

Onomatopoeic Representations of the Haptics of Fruits

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Cali, Junio 2015

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## Abstract

Now more than ever, communication has become simple, direct, and with a high emotional component. In this sense, onomatopoeic expressions are used every day by billions of persons across all countries and cultures. It's an easy way to express disgust "Beurk" or surprise "Waouh". Consequently, the purpose of this study is to explore the relationships between fruits/vegetable pictures and onomatopoeic expressions associated with eating these products. The results of the study indicate that Spanish and French consumers have a similar Onomatopoeia to describe a bite into some vegetable. We validated that some onomatopoeias (Glub, Chomp and Slurp) are consistent to describe precisely the sound of a bite of these vegetables. These results can be applied to any context where consumers are not able to touch, taste, or smell the product, but the consumer needs to use these stimuli to understand the product. For example, adding an onomatopoeic expression to vegetable pictures in a supermarket website (Drive Trough Supermarkets). Consumers might feel more confident about their grocery choices because onomatopoeic expressions used properly could erase the distance between the vegetable ordered online and customers' expectations. The main recommendation driven from this research is to use onomatopoeic expressions that were selected with a high percentage, these can be applied could on advertising in order to promote fruits and vegetable consumption.

## Keywords

Onomatopoeic Representations / Vegetables / Marketing Application

## Resumen

Más que nunca, la comunicación se ha vuelto simple, directa y con un alto componente emocional. En este sentido, millones de personas usan las onomatopeyas cada día en todos los países y culturas en el mundo. Es una forma fácil de expresar el asco “Beurk” o la sorpresa “Waouh”. En consecuencia, el objetivo de este estudio es explorar la relación entre las fotos de frutas/vegetales y las onomatopeyas asociadas con el consumo de estos productos. El resultado del estudio muestra que los consumidores franceses y españoles tienen las mismas onomatopeyas para describir una mordida en algunos vegetales. Validamos que algunas onomatopeyas (Glub, Chomp y Slurp) son coherentes para describir precisamente el sonido de una mordida en estos vegetales. Los resultados pueden ser aplicados a cualquier contexto donde los consumidores no pueden tocar, gustar u oler el producto, pero el consumidor necesita usar estos estímulos para comprender el producto. Por ejemplo, agregar una onomatopeya a la foto de un vegetal en el sitio web de un supermercado (Drive Trough Supermarkets). Los consumidores podrían sentirse más seguros durante la elección de los productos porque las onomatopeyas usadas adecuadamente podrían hacer olvidar la distancia entre el vegetal pedido online y las expectativas del consumidor. La principal recomendación impulsada por este estudio es de usar las onomatopeyas seleccionadas con un alto porcentaje, las cuales podrían ser aplicadas en la publicidad con el fin de promover el consumo de frutas y vegetales.

## Palabras claves

Onomatopeyas / Vegetales / Aplicación marketing

## Introduction

Now more than ever, communication has become simple, direct, and with a high emotional component. Individuals talk, write, and of-course, have electronic chats using and creating spontaneous expressions that represent their thoughts and emotions. Many use memes, or they also abbreviate some words to simplify their sentences. Sometimes they also use onomatopoeic expressions, probably to give more emotional meaning to their communication.

Moreover, onomatopoeic expressions are used every day by billions of persons across all countries and cultures. It's an easy way to express disgust "Beurk", surprise "Waouh" or the pleasure of eating something good "Miammiam". Nevertheless, an onomatopoeic expression can change depending on the language. For example, the rooster call in French will be "Cocorico" but in Spanish is "Quiquiriqui". Likewise, onomatopoeic expressions that describe a bite of a fruit or vegetable could be different according to the language. Fruits and vegetables are products that require a meaningful consumer interaction, not only through taste, but through all their senses. We state that there are onomatopoeic expressions that represent consumers' experience with a fruit or vegetable.

