Small change, big change – Increasing attention with product package variations

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Abstract

The purpose of this paper is to investigate the influence of front-of-pack (FOP) variations on consumer attention. In a laboratory experiment using an eye-tracking method, the authors exposed 165 respondents to planograms containing target products displaying identical FOPs or FOPs with variations. Attention was measured by fixation duration and fixation counts, and eye movements were recorded at 250 Hz. The findings showed that FOP variations catch respondents' attention. Visual saliency has often been defined as a physical property of an object (such as color, shape, motion). In the current study, we show the importance of also taking into account the interaction of one stimulus with other stimuli. To our knowledge, this is the first time that the effects of FOP variations have been investigated. On a managerial level, the current study offers a simple and low-priced solution to cut through the clutter and catch consumers' attention, which is the first step to a product purchase.

Keywords: FOP variation, product package, eye-tracking, attention

Paper type Short Communication

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1. Introduction

Marketing managers face a dilemma when it comes to change. On the one hand, there is a mantra in advertising that stresses the importance of permanence with respect to the message, suggesting that consumers would be lost if a brand kept changing its positioning and slogan. This also applies to the visual messages emitted by a company. Thus, it has long been considered that the logo - as the brand's visual essence - needs to remain constant, otherwise the brand is exposed to a risk of disenchantment. And indeed, numerous logotypes, such as Ford, Coca-Cola, General Electric (GE) and the London underground symbol, designed by Edward Johnston in 1916, have remained identical or undergone only minor changes over time (Droulers, 2016). The marketing press often reports on examples of companies changing their logo and then facing dissatisfied consumers who want them to go back to the initial logo. One famous example is the Gap clothing company which, following negative consumer reaction to the launch of a new logo design in 2010, returned to its original Gap logo a week later. There are also numerous examples of changes to product packaging that resulted in failure, Tropicana being one of the most famous. In 2009, Tropicana introduced a new package design, but two months later it went back to the original product packaging. Lee, Gao, and Brown (2010) calculated that the package redesign cost Tropicana an estimated $27.3 million loss in sales. Hence, changes to the logo or product package can have severely detrimental outcomes.

On the other hand, several studies have noted the positive effects of newness, with Sääksjärvi, van den Hende, Mugge, and van Peursem (2015), for example, arguing that brand freshness is particularly challenging for established brands that are well-known but may have lost some of their former interest and their capacity to attract consumer attention. Without actually testing the hypothesis, these authors suggested that cutting through the advertising clutter with logo variations (i.e., slight variations to the brand's existing logo) could have a positive effect on attention. Changing the logo may also have a positive effect on brand image. Sääksjärvi, van den Hende, Mugge, and van Peursem (2015) showed that slight changes to the logo promote brand prominence and freshness, while Müller, Kocher, and Crettaz (2013) observed that introducing a new logo prompts consumers to view a brand as more modern.

In the studies about changes to logo or product package mentioned above, it is important to note that variations follow one another over time, with the changes intended to be permanent. However, in a new trend that has developed in recent years, limited edition packaging (or logotypes) is frequently created for special events to replace the original product package for a limited period of time. Many producers, like Coca Cola for instance, bring out Christmas-edition cans at the end of the year. Such variations can be even shorter. A very well-known example is Google whose logo depicted on its website changes constantly to celebrate anniversaries of famous artists, pioneers, and scientists or specific events (Olympic Games, Valentine's Day), for example. In general, these logo variations last no more than one day. According to Google, over 4000 of these so-called doodles have been already created. On the basis of the studies mentioned above, we can assume that these limited-in-time variations are intended to foster brand 'freshness'.

Such variations also have on impact on attentional processes. Attention research has shown that we cannot focus on all of the objects present in our visual field at any one time. A key challenge is to select which elements are relevant and which ones should be ignored. Pinto et al. (2013, p.1) argued that "this process of selecting a subset of the input, and ignoring the rest, is referred to as attention." This statement is especially relevant in the context of a retail store that has thousands of different products placed in a limited space. Creusen and Schoormans (2005, p.68) stressed that "gaining attention is an important first step in enabling consumer product purchase." Löfgren, Witell, and Gustafsson (2008) also emphasized the fact that aspects of product packaging help the product to capture consumer attention in what they call "the first moment of truth", i.e., product choice at point of purchase.

