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Seeing is not necessarily liking: Advancing research on package design with eye-tracking[☆]

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ABSTRACT

This paper contributes to the package design research by proposing and verifying process-based framework that explain how various package features affect customers visual attention. An exploratory study was carried out in virtual settings, deploying eye-tracking methodology in combination with package collages in order to assure a reasonably realistic product category context, yet better control over non-package factors that affect attention. Findings suggest that physical and semantic package features affect attention during the ‘orientation’ phase and reveal how efficiently attention is transferred to the brand in the ‘discovery’ phase. Results in addition reveal that packages that attract the most attention are not necessarily likeable or suitable, but also that recall is a questionable measure of attention. The study provides important implications by informing management on how to break the visual clutter and stand out from competitors, while staying in line with the product category ‘code’.

1. Introduction

Package design is an important yet sub-optimally understood visual marketing tool. Orth and Malkewitz (2008) state that package design is very influential because of its pervasive impact and its presence in the purchase situation. This is accentuated by the fact that today the majority of purchase decisions are made at the point of sale (Clement, 2007; Tonkin, Ouzts, & Duchowski, 2011). Product and package design play important functions such as ‘attention grabbing’, categorization and communication of aesthetic, symbolic and functional information (Creusen & Schoormans, 2005). In addition, package design is relatively cost effective, but a poorly designed package on the other hand can have serious negative effects, as attested by Tropicana’s \$50 million loss due to redesign failure (Young & Ciummo, 2009).

An improved knowledge on the features of packaging design and their impact on customer decision-making is thus warranted. In particular, more research is needed in order to analyze which packaging feature triggers attention and enhances the buying process (Clement, 2007). According to Pieters, Warlop, and Wedel (2002) information clutter is imposing a serious media problem, which is why knowledge about the factors that can break the clutter is crucial. Consumers choose

the products or packaging that are able to break through the clutter and attract visual attention, since attention is related with the choice of the products (Bigné, Llinares, & Torrecilla, 2016; Pieters & Warlop, 1999). Still, the lack of knowledge regarding the relevant features of packaging is evident, since most of the research focused on visual attention was done in advertising. As a result important issues remain unexplored, such as diverse effects on visual attention, examination of multiple measures of attention and manipulation of relevant factors such as product shelf position (Chandon, Hutchinson, Bradlow, & Young, 2009).

This paper aims to fill the mentioned gaps by examining the effects of packaging on visual attention and package evaluation. Visual attention is manifested as ocular behavior, being a largely unconscious phenomena, which is why eye-tracking is considered the most adequate methodology to measure it (Bridger & Noble, 2015; Chandon, Hutchinson, Bradlow, & Young, 2007; Clement, Kristensen, & Grønhaug, 2013). Eye-tracking studies in marketing proved relevant for measuring visual attention, for better understanding of how customers process visual commercial scenes, and to measure the effectiveness of visual marketing stimuli (Chandon et al., 2009). More recent studies also demonstrated that eye-tracking methodology is adequate for examining how package features

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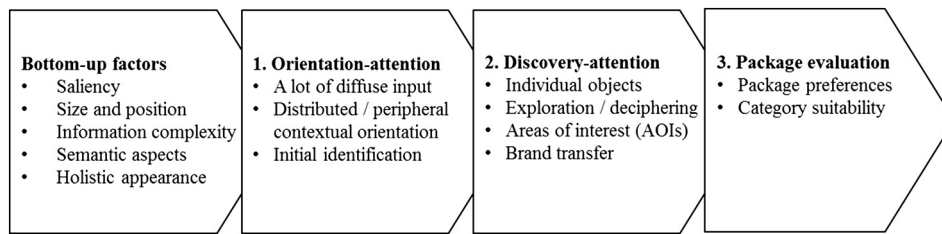


Fig. 1. Framework of visual attention process.

affect visual attention (Bialkova, Grunert, & van Trijp, 2013; Bialkova & van Trijp, 2011; Clement et al., 2013). Eye-tracking is thus becoming widely applied in marketing, yet its deployment for package research is still scarce - either due to its limitations (see e.g. Bridger & Noble, 2015; Russo, 2011), or due to its infancy, which left open various research issues.

Most of the relevant studies that were done in experimental settings namely focus on a rather narrow set of stimuli features that affect attention. In this manner there is a risk that most outstanding package designs and the most decisive design features are omitted, which suggests use of more exploratory and more integrative research designs (see e.g. Bigné et al., 2016). They would allow for identification of actual package designs and features that affect attention, yet could also incorporate certain 'holistic' design features that are currently neglected (Orth & Malkewitz, 2008). Laboratory studies in addition fail to examine visual context, which is crucial since some key features that affect attention like typicality are relative and depend on the category prototype (Garber, 1995; Schoormans & Robben, 1997). Packages namely compete for attention within the product category, therefore the research and interpretation needs to be situated within the actual product category in order to provide the relevant managerial implications.

