Effects of Face Images and Face Pareidolia on Consumers' Responses to Print Advertising

An Empirical Investigation

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This research investigates whether print advertisements featuring faces (*i.e.*, face advertisements) or facelike images (*i.e.*, pareidolian advertisements) better capture consumer attention than advertisements that do not include such elements. In two studies, the researchers examined the effects of exposing consumers to print advertisements containing faces or pareidolian images for short time lapses—one-half, one, and three seconds. The results show that both advertisement types captured viewers' attention and more frequently were recognized than advertisements that did not feature faces or facelike objects. Both face advertisements and pareidolian advertisements increased brand recognition and advertisement preference. Theoretical and operational implications are discussed.

INTRODUCTION

Today's consumers cope with an overabundance of advertising stimuli. Every day, a regular consumer sees an average of 360 commercial messages across the five main media—television, radio, Internet, newspapers, and magazines (Johnson, 2014). In the United States alone, television airs an average of 38 advertisements every minute (Nielsen, 2014).

This number significantly exceeds consumers' information-processing capacities. Of the 360 advertisements that they are exposed to daily, consumers might notice only 42 percent of them and recall far fewer (Johnson, 2014). In an attempt to break through the clutter, advertisers try to use a wide variety of attention-grabbing devices (Guido, 2001)—from noticeable logos to high color contrast—or creative stimuli aimed at eliciting emotions (Hollis, 2017; Ipsos, 2016; Millward Brown, 2009).

Consumers generally devote scant attention to advertisement messages, however. They normally look at print advertisements for less than two seconds (Hill, 2010) and at online advertisements for one-third of a second (Nielsen and Pernice, 2010). This means that, in an increasingly crowded arena, the competition for consumers' attention is played on smaller and smaller time frames. Advertisers need to know the mechanisms underlying consumers' attention to increase the chances that messages will be processed.

Management Slant

- Advertisements featuring human faces and facelike (*i.e.*, pareidolian) images capture greater attention and preference than other advertisements in short time lapses.
- With increasing time exposure, the attention-grabbing capacity of face and pareidolian advertisements gradually decreases.
- Face and pareidolian advertisements lead to greater advertisement and brand recognition than other advertisements.

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Consumers manage the plethora of commercial information by paying selective attention to specific stimuli (Desimone and Duncan, 1995). In this respect, faces might play a pivotal role, because they serve as biologically and socially significant visual stimuli that convey primal information about social interaction (Ellis and Young, 1998). Faces are so highly relevant that they automatically can capture attention better than objects such as cars, houses, clothes, and foods (Ro, Russell, and Lavie, 2001; VanRullen, 2006).

The human mind is so attentive to faces that people sometimes can see them in nonface images (Kato and Mugitani, 2015)—an illusory phenomenon known as pareidolia, from the Greek *para* (beside or beyond) and *eidolon* (form or image). Both faces and facelike images may recruit people's attention automatically through an orienting response mechanism (Tomalski, Csibra, and Johnson, 2009)—that is, an involuntary, reflexive reaction to a sudden or meaningful stimulus (Greenwald and Leavitt, 1984).

Although advertising communications could benefit from using faces, there have been no significant empirical assessments of whether advertisements featuring faces and those featuring facelike images have the potential to stand out in a cluttered advertising environment. To fill this gap, this research investigates whether these two advertisement types are able to capture consumers' attention and influence their memory better than advertisements that lack facial elements. The research investigates the effects that arise from consumers' orienting response to face and pareidolian advertisements within short time lapses. This study explores whether facial and pareidolian stimuli can increase consumers' attention and preference toward advertisements as well as their recognition of advertisements and brands in print media.

LITERATURE REVIEW

Orienting Response

When humans encounter stimuli that convey meaningful messages, they reflexively experience a boost in attention (Lang, Bradley, and Cuthbert, 1997). Such an involuntary, reflexive reaction to a sudden or significant stimulus is known as the orienting response (Greenwald and Leavitt, 1984; Sokolov, 1990) and corresponds to "focal attention being directed toward a stimulus" (Greenwald and Leavitt, 1984, p. 584). This built-in sensitivity results in a "reflexive response to an environmental stimulus, such that there is a transient orientation of the individual to the stimulus" (MacKay-Brandt, 2011, p. 1830). An orienting response does not coincide necessarily with an overt behavioral reaction, however; it "serves to potentiate information processing and to prepare or facilitate a rapid behavioral response to the eliciting stimulus (even if such action is not always undertaken)" (Nieuwenhuis, De Geus, and Aston-Jones, 2011, p. 162).