Two kinds of attentional mechanism explain why consumers pay attention to one product and ignore another. First, 'top-down' attention (endogenous attention or goal-oriented attention), which involves task-dependent cues, refers to the voluntary allocation of attention to certain products (e.g., "where can I find breakfast cereals in this store?"). Second, 'bottom-up' attention (exogenous attention or stimulus-driven attention) that involves image-based saliency cues refers to a rapid and involuntarily switching of attention to unexpected, novel or salient stimuli (e.g., "pink for a coffee product package … that's unusual!"). Several studies related to food images or food packaging have examined the influence of different factors on bottom-up attention. Thus, García-Madariaga, López, Burgos, and Virto (2019) showed that the presence of images or texts on packages increases the participants' level of attention. In a comprehensive study on food image presentation, Gere et al. (2020) examined the influence of several factors (stimulus size, picture background, stimuli orientation, product group and number of

alternatives) on bottom-up attention. In line with the current study, they showed that the orientation of food image (e.g., apple, pear or gummy bear) influenced time to first fixation and first fixation duration significantly, but not fixation duration or fixation count.

The bottom-up attention process is guided by the visual saliency of the different items present at a specific moment in the visual field. According to Borji and Itti (2012, p.478), "it [visual saliency] is basically a process that detects scene regions different from their surroundings." The perceptual saliency of stimuli critically depends on the surrounding context. Thus, visual saliency is not only defined as a physical property of an object (such as color, shape, motion), but also as the difference between this object and another object in a visual scene. Itti and Borji (2014, p. 1126) note that "visual salience is sometimes carelessly described as a physical property of a visual stimulus. It is important to remember that salience is the consequence of an interaction of a stimulus with other stimuli." The current study aims to investigate the effect of the simultaneous coexistence of different FOP versions of the very same product on attentional processes. When FOP variations introduce visual differences between similar items, visual saliency needs to increase, triggering bottom-up attention. Our study therefore posits that simultaneously displaying FOPs of the same product, but with visual variations, will gain more attention than displaying identical FOPs next to one another.

2. Method

To examine the influence of FOP design on attention, a laboratory experiment was conducted using an eye-tracking method.

2.1 Sample

The sample consisted of 165 participants (150 women) aged 20 to 48 years (M = 26.95; SD = 6.16), recruited by a marketing agency. More specifically, it featured 119 participants aged 20 to 29 years, 39 participants aged 30 to 39 years, and 7 participants aged 40 to 48 years. One hundred and eighteen of the participants were employed and 47 were students. All the participants declared that they had normal or corrected-to-normal visual acuity. The study was approved by the Ethics Committee of the School of Management where it was conducted (France) and conformed to the ethical principles of the Declaration of Helsinki.

2.2 Stimuli

To study the influence of FOP design, we chose the savory biscuit category. The thinking behind this choice is that savory biscuits are frequently purchased and widely consumed by men and women of all ages. As we did not want to create a completely new version of the FOP but simply wished to introduce FOP variations, we asked a professional design agency to keep the general appearance of the FOP (same brand position, same textual information, same color, etc.) and simply change the layout of the image of the biscuits on the FOP in order to obtain two versions, one with the biscuits arranged more or less horizontally and one with the biscuits arranged more or less vertically (see Figure 1). In order to increase external validity, six different sorts of savory biscuits were studied, and the target FOPs were presented on shelves surrounded by distractor FOPs to reproduce a natural retail environment (see Figure 2).

To minimize the effects of prior brand awareness, an own-brand label that was not widely available in the area where the study was conducted was chosen. Indeed, the stores of this retail brand are mainly located in the countryside, while the study was conducted in a large city.

