Journal of Retailing 93 (3, 2017) 266–282

How Product–Environment Brightness Contrast and Product Disarray Impact Consumer Choice in Retail Environments

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Available online 24 April 2017

Abstract

A conceptual model is developed to predict how consumers respond to in-store displays as a function of the extent to which a product's brightness level (i.e., its perceived light-emitting quality) contrasts with that of its background environment and the product's level of disarray. We show that products whose brightness levels contrast more with those of the retail environment are more preferred because they visually "pop out" (e.g., a dark product in a brightly lit store environment). However, this preference reverses when the products that pop out appear in disarray (i.e., are perceived to have been previously touched by other shoppers). Because most stores are bright environments, darker (vs. lighter) products in disarray are more likely to be perceived as contaminated and less pleasant, leading to avoidance behaviors, evident in reduced sales and preference. Theoretical and managerial implications are discussed.

Keywords: In-store merchandising; Brightness contrast; Visual attention; Feature contrast; Display; Disarray

Multicolor in-store displays, which typically contain a single product available in an assortment of colors (e.g., a single sweater style in eight different colors), are commonly used to display apparel and fashion home merchandise (i.e., soft goods) in apparel, specialty, discount, and department stores. When shopping in such stores, consumers will often remove a product from the display to inspect it, and then, if deciding not to purchase the item, return it to the display and continue shopping. The discarded merchandise is rarely replaced in the exact manner in which it was found. For example, a person might remove a sweater from the bottom of a neat stack of sweaters on display, refold it and place it back in the stack to the best of her ability, or may simply toss the sweater on top of the display. This common behavior causes a previously organized and neatly arrayed in-store multicolor display to appear messy or in disarray for the next shopper. A messy display can negatively impact sales and shift product preferences, as research has shown that products that appear to have been touched by others are less preferred (Argo, Dahl, and Morales 2006, 2008; Castro, Morales, and Nowlis 2013; Morales and Fitzsimons 2007; Newman, Diesendruck, and Bloom 2011).

The question we ask here is: When messily displayed, do all products suffer equally, or are some products more likely than others to exhibit the negative effects of appearing to have been touched by others? We aim to show that sales of messy products are more likely to decline when the products are more visually salient (i.e., pop out) from the display due to a significant contrast between the level of brightness of the product (i.e., the product's subjective light-emitting quality; Halsted 1993) and that of the surrounding environment. Our core premise is that a key moderator of the extent to which messily displayed products have negative effects on sales and preference is the extent to which they visually pop out due to product–environment brightness contrast.

This research makes a number of contributions. It adds to the growing literature on store atmospherics. Various aspects of the store's atmosphere can influence perceptions of merchandise quality, store image, and shoppers' emotional and cognitive states (Eroglu, Machleit, and Davis 2003; Schlosser 1998). For example, changes in flooring alters shoppers' walking speeds (Van Den Bergh et al. 2016), and emitting nature sounds impacts

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http://dx.doi.org/10.1016/j.jretai.2017.03.003
0022-4359/

willingness to buy sustainable foods (Spendrup, Hunter, and Isgren 2016). Here we focus on how store lighting, product brightness, and product appearance combine to impact product sales and preference.

This research investigates an aspect of color that is rarely examined—brightness—compared to the more commonly examined aspect of color—hue (Elliot and Maier 2014). Color is characterized by three dimensions: hue, saturation, and brightness (known as the HSB color model; Valdez and Mehrabian 1994). Hue refers to color wavelength (Valdez and Mehrabian 1994) and is the dimension of color most often referred to (e.g., blue, red, yellow) and most commonly investigated (see Elliot and Maier 2014). Saturation and brightness, the other two dimensions of color, have received much less attention. Saturation refers to how "deep" the color is, with lower saturation levels appearing greyer (Valdez and Mehrabian 1994). Brightness refers to a color's perceived light-emitting quality, driven in part by the amount of light reflected from an object to the eyes' rods and cones (Halsted 1993). Brighter colors, such as white (vs. black) or light grey (vs. dark grey), reflect more light. By incorporating visual attentional processes driven by brightness contrast into what is currently known about in-store behavior, we expand the scope of the literature on color theory and its impact on consumer response (e.g., De Bock, Pandelaere, and Van Kenhove 2013; Kareklas, Brunel, and Coulter 2014).

