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Food Package Familiarity and Perceived Amount of Verbal Information: The Moderating Effect of Frugal Behavior

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ABSTRACT

This paper discusses the moderating effect of frugal behavior on the relationship between food package familiarity and the perceived amount of verbal information. Two experiments were conducted on food packaging to analyze two central points: (a) the relationship between food package familiarity and the perceived amount of verbal information and (b) the moderating effect of frugal behavior on this relationship. The studies demonstrate the negative influence of food package familiarity on the perceived amount of verbal information. We demonstrate that the greater (smaller) the familiarity with food packaging is, the smaller (greater) the visual attention to the verbal information will be. Second, we show that frugal behavior moderates this behavior. Our experiment shows that a greater (smaller) tendency toward frugal behavior tends to have a positive (maintain negative) effect on the relationship between food package familiarity and the perceived amount of verbal information.

KEYWORDS

Eye tracking; food package; frugal behavior; verbal information

Introduction

The use of ocular tracking technology to analyze the visual perception of food packaging has become popular in academic studies (Clement, Kristensen, & Grønhaug, 2013; Banović, Chrysochou, Grunert, Rosa, & Gamito, 2016; Ran, Yue, & Rihn, 2016; Samant & Seo, 2016). The purpose of these studies is to analyze the movement of the human eye by examining the fixations and saccades that occur when it is stimulated by the shapes and characteristics of packages. Several studies (Bialkova & van Trijp, 2011; Chandon, Hutchinson, & Young, 2002) indicate that the visual perception of food packaging can influence behavioral attitudes, which range from memory activation (Chandon et al., 2002; Janiszewski, 1998) to the choice of a product (Van der Laan, Hooge, De Ridder, Viergever, & Smeets, 2015).

The visual perception of packaging can be influenced by several factors. A factor that has been analyzed in recent studies is familiarity with consumer packaging (Bialkova & van Trijp, 2011; Chandon et al., 2002). Studies have noted that familiarity with a product negatively influences visual attention (Clement et al., 2013; Pieters & Wedel, 2004). This means that the greater the familiarity with the packaging, the lower the visual attention of the consumer will be.

In this study, we decided to test the relationship between food package familiarity and visual attention in consumers who have a low versus high propensity to frugal consumer behavior. Frugal behavior is a personality trait that reflects possible short-term sacrifices to achieve idiosyncratic long-term goals (Goldsmith, Reinecke Flynn, & Clark, 2014; Lastovicka, Bettencourt, Hughner, and Kuntze, 1999). We believe that people who have a high penchant for frugal behavior will have greater attention even if they are familiar with the packaging. This occurs because eye movement reveals that people are not cognitively aware of their actions. To test our research proposal, we analyzed the visual attention of consumers in the perceived amount of verbal information of various food packages.

Thus, this paper analyzes the moderating effect of frugal behavior on the relationship between food package familiarity and perceived amount of verbal information. The article is structured as follows. First, we demonstrate the negative influence of food package familiarity on the perceived amount of verbal information. We show that the greater (smaller) the familiarity with food packaging is, the smaller (greater) the visual attention to the verbal information will be. Second, we show that frugal behavior moderates this relation. Our experiment shows that a larger (smaller) tendency toward frugal behavior tends to have a positive (maintain negative) impact on the relationship between food package familiarity and the perceived amount of verbal information.

The contribution of this study is associated with the analysis of the relationship between visual perception, product familiarity and frugal behavior. Academic studies have shown the need to reduce material throughout the economy and to reorient our economic activities in favor of future generations (Bouckaert, Opdebeeck, & Zsolnai, 2008). This could be made possible by using a more frugal approach to life and the economy. Frugal practices may lead to rational outcomes such as reducing food waste.

Some contributions highlight the need for frugality to be understood as a lifestyle choice. Alternative discussions of frugality posit it as either a personality trait or a value (Todd & Lawson, 2003). This increase in a pattern of consumer behavior makes this topic important for a variety of concerned parties. Policy makers are interested in understanding frugality because it can be part of the detrimental effects of excessive consumption on the environment, on society as a whole, and on personal life satisfaction (Ballantine & Creery, 2010). On the other hand, marketers are interested in

understanding frugal consumers as a potential new market segment (Goldsmith et al., 2014; Rick, Cryder, & Loewenstein, 2008). Therefore, understanding the visual impact of packaging, the familiarity of products and the dimensions of frugality is important to know about the choices and consumption of products that have environmental associations.

Our research goal is important as we believe we live in an era of rampant materialism, where we are encouraged to buy two for one, buy now pay later, supersize/upgrade, shop until you drop, throw away and replace, etc. People simply buy too much, to the extent that they cannot consume much of what is purchased (Bove, Nagpal, & Dorsett, 2009). We believe that the format of many food packages will encourage this over-consumption, contributing to environmental depletion and degradation. The purpose of this paper to study frugal behavior that reflects the ideas of constrained consumption and antimaterialism. It is believed that frugality is 'that careful management of anything valuable which expends nothing unnecessarily, and applies what is used to a profitable purpose' (Goldsmith et al., 2014).

