environmental consciousness to provide an intuitive representation.

**< Place Figure 3 about here >**

## Discussion

These results bear interesting theoretical contributions and practical implications for marketing managers and public policy makers willing to contribute to the reduction of packaging waste.

**Theoretical implications**

First, this research demonstrates that the decision to eliminate overpackaging can be considered as an ethical dilemma for consumers and manufacturers as defined by Culiberg and Bajde (2013), as it involves behaving, knowingly and willingly, in a way that has negative consequences for the welfare of others (which include people as well as animals, plants and the environment in general). As such, it extends the work of Bone and Corey (2000), who already identified three specific ethical issues faced by packaging (i.e., the use of attractive promotional graphics on a package for a product which is potentially hazardous, the situation in which the cost of materials to package a product exceeds the cost of the product itself, the practice of using pictures on product packages which bear little resemblance to the actual product). Clearly, packaging decisions entails many ethical considerations beyond this very small sampling of cases. Moreover, this research highlights that consumers' and manufacturers' ethical dilemmas may be nested into each other. More precisely, consumers' ethical dilemma involves consumers' decisions that should be considered as relevant consequences to be precisely assessed by manufacturers when considering their own ethical dilemma. Going further, manufacturers' ethical dilemma is partly linked to their incomplete information about consumers' response to their potential elimination of overpackaging. As such, we show that incomplete information complicates manufacturers' ethical dilemma, when it could be easily solved if manufacturers actually knew more precisely when consumers are likely to respond in a negative way to the elimination of overpackaging (Ordabayeva and Chandon, 2013). In a more general way, it enriches the teleological moral perspective of Hunt and Vitell's (1986) model of ethical decision-making by underlying the inherent interdependence between different stakeholders.

Second, this research shows that eliminating overpackaging can be detrimental to a brand because it may reduce consumers' intention to purchase the product. As such, it replicates a

recent demonstration made by Monnot et al. (2015) that showed that eliminating overpackaging reduces purchase intention for mimic private labels due to lower perceived quality and convenience. However, this research goes further by showing that this negative effect is consumer- and context-dependent as it is only observed in less environmentally-conscious consumers who can see that competitors are continuing to use overpackaging. As such, it identifies boundary conditions linked to consumers' environmental consciousness and store shelf context effects, and extends Monnot and colleagues' (2015) previous work. Furthermore, the present research illustrates the deontological moral perspective of Hunt and Vitell's (1986) model of ethical decision-making by demonstrating the influence of individual traits and values (namely consumers' environmental consciousness) and of industry norms (Jones, 1991; Singhapakdi and Vitell, 1993). Precisely, showing that the store shelf context actually has an impact on the decision to remove overpackaging or not, the experiment underlines the influence of industry norms and competitors' dynamics on ethical decision-making when there is no obligation to get rid of overpackaging. Interestingly, the present research goes further by considering that industry norms and dynamics do not only shape manufacturers' ethical decision-making, but also consumers' ethical decision-making. To sum up, the present research is finally in line with Hunt and Vitell's (1986) integrative framework-based model of ethical decision-making, as it shows that packagers engage in both deontological and teleological perspectives when deciding to eliminate overpackaging.

Third, showing that when consumers face non-overpackaged competing products, i.e. when the market "standard" is changing, the absence of overpackaging has no negative impact, the present research enriches the analysis and answers the call for new research considering context effects in order to better understand the impact of overpackaging elimination and the psychological mechanisms involved in the consumer responses to it (Monnot et al., 2015). In line with Bettman et al. (1998), who showed that consumers' decisions are largely influenced by choice context, the finding that consumers' response may differ when the focus is on a

single product *vs*. a shelf store with more than one brand could be considered a methodological contribution. Specifically, we emphasize that researchers must be cautious when carrying out experiments that are too far from a real-life context. Experiments on single products taken out of the context of their competitive environment are worth considering, but in early exploratory phases of research, before being supplemented by additional studies controlling for possible context effects. Going further, the fact that the experiment corroborates hypotheses that specifically draw on attribution theory reaffirms the value of attribution theory for consumer behavior research, and especially for research conducted on consumers' response to context effects. Attribution theory states that individuals seek causes to which they can attribute what they observe. When consumers face an unusual heterogeneous situation on the store shelf, they are more likely to look for explanations because this situation is not consistent with their expectations. As such, referring to both attribution and context effects theories together could be seen as a contribution in itself, as it indicates which in-store context is perceived as usual *vs*. unusual.