A number of studies in the field of cognitive psychology (Graham and Hackley, 1991; Öhman, Hamm, and Hugdahl, 2000) have shown that both novel and meaningful stimuli elicit the orienting response. Novel stimuli are unknown or unexpected stimuli, whereas meaningful stimuli (*e.g.*, faces) are those that convey information that is relevant to an individual and perhaps emotionally charged. Because individuals have limited cognitive resources (Lang, 2000), they are inclined to focus on salient stimuli that automatically activate involuntary attention (Guido, 2001; Lang *et al.*, 1997).

In turn, the orienting response increases individuals' memory of the information embedded in such stimuli (Deffenbacher, Bornstein, Penrod, and McGorty, 2004). It has been suggested that orienting responses can be elicited by familiar stimuli that are especially significant to the individual (Greenwald and Leavitt, 1984), such as faces (Artuso, Palladino, and Ricciardelli, 2015; Ro, Friggel, and Lavie, 2007). In this vein, psychological research has highlighted "the existence of a bias to preferentially orient attention toward faces at the expense of other nonface stimuli" (Tomalski *et al.*, 2009, p. 569). Despite its practical relevance for advertising strategies, the orienting response has not been explored thoroughly by marketing research, particularly in terms of how it might determine consumers' responses to advertising messages featuring faces.

Faces as Significant Visual Stimuli

Faces are, one could argue, the most biologically and socially significant visual stimuli in the human environment. For this reason, they have a special ability to capture attention and deliver meaningful information. Previous studies have argued that this adaptive process creates an attentional bias for faces (Frischen, Eastwood, and Smilek, 2008). Faces rapidly and efficiently transmit information about other people's intentions as well as their feelings about past, present, and future events (Small and Verrochi, 2009).

Because of their sociobiological significance, faces receive enhanced processing in the competition for attention (Dekowska, Kuniecki, and Jaskowski, 2008; Hershler and Hochstein, 2005; Rakover and Cahlon, 2001), which makes them ideal candidates for automatic processing (Öhman, 2002). The psychological research posits that faces typically capture attention more easily than other visual stimuli (Palermo and Rhodes, 2007; VanRullen, 2006; Weaver and Lauwereyns, 2011). Faces also induce stronger involuntary responses; in large scenes containing a face among other objects, the very first saccades tend to be directed to the face (Cerf, Harel, Einhäuser, and Koch, 2008; Honey, Kirchner, and VanRullen, 2008). In general, individuals

categorize faces much faster than other objects (Pegna, Khateb, Michel, and Landis, 2004).

Across several contexts, scholarly research has shown that faces generally help attract attention. In the field of retail marketing, it has been shown that mannequins with a head—and hence a face—lead to higher intention to purchase the merchandise displayed on them than headless mannequins (Lindström, Berg, Nordfält, Roggeveen, *et al.*, 2016). In the field of marketing communication, it has been shown that Instagram photos featuring faces are about 40 percent more likely to receive "likes" than photos without faces (Bakhshi, Shamma, and Gilbert, 2014). Existing research in the advertising field has shown that online banners containing faces may capture greater attention than banners without faces (Sajjacholapunt and Ball, 2014) and that advertising content is recalled more easily when advertisements include faces (Droulers and Adil, 2015a). Faces may affect consumers' attitudes toward advertising and their purchasing intentions (Xiao and Ding, 2014).

Although both advertising practice and the psychological literature (Cerf, Frady, and Koch, 2009) suggest that individuals focus on faces to the detriment of other stimuli, this issue remains underinvestigated. The advertising literature has not assessed yet the differential ability of face advertisements versus no-face advertisements to capture consumer attention. This question merits further research (Droulers and Adil, 2015a; Sajjacholapunt and Ball, 2014; Xiao and Ding, 2014).

Pareidolia and the Illusory Perception of Faces

Humans tend to perceive faces—as well as body parts, animal shapes, and other familiar images—in clouds, rocks, planetary landforms, and other places where they do not actually exist (Shelley, 2015).

Although both advertising practice and the psychological literature suggest that individuals focus on faces to the detriment of other stimuli, this issue remains underinvestigated.

This phenomenon, known as pareidolia (Chalup, Hong, and Ostwald, 2010; Hong, Chalup, King, and Ostwald, 2013; Liu, Li, Feng, Li, *et al.*, 2014), induces people to recognize familiar forms in unrelated visions of real things. This sensitivity to facelike patterns derives from an unconscious tendency to seek familiar images in novel perceptual inputs (Gosselin and Schyns, 2003; Rieth, Lee, Lui, Tian, *et al.*, 2011) as well as from the social importance that humans innately ascribe to faces (Liu *et al.*, 2014).