Structurally, the article starts by presenting the theoretical basis and, soon afterwards, the methods and procedures used in the first and second experiments. It should be noted that the data collection was done using the *Tobii Pro X3-120* eye-tracking equipment. Finally, the results and the final considerations of the article are presented.

Theoretical references

The theoretical framework of this paper argues that familiarity negatively influences the perception of the amount of verbal information in a food package. However, a high propensity for frugal consumer behavior tends to increase the amount of verbal information displayed. However, a low propensity for frugal consumer behavior tends to cause it to reduce the amount of verbal information displayed on a package.

Consumer familiarity and amount of perceived information

The ocular movements followed form a dynamic tracing where the person's attention is drawn in a visual field (Wedel & Pieters, 2008). Visual attention is understood as a spotlight that helps you understand scenes and reduces the processing of events. Visual attention is given through the motor movements of the eyes and the head that guarantee the focus through the illumination of the desired region in the space observed (Wedel & Pieters, 2000).

The focus of visual attention is affected through a scanpath on the stimulus, consisting of fixations, and balances. These fixations and balances seek interpretation of the scene by making several small corrective eye movements (Huddleston et al., 2015).

The negative impact of consumer familiarity on the amount of perceived information is not new in academic studies. Familiarity in consumption demonstrates the level of experience of a person with existing products or brands (Kent & Allen, 1994). The familiarity of the packaging of a product facilitates its recognition, as it is associated with past consumer experiences (Bialkova & van Trijp, 2011). This familiarity makes the packaging easy to identify in a display or store. Because of this familiarity, consumers will spend less time making purchase decisions (Clement et al., 2013).

In the specific case of the food packaging research (Bialkova & Van Trijp, 2010, 2011; Clement et al., 2013) studies have shown that product familiarity affects visual attention. The impact of familiarity influences the speed of detection and identification of verbal information, such as the packaging label. Visual attention is reduced because there is a decrease in the duration of the fixations (Bialkova & van Trijp, 2011).

The effect of product familiarity indirectly interferes with visual attention (Pieters & Wedel, 2004). This is because when the memory recovery of a familiar product is activated, there is a decrease in the likelihood of a more accurate analysis of its information and attributes. The evidence of this assertion is that family products are less prone to competitive interference in attribute recall (Kent & Allen, 1994). In this way, it is possible to verify that familiarity with a product category reduces the visual search time (Clement et al., 2013).

The perception of familiarity can be generated in several segments of a product: headline, pictorial, brand, and body of the text (Rosbergen, Pieters, & Wedel, 1997). In this paper, we propose to analyze the effect of familiarity on the perception of the amount of verbal information in food packages. Thus, we analyzed headlines, body text, nutritional information, daily guideline amounts, and traffic light systems, among other descriptive information. It may be that the differences in visual attention (eye fixation sequences) between these segments coincide with the differences with regard to the involvement or remembrance of the product (Rosbergen et al., 1997).

Visual cognitive processing can be modified according to attention, which requires eye movement (Russo & Leclerc, 1994). The theory of attention to visual marketing presupposes that there is a process of selection and focusing that is influenced by visual stimuli (Wedel & Pieters, 2008). This theory indicates that individual traits contribute to attention in the analysis of a stimulus. In the literature, such individual traits are called top-down factors (Huddleston, Behe, Minahan, & Fernandez, 2015). Our research argues that the individual traits of frugal behavior may interfere in the informative capability and the salience of the visual stimuli to the consumer. This phenomenon may generate changes in the relationships between food package familiarity and the perceived amount of verbal information.

Frugality in food consumption

Frugal consumer behavior reflects possible short-term sacrifices in buying to achieve idiosyncratic long-term goals (Lastovicka et al., 1999). Frugality in consumption is a lifestyle trait that is characterized by the degree to which people are contained in the acquisition and use of financial resources to achieve long-term goals. Frugal consumers like to save money and have an aversion to spending. They seek to bargain for better prices, and they are less susceptible to interpersonal influence because they are less materialistic (Goldsmith et al., 2014). Thus, frugal behavior reflects the degree to which an individual is contained in both the acquisition and use of a product (Bove et al., 2009).

Frugality can mean controlling the quality of what one purchases, consumes or possesses (Argandoña, 2010). In addition, frugal consumption seeks not only higher-quality and more expensive goods, but healthy, sustainable products that do not adversely affect one's own health or that of others or the environment, etc. Frugal describes a person who spends wisely (McCloskey, 2006) and makes informed decisions about how resources are used (Roberts, 1998). Specifically, Lastovicka et al.'s (1999) conceptualization of frugality as a lifestyle construct takes its definition of frugality as a one-dimensional consumer lifestyle trait characterized by the degree to which consumers are both restrained in acquiring and resourcefully using economic goods and services to achieve long-term (Todd & Lawson, 2003), which is based on a thorough review of the literature across numerous disciplines (e.g., economics, early American studies, religion, self-help, psychology) and a qualitative study of 84 subjects.