Last, this research enriches the literature on packaging features and their effects on product evaluation (Schoormans and Robben, 1997; Underwood, 2003; Orth et al., 2010). Previous research has demonstrated that consumers use packaging features as extrinsic cues to assess products. Going further, this research shows here that the mere presence of overpackaging is one of these extrinsic cues used by consumers to determine their preference, in addition to the list of features traditionally mentioned in the literature, such as color or shape. In the meantime, this research, which draws on attribution theory, shows that overpackaging elimination for a target product only reduces purchase intention among non-environmentally conscious consumers facing overpackaged competing products, namely among less involved consumers. As such, it suggests that the Elaboration Likelihood Model (ELM), and more precisely the peripheral route, are relevant theoretical explanations when studying the influence of packaging attributes. In fact, the peripheral route, where "persuasion results from

non-issue relevant concerns" (p. 262), actually includes attributional approaches according to Petty and Cacioppo (1981), and is likely to be more influential among less involved consumers. This means that when individuals are non-environmentally conscious, they are not involved in processing the product information and they follow the peripheral route by considering overpackaging as an extrinsic cue to assess the product. Our results are therefore clearly in line with the ELM meta-framework, which has, to the best of our knowledge, rarely been used to analyze the effects of packaging attributes on consumers' evaluations (except: Gopinath and Glassman, 2008). What is more, unsurprising as this result about the moderating role of consumers' environmental consciousness may seem, it had not yet been demonstrated, and answers the recent call by Monnot et al. (2015) to consider the moderating role of individual sensitivity to environmental protection when studying overpackaging elimination effects. In the end, the research concludes that consumer attitudes may partly justify manufacturers' unwillingness to eliminate overpackaging. Indeed, manufacturers have no interest in eliminating overpackaging when their consumers do not exhibit sufficient environmental consciousness, which leads to discuss our implications for marketing managers and public policy makers.

**Implications for marketing managers and public policy makers**

Regarding the ethical dilemma, the risk is that manufacturers who do not display a high level of environmental sensitivity may simply stick to the *status quo*, to the detriment of the environment. In the short term, they will only be willing to engage in overpackaging elimination in situations where it does not adversely affect consumer purchase intentions. In this perspective, some optimistic recommendations can be drawn from our results that help them identify two such situations. First, such manufacturers could eliminate overpackaging in product categories where competitors have begun eliminating overpackaging. Second, they could eliminate overpackaging whenever they target environmentally-conscious consumers.

As such, our research identifies situations where eliminating overpackaging could be a way to reduce the environmental impacts of products, especially in countries where recycling rates are not very high (e.g., between 30 and 40% in the UK, Italy, France and Spain, and far less in Eastern European countries, compared with more than 60% in Germany and Austria according to the European Environment Agency (2013). Apart from these two situations, our results show that eliminating overpackaging would not be in the interests of manufacturers if their competitors do not commit to the same strategy.

In a heterogeneous context, i.e. when the competing product is overpackaged, eliminating overpackaging on the target product results in a significant decrease in purchase intention. This situation echoes game theory and the prisoner's dilemma. All manufacturers should benefit from a general elimination of overpackaging, but they will not go down that path unless their competitors do the same. This dilemma is solved through cooperation (Axelrod, 1984). In our framework, this suggests that a third party should regulate the market, urging manufacturers to discuss, negotiate and reach a collective agreement on overpackaging elimination. While they are at risk if overpackaging elimination breaks the market "standard", the risk is controlled if a third party coordinates implementation of a new market "standard" for overpackaging. This third party could be an inter-professional organization, involving manufacturer members who actively advocate overpackaging elimination. Alternatively its role could be played by public policy makers, using different types of tools ranging from a law banning overpackaging to various economic incentives (e.g., tax reductions for manufacturers that make efforts to cut their amount of packaging; fines for those that persist in selling excessively packaged products). That being said, for manufacturers displaying a high level of environmental sensitivity (Lannelongue et al., 2014) such incentives or compulsory measures are not necessary. Brands with a conscience indeed are intrinsically driven by "a desire to transcend their licit business objectives and make a positive transformative impact on the world" (Iglesias and Ind, 2016, p. 206). Such companies would

thus get rid of overpackaging regardless of the potential negative impact on their image, because they believe it is the right thing to do.

