



# The positive effect of contextual image backgrounds on fluency and liking



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## ABSTRACT

In e-commerce websites, products may be presented either deprived of context, in a product image on white background, or with context, in an image with a contextually fitting background. Extant fluency research would suggest preferring context-less to contextual images, because detailed image contexts increase the complexity of the image, possibly decreasing viewers' fluency perceptions and, in turn, liking. The current research, however, establishes that despite their higher complexity, contextual images can also be perceived more fluently and liked more, because they facilitate the recognition of the product. Three experimental studies show this positive effect of contextual backgrounds in an e-commerce setting (e.g., actual product images from e-commerce). Furthermore, the present investigation shows that the positive effect of contextual backgrounds is amplified for ambiguous products, as they profit more from a facilitation of recognition. Online retailers can thus profit from presenting products in contextual images, particularly if the products are ambiguous or difficult to recognize.

## 1. Introduction

Product images are a core component of every online shopping experience, as products cannot be directly touched (Djamasbi et al., 2011; McCabe and Nowlis, 2003). Indeed, 67% of e-commerce customers state that a high-quality product image is very important for their purchase decision—more so than product descriptions, size charts, or reviews (Freedman, 2008). Consequently, an entire industry has developed that exclusively focuses on product photography for online retailers, which generated estimated revenues of \$5.5 billion in the United States in 2015 (Research and Markets, 2016). E-commerce photo studios with telling names such as Splashlight and Freshpack Photo present claims such as “Elevated E-Commerce” (Splashlight, 2016) and “Better photos, more sales!” (Wiethe Group, 2016). Online retailers, however, must ultimately decide which type of images they want. The most common options for product photography are stills on a white background and mood images in the context of “room sets.” While some practitioners advise using only white backgrounds for product images, thus enabling “products to shine” (Coyne, 2015), others promote realistic settings that evoke “a sense of time and place” (Sekonda, 2014). So far, research has been silent about recommending either option.

Extant fluency research assumes that a contextual background can render the image more complex, decrease fluency and potentially reduce consumers liking or hamper the perceived flow of using the online store (Reber et al., 1998; Winkielman et al., 2003). The more simple a

stimulus, the less complex it is (Reber et al., 2004). A product photographed on white background should thus be perceived as less complex than a product in an elaborate contextual setting. The latter's increased complexity requires additional resources to process, lowering fluency (Larsenet et al., 2004) and lower fluency decreases evaluations (Reber et al., 1998).

However, recent findings unrelated to image perceptions indicate that complexity in a stimulus might be appreciated under specific conditions, such as when consumers are repeatedly exposed to atypical product designs (Landwehr et al., 2013), when the visual or aesthetic complexity of a website increases browsing enjoyment (Cai and Xu, 2011; Mai et al., 2014) or additional information is goal-relevant (Mahnke et al., 2015). These findings indicate that conditions might exist under which contextual information in product images can be perceived more positively than the product shown on a common white image background.

Besides lowering fluency perceptions through the effects of complexity, contextual background might also make it easier for consumers to recognize and understand products, thus increasing fluency. As products are intangible online (Laroche et al., 2005), consumers require additional information to process them. We propose that contextual backgrounds offer such information, which might help to increase consumers' fluency perception. The present research, therefore, investigates whether the positive fluency effects of contextual background (through an eased understanding on the products) outweigh the negative (through increased complexity). Further, we assess conditions

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under which a positive effect of contextual backgrounds might be exacerbated. Specifically, contextual backgrounds may help to clarify the meaning of ambiguous products, which allow for multiple interpretations (Hoch and Ha, 1986). The present article establishes that contextual background increases fluency particularly for such products that are ambiguous and thus difficult to process (e.g., a glass vase for which it is difficult to recognize the product category or use—furniture or drinking device). This finding complements extant research, which posits that all image complexity reduces fluency (Larsen et al., 2004; Wu et al., 2016).

Three empirical studies utilize realistic stimuli and settings close to the actual e-commerce environment (e.g., all images taken from actual e-commerce websites). As such, this investigation answers calls for fluency research with nonartificial, realistic stimuli (Lee and Labroo, 2004) such as images (Albrecht and Carbon, 2014), the understanding of which is “incomplete and fragmented” (Larsen et al., 2004) to date. Furthermore, the present article identifies managerially relevant conditions for the appreciation of contextual background images (i.e., product ambiguity), which in turn point to fruitful avenues of future research—on product image assortments, for example.

## 2. Theoretical background and hypotheses development

Feelings of fluency have been established as a highly relevant variable which taints the perception of various objects, ranging from artificial stimuli (such as Chinese characters), to realistic objects, such as ads (Lee and Labroo, 2004), art (Belke et al., 2010), products (Cox and Cox, 2002) or texts on retail websites (Mosteller et al., 2014), influencing many behaviorally relevant variables ranging from evaluations (Reber et al., 1998)—the focus of this investigation—to activation (Albrecht and Carbon, 2014), risk (Park et al., 2016) or truth perception (Sundar et al., 2015). Fluency is defined as “ease or difficulty with which new, external information can be processed” (Schwarz, 2004, p. 338). In the context of e-commerce, different types of product images can affect fluency and hence the product’s evaluation. This investigation distinguishes between the two most common image types, images on white background (no context condition; e.g., running shoe on white background) and images in a, usually, rich contextual setting (context condition; e.g., close-up of running shoe on an athlete in a forest), when assessing their fluency-related effects. This distinction is in line with extant research which defines contextual details in images as “considerable information on the physical setting or locale, the spatial arrangement of objects and people, and the activities associated with the consumption of the product.” (Krishnamurthy and Sujana, 1999, p. 56).