Frugality involves voluntary restraint and moderation in consumption (Lastovicka et al., 1999). It shows the degree to which one is both restrained in acquiring and resourceful in using products and slowing down the process of environmental harm (Bove et al., 2009). In the academic literature frugal behavior is seen in two perspectives: "frugality as value orientation" or "frugality as a lifestyle trait".

Values provide guides for living the best way possible for individuals, social groups, and cultures. Values are fairly distal influences on consumer behavior. Their impact is mediated and moderated by factors such as worldviews, personal norms, the self-concept, attitudes, and situational or contextual influences (Pepper et al., 2009). Moreover, people usually use moral standards to judge themselves and others, to influence the actions and thoughts of other people, and to judge what is right or wrong for them. These modes of conduct are covered by the concept of "values" (Rokeach, 1968), which are related to concepts, beliefs, and/or desirable ends (Matos & Leis, 2012).

However, values refer to the importance of an individual attribute to frugality or a guide to action and judgments across specific situations.

This value transcends all of the world's major religions, one promoted since antiquity and universally shared in the human family (Durning, 1992).

Some view frugality as a lifestyle trait (Lastovicka et al., 1999), others as a single value orientation (Todd & Lawson, 2003), while others see it simply as a pattern of behavior (Egol, Clyde, Rangan, & Sanderson, 2010). Values and traits may mutually influence one another (Roccas, Sagiv, Schwartz, & Knafo, 2002). For example, frugality as a value serves as guiding principle for self-regulated consumer behavior. By comparison, as a behavioral trait, frugality is likely to increase the degree to which individuals value frugal goals as this allows them to justify their behavior (Bove et al., 2009).

Frugality is conceptualized as a lifestyle trait reflecting disciplined acquisition and resourcefulness in product and service use. Frugality is sacrifice in terms of denying a series of short-term purchasing whims and industriousness by resourcefully using what is already owned or available for use. All of this is in service of achieving longer term goals (Lastovicka et al., 1999). Moreover, Lastovicka et al. (1999) define frugality as a unidimensional consumer lifestyle trait characterized by the degree to which consumers are both restrained in acquiring and in resourcefully using economic goods and services to achieve longer-term goals. They have been successful in developing a measure that reflects frugality as a lifestyle construct. The measure reflects attitudes toward a set of saving, shopping, consuming, and recycling behaviors that provides a larger picture than would be reflected in any limited set of values (Todd & Lawson, 2003).

Lhuissier's (2012) study argued that "frugality" corresponded to a way of managing and allocating a family budget with a very specific aim: it was orientated toward a long-term project. For this reason, it applies both to families' eating habits and their lifestyles. In poor families, food thus seems to be the main source of expenditure, which families could modify to manage their budget. However, the frugality of poor families' daily diet is less a reflection of their poverty than an active factor in their savings behavior aimed at preserving their income and securing the family's future. Therefore, frugality in eating habits did not necessarily reflect hardship. Nevertheless, the frugality of their diet was synonymous with hardship compared with standard eating habits. In contrast, the rural working-class families perceived the frugality of their diet as renunciation (Lhuissier, 2012).

The concept of frugality can be seen as an analytical category for the eating habits and lifestyles of families. Many studies show that frugality in the daily diet of families is not only a reflection of poverty or economic conditions. Frugality in food consumption may be an attempt to preserve income and secure a better future for one's family (Lhuissier, 2012). Frugal behavior demonstrates that food provides a key to interpreting the differentiation of lifestyles and consumption within economic classes. Foods appear as the main source of expenses that families can modify to manage their budget.

Thus, “frugality” in food consumption corresponds to a form of management and allocation of a budget with a specific goal that is oriented toward a long-term project (Burridge, 2012).

From the perspective of frugal consumers the exaggerated expenditure of money is seen as profane because such behavior is based on the deprivation and sacrifice of a series of caprices for a purpose. Several authors (Bove et al., 2009; Goldsmith et al., 2014) have demonstrated that this phenomenon is expressed in various attitudes in everyday life, such as (i) saving wrapping paper for reuse, (ii) avoiding putting too much food on a plate to avoid waste, and (iii) customizing old clothes to save money. We believe that people who have a high propensity for this type of behavior will tend to have more visual attention (eye fixation sequences) of the amount of verbal information on food packages, even if they are familiar with the packages. This is because we believe frugal behavior simultaneously involves verbal information perception and the familiarity of the packaging.

