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**The Effects of the Haptic
Perception of Packaging Texture
in Product Perceptions**

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The Effects of the Haptic Perception of Packaging Texture in Product Perceptions

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Abstract

In a period where multiple studies focused in questioning the consumer about the best packaging profiles in order to optimize sales in the marketplace, this paper proposes to investigate the effect of texture in a packaging in the perception of the product taste. Mc Neal and Ji (2003) highlighted the influence of packaging in persuading the consumer, both in the store and during consumption. In fact, the first contact between the consumer and a product in a purchase situation is the visual and the tactile contact. The present work is focused on the consumer's perceptions of taste when confronted with a textured packaging congruent with the product nature. Blind experiments were performed, where the participants tasted a tutti-frutti juice while they touched a citrus-textured bottle or a non-textured (smooth) bottle. The results point that the haptic perception of a packaging texture has an influence in the perception of flavor of the packed product. This opens up various questions about this effect.

The experiments reported herein cover a convenient sample of sixty people (30 women, average age 27). The methodology used is based on a blind test experiment between subjects combining two tastings of the same drink completed by individual interviews with each participant. The selected drink was a tutti-frutti juice from the "first prize" category, bought in a common supermarket. A reflection in the design of packaging is proposed, especially in the beverage industry in accordance with the main results of the study.

Keywords: packaging, haptic perceptions, touch, taste

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1. Introduction

Would you buy a metallic can of milk or an orange juice in a brick covered with plush? These examples illustrate the difficulty of judging a packaging without considering the nature of the product packed. More specifically, does the effect of the packaging texture depend on its content?

Whether they choose for the price, for the quality, for the price vs. quality ratio or even for the brand loyalty, nowadays consumers try to take the purchase decision as appropriately as possible. Moreover, given the diversity of products exposed in our supermarkets, the choice is large and can be a very difficult task. In the current economy of self-service, manufacturers have a final opportunity to convince potential buyers before a selection of brand by the packaging itself (McDaniel and Baker, 1977). As pointed out by *Underwood* (2003), the packaging has an important role in the product selection because 76% of purchasing decisions are taken in the point of sales. The packaging is defined as the container which is in direct contact with the product itself, which holds, protects, preserves, identifies and facilitates its handling and commercialization (*Vidales Giovannetti*, 1995). Thus, the primary existence of a packaging is related to the product storage and transportation; however its current role greatly expanded. Multiple interesting studies were already carried out on the packaging. For example, *Martin and Gupta* (1993) analyzed the size and volume, *Folkes, Wansink and Van Ittersum* (2003) studied the size and the shape and *Pantin-Sohier* (2009) focused on two variables such as color and shape. *Ampuero and Vila* (2006) argued that the color, the typography, the graphic shapes and the images are the key variables of packaging in terms of product positioning. Previously, *Underhill* (1999) explained the fact that nearly 90% of the new food products fail and do not result into success. He also claimed that shopping has become a rare opportunity to freely experiment new forms and materials. Moreover, it suggests that an intelligent use of the sense of touch by the shopkeepers may have a significant impact on the consumer's behavior. The academic literature on the packaging has become widespread over the last ten years with the frequent use of experimental studies allowing the understanding of the packaging itself and how it can be used to promote products. For example, *Raghubir and Krishna* (1999) showed the elongation effect resulting from the shape and the height of the packaging when observing that for an equal volume, the taller packages appear to be more voluminous than the shorter ones.

Concerning the taste, the pioneer in showing the influence of the color of a packaging in the perception and judgment of a taste was *Dichter* (1964) by using coffee pots of four different colors - brown, red, blue and yellow. In 1977, in a study conducted in two supermarkets, *McDaniel and Baker* invited a total of 400 customers to open two types of packaging, to taste the crisps inside and then to evaluate them. The crisps inside the packages were the same. They found that the easier to open packaging may have an influence in the assessment of the product. Indeed, the crisps from the easier to open packaging were perceived as having lower quality, less crispy and less tasty. *Hine* (1995)

in his study of changing the color of the label 7up found that the perception of the product itself was also affected. Indeed, with the same beverages inside, participants perceived the beverage with the modified label as more lemony than the original one.