This work also builds on research that has shown that visual attention impacts decision makers' choice probabilities (Orquin and Mueller Loose 2013). Normally, objects to which shoppers devote more visual attention are more preferred and more likely to be chosen for purchase (Milosavljevic et al. 2012; Pieters and Warlop 1999; Russo and Leclerc 1994). Sales and purchase likelihood decrease when attention is drawn to a negative product attribute (Areni, Duhan, and Kiecker 1999), however, consistent with the notion that shoppers react with avoidance (approach) responses to environmental stimuli that elicit unpleasant (pleasant) emotional responses (Donovan and Rossiter 1982; Donovan et al. 1994; Mehrabian and Russell 1974). In line with these findings, we show that increased visual salience from *product–environment brightness contrast* can negatively influence preference and choice if the product is messily displayed. Thus, when a product is more likely to be noticed because its brightness level contrasts with that of the surrounding environment (e.g., a dark product in a brightly lit store) but the product is in a state of disarray (e.g., the product appears messy rather than neat), the resulting increased visual salience will negatively impact approach behavior.

This work adds to the streams of research examining the effects on consumer behavior of disorganized environments (Bitner 1990; Chae and Zhu 2014; Vohs, Redden, and Rahinel 2013) and merchandise that appears to have been touched by others (Argo, Dahl, and Morales 2006, 2008; Morales and Fitzsimons 2007; Newman, Diesendruck, and Bloom 2011). Here we find that not all products that appear to have been touched by others are equally likely to elicit negative responses from consumers. We show that disarrayed products that are visually salient due to brightness contrast with the environment are those most likely to be harmed (i.e., typically messy dark products rather than messy light products in brightly lit stores). For managers, the findings highlight the critical interplay between product and environmental brightness levels in attracting shoppers toward (or repelling them away from) product displays and their contents.

We next review relevant literature to build our conceptual model, followed by a description of three studies conducted to test various aspects of the model. We conclude with a general discussion.

Conceptual Model

Atmospherics was originally defined by Kotler (1973–74, p. 50) as: "the conscious designing of space to create certain buyer effects, specifically, the designing of buying environments to produce specific emotional effects in the buyer that enhance purchase probability." More recently, store atmospherics have been conceived of in terms of the multisensory experiences that impact shopper behavior (Spence et al. 2014). Research investing the effects of atmospheric cues has drawn from the field of environmental psychology, suggesting that consumers respond with approach or avoidance behaviors to such stimuli (Bitner 1992; Donovan and Rossiter 1982; Mehrabian and Russell 1974). Researchers have shown that colors (Belizzi, Crowley, and Hasty 1983), lighting (Summers and Hebert 2001), odors (Douce and Janssens 2013), music (Yalch and Spangenberg 1990), textures, and layouts can all impact shopper response. The present research adds to this stream by examining the impact of the brightness levels of products and their surrounding environment on shoppers who are browsing in stores.

Attracting Shopper Attention

Because shoppers are exposed to a wide variety of visual stimuli while browsing in stores, they must allocate their attention to a small subset of these stimuli while ignoring others. Visual attention, the mechanism that turns looking into seeing, involves selectively processing information and focusing on a specific location or an aspect of a visual scene by prioritizing some scene elements while ignoring others (Carrasco 2011). Selecting which stimuli to pay attention to is impacted by both bottom-up (e.g., exogenous or stimulus-driven) and top–down (e.g., endogenous or goal-driven) processes (Bialkova and van Trijp 2011). Exogenous processes influence attention when the observer involuntarily or automatically orients his or her response to a location that is highly perceptually salient. After a stimulus attracts attention automatically (via exogenous attention), then the person can decide whether or not to continue to devote attention to the stimulus as a function of his or her goals regarding the stimulus object (via endogenous attention).

Saliency reflects the "relative behavioral significance of visual information" (Kaldy, Blaser, and Leslie 2006, p. 482) and is a key driver of exogenous attention. Models of visual attention have shown that objects automatically attract attention when they exhibit feature contrast (Lamy and Zoaris 2009), which refers to "how different an object is from its neighbors" (Lamy and Zoaris 2009, p. 1472). When objects within one's