Among all pareidolian forms, face pareidolia is the most widespread because of humans' natural predisposition for detecting faces (Martinez-Conde and Macknik, 2012). Unlike most other visual objects, which are processed analytically, faces are processed configurally. This means that they are perceived as a nondecomposed whole rather than as a combination of independent parts (Richler and Gauthier, 2014; Rossion, 2013).

All faces have a basic T-shaped configuration—consisting of two eyes, a nose, and a mouth—that represents a template for rapidly differentiating faces from other visual stimuli in the surrounding environment (Tsao and Livingstone, 2008). Because of their reliance on this template, humans also tend to see faces in any object characterized by the T-shaped configuration. This is why stylized sequences of typographical symbols, such as emoticons, are recognized immediately as faces (Chalup *et al.*, 2010).

Some companies already have constructed products around a T-shaped configuration, such as Celine's handbags, and occasionally have included pareidolian images in their print advertisements. Advertising research, however, has not assessed yet whether such images are truly superior to other types of advertising images in terms of their attention-grabbing and processing abilities. In the past few decades, marketing research has focused on anthropomorphism—the attribution of humanlike characteristics to nonhuman objects (Guido and Peluso, 2015)—and found that products that incorporate human features (*e.g.*, human-face cookies) induce increased attention and deeper processing (Epley, Waytz, and Cacioppo, 2007) and also influence consumers' attitudes and intentions toward these products (Hart and Royne, 2017; Hur, Koo, and Hofmann, 2015).

Advertising research has found that advertisements featuring anthropomorphic presentations may foster brand liking (Delbaere, McQuarrie, and Phillips, 2011) and influence consumers' intentions (Hart and Royne, 2017). Existing literature has not focused specifically on advertising messages that feature pareidolian images, however. Advertisers thus lack an understanding of such messages' ability to capture viewers' attention and influence their processing.

HYPOTHESES DEVELOPMENT

Although the use of face and pareidolian images is common in advertising practice (Keaveney, Herrmann, Befurt, and Landwehr, 2012), there is very little

evidence that advertisements featuring faces and facelike images have a superior ability to capture consumer attention. Drawing from visual perception literature, which stresses that faces activate an immediate reaction (Cerf *et al.*, 2009) and induce more involuntary orienting responses than other visual stimuli (Hershler and Hochstein, 2005; VanRullen, 2006), the authors hypothesized that this process also might occur for advertisements featuring faces and pareidolian images. Thus:

H1a: Face advertisements attract more attention than no-face advertisements.

H1b: Pareidolian advertisements attract more attention than nonpareidolian advertisements.

A previous study (Sambeth, Maes, Quian Quiroga, Van Run, *et al.*, 2004) showed that repeated or lengthened exposures to a stimulus reduced the magnitude of this orienting response. Such an effect explains why individuals' attention to a particular stimulus fades as their exposure time increases (Zimmer, 2006). On the basis of these arguments, the authors hypothesized the following:

H2a: With increasing exposure time, consumer attention to face advertisements decreases.

H2b: With increasing exposure time, consumer attention to pareidolian advertisements decreases.

Individuals generally recognize a stimulus more easily when it captures their attention (Ohyama and Watanabe, 2010). Because faces receive priority in the competition for selective attention, it is possible that individuals might process faces and their associated information more readily than other stimuli. Translating this idea into marketing, previous research shows that brand recognition (*i.e.*, consumers' ability to confirm prior exposure to a brand when given said brand as a cue; Keller, 1993) improves when the associated advertisement garners more attention (Lombardot, 2007). When an advertisement ensnares a person's attention, he or she more likely will identify correctly the associated brand, because attention strengthens memory (Schomaker and Wittmann, 2017).

Recent studies suggest that pareidolia may produce a similar positive effect on individuals' memory processes. One study established that once individuals perceive pareidolian faces, they tend to pay attention to them, even though they know the faces are illusory (Kato and Mugitani, 2015). People's perception of novel objects as being similar to familiar objects favorably influences their memorization and subsequent detection (Rieth *et al.*, 2011). The authors therefore hypothesized the following:

H3a: Face advertisements activate greater brand recognition than no-face advertisements.

H3b: Pareidolian advertisements activate greater brand recognition than nonpareidolian advertisements.

Higher levels of attention can improve not only consumers' brand memory but also their likelihood of recognizing the advertisement later (Aribarg, Pieters, and Wedel, 2010). "Advertisement recognition" refers to viewers' capacity for identifying a certain advertisement among others after prior exposure. The authors expected that advertisements featuring faces or pareidolian images would be more salient in viewers' minds than other types of advertisements and thus recognized more easily.

H4a: Face advertisements produce greater advertisement recognition than no-face advertisements.