Each participant was exposed to three planograms composed of three shelves (top, middle and bottom) with four products (one target product and three distractor products) on each shelf, each product being represented by two FOPs. On each planogram, two target FOPs were placed side by side on the top shelf (planogram 1: *feuilleté sésame pavot* (sesame and poppy seed flaky fingers); planogram 2: *mini-crêpes cheddar* (cheese crepes); planogram 3: *torsades chèvre romarin* (goats cheese straws)), and two target FOPs were placed side by side on the middle shelf (planogram 1: *palmier olives noires* (black olive biscuits); planogram 2: *mini-crêpes Roquefort* (blue cheese crepes); planogram 3: *mini-torsades tomate olive origan* (mini oregano tomato and olive flaky bites)) (see Figure 2).

2.3 Experimental design

To investigate the influence of FOP design on consumer attention, a mixed design was chosen combining repeated measures (the participants were asked to look successively at three planograms) and three between-groups. The participants were randomly assigned to either two identical target FOPs with the image of the biscuits displayed horizontally (N=45) (*FOP horizontal identical condition*), or two identical target FOPs with the image of the biscuits

displayed vertically (N=56) (*FOP vertical identical condition*), or one target FOP with the image of the biscuits displayed horizontally and the other target FOP with the image of the biscuits displayed vertically (N=64) (*FOP variations condition*).

2.4 Procedure

Each participant was given a specific arrival time and was welcomed to the laboratory by a research assistant. After being informed of the eye-tracking procedure and giving their written consent, the participants were seated facing a 24" (52 cm x 32.5 cm) HP screen, below which a remote eye-tracking system had been installed. The benefit of using this equipment is that no devices are attached to participants' faces, giving them a certain freedom of movement (Adil, Lacoste-Badie, & Droulers, 2018). The participants were positioned about 70 cm from the screen so that the screen package size matched the real package size as far as possible.

The experiment began with a calibration (tracking a moving red dot on the screen) that was successfully completed by all the participants. This calibration procedure enables the eye-tracking system to precisely localize eye position and ensures reliable eye movement recordings. Following the calibration phase, the participants were asked to look at the planograms as if they were planning to make a purchase in this category in a real store. Each planogram was exposed for five seconds, as several studies have shown that effective time spent looking at product options is quite short in a store. Lindberg et al. (2013), for example, showed that when making a purchase decision in a grocery store, shoppers look at juice products for 6.5 seconds on average and detergents for 7.9 seconds. Analyzing the time-course of food image pairs (e.g., high-calorie food vs. low-calorie food) presented for 6 seconds, Potthoff and Schienle (2020) showed that gaze behavior remains the same after the first second of the picture pair presentation. Thus, the time exposure chosen in the current study was a little shorter but remains comparable to Lindberg et al.'s (2013) study. The planograms were presented in the same order under the three experimental conditions. After viewing the three planograms, the participants were asked control questions to ascertain their knowledge of the stimulus retail brand "*Les Créations*" (yes/no), and if the answer was yes, whether they had already bought this retail brand's savory biscuits (yes/no). Their frequentation of the retail brand store was also assessed (Would you say that you shop at "*Intermarché*" stores: never, exceptionally, from time to time, regularly, exclusively?). The participants also answered socio-demographic questions. Finally, they were given a full debrief concerning the aims of the study and a 20-euro gift card to thank them for their time.

2.5 Eye movement recording and analysis

In line with the eye-mind hypothesis (Just and Carpenter, 1980, p.331) that "there is no appreciable lag between what is being fixated and what is being processed" using an eye-tracking device, eye movement was used as a proxy for attention.

The eye movements were recorded with binocular remote corneal reflection eye-tracking (SMI RED 250). The sampling rate of 250 Hz means that the points of regard were captured every 4 milliseconds (ms). The experiment was conducted via the SMI Experiment Center (Version 3.7.68). Standard velocity-based thresholds of the SMI BeGaze Software (Version 3.7.58) were used for event detection (velocity-threshold for saccade detection: 40°/s). The state when the eye remains still over a period of time is called a fixation and lasts anywhere between some tens of milliseconds up to several seconds (Holmqvist et al., 2011). In the current paper, fixations were defined by an absence of saccades and blinks for at least 50 ms. Data were exported using SMI BeGaze.

