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Left isn't always right: placement of pictorial and textual package elements

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Abstract

Purpose – The purpose of this study is to investigate how the positioning of textual and pictorial design elements on a package affects visual attention (detection time) toward these element types.

Design/methodology/approach – The study has a 3×2 (Stimulus \times Location) between-subjects design. One pictorial and two textual package elements, located on the top right- or top left-hand side of a package, were used as stimuli. Visual attention was measured by eye-tracking. A total of 199 university students participated. The data were analysed using a two-way ANOVA and a Pearson's chi-square analysis with standardised residuals.

Findings – The results show that in order to receive the most direct attention, textual elements should be on the left-hand side of a package, whereas pictorial elements should be on the right-hand side. This is inconsistent with previous design directions (based on recall), suggesting the opposite element organisation.

Originality/value – Previous research has focused on recall (whether respondents remember having seen package elements) or preference (whether respondents prefer a package based on element positioning). The focus of the present study was whether respondents actually saw the different elements on a package, and how long it took them to detect such elements.

Detection time for certain element types can be viewed as a new and complementary way of evaluating the position of package elements. The paper also addresses whether preference is a result of easy information acquisition.

Keywords: packaging, package design, visual attention, visual perception, eye-tracking, pictorial elements, textual elements, preference, retail environment

Article classification: Research paper

Introduction

Packaging plays a key role in customers' purchase decisions (Deng and Kahn, 2009; Hanzae and Sheikhi, 2010; Kuvykaite *et al.*, 2009; Orth and Malkewitz, 2008; Rettie and Brewer, 2000; Silayoi and Speece, 2004; 2007; Underwood and Klein, 2002). Packaging can be regarded as a silent salesman (Pilditch, 1973), and most customers make their purchase decisions solely by looking at the front of the package (Urbany *et al.*, 1996). Given the similarity in package design between many products within a category, selection of a specific product may depend on if it captures the customer's attention and conveys the right message within a very limited time (Judd *et al.*, 1989). Thus, everything that facilitates communication of the intended message on a product's packaging is crucial at point of purchase (POP). A poorly designed package with a disorganised layout can cause confusion, giving customers a negative perception of the product.

Few studies have investigated the communicative effects of product packaging, as well as the link between packaging and consumer attention (Underwood *et al.*, 2001).

Nevertheless, even the slightest change in attention can have a significant impact on brand memory (Wedel and Pieters, 2000), perception (Pieters and Warlop, 1999) and sales (Janiszewski, 1998). Even though capturing attention is not always enough for brand selection (Janiszewski and Warlop, 1993), visual attention is crucial for purchase selection. People choose with their eyes (Clement, 2007), which means that unseen items are unsold items. Therefore, a customer's buying behaviour will be affected by visual stimuli (Pieters and Warlop, 1999; Reutskaja *et al.*, 2011).

Text and pictures are important package characteristics. Researchers often classify these into separate categories, such as verbal and visual (Rettie and Brewer, 2000), or informational and visual package elements (Silayoi and Speece, 2004; 2007). Pictorial

elements are central for capturing and retaining customers' attention (Childers and Houston, 1984; Pieters and Wedel, 2004; Underwood *et al.*, 2001), and textual elements have a large impact on consumers' choices (Pieters and Wedel, 2004). For instance, Feiereisen *et al.* (2008) showed that words, more than pictures, generally enhance comprehension of new products.

The purpose of this study is to investigate the influence that positioning has on visual attention toward textual and pictorial elements; two major design components of packaging. More precisely, the aim is to explore detection time for these element types, when located on the right- or left-hand side of a package. The definition of *package*, as given in Ampuero and Vila (2006; 2007), is a container that is in direct contact with the product itself, facilitating handling and commercialism, and protecting, preserving and identifying the product. In the present article, this term will exclusively refer to packaging for retail products. The research has impact on where these elements should be positioned on a package in order to be noticed. As far as can be ascertained, no one has addressed this research question previously.