Materials and methods

Two experiments were conducted. The first study investigated the negative impact of food package familiarity on the perceived amount of verbal information. The second study evaluated the moderating effect of frugal behavior on the relationship between food package familiarity and the perceived amount of verbal information.

Experiment I

Participants. The participants were recruited from a population of consumers who routinely make food package choices. In this recruitment process, the participants’ eating habits and their knowledge about food were analyzed. This procedure was used to obtain a more homogeneous sample in relation to food consumption. This investigation included the participation of 116 volunteers. These participants were invited to participate in a study without knowing directly what the objectives were. The respondents only knew that it was for food research.

Of the total participants, 51% were female, and 49% were male. They have a mean age of 24.2 years, with a standard deviation of 6.2 years. We selected consumers who had normal vision or vision that is corrected by wearing glasses or contact lenses. We excluded consumers with other sight impairments, such as cataracts, as suggested by other studies (Ares, Mawad, Giménez, & Maiche, 2014; Rebollar, Lidón, Martín, & Puebla, 2015). The exclusion of these consumers helps avoid mistakes in the data collection by providing the correct operation of the eye-tracking.

Procedure. This first experiment had an average duration of up to 20 min per voluntary participant. The experimental design defined two treatments.

The consumers were initially separated into two groups with a between-subject design (familiarity with food package “versus” unfamiliarity with food package). Participants were not informed that there were two treatments.

Initially, the consumers in the familiarity with food package grouping ($n = 58$) were asked to interact with a food package in their hands. These consumers were asked to evaluate this package for a minimum of 2 min. The results of this evaluation were not to be used in the experiment. The purpose of this phase was to stimulate consumer familiarity with the package in these 2 min. In contrast, the unfamiliarity with food package (control group) grouping ($n = 58$) did not receive any packaging.

The 2-min time available was determined in a pretest where other participants determined a sufficient time to analyze a package. The idea is that this time generated would give the consumer a familiarity with the packaging. On average, the pretest indicated that they felt familiar with the packaging after 2 min of exposure.

In this step, for the familiarity of food package group, we showed three types of food package: potato chips, cereal bars, and cereal biscuits. All three of the packages were clearly visible. The verbal information (text and technical information such as description, nutritional information, guideline of daily amounts, and traffic light system) on the packages was clearly readable.

The choice of packaging was also done through a pretest. We tried to use this experiment in packaging where people could analyze the verbal information. The pretest was done with 20 participants. All the participants said that they were able to see the verbal information of the three packages in a period of 2 min.

Next, the participants were asked to sit in front of a computer to observe some product packages on a computer. We used it to collect information on the participants' eye movements using a Tobii Pro X3-120 Eye Tracker. The subjects participated individually and received instructions. They were informed that the camera would record their eyes while they analyzed some of the packaging that appeared on the computer. Then, the participants were seated in front of the screen where the calibration process was done. The calibration process and instructions took an average of 3 min. Then, the participants looked at the center of the screen on which the stimulus slides would be projected. The center of the screen was located at the consumer's eye height, and the distance between the eyes and the screen was 60 cm. The participants analyzed different types of packaging at 5-s intervals. At these points in time an infrared camera (120 Hz) that was located below the projection screen recorded their eye-movements.

In total, 10 slides with 10 food packages were presented to the respondents of the two groups. The consumers in the familiarity with food package group viewed the 10 packs. In this group, one of these 10 packages was similar to the package that was delivered in the first stage of the experiment. The consumers

in the unfamiliarity with food package group viewed the 10 packs. In this case, none of the packages was familiar to the respondents. In this first experiment, we wanted to observe whether there was a difference between the perceived amount of verbal information in the familiarity and unfamiliarity with food package groups. Thus, we divided the packaging into areas of interest (AOI). The AOI that we analyzed in these experiments was the sum of the AOI's that were associated with the verbal information of each food package.

Three packages were used to measure the dependent variable. The other seven packages that were not used to determine the dependent variable did not have significant differences in the AOI of verbal information between familiarity of food package and unfamiliarity of food package (potato chips, cereal bars, and cereal biscuit). The dependent variable in this experiment was the respondents' attention to the verbal information of a food package. We measure the visual attention within the AOI through a fixation count. The fixes summarize the number of times that eyes were fixed trying to encode some information in the AOI.

Soon after the presentation of the slides, the respondents answered a questionnaire to evaluate the influence of the foreign variables in the experiment. This step aimed to identify possible control variables. Finally, the participants were thoroughly interviewed to check the debriefing procedures (Fitzsimons & Shiv, 2001). Then, the participants were informed about the actual purpose of the experiment, thanked and dismissed.

Results

The control variables did not influence the relationship between food package familiarity and the perceived amount of verbal information. Thus, we verified the fixation count in the AOI's that represented the verbal information of a food package. In the potato chips package, significant differences were observed in the analysis of the fixation count in the AOI's between the groupings of familiarity and unfamiliarity with food package ($t = 2.04$; $p < 0.05$). The fixation count was higher in the unfamiliarity with food package group ($X = 19.42$; $SD = 6.09$) than in the familiarity with food package group ($X = 15.68$; $SD = 5.03$). [Figure 1](#) presents the results.