To measure how attention was distributed across the target FOPs, an area of interest (AOI) was drawn around the four target FOPs on each planogram (see Figure 3). Attention devoted to the AOI was measured by the 'fixation time' (FT) (total duration of the fixations in milliseconds within an AOI) and the 'fixation count' (FC) (number of fixations within an AOI).

As eye-tracking experiments often lose data due to calibration problems or recording issues, the data collection was carefully checked on a daily basis. As no data collection issues were observed, the data of all the participants were entered in the database for analysis. The analysis was conducted using IBM SPSS Statistics (Version 21).

3. Results

3.1 Preliminary results

Since mixed designs include both repeated measures and between-group measures, the conditions for applying the analysis of variance were checked on two levels. For repeated measures, Mauchly's test violates the assumption of sphericity (p<.05) and the degrees of freedom of test F were thus corrected by the Greenhouse-Geisser correction (ε = .963). For between-group measures, after looking for potential sources of bias, no violations of

assumptions were noted. Tests comparing mean and standard deviations of individual variables were performed to verify the comparability of the three experimental groups. In all the variables examined: i.e., age, gender, social activities, level of studies, target brand knowledge, purchase frequency of the target brands and brand retail store frequentation, there was no significant difference between the three experimental groups (p>.05).

3.2 Main results

A mixed design ANOVA was conducted on the dependent variables. There was a significant main effect of the FOP condition on both fixation time and fixation count (Table 1). The results revealed that participants spent longer looking at the FOP variations condition (M=1166ms, SD=680) than the FOP identical condition, whether the format was horizontal (M=895ms, SD=548) or vertical (M=953ms, SD=650) (F (2, 162) = 6.342, p = .002). They also made more fixations on the FOP variations condition (M=5.06, SD=2.60) than the FOP identical condition, whether the format was horizontal (M=4.18, SD=2.38) or vertical (M=4.23, SD=2.51) (F (2, 162) = 5.209, p = .006). In both eye-tracking measures (FT and FC), the difference between the horizontal and vertical formats was not significant (p >.05). Thus, the hypothesis that FOPs displaying visual variations gain more attention than identical FOPs is supported.

There was also a significant planogram effect for both fixation time (F (1.9, 312) = 65.417, p = .000) and fixation count (F (1.9, 312) = 41.593, p = .000), indicating in the three FOP conditions that attention towards the AOI on the first planogram was greater than attention towards the AOIs on the second and third planograms. In both eye-tracking measures (FT and FC), the difference between the second and third planogram was not significant (p >.05). However, there was no significant interaction effect between the FOP condition and the planogram for either fixation time (F (3.85, 312) = .237, p = .912) or fixation count (F (3.85, 312) = .503, p = .727).

We also analyzed the data using ANCOVA with individual variables (age, social activities, level of studies, knowledge of the target savory biscuit retail brand, target retail brand store frequentation, involvement with the savory biscuit category) as covariables and no direct effect or interaction effect was observed on the dependent variables (p >.05). Since Hummel (2017, 2018) showed that gender could generate differences in visual attention, we also examined the influence of gender, but found no gender-specific impact on visual attention in the current study. Moreover, as expected, the participants had little knowledge of the target

savory biscuit retail brand: 75% of them declared that they did not know the brand, while only 18% declared that they shopped in the target brand store ‘regularly’ or ‘exclusively’.

Table 1
Mixed design ANOVA results from the experiment for the three FOP conditions and by planogram.