H4b: Pareidolian advertisements produce greater advertisement recognition than nonpareidolian advertisements.

The orienting response mechanism might affect significantly consumers' preferences for various print advertisements (Nielsen, Shapiro, and Mason, 2010). When choosing between two options, people prefer alternatives that require them to orient their gaze (Simion and Shimojo, 2007). Because faces and facelike objects capture individuals' attention, the authors hypothesized the following:

H5a: Face advertisements are preferred over no-face advertisements.

H5b: Pareidolian advertisements are preferred over nonpareidolian advertisements.

STUDY 1A

Methods

Face Advertisement Stimuli. The authors selected a random set of real print advertisements promoting fashion-branded products. They chose this category because fashion advertisements normally feature endorsers and hence faces. The authors grouped advertisements into pairs of a similar branded product (*e.g.*, two advertisements about handbags from the same brand) to avoid the confounding effects of brand preference, product preference, or executional style. To this end, two independent judges, who identified advertisements with the same products and brands, prescreened the pairs and then applied the Pixolution ImageSorter software, which classifies images on the basis

of their visual similarity and color weight. This step allowed the authors to mitigate the potential confound of color preference when participants saw the two advertisements side by side.

Each pair included only one advertisement containing a face. The authors controlled for facial dimension by including an equivalent number of large faces (*i.e.*, faces whose size was half or more of the advertisement) and small faces. To rule out the possible influence of sexual stimuli (Severn, Belch, and Belch, 1990) and facial expressions (Neumann and Strack, 2000), the judges selected the advertisements that lacked such stimuli and featured only neutral facial expressions (Ilicic, Kulczynski, and Baxter, 2016; Small and Verrochi, 2009). The judges eliminated approximately 10 percent of the initial pools of images, resolving any disagreement through discussion.

The authors controlled for endorsers' gaze direction by including an equal number of faces with either direct gaze (facing toward the ideal interlocutor) or averted gaze (laterally shifted gaze) in the pool of advertisements (Droulers and Adil, 2015b; Hutton and Nolte, 2011). The final set of advertisements featured an equal number of male and female Caucasian endorsers with similar levels of attractiveness. The authors used real advertisements to maximize the study's external validity.

The authors split a total of 96 print advertisements into 48 pairs, with each pair referring to the same fashion brand. Next, they randomly divided the 48 pairs into three sets, each containing an equal number of advertisements featuring small versus large faces, male versus female endorsers, and endorsers with direct versus averted gaze. To avoid habituation effects, the authors inserted six pairs of advertisements without faces or any chromatic similarities into each set, using random number tables to determine the advertisements' position.

Each set of advertisements comprised 22 pairs. Each pair of images was copied and pasted into a Microsoft PowerPoint presentation. Within each set, the authors placed pairs in a random order, using random number tables to determine the face advertisement's position (left or right) on each slide to mitigate the confounding influence of side preference.

Procedure. Four researchers approached potential participants in public spaces—cafeterias, libraries, sport centers, and retail stores—in Lecce, Italy, a medium-sized city. They invited these individuals to partake in a research study in exchange for a coupon redeemable at a local consumer electronics store. A total of 322 people (M_{Age} = 26.13 years, SD_{Age} = 9.68), equally distributed by gender, agreed to participate. They were given a prearranged schedule and instructed to meet with a researcher in a laboratory at the local university campus. Participants entered the laboratory one by one, received a printed questionnaire, and sat down before a video projector displaying the PowerPoint presentation and its three sets of stimuli. Participants saw each pair for different time lapses (See Figure 1A).

The pairs were displayed for one-half second in Set 1, for one second in Set 2, and for three seconds in Set 3. The series of treatment conditions was counterbalanced completely: The authors presented the three time-exposure conditions (one-half, one, three seconds) in every possible sequence to rule out possible time-related threats and order effects. For each of the 22 pairs of advertisements included in each set, the researchers asked participants to first indicate, using their questionnaire, which of the two displayed advertisements more immediately attracted their attention.

Participants afterward watched an entertaining two-minute video about curious cats on the same projector screen. The authors included this video not only to divert participants' attention from the study's real purpose but also to create a time gap between the advertisement exposure and the recognition tasks. Once the