As overpackaging is usually associated with better protection, higher quality and attractiveness (Elgaaied-Gambier, 2016), manufacturers wishing to eliminate it must make sure that their primary packaging will be sufficiently robust and attractive if they are to avoid a loss of perceived convenience and attractiveness. Also, to avoid negative attributions associating overpackaging elimination with lower quality, manufacturers need to communicate in order to break the persistent link in consumers' minds between overpackaging and high-end premium quality products. For instance, when eliminating overpackaging, manufacturers could adopt an informational approach, adding a note on the product itself, or placing a shelf flyer close by, in order to attract attention to the change in packaging and explain it. Clearly stating that overpackaging elimination is part of their responsible commitment to sustainable development is likely to temper the negative attributions that could lead to lower purchase intention for the product.

It is to be noted that changing the market "standard" in terms of overpackaging will probably be easier for certain product categories. For example, manufacturers in the food industry might typically be more reluctant than others to get rid of overpackaging, because this type of goods consumers are more concerned with contamination effects (Argo et al., 2006) such as hygiene and protection issues. Yet these contamination effects are not always scientifically proven, and can be considered as a preconceived idea, a false belief. This last point also underlines the importance of consumer education as consumers indirectly bear some responsibility for the deterioration of the environment. Unfortunately, consumers are not sufficiently aware of the environmental consequences of overpackaging. Governments should therefore communicate and inform consumers about this issue through public service announcements, to develop greater public awareness. In the same perspective, consumer associations could help change the consumer belief that overpackaged products are upmarket

products, and help them identify superfluous packaging. Manufacturers would be less reluctant to eliminate overpackaging if consumers were more environmentally-educated.

Another operational recommendation concerns merchandising and range management. Regarding merchandising, retailers could redesign store shelf display in a way that takes into account brands' overpackaging strategies, and specifically avoid placing brands that have already eliminated overpackaging next to overpackaged competing brands, particularly on highly competitive markets. Regarding range management, manufacturers marketing several brands in the same product category should homogenize overpackaging strategies among same-tier brands, to avoid cannibalization (e.g. Dannon with Activia and Taillefine in France).

**Further research**

From a methodological point of view, this research has not considered the fact that in real stores consumer choices are usually between more than two brands. For several product categories, such as the ultra-fresh market, the number of different items in store is very high, obliging consumers to compare a wide variety of products comprising several brands and different intrinsic and extrinsic features. Products are not therefore usually compared two by two, as tested in this research for the purpose of the experiment. This research also studied the specific category of yogurts. Replications with other product categories such as toothpaste or cosmetics could be considered, because choice mechanisms might be different for different products. We only focused here on purchase intention rather than actual purchase behavior, and this can be considered another limitation of this study. The main reason for this choice was that it was impossible to find the ideal overpackaging configurations to test and to control for all environmental variables at the same time.

Price effect could also be explored in further research. In the present research, prices were voluntarily similar between the two brands, to neutralize any potential price effect. Still, the

non-overpackaged products may sell for less than the overpackaged ones. In the case of food products, it is acknowledged that packaging in general accounts for up to 20% to 50% of the total cost of the product (Gould, 1997). In the meantime, manufacturers who eliminate overpackaging do not systematically take the advantage of this cost reduction to reduce prices. In any case, manipulating the price of non-overpackaged products could offer relevant insights regarding the price cut that would encourage consumers, especially the less environmentally conscious consumers, to switch to non-overpackaged products.

It could also be interesting to replicate our research in an online context, where the consumer response to merchandising instruments, such as shelf display, might differ (Breugelmans et al., 2007). Since overpackaging plays a major role in product protection, it might be important for consumers who have to transport their purchased products back home themselves, but potentially less important in an online context where the retailer is responsible for product transportation. Moreover, in an online context, the product's visual attractiveness is given less consideration than other features such as price, volume, number of units, etc. The online context is thus an interesting context for further research, because when consumers buy online they are differently aware of packaging. Also, retailers use a lot of packaging to deliver products bought online and consumers only realize the amount of packaging and waste generated when they receive and unpack all their shopping bags and cardboard boxes. This specific context could well change the perception of overpackaging in terms of convenience as well as environmental friendliness.

Finally, the literature shows that the way the attribution process works varies among individuals. Some people are more attributionally motivated (capable of considering a diverse set of external and internal explanations for an event) than other people (Fletcher et al., 1986). In this research, we tested attribution theory in two different ways. It could be interesting to incorporate a measure of individuals' attributional motivation, which could offer an original, alternative way to test the relevance of attribution theory.

## Notes


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### Compliance with Ethical Standards

### Conflict of interest

The authors declare that they have no conflict of interest.