AOI target FOP’s	FOP VERtical identical condition N=56	FOP VARiations condition N=64	FOP HORizontal identical condition G3=45			
	Mean (SD)	Mean (SD)	Mean (SD)	F	*p-value*	Post hoc
Fixation Time (FT) ms	953 (650)	1166 (680)	895 (548)	6.342	.002	VAR>VER-HOR
Fixation Count (FC)	4.23 (2.51)	5.06 (2.60)	4.18 (2.38)	5.209	.006	VAR>VER-HOR
FT_Planogram1	1348 (702)	1516 (651)	1214 (558)	2.963	.054	VAR> HOR
FT_ Planogram2	807 (546)	1041 (616)	796 (454)	3.677	.028	VAR>VER-HOR
FT_ Planogram3	705 (497)	942 (637)	674 (482)	4.055	.019	VAR>VER-HOR
F	30.41	20.87	18.45			
p-value	.000	.000	.000			
Post hoc	P1>P2-P3	P1>P2-P3	P1>P2-P3			
FC_ Planogram1	5.58 (2.78)	6.03 (2.48)	5.46 (2,60)	0.731	.483	-
FC_ Planogram2	3.69 (2.07)	4.85 (2.42)	3.73 (1.86)	5.489	.005	VAR>VER-HOR
FC_ Planogram3	3.41 (2.08)	4.29 (2.62)	3.35 (2.11)	3.028	.051	VAR>VER-HOR
F	18.86	10.71	13.54			
p-value	.000	.000	.000			
Post hoc	P1>P2-P3	P1>P2-P3	P1>P2-P3			

4. Discussion

In the present study, all the FOP elements: i.e., the brand, the category name, the slogan, the name of the main ingredients, and even the images, remain the same. The only modification concerns the layout of the product image on the FOP. To our knowledge, this is the first time that the effect of the coexistence of two different FOPs for the same product has been studied. However, closely related to the current study, Gere et al. (2020) showed previously the influence of food images presentation (e.g., the disposition and the size of food images) on gaze behavior. The current study reveals that even slight FOP variations can attract consumer attention. The attention devoted to the FOP variations – the image of the contents on one FOP being displayed in a horizontal way and on the other FOP in a vertical way – placed alongside one another was higher than the attention devoted to two identical FOPs.

In most studies, the influence of salience is observed by manipulating one physical property of the stimulus, such as color or size. Thus, Milosavljevic, Navalpakkam, Koch, and

Rangel (2012) manipulated FOP visual saliency by making it brighter to examine the impact on decision-making speed and cognitive load, while Lohse (1997) showed that color makes the ad more salient: color ads are more likely to be noticed than ads without colors. Based on Itti and Borji (2014), who stressed the importance of considering saliency not just on the basis of the physical property of a visual stimulus but rather as the consequence of an interaction of a stimulus with other stimuli, the current study showed that slight variations between two FOPs for the very same product placed side by side increases visual saliency and catches consumers' attention.

The results also revealed that attention towards the AOI of the first planogram was greater than attention towards the AOIs of the second and third planograms (the presentation order was the same in all three experimental conditions). Earlier research documenting that the center of a shelf gets more attention (Chandon, Hutchinson, Bradlow, & Young, 2009; Atalay, Bodur, & Rasolofoarison, 2012) could explain this finding. Considering the relatively central position of the target stimuli on the planograms, participants were more likely to look at the items located in the center of Planogram 1. As planograms 2 and 3 were similar in terms of content (same product category) and the participants were more familiar with the task, their exploration of the planogram extended beyond the center.

The current research offers critical insights for brand manufacturers. Since consumers say they make most of their purchasing decisions in-store (POPAI 2014), attracting their attention in a cluttered retail environment is hard. While retailers control most of the aspects that influence consumers' attention in-store, such as number of facings or product position (Atalay, Bodur, & Rasolofoarison, 2012), manufacturers control one of the most striking factors, namely, the FOP. The current study proposes a simple and low-priced solution to stand out from the competition and attract consumer attention, which is the first step towards the purchase of a product.

Future research needs to consider the influence of the introduction of FOP variations on declarative measurements, such as perceived assortment size (Pizzi & Scarpi, 2016), perceived shelf complexity (Bigoin-Gagnan & Lacoste-Badie, 2018) and purchase intention. Moreover, our sample is made up of young adults, mostly women. As age and gender could influence visual attention, especially with regard to food products (Hummel et al., 2017; Gere et al. 2020), future research should include representative samples that are more comparable to the general population. Hummel et al. (2017) showed that participants' attention varies depending on the type of food stimuli presented (low calorie food vs. sweet and savory high-calorie food). Thus, in the future, it would be interesting to replicate the current study with healthier food items. The

current study also manipulated the image of the product on the FOP. An interesting research avenue could be to study other forms of FOP variations such as the layout of textual information on the FOP. Finally, this approach to bring greater variety to the shelves could be a "win-win" for both manufacturers and retailers.