Consequently, the purpose of this study is to explore the relationships between fruits/vegetable pictures and onomatopoeic expressions associated with eating these products. Additionally, we expect to compare the relevance of these onomatopoeic

expressions for individuals whose native language is Spanish vs. others whose native language is French.

Food marketers could increase consumers' preferences for their products if individuals have meaningful information about the products' characteristics. We propose that onomatopoeic expressions provide consumers' with information about the product such as its freshness. In this sense, we think that onomatopoeic expressions used properly could improve consumers' perceptions, product evaluations, and actual consumption. Therefore, onomatopoeic expressions could be used, for example, on Internet advertising (Frame ads, pops-up, floating ads etc.) and by this way approach the potential consumer of the product. Product intangibility on Internet is one of the biggest issues facing online shops and could be reduce through this approach. This proposition requires an important debate and a series of follow-up of studies. Thus, this study is a first approach and will be continued by the director of this study along with other professors and students.

This document is organized as follows. First, we will present the theoretical information about tactile stimuli, the link between touch and sound, and also the definition of the onomatopoeic expression. Second, we will focus on the study: method, procedure and control variables. To conclude, we will analyze and discuss the results of the study and outline our main conclusions and limitations.

## 1. Perception of tactile stimuli

The sense of touch has been recognized for centuries and a primary source of information. Aristotle believed that touch mediated all sense perception (Siegel, 1970). In fact, the term “haptics” (Gibson, 1966) concerns the active seeking and extraction of information by the hand. It includes both cutaneous (affecting the skin) and kinesthetic (muscle tissues) information. The haptic information enables to learn about our context; in fact, we use, in our everyday life, words coming from the sense of touch such as a “touching” *story* or *keep in “touch”* and we all noticed that touch can be irresistible for children.

The sense is called the proximal sense; it is the only one that has a direct experience of the objects. The skin receives information about the immediately surrounding world, therefore touch is inseparably linked to action. Thus, it can be remarkably fast and accurate at recognizing real objects. Probably because of its proximity to the world, the sense of touch is often underestimated. Moreover, texture, temperature and weight information are easily collected by touch. Also the sense of touch can include the negatives sensations of irritation and pain. By contrast, the idea of an ambient touch is not relevant (Peck, 2010). In other words, touch is an active and proximal sense (unlike hearing, smell or vision). We need to be in contact, physically, with the object in order to extract information.

Some products could be more touched by others. Indeed, when a product advantage is determined by its geometry, touch may give potentially little added value. On the contrary, touch may be valuable for products where material is key (like for example fruits and vegetables).



Thus, Peck (2010) details the reasons why we touch products. The simplest reason is to make a purchase. The buyer touches a product only to grab it and make a purchase; the consumer does not have the intention to extract information by touching the object. At second level, a potential buyer can touch a product in order to glean non-haptics information (olfactory, auditory or gustatory inspections). For example, when a customer rotates a package and reads nutritional information. Third, consumers wish to touch a product with the purpose of learning about it, obtaining information such as temperature, texture or weight. This haptic information will be stored in memory and encoded (Peck, 2010). Thus, we do not need to touch a product again in order to extract haptics information. Vision will be sufficient for remembered haptic information of products. A fourth kind of touch is the hedonic touch, is oriented toward pleasant sensory experiences. In this case, touch is done as an end in and of itself.

Some customers have a high need for touch (NFT) and will use this characteristic in order seek haptic information and to use it for his judgement. High NFT individuals may spend less time extracting haptic information such as weight. However, an NFT person could forget his efficiency in processing haptic information while touching a soft product and enjoying the pleasant feedback. (Peck & Childers, 2010).

On the other hand, some product encourage touch more than others. In this case consumers would like to obtain information that only touch can provide. A written description of the products' haptic characteristics can compensate for consumers' lack of touch (Peck & Childers, 2003).

Tactile input has a positive effect on the evaluation of products, especially for products for which quality is an important characteristic. On the contrary, when evaluating low quality

products tactile input had a negative effect on product evaluations (Grohmann, Spangenberg & Sprott, 2007).