The cereal bars package also showed differences in the mean of the fixation count in the AOIs between the grouping of familiarity and unfamiliarity with food package ($t = 2.69$; $p < 0.01$). The fixation count was higher in the unfamiliarity with food package group ($X = 19.52$; $SD = 5.12$) than it was in the familiarity with food package group ($X = 14.21$; $SD = 6.62$). Finally, we evaluated the differences between the familiarity and unfamiliarity with food package groups using a cereal biscuit package. In this package, we found significant differences ($t = 1.81$; $p < 0.05$) because the fixation count was

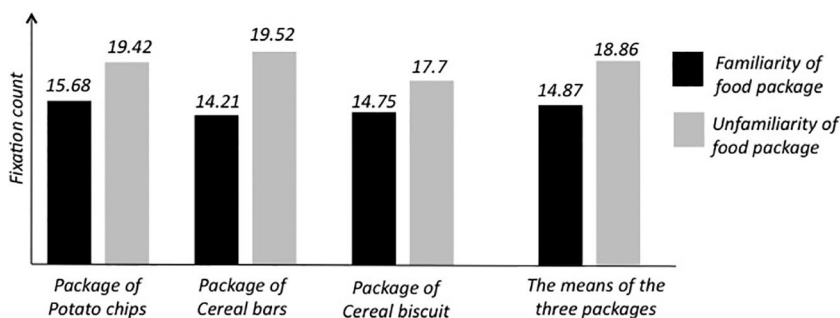


Figure 1. Results of study 1.

higher in the unfamiliarity with food package group ($X = 17.7$; $SD = 5.26$) than it was in the familiarity with food package group ($X = 14.75$; $SD = 4.28$).

An analysis of the means of the fixation count of the three packages shows a significant difference between the groupings of familiarity and unfamiliarity with food package ($t = -3.81$; $p < 0.05$). We found higher values for the fixation count in the AOIs in the unfamiliarity with food package group ($X = 18.86$; $SD = 5.57$) than in the familiarity with food package group ($X = 14.87$; $SD = 5.57$).

We performed a mean difference analysis among the three packages for the participants who were in the cluster of familiarity of food package. An ANOVA did not indicate a significant difference among the three packages ($F = 0.32$; p -value = 0.723). For the grouping of unfamiliarity with food package, we did not find evidence of significant differences ($F = 0.64$; p -value = 0.528).

Experiment II

Participants. The participants from study 2 were recruited into a new population of consumers and invited to analyze food packaging. The criterion used is similar to study 1. People were chosen because of their eating habits and their knowledge about food.

This study had the participation of 97 volunteers. Of the total number of participants, 52% were male, and 48% female. This sample had a mean age of 25.7 with a standard deviation of 7.8 years. Similar to study 1, we adopted sample selection criteria according to the study of Ares et al. (2014) and Rebollar et al. (2015). These procedures were aimed to ensure the correct functioning of the ocular tracking in the data collection.

Procedure. The second experiment had an average duration of up to 25 min per volunteer. The experimental design was 2 (familiarity with the food package versus unfamiliarity with the food package) \times 2 (low versus high propensity to frugal behavior). The consumers were initially separated into two

groups, with a between-subjects design (familiarity of the food package versus lack of familiarity of the food package). Initially, similar to study 1, the consumers in the food package familiarity cluster ($n = 98$) were invited to interact with a food package in their hands. These consumers were asked to evaluate the package for a minimum of 2 min. The goal of this phase was to stimulate consumer familiarity with the package during these 2 min. In contrast, also similar to study 1, the group of unfamiliar food (control group) ($n = 98$) did not receive packaging.

Similar to study 1, the set of packages chosen passed a pretest. The objective of this pretest was to select the packages that promoted more familiarity in the participants. Therefore, the chosen packaging had a layout that allowed the identification of traces of the verbal information.

In this step, we showed four different types of food packages to the group that had familiarity with the food package: potato chips, cereal bars, cereal biscuits, and seed cookies. The first three packs were used in Study 1. All of the four packages were clearly visible. The verbal information (text and technical information, such as description, nutritional information, daily guideline values, and traffic light system) on the packages was clearly legible.

The difference from study 1 in study 2 is that the visual attention of the packages is analyzed together. This implies that in study 2 the visual attention was not assessed individually per package. The intention in study 2 is to demonstrate that the significant differences of the tests in the low versus high propensity to frugal behavior conditions are not conditioned to a single packaging format, but to capturing the verbal information of the packages as a whole.

