



Unsold is unseen ... or is it? Examining the role of peripheral vision in the consumer choice process using eye-tracking methodology



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ABSTRACT

In visual marketing, the truism that “unseen is unsold” means that products that are not noticed will not be sold. This truism rests on the idea that the consumer choice process is heavily influenced by visual search. However, given that the majority of available products are not seen by consumers, this article examines the role of peripheral vision in guiding attention during the consumer choice process. In two eye-tracking studies, one conducted in a lab facility and the other conducted in a supermarket, the authors investigate the role and limitations of peripheral vision. The results show that peripheral vision is used to direct visual attention when discriminating between target and non-target objects in an eye-tracking laboratory. Target and non-target similarity, as well as visual saliency of non-targets, constitute the boundary conditions for this effect, which generalizes from instruction-based laboratory tasks to preference-based choice tasks in a real supermarket setting. Thus, peripheral vision helps customers to devote a larger share of attention to relevant products during the consumer choice process. Taken together, the results show how the creation of consideration set (sets of possible choice options) relies on both goal-directed attention and peripheral vision. These results could explain how visually similar packaging positively influences market leaders, while making novel brands almost invisible on supermarket shelves. The findings show that even though unsold products might be unseen, in the sense that they have not been directly observed, they might still have been evaluated and excluded by means of peripheral vision. This article is based on controlled lab experiments as well as a field study conducted in a complex retail environment. Thus, the findings are valid both under controlled and ecologically valid conditions.

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1. Introduction

A truism in visual marketing is that “unseen is unsold,” which means that a product that customers do not notice will not be sold. This concept rests on the idea that the consumer choice process is strongly influenced by visual search of information. Extensive research (e.g., Clement, 2007; Orquin & Loose, 2013; Pieters & Warlop, 1999) shows that this is indeed the case. Thus, since the consumer choice process relies heavily on visual input, it can be investigated by examining customers’ visual attention, defined as the processes involved when visual information is filtered and

selected, so that it can be processed more deeply and reach awareness (Paré & Dorris, 2011).

Previous literature shows that roughly half of the products in an average product category are observed at least once (Sorensen, 2009). This also means that every second product might be considered unseen. However, it is unknown whether this is due to a lack of drivers of attention or a general lack of interest from the customer. Although factors such as visual saliency and similarity have been found to influence attention in consumer choice situations (van der Laan, Hooge, De Ridder, Viergever, & Smeets, 2015), little is known about the function of peripheral vision in the exclusion of such visually salient or similar objects. Peripheral vision refers to vision outside of the center of gaze, which is involved in the detection and location of stimuli and enables a reorientation of visual attention (Keshvari & Rosenholtz, 2016; Slaghuis & Thompson, 2003). Studies beyond the consumer

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behavior literature have admittedly investigated several important aspects pertaining to the role of peripheral vision in visual search (e.g., [Duncan & Humphreys, 1989](#); [Findlay, 1997](#); [Wolfe, 1994](#)); however, as far as can be ascertained, no studies have examined the extent to which customers can exclude products without having to look directly at them (i.e., how their use of peripheral vision can guide which products in a supermarket shelf they will instantly filter out and which they will process more carefully). Therefore, the aim of the present research is to explore how peripheral vision guides attention during the consumer choice process. To summarize, the research questions addressed in this article are:

- (1) Do customers use peripheral vision in goal-directed search during the consumer choice process to discriminate between task-relevant and task-irrelevant stimuli (hereinafter referred to as targets and non-targets)?
- (2) Does such presumed use of peripheral vision enable customers to exclude non-targets without directly looking at them?
- (3) Do the saliency of non-targets and the similarity between targets and non-targets interfere with such potential reliance on peripheral vision?
- (4) Does the presumed use of peripheral vision generalize from instruction-based laboratory tasks to preference-based choice tasks under ecologically valid conditions in a real supermarket setting?

2. Theoretical framework

According to [Broadbent's \(1958\)](#) selective filter theory, people only have a limited capacity to process the huge amount of information that enters their sensory channels, which means that they select the stimuli that are to be further processed quite quickly. Therefore, in order to cope with the myriad of sensory input, all stimuli are initially processed in a preattentive manner for basic, physical properties. Applied to visual search, such properties include visually salient features such as color, shape, and size, often referred to as bottom-up factors or stimulus-driven attention ([Parkhurst, Law, & Niebur, 2002](#)). A selective filter then determines whether a certain object is meaningful enough for further processing or whether it should be filtered out based on its deemed irrelevant physical features. However, because the selection of attention is always determined both by stimulus-driven and goal-driven attention, a more controlled search for task-relevant information based on goals, needs, or desires (i.e., top-down factors; [Orquin, Bagger, & Loose, 2013](#)) also acts as a strong driver of attention ([Driver, 2001](#)), but may be influenced by, and sometimes compete with, salient bottom-up factors. Later research (e.g., [Lachter, Forster, & Ruthruff, 2004](#); [Parkhurst et al., 2002](#)) has confirmed the central tenets of the selective filter theory, including its stage model view of attention comprising initial processing of all stimuli, filtering of irrelevant stimuli, and the selection of potentially relevant stimuli for further processing. Such a stage model conceptualization is also a fundamental part of the consumer choice process.

