



Visual attention toward tourism photographs with text: An eye-tracking study



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HIGHLIGHTS

- Text within tourism photographs draws the majority of viewers' visual attention regardless of the text language.
- Tourism photographs with text in a known language attract more visual attention than photos with an unknown language.
- Tourism photographs with a single textual message obtain more visual attention than those with multiple textual messages.
- Participants' perceived advertising effectiveness of tourism photographs is fundamentally affected by the text language.

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ABSTRACT

This study examines consumers' visual attention toward tourism photographs with text naturally embedded in landscapes and their perceived advertising effectiveness. Eye-tracking is employed to record consumers' visual attention and a questionnaire is administered to acquire information about the perceived advertising effectiveness. The impacts of text elements are examined by two factors: viewers' understanding of the text language (understand vs. not understand), and the number of textual messages (single vs. multiple). Findings indicate that text within the landscapes of tourism photographs draws the majority of viewers' visual attention, irrespective of whether or not participants understand the text language. People spent more time viewing photographs with text in a known language compared to photographs with an unknown language, and more time viewing photographs with a single textual message than those with multiple textual messages. Viewers reported higher perceived advertising effectiveness toward tourism photographs that included text in the known language.

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1. Introduction

Photographs have been extensively used in tourism advertising. As an old adage says, "A picture is worth a thousand words." One single image can convey a complex idea and make it possible to quickly deliver large amounts of information (Zimbardo, 1992). In the consumer goods industry, photographs have been largely used to convey information about a brand and create an image or personality of a brand (Runyon, 1979). Given the intangible features of tourism experiences that cannot be experienced in advance, photography is a pivotal tool used by tourism marketers in various platforms to promote destinations and provide tourists

a virtual experience of a destination (Tussyadiah & Fesenmaier, 2009). Studies show that photographs as visual cues can capture tourists' attention (Lohse, 1997), generate perceived destination image (Galí Espelt & Donaire Benito, 2005; MacKay & Fesenmaier, 1997), and affect purchase decision-making (Underwood & Klein, 2002).

A handful of scholars have shown interest in studying photographic images in tourism settings (e.g., Dewar, Li, & Davis, 2007; Garrod, 2008; Lo, McKercher, Lo, Cheung, & Law, 2011; Markwell, 1997; Pan, Lee, & Tsai, 2014). Extant research in this area has been largely focused on people's interpretations of tourism photographs and how these interpretations affect their perceived destination image (e.g., Garrod, 2009; MacKay & Fesenmaier, 1997). These tourism photographs were from advertising materials (e.g., guidebooks, brochures, postcards) or online user-generated platforms (e.g., TripAdvisor, Yelp) (Lo et al.,

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2011; Molina & Esteban, 2006; Stepchenkova & Zhan, 2013). Participants in these studies were asked to view photographs and provide their understandings and feelings in free narratives or by independently answering questionnaires without interference from researchers. However, one important fact in the real world has been generally overlooked in these studies: only after paying attention to a photograph can consumers provide their cognitive and affective responses to it. Recognizing this omission in existing tourism research, the present study is conducted to investigate how consumers allocate visual attention when viewing tourism photographs, and how they perceive the advertising effectiveness of the photographs. A unique manifestation of text elements in tourism photographs is specifically examined in the present study, namely text naturally embedded as part of the landscape (e.g., inscribed boards, stone carvings, tablets, and store signs). Two aspects of these text elements are tested: whether the language of the textual messages is known or unknown to the viewers and whether there are single or multiple textual messages in the photographs.

2. Literature review

2.1. Visual processing research in marketing

Extensive use of pictures in marketing programs is not a recent phenomenon. Since the 1960s, the pictorial components in advertisements and packages have received attentions of marketing scholars. A large amount of research has been conducted to investigate consumers' visual processing behavior, particularly visual attention, toward advertisements or packages with pictures. It has been largely reported that both pictorial and textual features in advertisements capture consumers' visual attention (Percy & Rossiter, 1983, 1997; Pieters & Wedel, 2004; Singh, Lessig, Kim, Gupta, & Hocutt, 2000; Wells, Moriarty, & Burnett, 2000). Findings of advertising research have shown that consumers' visual attention to advertisements can be affected by the viewing task and the amount of time allowed for viewing. Consumers tend to spend more time viewing pictures in advertisements if the task is to memorize a brand (Pieters & Wedel, 2007). Rayner and colleagues concluded that viewers spend more time on the text of an advertisement when they are asked to imagine making a purchasing decision rather than asked to memorize the advertisement for later recognition (Rayner, Miller, & Rotello, 2008; Rayner, Rotello, Stewart, Keir, & Duffy, 2001). Researchers also found that viewers focus on pictures and skip the other components of advertisements when they are under time pressure (Pieters & Warlop, 1999).