The two image types (with and without contextual background) may influence the fluency perceptions of the images. Extant research shows that contextual information might influence consumers through two routes. First, a simple account of the two image types’ fluency effects expects that product images with contextual background would be perceived as more complex and less fluent than product images on white background (Larsen et al., 2004). Miceli et al. (2014, p. 887) define visual complexity as “the variety of the information featured by the visual structure of the logo [...] characterized by heterogeneous visual elements that span multiple perceptual dimensions.” Accordingly, product images in context should be perceived as more complex. This complexity, in turn, reduces fluency perceptions (Larsen et al., 2004).

Several extant lines of research support this notion of background information in images increasing complexity and lowering fluency perceptions: first, stimuli which offer more information are more complex and are perceived less fluently (Garner, 1974; Reber et al., 2004). In an e-commerce context, Wu et al. (2016) decreased fluency by adding sales information to an image of a product on white background. Second, lower figure ground contrast between the focal object and its background makes objects more difficult to perceive and lowers fluency (Reber et al., 1998). Mosteller et al. (2014) show that lowering the

text–background contrast on retail websites reduces fluency and liking. Third, lower image symmetry decreases fluency perceptions (Mayer and Landwehr, 2014). In the present study, product images with contextual backgrounds are designed to offer the viewer a rich contextual setting for the product (e.g., a sofa in a realistic living room with many other objects, such as decorations or carpets), which should increase the amount of information in the image. Relative to products on white background, products in contextual settings do not stand out as clearly (e.g., colors of sofa and living room do not contrast strongly), lowering contrasts; the images are also less symmetrical, because the background information is unlikely to be mirrored (e.g., same artwork on both sides of the sofa). Therefore, adding contextual background to a product image should increase the complexity and decrease the fluency perceptions of the image. It is important to note, however, that all the aforementioned studies on the negative effect of image complexity are based on a reduction of *perceptual fluency* (Belke et al., 2010; Lee and Labroo, 2004)—the “ease of identifying the physical identity of the stimulus” (Reber et al., 2004, p. 366).

Extant literature gives an early indication that a second, and positive, influence of contextual background information on fluency might arise. Contextual product image background does not only influence the perception of the stimuli, but also carries semantic meaning (Scott and Vargas, 2007) and could, thus, influence perceptions of *conceptual fluency*—or the “ease of mental operations concerned with [recognizing] stimulus meaning and its relation to semantic knowledge structures” (Reber et al., 2004, p. 366). Because consumers cannot directly touch products in an online store, recognizing the product’s (semantic) meaning and its utilization should be more difficult and therefore more relevant than in offline settings (Khakimjanova and Park, 2005). This recognition is particularly difficult for “contextually impoverished” product images (e.g., those appearing on a white background), whose meaning could remain equivocal (Krishnamurthy and Sujana, 1999, p. 57), thereby lowering conceptual fluency. Thus, additional contextual information might improve fluency through an eased conceptual understanding of the stimuli.

Several studies from other research settings provide supporting evidence for the relevance of conceptual meaning in images. Shapiro (1999) finds that consumers subconsciously compare the semantic meaning between the contextual background of a printed ad (to which they are incidentally exposed) and the advertised product, leading to increased semantic activities and recall if contextual background and product match. Image primes can work not only perceptually, but also conceptually (Grimes, 2008). To manipulate fluency, Lee and Labroo (2004) use a series of conceptually (un)related image primes before showing the target product image. Other studies alter fluency with semantically (non)matching titles of hotel images on booking websites (van Rompay et al., 2010) or of paintings (Belke et al., 2010). This notion that consumers conceptually encode the meaning of images and other stimuli in their environment has also been supported in a field study (Berger and Fitzsimons, 2008; Gill and El Gamal, 2014). Consequently, when a contextual background fits a product, the background can facilitate recognition of the product meaning and increase fluency.

In summary, when consumers view product images, perceptual and conceptual fluency should be affected differently: while the additional complexity decreases perceptual fluency, the additional information from the background should increase conceptual fluency. We propose that in an e-commerce context the potential positive conceptual fluency effects (which pertain to recognizing meaning and usage of the product) should be more relevant than the negative perceptual fluency effects (which pertain to the easier processing of simple stimuli): first, consumers require additional information to ease their understanding of the product. Online shops resemble “remote purchase environments” (Wood, 2001, p. 157), where products remain intangible for consumers (Laroche et al., 2005) because they cannot be touched (McCabe and Nowlis, 2003). Additional information from contextual backgrounds might, therefore, help consumers’ understanding of the products and

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