The next section of the article contains a general discussion regarding package elements. Since textual and pictorial package elements tend to be processed in different regions (hemispheres) of the brain, attention turns to the laterality of the human brain. This is followed by a review of related research on textual and pictorial elements, mainly for packaging, and with brain laterality as an underlying theoretical framework. The paper will then develop two pairs of research propositions in parallel with this concept. Finally, focus shifts to the present study, its methodology, results, and implications.

Package elements

A package consists of different types of elements that are essential for grabbing and sustaining customers' attention. When designing a package, it is important to understand the

influence these elements have on customers (Silayoi and Speece, 2007), and where they should be located to receive the most attention. Due to the increasing range of products in the retail environment, consumer attention is essential for a product to stand out. Many customer decisions are unplanned (Hausman, 2000; Kollat and Willett, 1967; Park *et al.*, 1989) and made at the POP (Bucklin and Lattin, 1991; POPAI, 1996; Rundh, 2005). The ability to communicate a clear and salient message on a package at the POP is therefore central.

Furthermore, saliency and element organisation can facilitate information search and influence which aspects receive attention (Janiszewski, 1998). In addition, it has been argued that consumer behaviour should be studied by focusing on separate package elements and how they relate to actual purchases (Underwood *et al.*, 2001).

Apart from some recent studies (e.g., Deng and Kahn, 2009; Rettie and Brewer, 2000; Pieters and Warlop, 1999; Silayoi and Speece, 2004; 2007; Underwood *et al.*, 2001; Underwood and Klein, 2002), there is a general lack of research on the communicative aspects of textual and pictorial package elements. Until the 1980s, research on the impact of textual and pictorial elements on consumer behaviour was limited (Childers and Houston, 1984). This is still largely unexplored, at least from a packaging point of view.

However, there is quite extensive research regarding the processing of textual and pictorial information in the human brain. The functional asymmetry of the brain's hemispheres has been acknowledged for more than a century (Witelson and Pallie, 1973). On the basis of this asymmetry, the human brain is lateralised, which means that information processing is handled differently in the two hemispheres. There is substantial evidence that the left hemisphere (LH) specialises in semantic categorisation and comprehension, processing, and recognition of verbal information; whereas the right hemisphere (RH) specialises in imagery, visuo-spatial skills, and comprehension of pictorial material (Gontijo, *et al.*, 2002; Hansen, 1981; Holbrook and Moore, 1981; Janiszewski, 1990a; 1990b; Jordan *et*

al., 2003; Kimura, 1969; 1973; Koivisto and Revonsuo, 2003; Meyer and Fedemeier, 2006; Meyers-Levy, 1989). Because of the cross-connection between the hemispheres and the visual fields, information from the left visual field (LVF) is processed in the RH, and information from the right visual field (RVF) is processed in the LH in normal subjects (Hansen, 1981; Jordan *et al.*, 2003; Koivisto and Revonsuo, 2003).

Development of research propositions

With brain laterality (in this case, the LH's processing of textual information and the RH's processing of pictorial information) as the theoretical framework, there appears to be two distinct views regarding the best way to locate textual and pictorial package elements: recall (if respondents remember having seen the elements) and preference (if respondents prefer an item based on its position of elements). Table 1 summarises the findings that support these two views. Neither recall nor preference provides any clues about how package elements should be organised in order to facilitate customers' perception of packaging information. This paper argues that detection time for certain package elements is important for gaining a deeper understanding of visual attention and information acquisition.

Due to the exploratory nature of the study, with the primary goal of investigating a previously unused measure of visual attention toward package elements, it was considered more appropriate to develop theory-based propositions rather than build up hypotheses. With the two theory blocks in mind (presented below), two pairs of conflicting propositions were formulated. One pair favours the hemispheric explanations of recall, while the other is based on the theory of aesthetic preference.

Insert Table 1 here

The recall view: One way to organise textual and pictorial package elements stems from the research on recall by Rettie and Brewer (2000). In their study, recall tasks were used to investigate the role of verbal and visual elements on packages. A sample of 150 university students were shown five packaged grocery products, one at a time, and were asked recall-related questions regarding verbal and visual package elements. The stimuli consisted either of the original packages or their mirror images. A tachistoscope kept the exposure length constant among participants.