Then, the participants were invited to sit in front of a computer to observe some packages of products on the computer screen. Similar to the procedure in Study 1, we used the Tobii Pro X3-120 Eye Tracker to collect eye movement information. After collecting eye tracking data, also similar to Study 1, 10 slides with 10 food packages were presented to the interviewees of the two groups. The consumers in the familiarity with the food package group viewed the 10 packs. In this group, one of these 10 packages was similar to the package that was delivered in the first phase of the experiment. The consumers in the unfamiliarity with the food package group viewed the 10 packs. In this case, none of the packages were familiar to the respondents. We again wanted to note whether there would be a difference between the perceived amount of verbal information in the food package familiarity cluster and the unfamiliarity of the food package cluster. To determine this, we again divided the packages into AOIs. The AOI that we analyzed in these experiments was the sum of the four AOIs that are associated with verbal information from the food packages.

The four packages were used to measure the dependent variable. Again, in this experiment the dependent variable in this experiment was the attention of the

interviewees to the verbal information of the food package. However, unlike study 1, we measured the visual attention within the AOI fixation duration.

Shortly after the presentation of the slides, the participants responded to a scale to assess frugal consumption behavior. The frugal behavior scale that was used was adapted from the study by Lastovicka et al. (1999). In total, five items were used to evaluate the consumers' frugal behavior. After the sum of these items was obtained, the grouping of low versus high frugal behavior was divided and classified by median calculation. This stage of the experiment was classified as a within-subject design.

Finally, the participants were thoroughly interviewed to check debriefing procedures (Fitzsimons & Shiv, 2001). Then, the participants were informed about the actual purpose of the experiment, thanked and dismissed.

Results

We verified the fixation duration in all of the AOIs that represented the verbal information of the food packages. The group with a low propensity for frugal behavior showed significant differences in the analysis of the duration of the fixations in the AOI between the familiarity of food package and unfamiliarity of food package groups ($t = -4.331$; $p < 0.01$). The fixation duration was higher in the unfamiliarity with the food package group ($X = 0.743$ m/s, $SD = 0.303$ m/s) than in the familiarity with the food package group ($X = 0.686$ m/s; $SD = 0.49$ m/s). Figure 2 presents the results.

The group with a high propensity for frugal behavior showed significant differences in the analysis of the duration of the fixations in the AOI between the familiarity and unfamiliarity with food package groups ($t = -5.48$; $p < 0.01$). The fixation duration was higher in the familiarity with the food package group ($X = 0.782$ m/s; $SD = 0.468$ m/s) than in the unfamiliarity with the food package group ($X = 0.753$ m/s; $SD = 0.614$ m/s).

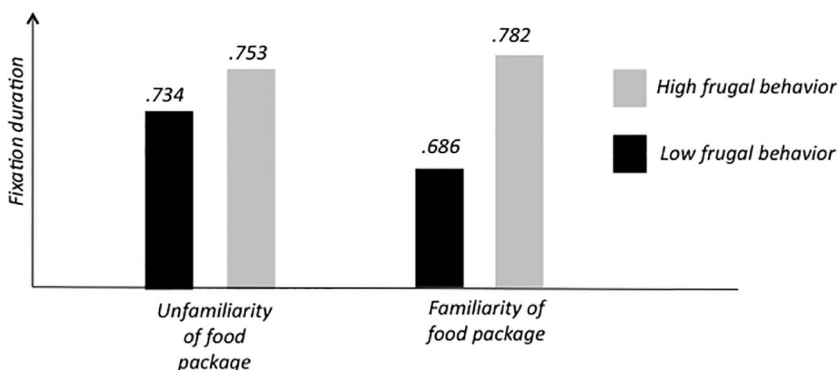


Figure 2. Results of study 2.

For the participants who were allowed to obtain familiarity with the packs, we did not find significant differences between the low and high propensity groups for frugal behavior ($t = 0.479$; $p = 0.619$). The participants who were exposed to pack familiarity found significant differences between the low and high propensity groups for frugal behavior ($t = 5.17$; $p < 0.05$). The fixation duration was higher in the high propensity for frugal behavior ($X = 0.782$ m/s; $SD = 0.46$ m/s) than in the low propensity for frugal behavior ($X = 0.686$ m/s; $SD = 0.49$ m/s).

Conclusion

The first objective of this research was to identify the influence of familiarity with food packaging on the visual attention of the consumer. The results revealed the existence of two visual patterns: (i) people who are familiar with food packaging tend to pay less attention to verbal information, and (ii) people who are unfamiliar with a product tend to be more attentive to verbal information.

The viewing patterns that were presented in the eye-tracking revealed that the participants in the experiment who were conditioned with familiarity of the packaging looked less at AOIs than at the verbal information, while the participants who had no previous familiarity with the food packaging did not look for verbal information as frequently. In the first experiment, what differentiated the results of the two groups was the amount of attention that was fixed by the participants on the verbal information of the packages. Thus, experiment 1 demonstrated that the amount of fixation in the respondents' eyes was dependent on the stimulus (information or not on the familiarity of the package). This means that the attention system adapts the duration of the fixing to familiarity with food packaging.