Fruits and vegetables are a good example of products that are related with a high NFT. For these products, touch provides information about its quality and readiness for consumption. It is common for fruit buyers to touch the fruit by pressing it to feel how mature it is, holding it to have a sense of its weight, or touching its texture looking for any damage.

## 2. Sound is informative about touch

Zampini and Spence (2004) explore the effect of loudness and frequency of the sound of a potato chip makes when one is biting it. The sound produced will indicate the consumer how fresh the chip is. In this way, sounds pass haptic information to the consumer. For example, if you bite into a fresh, bright red apple you will expect to hear a pleasant crunch. This sound, without the shadow of a doubt, would affect your perception of the red apple (its freshness, appeal and taste).

However, the sound of a bitten fruit or vegetable requires a previous experience with the product. By eating or somehow consuming the fruit, the person will have the sense of how it feels to bite, chew, suck, or chop this product. These expressions of touch have a complementary meaning through its sound because sound will be determined by the texture of the fruit or vegetable. For example, the sound of a strawberry, which is naturally soft, will be different from that of an apple, which is naturally hard.

### 3. An onomatopoeic expression

The onomatopoeia (< Greek, *onomatopoiia*, “creation of terms”) can be defined as a creative process of the conventional language, which is characterized by having a high level of expression by which it seeks to imitate from what phonics a sound or noise. This spontaneous notice enables a connection with the element that produces it through an action. The onomatopoeia is a sound, but it usually reaches a visual dimension that allows individuals to have an iconic value of an acoustic expression. Because it is incorporated in the phonological system of a given language, the onomatopoeia has a cultural symbolism. Each language has its own onomatopoeia, but some of them have a universal value.

Thus, onomatopoeia can be visual or auditory. Because of this, it has been explored from different sources, to art and poetry of the avant-garde and calligraphy (letters and their forms, the works of Apollinaire, are a clear example of this); the music and the audio-visual (acoustic source On/Off); and the literary narrative and graphics in the case of the comic strips. The onomatopoeia found a niche within comics, it is popular taking the shape of the bubble, or balloon and its delta as the typographical style and kinetic elements that enrich discursively the action and reinforce the symbolic value of the onomatopoeia.

In some cases the onomatopoeia can be confused with a similar language expression called an interjection, this is a word unchanged and with syntactic autonomy which can take the form of print sudden, exclamatory, or a deep sense, as in wonder, surprise, pain,

discomfort, love, etc. Where the intonation of the speaker gives it a real semantic value, and allows you to express a feeling or a sense, establishing an emotional communication between the sender and the receiver.

Román Gubern and Luis Gasca, in his book *Diccionario de onomatopeyas del cómic*, define that:

“The onomatopoeia is a rhetorical figure of diction and more precisely an acoustic icon that expects to become an oral/writing translation of noises. For its conditions of mimetic phoneme, Saussure excluded onomatopoeias from the arbitrary status of human language. And that remains the actual philosophical criteria. Onomatopoeias constitute, also, units that Bloomfield named “composed phenomenon” and usually appear as euphonic o dysphonic sounds that emotionally color and provide connotations to each expression within the framework of each cultural context.”(Madrid: Ed. Cátedra, 2008, pág. 8).

Also Gasca and Gubern (2008) classified into five categories determined by the nature of the acoustic source, which would be: the non-verbal sounds of human production (groans, snores, sighs), the sounds of animal production (lows, barking), the sounds produced by nature (wind, thunder, earthquake), the sounds produced by the interaction of a living being and an object (shocks, blows, gunshots), and sounds produced by objects (collisions, ringing, rings).