Rettie and Brewer found a RVF recall advantage for verbal package elements and a LVF advantage for pictorial elements. The cross-connection between the visual fields and the hemispheres led them to conclude that this could be explained by brain laterality, with linguistic information processed mainly in the LH, and visuo-spatial functions primarily located in the RH. The Baddeley and Hitch working-memory model (for a review, see Baddeley, 2003) also justifies these results, given that tasks involving the language-based phonological loop correspond mainly to greater LH activity, and tasks involving the visuo-spatially-oriented sketchpad will lead to a higher RH activation (Smith, Jonides, & Koeppel, 1996).

Therefore, the logical package design guidelines should be to locate textual elements on the right-hand side of a package and pictorial elements on the left-hand side. The first pair of research propositions is as follows:

P_{1a}: Textual elements will be detected fastest when located on the right-hand side of a package.

P_{1b}: Pictorial elements will be detected fastest when located on the left-hand side of a package.

The preference view: In contrast to the recall view, there are some studies that argue for the reverse positioning of package elements. What these studies have in common is that they relate, directly or indirectly, to the concept of preference. Investigating the possible connection between aesthetic preference and brain laterality, Levy (1976) conducted two experiments. In the first experiment, students were shown several vacation slide pairs (a photo and its mirror image) and instructed to choose the photo they preferred. Together with the results obtained in the second experiment, in which participants were asked to determine the balance of some slides, a majority of right-handers evaluated pictures with greater weight (or the most important pictorial content) on the right-hand side as more aesthetically appealing. Levy suggested that this could be explained by the different functions of the hemispheres. Since the RH is generally more active in processing visuo-spatial information, this will result in more attention toward the LVF (corresponding to the RH), which makes this side look “heavier.” This explains why pictures that adjust for this would be evaluated as more aesthetically appealing. When the right-hand side contains important pictorial content or is given a heavier appearance, the skewness will be perceived as less pronounced (Levy, 1976). A similar reasoning should be applied to textual information, where the LH’s greater activity in verbal processing will cause a weighting toward the RVF. As can be seen below, this hemispheric explanation seems to apply even for textual and pictorial elements on packaging.

Deng and Kahn (2009) conducted a series of four computer-based experiments to examine the location effect on perceived product heaviness and package evaluation. They found that pictorial objects on the right are perceived as being heavier than the same objects on the left, and that products for which heaviness is considered positive (such as snacks) are preferable if the product image is located in such heavy areas.

Finally, in a study by Silayoi and Speece (2007), respondents (mainly women) from eight large companies in Thailand gave their opinions about a particular packaged, instant food product. The product was evaluated based on five influential attributes. One of these was the layout of verbal and visual elements. Photographic images of the stimuli were used to present different versions of the product, all of which were displayed at the same time. Silayoi and Speece reported that the product was preferred when it had pictorial elements on the right and verbal elements on the left.

To conclude, the package design recommendations with preference studies as a background should be to have the opposite layout (textual elements on the left and pictorial elements on the right). Since such a design has a positive impact on preference and overall product evaluation, a similar element organisation may be advantageous, even when it comes to detecting and paying attention to these element types. Hence, we propose:

P_{2a} : Textual elements will be detected fastest when located on the left-hand side of a package.

P_{2b} : Pictorial elements will be detected fastest when located on the right-hand side of a package.

Method

Visual attention was measured by means of eye-tracking; a technique of recording eye movements. The video-based pupil and corneal reflection method was used to estimate where on the stimulus the observer was looking (for details, see Duchowski, 2007). This method records the pupil center and a reflection spot on the cornea to measure the position of the eyes. The corneal reflection is caused by an infrared light source located in front of the observer (Holmqvist *et al.*, 2011). Previous eye-tracking studies have revealed a connection between attention to verbal package elements (brands) and decisions made in-store (Wedel

and Pieters, 2008), and have also investigated visual attention during brand choice under time-pressure and task motivation (Pieters and Warlop, 1999).