### Ethical approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

### Human and Animal Rights

This article does not contain any studies with animals performed by any of the authors.

### Informed consent

Informed consent was obtained from all individual participants included in the study.

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## Figures

### Figure 1. Stimuli

| | No overpackaging on target product | Overpackaging on target product |
|---|---|---|
| **No overpackaging on competing product** |  |  |
| **Overpackaging on competing product** |  |  |

**Figure 2. Interaction between the presence of overpackaging on the target product and consumers' environmental consciousness**

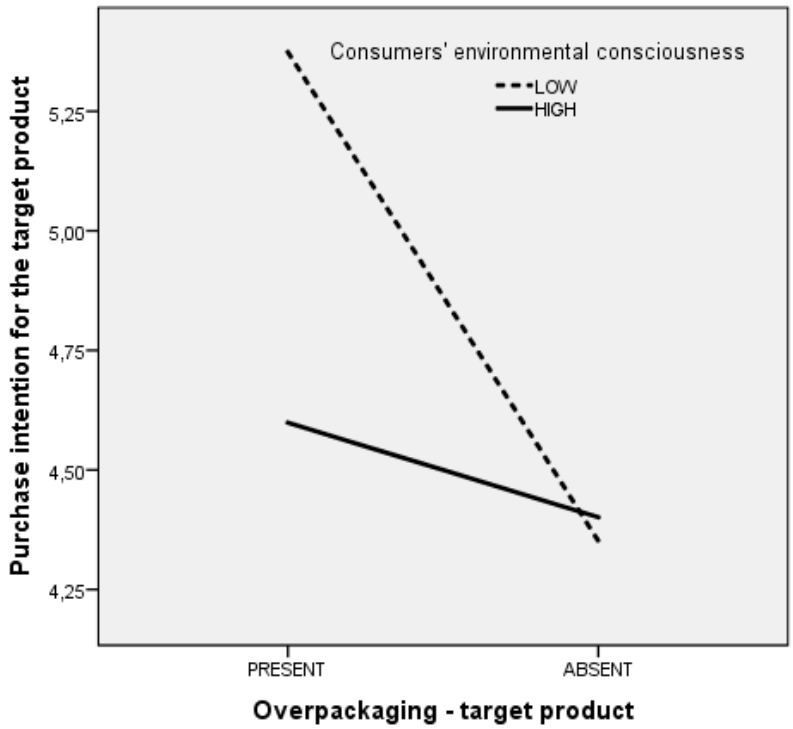
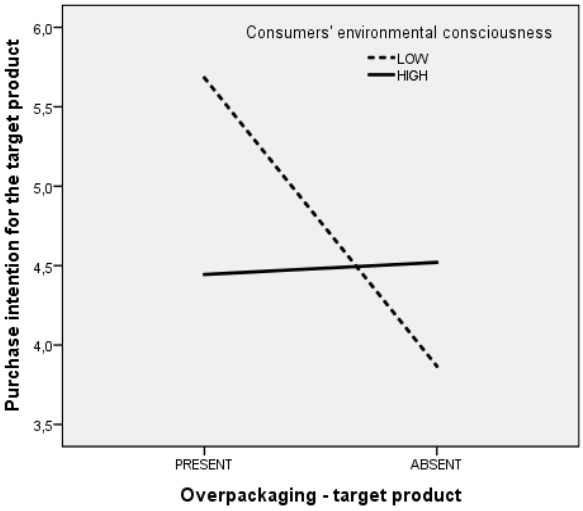
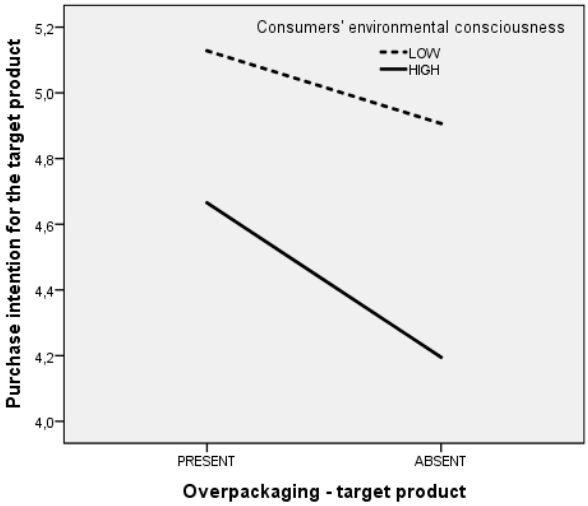