## 4. Method

The sample was composed of 61 persons whose mother tongue is Spanish (27 persons) and French (34 persons). They were recruited by e-mails, via social networks and directly on the ICESI Campus. The typical respondent was an undergraduate student, of 23 years old, with an international experience (25 females and 36 males). We compiled a database of twenty-seven fruit pictures; nine types of fruits and three pictures of each fruit. Fruits picture were be composed as follows: Red Apple, Tomato, Celery, Banana, Strawberry, Mango, Orange, Chontaduro, and Granadilla.

### 4.1. Vegetables tested

**Apple:** The apple has a round shape can come in various different colors, most commonly red or green. The flesh of the fruit is either ivory or white. The apple is native to central Asia, and is one of the most widely-cultivated fruits on the planet. (Prontes)

Photo of an apple



*Photo : F. Gibaud*

**Tomato:** There are around 7,500 tomato varieties grown for various purposes. Most cultivars produce red fruit, but a number of cultivars with yellow, orange, pink, purple, green, black are also available. The tomato is now grown and eaten around the world. Tomato has slightly acid-tasting flesh.

Photo of a tomato



*Photo : F. Gibaud*

**Celery:** Celery is used around the world as a vegetable for the crisp petiole (leaf stalk). The leaves are strongly flavoured and are used less often, either as a flavouring in soups and stews or as a dried herb.

Photo of a celerv



*Photo : F. Gibaud*

**Banana:** They are native to Indo-Malaysia, but are now grown all over the world in tropical and sub-tropical regions. While most bananas have yellow skin, that is just because the yellow banana is the most common type of banana on the market. Normal yellow bananas are usually 15 to 30 cm long. They have sweet flesh and can be eaten raw.

Photo of a banana



*Photo : F. Gibaud*

**Mango:** More than 1,000 varieties of mangoes exist and the colours, sizes and tastes of each vary from each other. The mango tends to be asymmetrical. Colours of the mango's skin include orange, green and red, and the flesh ranges from orange to light yellow. On the inside of the mango is a big seed, which varies in shape. (Reinbold)

Photo of an mango



*Photo : F. Gibaud*

**Strawberry:** Strawberries are native to the temperate regions of the Northern Hemisphere, and cultivated varieties are widely grown throughout the world. Strawberry is widely appreciated for its characteristic aroma, bright red colour, juicy texture, and sweetness.

Photo of a strawberry



*Photo : F. Gibaud*

**Orange:** Orange trees are widely grown in tropical and subtropical climates for their sweet fruit. The fruit of the orange tree can be eaten fresh, or processed for its juice or fragrant peel.

Photo of an orange



*Photo : F. Gibaud*

**Granadilla:** Granadilla is native to South America and has a strong but fragile, orange skin. The fruit has the shape and size of a plum. The shell is hard and shiny. The fruit contains a yellow, jelly-like pulp with a scattering of black edible seeds. The fruit has a sweet and sour flavor.

Photo of a granadilla



*Photo : F. Gibaud*



**Chontaduro:** The fruit is a drupe (which an outer fleshy surrounds a shell), 4–6 cm long and 3–5 cm broad. The rind of the fruit can be red, yellow, or orange when the fruit is ripe, depending on the variety of the palm. Its wild and domesticated populations can be found in Central America, in the pacific lowlands of Colombia and Ecuador, in Venezuela and in the area of the Amazon rainforest.

Photo of a chontaduro



*Photo : F. Gibaud*

Some of the pictures showed the complete fruit and some showed a bitten fruit.

Then, an online study was created for the research (accessible via a direct link). In this survey, after observing each of the pictures, participants were asked to choose an onomatopoeic expression from the list that best represented the sound of consumption of this fruit (annex A)

## 4.2. Procedure

The study was individual and online. Each participant has to reply to an online survey in which bitten vegetable pictures appeared randomly. In total, 27 images were shown to each respondent. Nine vegetables were tested with 3 pictures of each (3 pictures of 9 vegetables that being 27 pictures in total).