Design and stimuli

The study has a 3×2 (Stimulus \times Location) between-subjects design. A snack product (potato chips) was displayed on a screen for 7.0 seconds. The time limit was based on a pre-test study in which pictures were displayed for only 1.5 seconds. Since a majority of participants failed to detect the package elements during the pre-test, the projection time was substantially extended. Nevertheless, the projection time of 7.0 seconds is equal to the time-pressure condition in Pieters and Warlop's (1999) study. Time-pressure tends to affect the type of information favoured, with textual information generally filtered out and pictorial information receiving more attention, due to time shortage (Pieters and Warlop, 1999). However, since customers make product choices within seconds (Judd *et al.*, 1989), this time limit was considered relevant for measuring in-store behaviour.

A foreign brand of potato chips, not available on the Swedish market, was selected to rule out memory effects and familiarity aspects. Also, customers usually examine less familiar products more closely than familiar brands (Underwood *et al.*, 2001). Three different package elements (one pictorial and two textual) were used as stimuli. They were located on the top right or top left side of the package, thus creating six conditions. Each stimulus was equal in size, shape, and color. The pictorial element was a green clover symbol, and the textual elements contained the linguistic information "Win 100 000" and "New." [1]. Picture 1 shows the different stimulus versions for the left side conditions. Each participant only saw one of the pictures.

The locations (top left corner, top right corner) were chosen based on previous research showing that fixations are primarily performed toward the top left area of a stimulus (Abed,

1991), and because a right side location of a stimulus is seen as a heavy position (Levy, 1976), which can make certain food products (such as snacks) more preferable (Deng and Kahn, 2009).

Insert Picture 1 here

Participants

One hundred and ninety-nine Swedish university students (155 women and 44 men) participated in the study, with ages ranging from 19 to 49. Women tend to be less laterally differentiated (in both spatial and verbal functions) compared to men (Lake and Bryden, 1976; Levy and Reid, 1978; Meyers-Levy, 1989). Thus, it is plausible that a larger number of men would have magnified, rather than reduced, differences in detection time. Participants comprised a sample of university students from the social sciences, and were recruited during lectures. No course credits were given for participation. Subjects were given a lottery ticket (valued at approximately US\$2) at the completion of the 10-minute session.

Fourteen cases (eight women and six men) were removed because of incomplete eye-tracking recordings and insufficient calibrations. Attrition was not systematic across conditions, $\chi^2(5) = 7.34, p = .20$. One hundred and eighty-five subjects with complete eye-tracking data were randomly assigned to the different conditions. There were 31 subjects in the Clover-left version, 33 in the Win-left version, and 29 in the New-left version. In the right versions, 29 (Clover), 30 (Win), and 33 (New) subjects participated. Subsequent analyses are based on those participants with registered eye movements on the area of interest (AOI), looking at the specific textual or pictorial element.

Dependent variable

By varying the location (top left corner, top right corner) of textual and pictorial package elements, this study analysed how positioning affects detection time for such stimuli. The measure applied was Time to First Fixation (TFFF). This is the time from the point at which the actual stimulus is displayed until the initial fixation occurs on the AOI. Fixations are generally interpreted as a measure of visual attention and are the most reported events in eye-tracking data (Holmqvist *et al.*, 2011).

Procedure and material

The trials were conducted individually in a university laboratory facility. When participants were recruited, they were given a high-level explanation of the study's purpose. They were told that the aim was to explore the connection between package design and visual attention. Participants gave their informed consent.

Eye movements were recorded with the Tobii X120 Eye Tracker, with a claimed accuracy of 0.5° (Tobii eye tracking research, 2011) and a sampling frequency of 120 Hz. In other words, the eye tracker recorded eye movements 120 times per second. Subjects were informed that the eye tracker would record their eyes while looking at different products. The eye tracker was a remote unit, connected to a specially developed foot stand. A remote eye tracker puts both the infrared illumination and the eye video camera in front of the participant (Holmqvist *et al.*, 2011). Participants were instructed to stand on a marked spot just behind the recording unit.