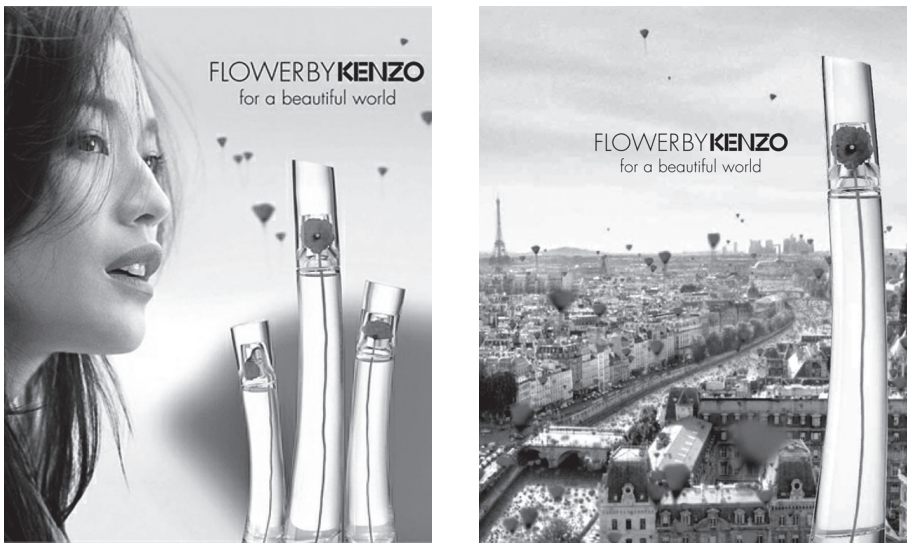


Figure 1A Example of a Pair of Advertisements Shown to Participants of Study 1A

video concluded, participants completed the rest of the questionnaire by identifying the brands featured in the displayed advertisements using a list of 30 brands printed on the questionnaire. Fifteen of those brands matched the 15 pairs of advertisements featuring a face advertisement (five pairs for each set); the other 15 brands matched the 15 pairs of advertisements that did not feature a face advertisement (five pairs for each set).

The questionnaire next asked participants to identify the displayed advertisements using three recognition sheets—one for each set. The sheet for each respective set contained:

- eight advertisements featuring faces that participants saw during the experiment;
- eight advertisements without faces that appeared during the experiment;
- eight filler advertisements (four with faces and four without faces) that were not displayed during the experiment.

For each set, participants had two minutes to mark the images that they thought corresponded to the advertisements displayed earlier in the study.

In a final step, participants viewed the three sets of advertisements a second time. After seeing each pair for a fixed time lapse (five seconds), they indicated on the questionnaire whether they preferred the advertisement displayed on the left or right.

Results

Attention-Getting Capacity. The authors performed chi-square tests on each pair of advertisements to check whether face advertisements attracted significantly more attention than no-face advertisements. The results revealed that, for 44 of the 48 pairs presented (91.7 percent of the total), face advertisements attracted more attention than no-face advertisements ($ps < .05$), which thus supports H1a. Face

The results revealed that face advertisements attracted more attention than no-face advertisements.

advertisements attracted more attention than no-face advertisements for 15 of the 16 pairs (94 percent of the total) in the one-half-second condition, 16 of the 16 pairs (100 percent of the total) in the one-second condition, and 13 of the 16 pairs (81 percent of the total) in the three-second condition.

The authors subsequently averaged the data regarding the number of times a participant reported being attracted to face advertisements and no-face advertisements. The authors then conducted a one-way repeated-measures analysis of variance (ANOVA) to compare the scores derived for the face advertisements in the three conditions. The results indicated that time exposure exerted a significant treatment effect.

Participants' attention toward face advertisements decreased as the exposure time increased (Wilks's $\lambda = .63$), $F(2, 320) = 92.73$, $p < .001$, partial $\eta^2 = .37$ ($M_{Set\ 1} = 11.75$, $SD = 2.70$; $M_{Set\ 2} = 11.26$, $SD = 2.64$; $M_{Set\ 3} = 9.53$, $SD = 3.29$). H2a hence was supported. The post-hoc tests with Bonferroni adjustment confirmed that the three treatments differed from one another ($p < .001$).

Brand Recognition. Participants recognized brands associated with pairs featuring face advertisements better than those featuring no-face advertisements. The average brand recognition associated with face advertisements equaled:

- 1.76 ($SD = 1.15$) for Set 1 (*i.e.*, about 67 percent of all the recognized brands);
- 2.53 ($SD = 1.36$) for Set 2 (*i.e.*, about 63 percent of all the recognized brands);
- 2.63 ($SD = 1.22$) for Set 3 (*i.e.*, about 67 percent of all the recognized brands).

The results thus support H3a.

Advertisement Recognition. Participants recognized face advertisements better than no-face advertisements. The mean recognition of face advertisements equaled:

- 3.82 ($SD = 1.95$; 62 percent of correctly recognized advertisements) in the one-half-second condition;
- 4.84 ($SD = 1.92$; 64 percent of correctly recognized advertisements) in the one-second condition;
- 5.13 ($SD = 1.82$; 63 percent of correctly recognized advertisements) in the three-second condition.