Urvoy and Sanchez (2006) presented the packaging as a promotional pathway to attract and to inform about the product itself and its brand. *Mc Neal and Ji* (2003) highlighted that the packaging influences and persuades the consumer as much in as in the store as at the moment of the consumption, once the first contact between a consumer and a product in a purchase situation is the visual and the tactile contacts. This occurs through the sensory perception of a packaging hence the interest to study the effects that they induce. As such, the present study is enclosed in the field of sensory marketing and our fundament is based on the following argument: “*After the eye, the hand is the first censor to pass on acceptance, and if the hand’s judgment is unfavorable, the most attractive object will not gain the popularity it deserves. On the other hand, merchandise designed to be pleasing to the hand wins an approval that may never register in the mind, but which will determine additional purchases... Make it snuggle in the palm.*” (*Sheldon and Arens*, 1932, p.100).

The importance of the sense of touch between persons or between a person and a product seems extremely significant both in a buying and in a consuming context. In the interpersonal touch domain, *Crusco and Wetzel* (1984) observed that restaurant servers who briefly touched customers received larger tips than servers who did not touch. Also, *Hornik and Ellis* (1988) shown that interpersonal touch increases the agreement of individuals to participate in survey questionnaires in a mall. In the marketing field, *Krishna* (2006) argues that two important cues must be taken into consideration when studying the consumer’s perceptions of a packaging: visual and haptic. Haptic perception results from the stimulation of the skin resulting from active movements of the exploration of the hand coming into contact with objects (*Revesz*, 1934). In this paper we consider the influence of the packaging on the perceived taste of the product during its consumption similarly to the study of *Krishna and Morrin* (2008) which demonstrated the influence of the strength of containers on the taste of water.

As previous research in the role and effects of touch, we refer to *Peck and Childers* (2003) which exposed the influence of haptic information on product judgments’ by two factors: the motivation of consumers to touch the products and the possibility to touch the products. More precisely, they demonstrated that barriers to touch such as a retail display cases, could inhibit the use of haptic information leading to a decrease in confidence in products evaluation and an increase in the frustration level of the consumers who are more motivated to touch products. These same authors exposed the haptic perception of the texture as a product perception, whatever the product. They use only neutral products (e.g. a sweater and a cellular telephone) and they didn’t consider the interaction between texture and the nature of the product. However, the aptness of packaging depends on the nature of the product: if a metallic can is adapted for a Coke, the case is not the case for a French wine. *Spence and Gallace* (2011) suggest that the use of packets that carry feelings

that are congruent with the taste, or more generally with the characteristics of the product contained within should result in significantly more positive judgments regarding the product itself by customers. In this line, we propose that the impact of the haptic perception of a textured pack depends on the congruency between the texture and the product itself. For this, we investigate the effects of a textured packaging on the perception of the taste of the product – in this case: a beverage. We focus on the consuming context and we assume that consumers will use the haptic perception of the packaging to perceive the taste of the product. In this article we won't have discussion on which sense dominates over the others.

2. Methodology

The study covers a convenient sample of sixty persons (50% women, average age 27) recruited in a french university, without monetary compensation. The methodology used was based on a blind test experiment between subjects combined with two tastings of the same drink. The chosen beverage was a tutti-frutti juice from the first prize category bought in a common supermarket. The decision for this flavor was based on the desire to increase the difficulty for the participants to identify the aroma of the juice. The experiments were conducted through semi-structured interviews performed individually. Half of the participants had tactile contact with a 50 cl lemon juice bottle with the texture of a lemon skin, and the other half touched a "classical" 50 cl fruit juice bottle without texture. Both bottles are exposed on figure 1. We will refer as group 1, the participants who had tactile contact with the textured packaging and as group 2, the participants who touched the non-textured packaging.

All interviews were conducted in the same chronological order. Starting with an introduction, the interviewer explained to the participant that he was taking part to a soft drinks tasting and to packaging evaluation for a new product. Then blindfolded, the participant tasted the beverage and answered to a series of questions about the product. While still blindfolded, he was confronted with the packaging and asked to express his opinion. Finally, a second cup of the same tutti-frutti juice was served and another series of questions were asked to the participant. The respondent wasn't aware about the fact it was the same juice each time. The conversations were recorded with a voice recorder in order to transcribe later the entire interviews and to compare them with others. The participants collaborated easily and exposed rigorousness in their answers and reflections in both groups. The use of comparisons with existing brands has proven to be a frequent answer tool. We retain among others: Coca-Cola, Joker, Pago and Pulco.

3. Results

To present the main results of this study we will first discuss the findings resulting of the content analysis. Second, we will present some quantitative aspects highlighted by the participant's responses.

The applied method allowed to collect a significant set of data and showed to be adjusted for this type of study, because it allows the respondent to feel free to express his perceptions. The software NVivo 9 was used for the content analysis and allowed to find interpretations by combining answers according to the types of bottles. The statistical results are shown in table 1 and were obtained from the tests performed in the two independent samples presented in the previous chapter.