Previous research suggests that consumer choice is a multi-stage process involving screening and choice ([Andrews & Currim, 2009](#); [Neelamegham & Jain, 1999](#); [Shocker, Ben-Akiva, Boccara, & Nedungadi, 1991](#)). During the screening phase, inappropriate alternatives are eliminated from further consideration ([Andrews & Srinivasan, 1995](#); [Glaholt & Reingold, 2009](#)) resulting in a subset of all available products. By only evaluating this subset, the decision making process is vastly simplified ([Bettman, 1979](#); [Johnson & Payne, 1985](#)). Indeed, given estimations that an ordinary

supermarket contains between 30,000 and 50,000 products ([Sorensen, 2009](#)), a successful elimination of products that are irrelevant for the customer's current task or goal is vital to reduce complexity and allocate attentional resources properly.

In their seminal eye-tracking study, [Russo and Leclerc \(1994\)](#) identified three stages in the consumer choice process – orientation, evaluation, and verification – with visual attention varying over these stages. In short, the orientation phase results in a set of possible choice options; that is, a consideration set ([Nedungadi, 1990](#)). During the evaluation phase, the products that best fits the goal of the customer will be identified in this set ([van der Laan et al., 2015](#)). The validity of this evaluation will then be confirmed during the verification phase. The inclusion and exclusion of products into the consideration set is especially interesting as these processes rely on visual search to discriminate between target and non-target products (cf. [Findlay, 1997](#)), with the target products being relevant for the customer's current task or goal.

Previous research has shown that product inclusion into consideration sets is driven by both out-of-store factors, like shopping goals and brand experiences ([Chandon, Hutchinson, Bradlow, & Young, 2009](#)), and in-store factors, such as priming of in-store marketing material ([Otterbring, Wästlund, Gustafsson, & Shams, 2014](#)), placement of verbal and pictorial packaging elements ([Otterbring, Shams, Wästlund, & Gustafson, 2013](#)), and visual design features such as shape and contrast ([Clement, Kristensen, & Grønhaug, 2013](#)). To the best of the authors' knowledge, however, no studies in the food science literature have examined the extent to which products can be excluded from consideration sets without reliance on the customer's focal vision (i.e., vision within the central two degrees of vision that provides a detailed representation of an object; [Slaghuis & Thompson, 2003](#)).

To address this gap in the literature, the authors proceed as follows. First, a lab-based eye-tracking experiment is presented (Studies 1A and 1B), in which the role and limitations of peripheral vision is investigated in discriminating between targets and non-targets. Specifically, it is examined whether peripheral vision is used in goal-directed search during the consumer choice process, thus enabling individuals to exclude non-targets without directly looking at them through their focal vision. Moreover, it is investigated whether the saliency of non-targets and the similarity between targets and non-targets can interfere with such presumed reliance on peripheral vision. Second, the results of a field experiment in an actual supermarket are reported, where the authors test the validity and real-world implications of the lab-based findings, again by means of eye-tracking methodology (Study 2). Before closing, the theoretical and managerial implications of the results are highlighted, after which the key content is summarized in a conclusion. Finally, the authors acknowledge some limitations of their work and offer fruitful directions for future research. As far as can be ascertained, this is one of the first eye-tracking studies to examine the role of peripheral vision in actual field settings. Thus, the article contributes to the growing stream of eye-tracking research examining how customers' use of visual attention can guide their subsequent choice behavior, purchase decisions, and product preferences (for some other notable examples from the food science literature, see [Bialkova et al., 2014](#); [Nijs, Muris, Euser, & Franken, 2010](#); [Van Herpen & Van Trijp, 2011](#)).

3. Study 1A – the role of peripheral vision in goal-directed visual attention and the effect of saliency

The main objective of Study 1A was to investigate the role of peripheral vision in goal-directed visual attention (that is, the voluntary allocation of attention towards the objects that are most informative for the individual's current goal or task; [van der Laan](#)

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