Once the eye-tracking device was adjusted, calibrations began. In the calibration process, participants were told to look in the middle of the screen and move their head as little as possible. The display was 256×160 cm (100.8×63 inches), located 227 cm (89.4 inches) in front of the eye tracker. The angular deviation from a horizontal position was 23° . Stimuli were presented in full colour at 1280×800 resolution. Digital images displayed the

package stimuli and its textual or pictorial elements. Eye recordings and slides were computer controlled. All of the package elements were large enough to be detected; the pictorial element was clearly visible, and the textual elements could be easily read.

Participants were told to follow the center of a moving red dot on the screen with their eyes. Once the calibration was successfully completed, subjects were given a familiarizing task of a package, displayed for an equal amount of time as the forthcoming picture (7.0 seconds). After a free-viewing instruction, each participant was then shown one package picture and its corresponding element type (textual or visual).

To ensure that the initial gaze position was identical among all participants, three fixation crosses/dots (attention grabbers) of different sizes and shapes were projected in the middle of the screen just before the actual package appeared. Each cross/dot was presented for 0.3 seconds.

Having completed the eye-tracking procedure, subjects were guided to a chair in an adjacent room to answer some demographic questions in paper-and-pencil format. This was done after the eye-tracking recordings to keep the relationship between textual and pictorial information as neutral as possible during the eye-tracking sessions. Previous research has shown that verbal tasks activate a processing style associated with the LH, which may affect or prime certain product judgments (Meyers-Levy, 1989). This procedure was chosen to avoid enlarging the effect of linguistic processing (corresponding to a higher activity in the LH).

Results

A two-way ANOVA with location (left, right) and stimulus-version (Clover symbol, Win 100,000, New) showed no statistically significant main effects in TTFF, either for location [$F(1, 112) = .08, p = .79$] or stimulus version [$F(2, 112) = .61, p = .55$]. However, the

interaction location \times stimulus version was statistically significant [$F(2, 112) = 3.35, p < .05$], which indicates location-related differences in the perception of textual and pictorial package elements (see Figure 1). Both textual elements were detected faster when they were on the left side of the package, whereas the reverse applied for the pictorial element. In other words, participants noticed the clover symbol faster when it was positioned on the right side of the package. See Table 2 for means and standard deviations.

Insert Figure 1 here

Insert Table 2 here

A Pearson's chi-square analysis was conducted to determine whether the seen and unseen elements in the different experimental groups were randomly distributed. Six categories were created on the basis of stimulus-version (Left Clover symbol, Right Clover symbol, Left Win 100 000, Right Win 100 000, Left New, and Right New) and AOI hit (seen, unseen). An AOI hit states that the coordinates of a fixation is inside the AOI (Holmqvist *et al.*, 2011).

The chi-square value was statistically significant [$\chi^2(5) = 24.67, p < .0005, V = 0.365$]. Standardised residuals were calculated to determine which stimulus versions were major contributors to the significance. A standardised residual with an absolute value greater than 2.00 is regarded as a major contributor (Hinkle *et al.*, 1994). The chi-square analysis revealed that only the Left Clover version was a major contributor [standardised residuals (seen, unseen) = -2.4 and 3.2 respectively]. Thus, significantly fewer participants saw the symbol in the Left Clover version than could be assumed in a random distribution, and those who saw the symbol detected it slower than participants in the Right Clover version.

Discussion

The results of this study show that the positioning of package elements significantly affects detection. This study must be considered exploratory because previous studies of visual attention have not examined detection time for certain structural package elements, and existing related research has shown conflicting results. Textual elements are detected fastest when they are located on the left side of a package, whereas pictorial elements are detected fastest when they are located on the right side. Moreover, the chances of detecting pictorial package elements are largely influenced by positioning. Only a small number of participants managed to detect the pictorial element (the clover symbol) on the left side. They also detected it more slowly than participants who saw it on the right side. This indicates that participants who did not see the pictorial element on the left were unable to do so within the time limit of 7.0 seconds. Further, this proves the importance of proper element organisation. A “wrong” location may leave a salient package element unseen.