Following each pictures, the participant found the question “*When you eat this vegetal, what sound would be associated?*” Then, the participant had to choose among the following answers (with a randomly appearing order):

*Table 1: The eight onomatopoeic expressions tested*

Crunch	Scratch	Plup	Slurp
Crack	Munch	Chomp	Glub

Then, collected answers were aggregated and analysed.

### **4.3. Control variables**

We included several questions to check the participant characteristics and affinity with fruits. “What fruit have you ever tasted?” “What is your mother tongue? Your nationality? Your age? Your gender?”

## 5. Results

### 5.1. First onomatopoeic expression elected for each vegetable

Table 1 shows the onomatopoeic expression with the highest frequency of responses (express en percentage). The results of the study indicate that Spanish and French consumers have a similar Onomatopoeia to describe a bite into some vegetable. The same onomatopoeia is used for Celery (Crunch), a Granadilla, an orange and a Tomato (Slurp).

For others vegetables, results are more contrasted. We found a significant difference for Mangos. Indeed, the French onomatopoeia for describe a bite into it is “Slurp” (27.5% of respondents). On the contrary, in Spanish, the adequate onomatopoeia will be “Munch” (31% of respondents).

Table 2: First onomatopoeic expression elected for each vegetable

Vegetable	French 1° onomatopoeia	Spanish 1° onomatopoeia	Similarities
Celery	<b>Crunch</b> (36%)	<b>Crunch</b> (52,4%)	<b>Crunch</b>
Banana	<b>Chomp</b> (28,4%)	<b>Munch</b> (33,3%)	
Chontaduro	<b>Chomp</b> (20,6%)	<b>Chomp</b> (29,8%)	<b>Chomp</b>
Strawberry	<b>Slurp</b> (25,5%)	<b>Munch</b> (31%)	
Granadilla	<b>Slurp</b> (40,2%)	<b>Slurp</b> (48,8%)	<b>Slurp</b>
Mango	<b>Slurp</b> (27,5%)	<b>Munch</b> (31%)	
Red Apple	<b>Crunch</b> (39,2%)	<b>Scratch</b> (23,8%)	
Orange	<b>Slurp</b> (43,1%)	<b>Slurp</b> (23,8%)	<b>Slurp</b>
Tomato	<b>Slurp</b> (33,4%)	<b>Slurp</b> (23,8%)	<b>Slurp</b>

## 5.2. Second onomatopoeic expression elected for each vegetable

Table 2 findings suggest that similar onomatopoeias exist also on the second choice. Thus, “Glub” comes in second position of the onomatopoeias elected for the Granadilla and the Orange both in French and Spanish.

For the Celery and the Red Apple, onomatopoeias elected by French and Spanish respondents are not the same but there are close (respectively “Scratch” and “Crack” for the celery; “Crack” and “Crunch” for the red apple).

Table 3: Second onomatopoeic expression elected for each vegetable

Vegetable	French 2° onomatopoeia	Spanish 2° onomatopoeia	Similarities
Celery	<b>Scratch</b> (31,4%)	<b>Crack</b> (27,4%)	
Banana	<b>Munch</b> (26,5%)	<b>Glub</b> (27,4%)	
Chontaduro	<b>Munch</b> (18,6%)	<b>Scratch</b> (21,4%)	
Strawberry	<b>Munch</b> (21,6%)	<b>Chomp</b> (20,2%)	
Granadilla	<b>Glub</b> (18,6%)	<b>Glub</b> (16,7%)	<b>Glub</b>
Mango	<b>Munch/Chomp</b> (22,6%)	<b>Glub/Scratch</b> (16,7%)	
Red Apple	<b>Crack</b> (35,3%)	<b>Crunch</b> (20,2%)	
Orange	<b>Glub</b> (15,7%)	<b>Glub/Munch</b> (20,2%)	<b>Glub</b>
Tomato	<b>Plup</b> (19,6%)	<b>Munch</b> (22,6%)	

## 6. Conclusions and practical implications

Thanks to Table 1 and 2, we can notice a strong correlation between onomatopoeias used to describe a bite into a Granadilla and into an Orange. Indeed, the same onomatopoeias were elected by French and Spanish respondents both for the first choice and the second. Thanks to this study, we validated that some onomatopoeias (*Glub*, *Chomp* and *Slurp*) are consistent to describe precisely the sound of a bite of these vegetables.