H4a hence was supported.

Advertisement Preference. To test H5a, the authors summed the frequencies of participants' expressed preferences for one of the advertisements in each pair. To check for significant differences in frequency distribution, the authors performed chi-square tests for each pair of advertisements. Results showed that participants preferred face advertisements to no-face advertisements in 31 of the 48 pairs ($ps < .05$; 64.6 percent of the total), which thus confirms H5a. The participants preferred face advertisements to no-face advertisements for:

- 11 of the 16 pairs (68.8 percent of the total) in the one-half-second condition of the attention task;
- 10 of the 16 pairs (62.5 percent of the total) in the one-second condition;
- 10 of the 16 pairs (62.5 percent of the total) in the three-second condition.

STUDY 1B

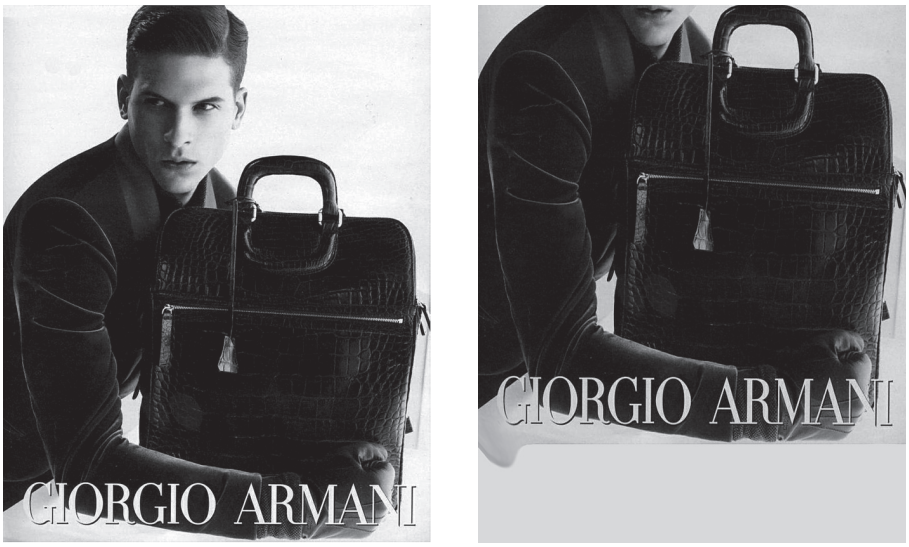
After the completion of Study 1A, the authors ran a new study with 135 people

(M_{Age} = 29.87 years, SD_{Age} = 9.98), with two goals. First, Study 1B was intended to rule out the possibility that the results of Study 1A stemmed from differences in the executional style of the advertisements rather than the intended experimental manipulation (face presence versus absence). Second, the study was designed to test the hypotheses on a different sample to ensure that the results did not vary across age groups (Study 1A's mean age was low).

To this aim, the authors randomly selected 16 print advertisements promoting fashion-branded products, published in popular magazines. The selection followed criteria similar to those of Study 1A—no sexual stimuli; only neutral facial expressions. The authors then manipulated the advertisements by creating a copy of each of the 16 images, in which the authors removed only the model's face.

The authors then inserted 16 pairs of advertisements, with each pair including the original advertisement (a face advertisement) versus its no-face version (See Figure 1B), into a Qualtrics-based questionnaire. In this case, to avoid habituation effects, the authors also inserted six pairs of advertisements without faces or any chromatic similarities. The questionnaire included the same experimental tasks as in Study 1A (the authors used random number tables to determine the face advertisement's position). Participants were assigned randomly to one of the three time conditions—one-half second, one second, and three seconds.

Results revealed that, again, face advertisements attracted more attention than no-face advertisements, thus providing further support to H1a. Face advertisements attracted more attention than no-face advertisements for 16 of the 16 pairs (100 percent of the total) in all three time-exposure conditions (one-half, one, and three seconds). A one-way ANOVA



Face Advertisement | No-Face Advertisement

Figure 1B Example of a Pair of Advertisements Shown to Participants of Study 1B

revealed that participants' attention toward face advertisements decreased as the exposure time increased, $F(2, 132) = 4.38$, $p < .05$, partial $\eta^2 = .06$. Post-hoc comparisons using Tukey's honestly significant difference test indicated that attention scores in the one-half-second condition ($M = 14.00$, $SD = 2.33$) differed significantly from those in the one-second condition ($M = 12.70$, $SD = 2.55$) and the three-second condition ($M = 12.29$, $SD = 3.70$).