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Figure 1. Target FOPs used in the experiment

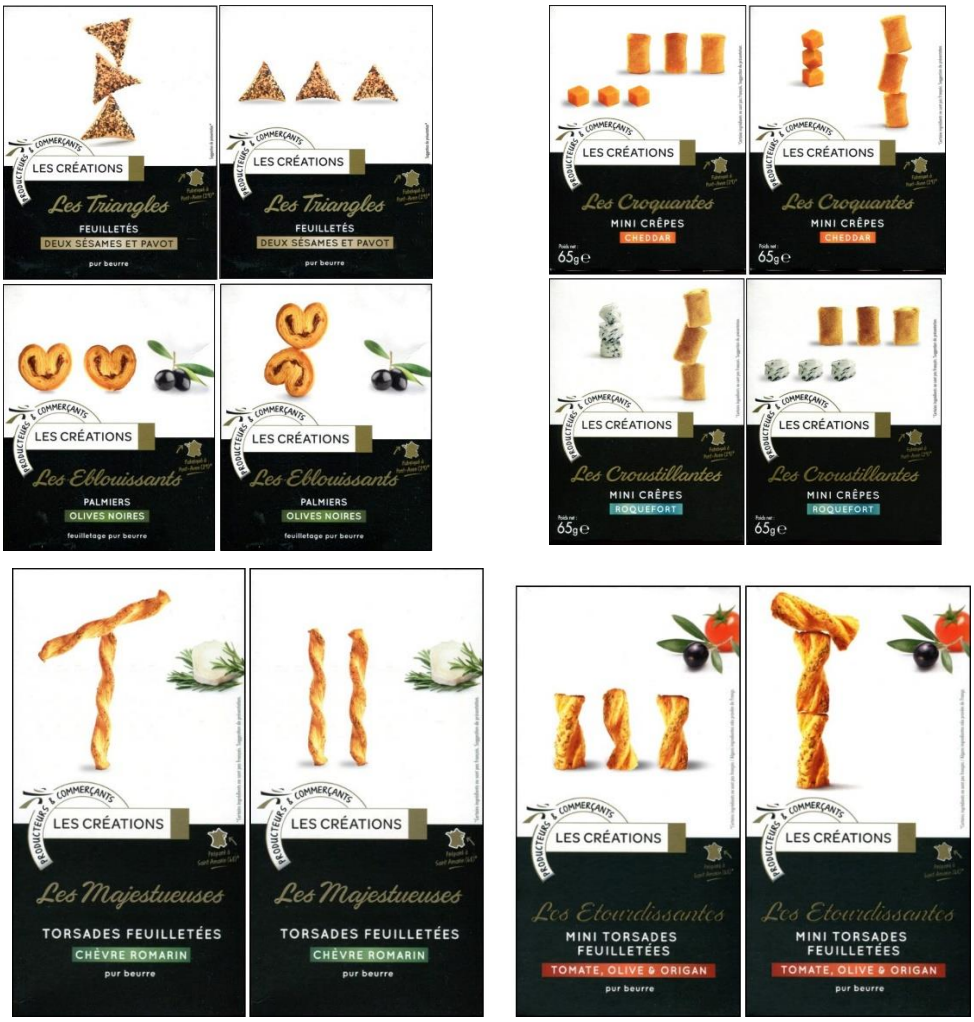

Figure 2. Planograms for the different experimental conditions

FOP horizontal identical condition	FOP vertical identical condition	FOP variations condition
Planogram 1	Planogram 1	Planogram 1
		
Planogram 2	Planogram 2	Planogram 2
		
Planogram 3	Planogram 3	Planogram 3
		

Figure 3. Area of interest in green