When viewing an AOI's verbal information from packaging that is familiar to the respondent, the visual attention is reduced. The effect of product familiarity inversely interferes with visual attention because the recall of memory through a familiar product reduces the likelihood of deeper consumer analysis (Clement et al., 2013). Our study 1 thus supports the prediction that familiarity reduces visual attention.

This reduction in packaging information matches evidence found in other publications. However, the results differ from these publications because they indicate only a reduction in pictorial AOI (Clement et al., 2013; Kent & Allen, 1994; Pieters & Wedel, 2004) or nutrition information (Bialkova & Van Trijp, 2010, 2011).

The results of Study 1 provide interesting evidence for the relationship between familiarity and visual attention. However, it does not analyze important criteria such as the personality traits of the participants. Thus, our second objective in this paper was operationalized through study 2 because we

analyzed the personality trait of frugal behavior. In study 2, the results revealed the existence of two visual patterns: (i) people who have a high propensity for frugal behavior, even those who are familiar with food packaging, tend to pay greater attention to verbal information; and (ii) people who have a low propensity for frugal behavior, even those who are familiar with food packaging, tend to pay less attention to verbal information.

Compared with study 1's patterns of visualization, in study 2, we observed that a change in visual attention occurs when there is a tendency to a high propensity for frugal behavior. Thus, the interaction between familiarity and frugal behavior influenced the amount of visual attention on verbal information. Consumers with a high propensity for frugal behavior viewed verbal information longer than those with a low propensity. Thus, we can see that the longer fixations during the reading of verbal information occur in people who are prone to frugal behavior.

The results of study 2 show that there is a moderating effect of frugal behavior on the relationship between product familiarity and the amount of visual attention. This moderating effect, which is indicated in the ocular tracking results, demonstrates that the time that is allotted for verbal information is suppressed when participants have a lower propensity for frugal consumption. The use of eye tracking in this experiment provides important information for an understanding of the underlying vision process, and it improves the underlying explanation of the inverse relationship between familiarity and visual attention. This is because it analyzes the interference of people who have greater and lesser propensity for frugal behavior.

These results demonstrate that people who make short-term sacrifices in buying to achieve long-term goals may tend to take more notice of verbal information on packages. This is because frugal behavior characterizes people who are restrained in the acquisition and use of financial resources to achieve more enduring goals (Goldsmith et al., 2014). The explanation of this greater focus of attention may be associated with the fact that frugal consumers seek more information to negotiate product prices because they are less susceptible to interpersonal influence and materialistic characteristics (Bove et al., 2009).

Thus, we can interpret that visual attention, even if it is conditioned to familiarity, can be influenced by short-term packaging sweep detail behavior when the consumer is oriented to a long-term project. This fact will impact the consumer's reading system that obtains knowledge of food packaging by altering the consumers' visual scanpaths.

The lack of eye movement research with respect to different personality traits is an important consideration, because types of traits such as frugal behavior may interfere with the process of storing information in memory. Thus, our experiments provide interesting results based on the relationship between food package familiarity and perceived amount of verbal information.

The article improves the understanding of the role of food packaging familiarity in reducing visual attention, which contributes to the research in supermarkets and specific food stores. In addition, it offers interesting insights into packaging management strategies and visual merchandising. In particular, it provides interesting practical information about variations in the familiarity of food packaging and its impact on visual processing, which is moderated by the consumer's frugal behavior.

Marketing professionals in the food industry are interested in understanding this phenomenon, because with such an understanding they can better position their packaging to different customer niches. Leaders and politicians will find this study to be of interest because they can explain the negative effects of such consumption and thus avoid food waste due to low attention in the reading of verbal information.

Table 1 highlights some of the key implications of our research for food retailers. First, we stress the importance of having strategies that increase the visualization of verbal information (nutritional information, guideline daily amounts, and traffic light system) for products that are known to customers. According to the results of our experiment on the packaging of nonfamiliar products, a strategy that does not require more attention to verbal information is necessary. This is because consumers, when they are not familiar packaging, are already accustomed to eye tracking verbal information.

Study 2 shows retailers how customers best visualize verbal food information because it qualifies the differences in low and high propensities for frugal consumption. More specifically, the study demonstrates the need to design more attractive packaging with respect to verbal information for consumers who have a high propensity for frugal consumption. Second, this study demonstrates to food professionals that the difference in the visual attention of personality trait groups occurs only with packages that are familiar to the consumer. Thus, through our ocular tracking results we highlight the importance of clearly displaying the verbal information of packages to consumers who are highly prone to frugality. These results highlight that consumers with a high propensity for frugality spend more time reading verbal information on food packaging.