The average brand recognition associated with face advertisements equaled:

- 5.18 (SD = 2.72) in the one-half-second condition (*i.e.*, about 79 percent of all the recognized brands);
- 5.37 (SD = 2.30) in the one-second condition (*i.e.*, about 81 percent of all the recognized brands);
- 4.98 (SD = 2.27) in the three-second condition (*i.e.*, about 79 percent of all the recognized brands).

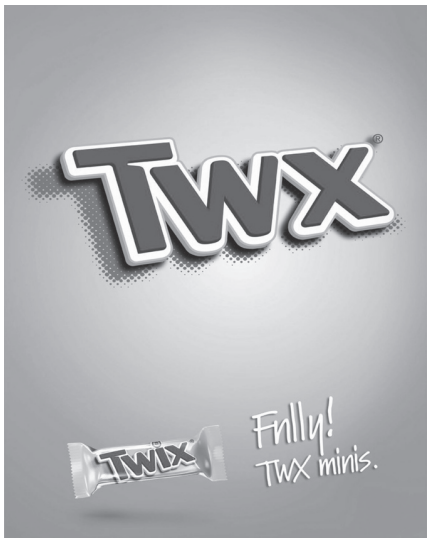
The results thus provide further support to H3a. Participants also recognized face advertisements better than no-face advertisements. The mean recognition of face advertisements equaled:

- 6.39 (SD = 1.81; 57 percent of correctly recognized advertisements) in the one-half-second condition;
- 6.70 (SD = 1.39; 59 percent of correctly recognized advertisements) in the one-second condition;
- 6.47 (SD = 1.40; 57 percent of correctly recognized advertisements) in the three-second condition, which further supports H4a.

Finally, participants preferred face advertisements to no-face advertisements in 16 of the 16 pairs (100 percent of the total), in all three time exposure conditions, which further confirms H5a.

Finally, to rule out possible age-related differences, the authors compared two subsamples of respondents by splitting the whole sample according to the median value of age (Mdn = 28). A multivariate ANOVA revealed no significant

Pareidolian Advertisement



Nonpareidolian Advertisement

Figure 2 Example of a Pair of Advertisements Shown to Participants of Study 2

between-groups differences in the considered dependent measures ($p > .05$), thus excluding possible age-related differences in responses.

STUDY 2

Methods

Pareidolian Advertisement Stimuli. Following the same criteria as before, the authors selected 36 pairs of advertisements, with each pair including an advertisement with a pareidolian element (namely, the image of a product or other elements resembling a face) taken from a random set of print advertisements covering a range of product categories (food, cars, *etc.*). These 36 pairs then were divided randomly into three sets of 12 pairs each. To avoid habituation effects, the authors supplemented each set with four pairs of nonpareidolian advertisements featuring no chromatic similarity, using random number tables to determine the advertisements' position. Each final set thus consisted of 16 pairs. Finally, the authors copied and pasted all pairs into a PowerPoint presentation, organizing them in the same way as in Study 1 (See Figure 2).

Procedure. Four researchers gathered a consumer sample (M_{Age} = 26.71 years, SD_{Age} = 9.91; 48 percent female), using the same procedure as in Study 1A. A total of 154 individuals participated in the laboratory experiment, viewing the three sets of stimuli for predefined time lapses (the same as in Study 1A). In this case, the brand-recognition task covered 24 brands: Twelve brands were associated with the pairs of advertisements featuring a pareidolian advertisement (four pairs for each set); the other 12 brands were associated with the pairs featuring nonpareidolian advertisements (four pairs for each set).

As in Study 1A, participants indicated their advertisement recognition on provided sheets—one for each set. Each sheet displayed miniaturized versions of 18 advertisements: Six were the same pareidolian advertisements displayed during the experiment, six were the same nonpareidolian advertisements displayed during the experiment, and the remaining six were advertisements that were not displayed during the experiment.

Results

Attention-Getting Capacity. Chi-square tests revealed that, for 29 of the 36 pairs (80.6 percent of the total), the pareidolian advertisements attracted significantly more attention than the nonpareidolian advertisements ($ps < .05$), which thus supports H1b. The pareidolian advertisements attracted more attention than the nonpareidolian advertisements for:

- 11 of the 12 pairs (91.6 percent of total) in the one-half-second condition;
- 10 of the 12 pairs (83.3 percent of the total) in the one-second condition;
- eight of the 12 pairs (66.7 percent of the total) in the three-second condition.

A one-way repeated-measures ANOVA compared the mean attention scores in the three treatment conditions. The results showed a significant treatment effect for time exposure, $F(2, 152) = 39.66$, $p < .001$, partial $\eta^2 = .34$ ($M_{Set\ 1} = 8.67$, $SD = 1.91$; $M_{Set\ 2} = 8.05$, $SD = 2.04$; $M_{Set\ 3} = 7.03$, $SD = 2.13$), thus supporting H2b. The post-hoc tests, performed with Bonferroni adjustment of the significance level, showed that the three treatments differed from one another ($p < .01$).