Theoretical implications

The results in this study are inconsistent with those obtained by Rettie and Brewer (2000). They examined recall for textual and pictorial package elements under conditions of rapid perception, with an exposure time of 0.5 seconds. Recall is separated from detection time, and the differences in exposure time in these studies means it is more likely that Rettie and Brewer managed to present the stimulus-types to just one of the visual fields.

In this study, however, longer exposure duration (7.0 seconds) presumably led to information processed in both visual fields. This is a more realistic setting; customers shopping in a real retail environment do analyse packages with both visual fields. Nonetheless, the different patterns in recall and detection time could imply a trade-off in

where to put the various element types on a package. To facilitate detection, important textual elements should be positioned on the left side, while unappealing but necessary textual information should be located on the right side. Furthermore, selling or attention-grabbing pictorial elements should be placed on the right side of the package to minimise detection time. To facilitate and maximise recall, the element organisation should be the reverse. These conflicting results imply that detection and recall are based on separate cognitive processes.

The results of the present study offer some support to Silayoi and Speece's (2007) findings that packages were preferred when there was textual information to the left and pictorial information to the right. Although Silayoi and Speece measured the overall evaluation of a packaged food product, which is very different from detection time, this may suggest a link between detection time for textual and pictorial package elements and a preference for packages with this information composition. Preference could be a result of easy information acquisition. Therefore, packages whose elements are detected more frequently and faster could lead to more positive evaluations of both the actual packages and their corresponding products.

Managerial implications

Customers typically spend a short time looking at each product when choosing from among the available alternatives in the store, and make product choices within seconds (Judd *et al.*, 1989). Consequently, the time an individual spends looking at a specific package in many ways represents the time that the manufacturer has to convince the customer that they should choose that product. Because the positioning of textual and pictorial elements affects detection time, this study provides new insight into where such stimuli should be located in order to receive the most direct attention of customers. Since adequate positioning of package elements increases the probability of such information being seen, the obvious managerial

implication is: To maximise the chances that a package conveys its intended POP message, which ultimately increases its chance of being sold, appealing textual elements should be located on the left-hand side, while pictorial information should be located on the right-hand side.

Limitations

The fact that the study did not control for handedness means that the results could have been influenced by these effects. For right-handers, language is mainly processed in the LH and visuo-spatial functions are located in the LH (Kimura, 1973). Left-handers tend to have less lateralized brain functions, which leads to a more bilateral organisation of language (Kimura, 1983) and visuo-spatial abilities (Laeng and Peters, 1995). In a normal population, more than 90 percent of people are right-handers (Sun and Walsh, 2006). If the sample had a greater-than-normal proportion of left-handers, the likelihood of obtaining distinct differences would have decreased, rather than increased. Consequently, it is reasonable to assume that we would have received these results even if we had controlled for this.

The study did not include any recall- or preference-related questions, which prevented the possibility of investigating the interplay between these phenomena and detection time, other than implicitly. However, the relevance of these measures is already well-researched, as can be seen in Table 1.

Future research

It is interesting to ask whether the positioning of textual elements on the left side and pictorial elements on the right side accelerates the customers' decision-making process. Can a well-structured package design enhance information acquisition and, if so, does this lead to more rapid choices?

The connection between preference and detection time for textual or pictorial package elements also remains to be examined more in detail. Can a proper package design, with elements organised to enhance detection, lead to a more positive product evaluation?

Another possible extension of the current investigation is to compare element organisation and detection time between healthy and unhealthy food products. This would be a continuation of the Deng and Kahn (2009) study that revealed different preferences for regular and healthy snack products. In that study, adding a salient health goal (e.g., low fat) weakened the preference for regular snacks with product images located on heavy positions. However, this effect was considerably less for healthy snacks. If detection time is related to aesthetic preference, it would be interesting to explore which pattern the TTF measure exhibits under similar conditions.