In addition to these managerial issues, this research contributes to the academic literature devoted to retail visual attention by highlighting the use of the eye tracking methodology along with a frugal behavior scale to explore how consumers visually process food packaging. Few academic studies in the field of food have compared data from ocular tracking with personality traits.

In the field of consumer behavior several previous empirical studies had addressed visual attention in the context of food packaging, but no study has investigated the direct relationship with frugal consumption. On the other hand, even though there are many empirical and theoretical studies about

Table 1. Implications for food retailing.

Study details	Results evidenced in the experiment	Implications for marketers in the food industry
Study 1: The study examined the relationship between foods package familiarity and perceived amount of verbal information	<p><u>The potato chips package:</u> The t-value is 2.004. The p-value is .0262. The result is significant at $p < .05$.</p> <p><u>The cereal bars package:</u> The t-value is 2.691. The p-value is .0053. The result is significant at $p < .05$.</p> <p><u>The cereal biscuit package:</u> The t-value is 1.800. The p-value is .0398. The result is significant at $p < .05$.</p> <p><u>The three packages:</u> The t-value is 3.813. The p-value is .00011. The result is significant at $p < .05$.</p>	<p>In food store and supermarket displays the familiarity of packaging can negatively influence a more careful reading of verbal information. Therefore, retailers should seek to increase attention to verbal information from family packages such as: nutritional information, guideline daily amounts and traffic light system. For packaging of non-family products, a strategy is not necessary that gives more attention to verbal information, because consumers are already accustomed to reading this information on this type of product.</p>
	<p><u>Lack of familiarity with packaging:</u> The f-ratio value is 0.645. The p-value is .5281. The result is not significant at $p < .05$.</p>	<p>The results demonstrate that there is no difference between the means when comparing the products alone in relation to the presence or absence of familiarity of the product. Thus, retailers can design these strategies in different types of food packaging, because the inverse relationship found in study 1 does not address the specific characteristics of a single packaging.</p>
	<p><u>Presence of familiarity with the packaging:</u> The f-ratio value is 0.326. The p-value is .7231. The result is not significant at $p < .05$.</p>	

Study 2: The study examined the moderating effect of frugal behaviour on the relationship between foods package familiarity and perceived amount of verbal information

Low frugal behaviour: The t-value is 4.331. The p-value is .000013. The result is significant at $p < .05$.
High frugal behaviour: The t-value is -5.481 . The p-value is $<.00001$. The result is significant at $p < .05$.

Food retailers need to design their visual merchandising strategy keeping in mind the level of frugality of their customers. The results of study 2 highlight that the propensity for high frugal behaviour can cause customers to demonstrate greater visual attention to the verbal information, even in known food packages. This implies that frugal consumers are more detailed with regard to information that is associated with nutritional information, guideline daily amounts and traffic light system. Thus, the packaging that is addressed to these consumers could be much more detailed with regard to the verbal information. Thus, food packaging designers need to carefully select when to use too little or too much verbal information. Specialists who design food packaging should focus more attention on verbal information on known packaging. This is because it is in this type of packaging that there is a significant difference between people who have low and high propensities to frugal consumption. In this case, when designing displays in food stores, retailers can benefit from increased knowledge about the propensity for frugality and its effects on the visual inspection of packages.

Presence of familiarity with packaging: The t-value is 5.173. The p-value is .0317. The result is significant at $p < .05$.
Lack of familiarity with the packaging: The t-value is $-.479$. The p-value is .619. The result is not significant at $p < .05$.

product familiarity, few studies investigate consumer frugal behavior with regard to foods.

Scholarly interest in frugal behavior has grown in the past few years for two main reasons. First, concern for the environment seems to have induced increasing numbers of consumers to practice frugal consumption. Second, the recent and persistent severe economic downturn some countries (e.g., emerging countries) have experienced compelled many consumers to become increasingly frugal (Egol et al., 2010). Frugal behavior has become increasingly important in the field of consumer behavior. However, in this paper, we aim to (a) confirm the inverse relationship between visual attention and product familiarity and (b) analyze consumer frugal behavior as a moderator of this relationship.

According to Tellis, Yin, and Bell (2009) frugality is a reluctance to pay high prices for new products because of a desire to conserve and not waste resources on uncertain new products. Moreover, frugality is an important dimension of innovativeness, especially in less developed economies. We believe that the academic findings of our paper strengthen this view, as it promotes a more conservative and less impulsive deep sense of the value of conserving resources that will lead to the purchase.

Our results also highlight the importance of conducting new studies of the variables that are analyzed here. We suggest an experiment that incorporates variables that measure the recall of the intention to buy and brand knowledge. We believe that these variables can mediate or moderate the relationships that are studied in this paper, for example, the fact that a memory of a decision that was made or an element of a mark on the consumer memory influences visual attention. Despite the limitations that are inherent in the manipulation of these new variables, we believe that this study can help scholars and professionals in the understanding of visual attention to the verbal information of food packaging.

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