Consistently with previous researches, the present study emphasizes that the consumer infers on the quality of a product through its packaging. Concerning the textured bottle, the participants link the packaging texture and its firmness to a product of high quality, in agreement with the results of *Krishna and Morrin (2008)*. In fact, some participants state that this packaging is "weird", "thick", "beefy", and also that it "fitted well to the hands". To the question "in which color do you imagine this packaging?", the majority of participants claimed opaque (arguing "to avoid light crossing"), orange, green and yellow. Here, two participants claimed that the cost of manufacture was certainly high and therefore should affect the price of the product itself. The texture of the packaging was the artificial skin of a lemon, although in the blind test this texture was several times associated to the skin of an orange or citrus. On the other side, the smooth packaging was much less criticized and even considered as cheap due to its "flimsy" and "flexible" material.

Statistically, in both conditions of textured and untextured bottle, nearly only half of the sample recognized the same juice across the two tastings ($P_{\text{textured}} = 50\%$ and $P_{\text{untextured}} = 40\%$ and they are statistically equal $p < .05$). This result lead us to a primary conclusion: the gustative perceptions in a blind test condition are not concrete, when the test requires tasting the same drink two times in less than 5 minutes, interrupted by a tactile contact.

In terms of congruency between the product and the texture perception, we point out the answers of the participants who changed their perception of taste in between the two tastings. In the group who touch the textured bottle between the two tastings, 27% of the participants who perceived a difference between both juices, identified a citrus flavor in the second tasting. For the group that touched the untextured bottle, no participants identified a citrus flavor in the second juice. The conclusion is that the textured packaging drives the perception of the consumer in terms of taste ($P_{\text{citrus}} = 27\%$ and $P_{\text{untextured}} = 0\%$ significantly different with $p < .05$).

4. Discussion and limitations

The texture of a packaging may actually play a role in the perceptions and the evaluations of the contained product. It is important to expose the fact

that certain participants admitted some difficulties in identifying the drink itself without seeing the color of the bottle that usually serves them as a guide in their everyday choices. In fact, each participant's speech proved to be very subjective but consistent in it-self. Indeed, the taste in terms of flavors varies according the experiences and experiences of each individual.

As expected, we have shown that the texture of the lemon juice packaging allowed associations with citrus fruits. Plus, this packaging and specially its texture had a real influence on the tasting perceptions and the product quality. Independently of the fact that the participants recognized or not the presence of the same juice in both tastings, the contact with this packaging always lead the participants to affirm that the contained product was made of high quality. Although when tasting the drink, in most cases, the participants were not satisfied and claimed that it was not in the same quality line of the packaging. We emphasize again that the juice was a tutti-frutti "first choice" juice and that the same juice was used in both tastings.

Some participants argued that the packaging of lemon juice was not adequate and it was not a usual packaging for a beverage and associated it more to a cosmetic product, such as shower gel. This is the reason why we suggest that experiments considering the congruency between texture and product should be replicated considering not only the haptic dimension, but also the visual dimension of the packaging texture. It is important to underline a possible complementarity between senses for a better apprehension of a specific product, in our case a tutti-frutti juice. Herein we defend the continuity on the investigations of the consumer perceptions. We place this study as a starting point for a deeper and more specific approach with wider questions about this thematic of packaging and touch effects. Future investigations will integrate for example the measurement scale "Need for Touch". This scale designed by *Peck and Childers* (2003b) allows a better conception of experiments, defining "a preference for the extraction and utilization of information obtained through the haptic system". Indeed, an experiment based on three steps can deliver new interesting insights: first about the touch, then about the vision and finally about the coupling touch-vision. To finish, the reproduction of the experiment with various textures seems fundamental.

The present study points for a serious reflection in the design of a packaging, especially in the drinks industry. Furthermore, as exposed by previous studies, the colors as well as the materials – and the texture – of the packaging seem to be important factors influencing the consumer perceptions that cannot be neglected in the packaging strategies.

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Figure 1. *Elements used in the experiment*



a) citrus-textured bottle;



b) non-textured bottle

Table 1. Perception of the juice taste depending on the experimental condition.

	Proportion of subjects having perceived a difference between the 2 juices	Proportion of subjects having perceived citrus in the second juice, among those who notice a difference between the 2 juices
Textured packaging 100% (30)	50% (15)	27% (4)
Non-textured packaging 100% (30)	40% (12)	0% (0)