This study was conducted with a free-viewing instruction, which means that participants did not get a specific task to memorise or evaluate the information provided on the package. Pieters and Wedel (2007) showed that visual attention toward ad objects (i.e., brands, pictorial elements, headlines, and body texts) is task-dependent. Hence, the duration of attention to those objects changes with different tasks (ad-memorisation, brand-learning, brand-evaluation, ad-appreciation, and free-viewing). Even though no differences were found between conditions in detecting the ad objects, participants spent significantly longer time looking at brands, body texts, and pictorial elements in the ad-memorisation condition compared to the free-viewing condition. However, the attention patterns for free-viewing and ad-appreciation were surprisingly similar. One recommendation for future research would therefore be to test whether attention paid to textual and pictorial package elements would change with specific tasks related to memory and preference.

Before any general conclusions can be reached, the results should be replicated in larger-scale experiments, including other products from the supermarket. Furthermore, as the

principles of information acquisition should be the same, independent of object and context, it would be interesting to apply these findings to other domains, such as advertisements or webpages.

A final suggestion for future research would be to investigate whether the findings reported in this article are replicable in a retail environment, with real snack products. Instead of a real product, this study used realistic pictorial representations of the package. The representations were much larger than any real snack product. Although realistic pictorial images are said to convey verbal and visual information as well as physical prototype stimuli (Jaeger *et al.*, 2001), a recent eye-tracking study found statistically significant differences in TTFF between stimuli presented in physical and virtual shopping environments (Tonkin *et al.*, 2011). Physically presented stimuli (cereal boxes) received fixations significantly faster than their corresponding virtual images. Since studies of eye movements in real-world settings still are at their very beginning (Liversedge *et al.*, 2011), it would be interesting to explore customers' visual attention in more realistic settings; both to find out if the results presented here are generalisable and to see whether the eye-tracking methodology are ecologically valid.

[1] The textual elements were presented in Swedish, in which the "Win" stimulus consists of four letters and the "New" stimulus consists of five letters.

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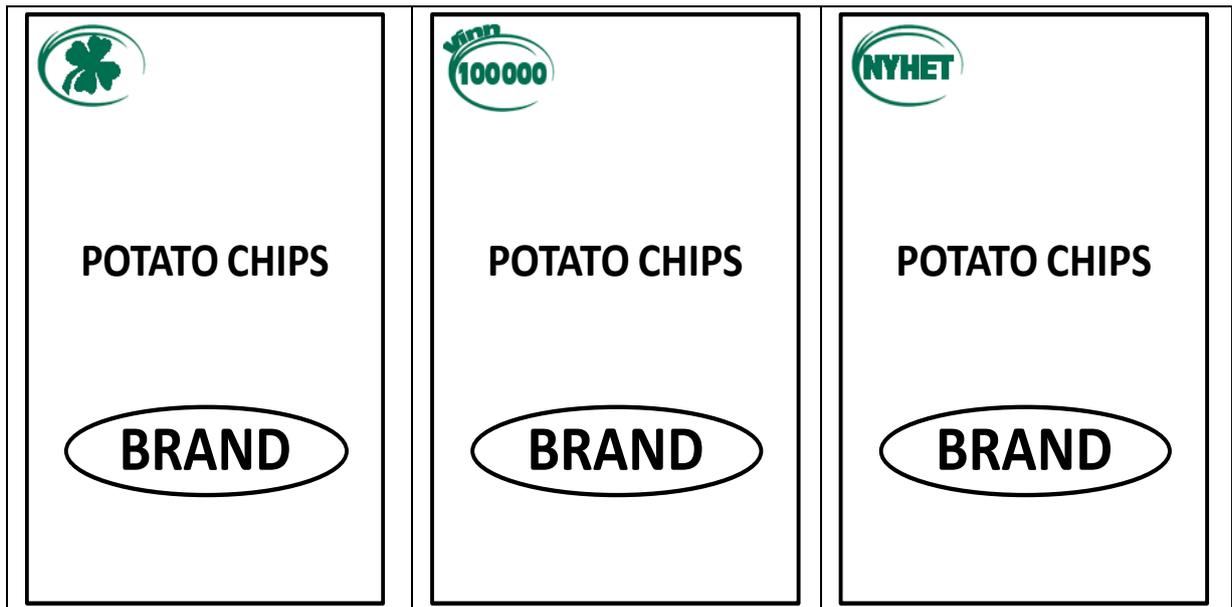
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Task/phenomenon	Left	Right	Researcher(s)
Recall, visual/pictorial package elements	X		Rettie and Brewer, 2000
Recall, verbal package elements		X	Rettie and Brewer, 2000
Overall packaging evaluation, pictorial elements		X	Silayoi and Speece, 2007
Overall packaging evaluation, verbal elements	X		Silayoi and Speece, 2007
Aesthetic preference, pictures		X	Levy, 1976
Package design preference, product images (snack products)		X	Deng and Kahn, 2009