**Figure 3. Interaction between the presence of overpackaging on the target product and consumers' environmental consciousness depending on the presence of overpackaging on the competing product**

Overpackaging on the competing product PRESENT




Overpackaging on the competing product ABSENT



## Tables

**Table 1. Benefits and costs associated with overpackaging elimination**

| | Benefits of overpackaging elimination | Costs of overpackaging elimination |
|---|---|---|
| **For consumers** | - Convenience associated with the decrease of packaging volume and household waste<br>- Lower prices (only if the company decides to change its pricing policy due to reduced costs)<br>- Health related benefits (because of the toxicity of some packaging materials or inks)<br>- Social and emotional value<br>- Protection of the environment and the well-being of others (altruistic motives) | - Aesthetic cost<br>- Decrease in perceived quality of the product<br>- Hygiene sacrifice (especially for food products)<br>- Difficulties of handling / transportation related to the lack of protection<br>- Decrease in perceived efficiency (environmentally friendly products are sometimes viewed as less efficient than regular products) |
| **For manufacturers** | - Elimination of all costs related to the unnecessary packaging<br>- More positive image in terms of ecological footprint<br>- Appeal to environmentally-conscious consumers<br>- Appeal to environmentally-conscious employees | - Potential impact on sales volumes due to a decrease in attractiveness and visibility of the product at the point of sale<br>- Lack of space to display all legal and marketing information on the primary container<br>- Emergence of new costs to improve the primary container (e.g. R & D costs, more expensive materials etc.)<br>- Merchandising difficulties (the shape of the primary packaging might not be adapted to store shelf layout) |

**Table 1. Sample characteristics**

| | Cell | | | | Total | Test of independence |
|---|---|---|---|---|---|---|
| | **C1** N=57 | **C2** N=56 | **C3** N=55 | **C4** N=50 | N=218 | |
| **Gender** | | | | | | |
| Male | 38.6% | 51.8% | 56.4% | 44.0% | 47.7% | $\chi^2 = 4.20$ |
| Female | 61.4% | 48.2% | 43.6% | 56.0% | 52.3% | p = 0.241 |
| **Age** | | | | | | |
| 18-29 | 12.3% | 32.1% | 16.4% | 24.0% | 21.1% | $\chi^2 = 15.19$ |
| 30-39 | 17.5% | 16.1% | 9.1% | 18.0% | 15.1% | p = 0.231 |
| 40-49 | 28.1% | 23.2% | 43.6% | 24.0% | 29.8% | |
| 50-59 | 26.3% | 17.9% | 21.8% | 20.0% | 21.6% | |
| 60-70 | 15.8% | 10.7% | 9.1% | 14.0% | 12.4% | |
| **Socio-professional category** | | | | | | |
| Upper | 28.1% | 14.3% | 30.2% | 24.0% | 24.1% | $\chi^2 = 6.55$ |
| Lower | 38.6% | 50.0% | 47.2% | 40.0% | 44.0% | p = 0.365 |
| Unemployed | 33.3% | 35.7% | 22.6% | 36.0% | 31.9% | |

**Table 3. ANCOVA (DV: purchase intention for the target product)**

| Independent variables | F | *p* |
|---|---|---|
| Overpackaging on the Target Product (OTP) | **6.75** | **.010** |
| Overpackaging on the Competing Product (OCP) | 0.98 | .323 |
| Environmental Consciousness (EC) | 2.26 | .135 |
| OTP x EC | **3.02** | **.084** |
| OCP x EC | 0.13 | .828 |
| OTP x OCP | 1.17 | .280 |
| OTP x OCP x EC | **4.37** | **.038** |
| Purchase frequency for target brand | 3.98 | .047 |
| Familiarity with target brand | 13.33 | .000 |
| Age | 3.69 | .056 |
| Gender | 1.189 | .277 |

**Table 4. Estimated marginal mean purchase intention for the target product**

| Environmental consciousness | Overpackaging on the competing product | Overpackaging on the target product | Mean |
|---|---|---|---|
| **Low** | Absence | Absence | 4.82 |
| | | Presence | 5.06 |
| | Presence | Absence | **3.91*** |
| | | Presence | **5.50*** |
| **High** | Absence | Absence | 4.33 |
| | | Presence | 4.74 |
| | Presence | Absence | 4.58 |
| | | Presence | 4.71 |

Covariates: purchase frequency for target brand, familiarity with target brand, age, gender