These results can be applied to any context where consumers are not able to touch, taste, or smell the product, but the consumer needs to use these stimuli to understand the product. In fact, previous studies show that the sound of food can provide information about quality and readiness for consumption (Zampini & Spence, 2004).

Marketing applications are numerous. For example, adding an onomatopoeic expression to vegetable pictures in a supermarket website where the impossibility of touch can be an issue when consumers try to pick their fruits and vegetables. Drive Trough Supermarkets are expanding all around the world; in these cases with the use of onomatopoeic expressions accompanying fruits and vegetables, customers who order online will be able to pick up the groceries when it suits them and have them loaded into their car without even getting out. For example, Leclerc, a French large supermarket chain could improve the attractiveness of its Drive Trough channel including onomatopoeic expressions in it. Consumers might feel more confident about their grocery choices because onomatopoeic expressions used properly could erase the distance between the vegetable ordered online and customers' expectations. Another application of onomatopoeic expressions is packaging, printed advertisements or other communication materials at the point of

purchase. An example is the Coca Cola campaign in Colombia, May 2015. For this campaign we notice on the labels a series of onomatopoeic expressions (PHSST FIZZ CLINK CLINK GLUG GLUG... AHHH) whose aim is to describe the action of drink a Coca-Cola.

Below : An example of onomatopoeic expressions using on a label



Photo: Florian Gibaud

May 24<sup>th</sup> 2015

Sensory research is still relatively new to marketing (Krishna, 2010), onomatopoeic expressions may help to recognize haptic and taste characteristics even when someone does not know the language or the product. Indeed, onomatopoeic expressions are easier to understand regardless of age, social origin or education. For brands and public organizations know what onomatopoeia is corresponding to a vegetal could be a driver for advertising, marketing and sales areas in all languages around the world.

Finally, this research used commodity products such as fruits and vegetables. These product categories are not used to have a significant marketing investments. Onomatopoeic

expressions could be an element of differentiation between these products. It could aggregate a new valor to fruits and vegetable.

## **7. Limitations and recommendations**

The main recommendation driven from this research is to use onomatopoeic expressions that were selected with a high percentage (>30% for the first choice), these can be applied could on advertising in order to promote fruits and vegetable consumption. Indeed, in several countries, obesity is, or will become, a serious social problem. The vegetable consumption is one of the cornerstones of this struggle. We could imagine billboards advertising with bitten vegetables and the proper onomatopoeias: The ad should convey a clear message, adapted to children (population at risk of obesity).

Clearly, sensory perception and sensory marketing are growing fields. The next challenge will be to bind these onomatopoeic expressions (specific to each language) to all our senses (touch, taste and hearing for example) in order to maximize the effect.

Finally, the next step of this study could be to be replicated in others languages (English, German and Portuguese) and analyse possible correlations between them.

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## Annexes

### Annex A

The study “Vegetal Perception” (translate in English, the first three questions)

#### Unity N° 1



1. When you eat this vegetal, what sound would be associated? Choose one of the following answers. \*

- CRUNCH
- SCRATCH
- PLUP
- CHOMP
- MUNCH
- CRACK
- SLURP
- GLUB



2. When you eat this vegetal, what sound would be associated? Choose one of the following answers. \*

- CHOMP
  - GLUB
  - SLURP
  - MUNCH
  - SCRATCH
  - PLUP
  - CRUNCH
  - CRACK
-



3. When you eat this vegetal, what sound would be associated? Choose one of the following answers. \*

- GLUB
- CHOMP
- SCRATCH
- CRACK
- MUNCH
- PLUP
- SLURP
- CRUNCH