Table 1: *Summary of studies investigating the impact of positioning on verbal and/or pictorial elements. A cross indicates superiority in ability or preference for the specified location.*



Picture 1: *The different stimuli (i.e., Clover, Win 100 000, New) in the left-hand side conditions.*

Location	Stimulus version	Mean	SD	n
Left	Clover Symbol	3.82	2.26	9
	Win 100 000	2.05	1.95	26
	New	2.12	1.86	21
	Total	2.36	2.03	56
Right	Clover Symbol	2.27	2.26	21
	Win 100 000	2.89	2.26	23
	New	3.17	2.27	18
	Total	2.76	2.26	62
Total	Clover Symbol	2.73	2.34	30
	Win 100 000	2.44	2.12	49
	New	2.60	2.10	39
	Total	2.57	2.16	118

Table 2: Mean time to first fixation of the three stimuli versions within the two locations.

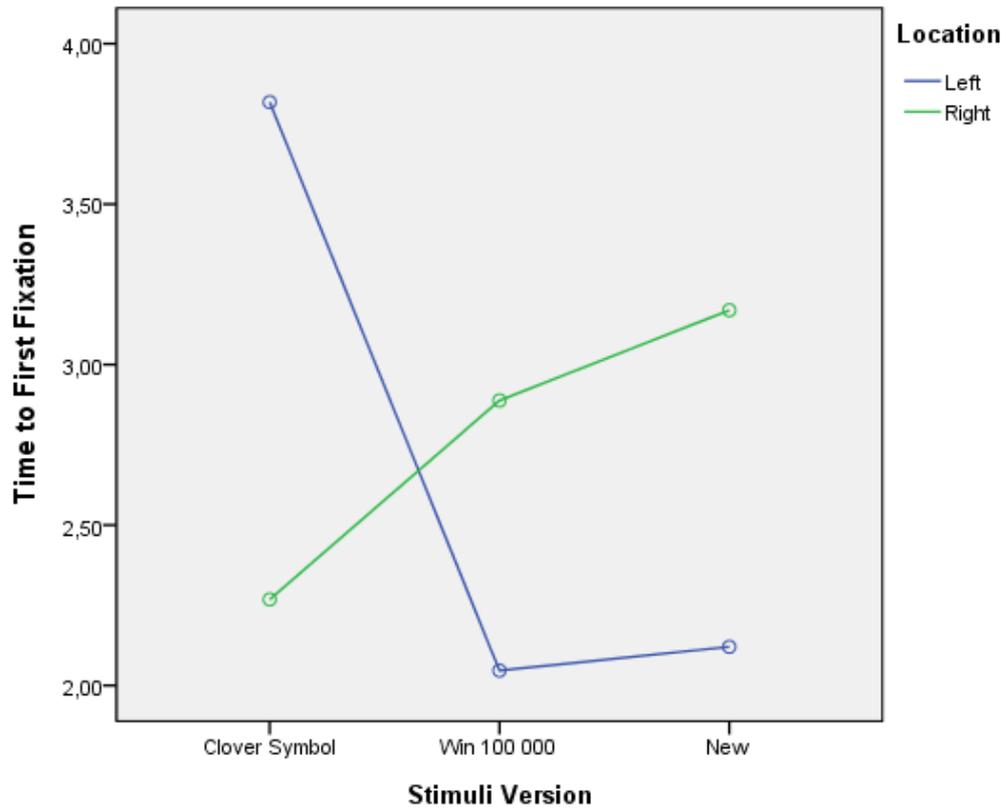


Figure 1: *Mean time to first fixation of the three stimuli versions within the two locations.*