In addition to advertisements and packages, a substantial amount of research on visual attention has been conducted in webpage environments in recent years. This research line has examined how internet users view, search, and process information from webpages (e.g., Nielsen & Pernice, 2010; Shrestha & Owens, 2008). It has been found by Nielsen and Pernice that regardless of the website type (e.g., company sites, news, search engines, and blogs), internet users tend to view pages following an "F" pattern: visual attention is largely focused on the upper and left part of the content area (Nielsen & Pernice, 2010). The "F" pattern was also identified when people were asked to read webpages with different layouts, such as single column versus double columns (Shrestha & Owens, 2008). One recent study further confirmed the consistency of this "F" pattern among viewers with different viewing tasks of free viewing, content awareness, and information search (Betz, Kietzmann, Wilming, &

König, 2010). In addition, Betz and colleagues found no influence of viewing task on viewers' visual processing behavior as measured by fixation points (Betz et al., 2010).

The majority of the abovementioned studies on visual processing behavior used the eye-tracking technique, which allows scholars to record viewers' eye movements and analyze their visual attention (e.g., Dreze & Hussherr, 2003; Lohse, 1997; Rosbergen, Pieters, & Wedel, 1997). Eye-tracking research is usually conducted in a lab setting. Participants are asked to view pre-assigned visual materials shown on a computer screen as their eye movements are recorded with an eye-tracker. Researchers usually employ a variety of measurements to statistically analyze eye movements, such as fixation duration, number of fixations, saccades, etc. (Duchowski, 2003). In addition, several types of image displays are used to illustrate the visual attention patterns, such as fixation plots (dots to indicate points where a person's eyes focus), heat maps (color-coded visualizations of where people look), and scan paths (the sequence of where a person's eyes focus). Whereas the majority of previous studies applied artificial materials, such as text, pictures, and ads designed by researchers, as visual stimuli, more and more scholars are interested in using natural materials, such as webpages, ads, and packages without alterations, to understand visual processing behavior in the real world.

In addition to investigating consumers' visual processing behavior in terms of visual attention, scholars have also explored the outcomes of visual processing behavior with a particular focus on consumers' estimations of the perceived advertising effectiveness of advertisements and packages. Rossiter and Percy (1978) argued in their advertising response model that pictures in advertisements can evoke pleasant visual scenes in consumers' minds even though they do not actually see the advertised product. This would consequently induce consumers' positive attitudes towards the product and the brand. A number of studies were subsequently conducted to test this model empirically (e.g., Edell & Staelin, 1983; Kisieliu, 1982; Mitchell & Olson, 1981). The findings of these studies indicated that pictures can result in more favorable product beliefs and brand attitudes than textual information in advertisements. Similar findings have been also shown in research on product packaging. For instance, Underwood and Klein (2002) found that packages displaying a picture of the product can effectively communicate information about the brand and thus positively affect consumers' brand attitudes. The most common method used in these studies was self-reported questionnaire surveys to collect consumers' product or brand evaluations after viewing advertisements or packaging with pictures (e.g., Percy & Rossiter, 1983; Underwood & Klein, 2002).

2.2. Visual processing research in tourism

The majority of visual processing research in the tourism area concentrates on the outcomes of tourists' visual processing behavior with two primary research streams: (1) tourists' perceived destination image generated by their interpretations of destination pictures, and (2) the perceived advertising effectiveness of destination marketing materials containing photographs. Studies in the first research stream can be further classified into two groups based on the research design. With regard to the first group of studies, tourism researchers have analyzed destination photographs posted by tourists on user-generated platforms (e.g., Garrod, 2008, 2009; Jenkins, 2003; MacKay & Couldwell, 2004). Participants' interpretations of

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