Package studies in real settings however also encounter some limitations as they typically fail to control for important confounding variables, such as position on the shelf, which has been found to affect attention (Atalay, Bodur, & Rasolofoarison, 2012; Tonkin et al., 2011). The additional problem of eye-tracking research in real settings might represent the fact that observed products on the shelf are too close together for the accurate measurement of relevant areas of interest (AOI), and does not follow proposed guidelines for precise and valid measurement (see Orquin, Ashby, & Clarke, 2016). This issue is especially challenging at fuzzy AOIs that are present on the package, where the color, picture, brand, text and other attributes overlap or integrate. It is thus questionable to what extent it is possible to detect fixation on such specific package features on the actual shelf and examine their effect on attention. Rather, it seems plausible first to examine which packages (as discrete objects) attract initial attention relative to other packages. Afterwards, close examination of AOIs on individual packages might follow in order to identify which package features attract more focused attention.

Such an approach would be better aligned with contemporary, process focused models of attention. These models explain initial and later focused attention, in terms of subsequent phases rather than exclusive types or processes (Hubner, Steinhauser, & Lehle, 2010; Orquin & Loose, 2013). In this respect, previous studies adopt rather outdated research frameworks. Relevant studies typically focus either on initial attention at the point of purchase situation (Tonkin et al., 2011) or on focused attention when stimuli like advertisements (Pieters & Wedel, 2004; Pieters et al., 2002) or package labels (Bialkova & van Trijp, 2011; Bialkova et al., 2013) were examined.

Also of importance is that studies that examine later phases of the decision-making process largely focus on the brand or product choice, and fail to examine the evaluation of the package itself. In this matter, the relationship between attention to, and evaluation of, the package is neglected. The relationship between the two is nevertheless of immense importance, since the most notable packages might not necessarily be

positively evaluated, nor appropriate for the category (Crowley, 1993; Garber, 1995; Schoormans & Robben, 1997).

This paper aims to readdress the identified research gaps by proposing and empirically examining an advanced research approach, which represents its main intended contribution. Based on the established research gaps and a literature review, a conceptual framework of visual attention is proposed on which the empirical study is based. Its aim is to explore which package features within the (canned) beer category affect consumers' visual attention and subsequent package evaluation. Empirical study was carried out by means of combined (experimental/survey) methodology in the virtual settings, deploying eye-tracking technology.

2. Literature review

The theoretical background and empirical section are both structured according to the process-based framework in Fig. 1. In order to justify it, relevant package features that affect visual attention are discussed first, followed by discussion of visual attention phases and measures.

2.1. Bottom-up package factors

Previous studies provide important insights into relevant package features that affect attention (e.g. Bialkova & van Trijp, 2010; Bialkova et al., 2013; Clement et al., 2013). Over the years it became clear that a broad array of diverse features and factors affect attention. For an overview of them, a classification on the bottom-up and top-down factors is useful (see Clement et al., 2013; Pieters & Wedel, 2004). Bottom-up factors typically consist of features like size, color and shape, while top-down factors are typically considered customer involvement, familiarity, expectations and similar customer-related factors. Some top-down factors, such as exposure/viewing time that were also found of relevance (Bigné et al., 2016) depend on presentation format, rather than customer and might interact with other (e.g. bottom-up, semantic) factors (see Elsen, Pieters, & Wedel, 2016; Orquin & Loose, 2013).

In general, this paper is focused on the bottom-up factors that pertain to the package and are under managerial control. These consist of various physical, but also of other (i.e. semantic, symbolic and context-dependent) features (Crilly, Moultrie, & Clarkson, 2004; Hubner et al., 2010; Kowler, 2011). Available consumer studies suggest that physical features dominate initial attention (Clement et al., 2013), while semantic ones like text, picture and brand are more relevant in the later, more focused examination and evaluation of stimuli (Pieters & Wedel, 2004; Underwood, Klein, & Burke, 2001; Underwood & Ozanne, 1998).

Orquin and Loose (2013) identified four major factors of stimulus-driven visual attention: position, saliency, surface size and visual clutter, where all proved to be relevant in consumer settings. Effects of the position of marketing stimuli on perception are reported by Atalay et al. (2012), Chandon et al. (2009), and Rettie and Brewer (2000). The effect of saliency (e.g. contrast, color, shape, orientation) on attention has been supported by Mormann, Navalpakkam, Koch, and Rangel (2012), Clement et al. (2013), Lohse (1997) and Bialkova and van Trijp (2011). Some of these studies also support the impact of

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