Brand Recognition. Participants recognized brands associated with pairs featuring pareidolian advertisements better than those featuring nonpareidolian advertisements. The average brand-recognition score for the pareidolian advertisements equaled:

- 1.44 ($SD = 0.83$) for Set 1 (about 72 percent of all recognized brands);

- 2.27 (*SD* = 0.97) for Set 2 (about 68 percent of all recognized brands);
- 2.45 (*SD* = 1.05) for Set 3 (about 71 percent of all recognized brands).

H3b thus was supported.

Advertisement Recognition. Participants recognized pareidolian advertisements better than nonpareidolian advertisements. The mean recognition score of the pareidolian advertisements equaled:

- 3.19 (*SD* = 1.59; 62 percent of correctly recognized advertisements) in the one-half-second condition;
- 3.85 (*SD* = 1.39; 62 percent of correctly recognized advertisements) in the one-second condition;
- 4.25 (*SD* = 1.60; 61 percent of correctly recognized advertisements) in the three-second condition.

The results hence supported H4b.

Advertisement Preference. Chi-square tests revealed that, for 23 of the 36 pairs of advertisements (63.9 percent of the total), participants preferred the pareidolian advertisements to the nonpareidolian advertisements (*ps* < .05), which thus validates H5b. Participants preferred the pareidolian advertisements in:

- seven of the 12 pairs (58.3 percent of the total) in the one-half-second condition of the attention task;
- nine of the 12 pairs (75 percent of the total) in the one-second condition;
- seven of the 12 pairs (58.3 percent of the total) in the three-second condition.

GENERAL DISCUSSION

The results highlight that face and pareidolian advertisements attracted greater attention than other advertisements. Given short exposure times, individuals instinctively sought faces in advertising because of the orienting response mechanism, which stems from the superior significance of faces, emotionally and biologically. Exposure time, however, represents a caveat. For both face and pareidolian advertisements, participants' attention decreased as exposure time increased. This result suggests that a longer exposure mitigated the attention-grabbing effect of faces. Given more time, viewers probably were able to observe other advertisement features and hence evaluate the whole advertisement, without necessarily focusing on faces.

The results also show that both face and pareidolian advertisements led to greater brand recognition than advertisements that lacked facial elements. The research also ascertained that both faces and pareidolian images drove greater advertisement recognition. Participants recognized face and pareidolian advertisements better than the alternative advertisements, regardless of the length of exposure.

These results are in line with prior literature on orienting response, according to which, if a task elicits orienting responses, memory for the informative aspects of a stimulus is enhanced (Deffenbacher *et al.*, 2004). Finally, the research demonstrated that consumers preferred both face and pareidolian advertisements to other types of advertisements. This result aligns with previous literature (Bradley, 2008; Nielsen *et al.*, 2010; Simion and Shimojo, 2007) and suggests that the orienting response might have affected advertisement preference formation significantly.

Implications for Advertising Practice

Consumers commonly are exposed to several advertisements through the same media vehicles, some of which deliver advertising messages for very short times—seconds or even fractions of seconds—such as electronic billboards, Internet banners, and the like (Keller, 1991; Nielsen and Pernice, 2010). This exposure dilutes the effect of advertising (Kent and Allen, 1994), so it is crucial for marketers to understand how to capture consumer attention.

In light of this situation, this research sought to assess the effects produced by faces and facelike images in print advertising. The obtained results show that face and pareidolian advertisements attracted viewers' attention more easily than other advertisements. Generally categorized in about 100 milliseconds, faces are detected at least twice as fast as many other stimuli (Palermo and Rhodes, 2007; Pegna *et al.*, 2004). The study's findings reflect this competitive advantage and suggest that the orienting response to faces might have produced positive cascading effects in terms of brand recognition, advertisement recognition, and advertisement preference.

Advertisers should exploit the power of faces in their communicational campaigns. The results may be especially useful for designing print advertisements, billboards, banners, or any other type of advertising commonly observed for a short period of time (Smit, Neijens, and Stuurman, 2006). Face and pareidolian advertisements could be placed in airports, train stations, or other public settings where consumers witness myriad advertisements and thus devote very little attention to them (Huang, Koster, and Borchers, 2008). The visual saliency of faces—their ability to stand out and attract attention—might increase significantly the amount of attention that consumers pay to billboard advertising. This higher attention, in turn, could affect positively consumers' advertisement preferences.

The use of faces could help marketers overcome consumers' tendency to overlook banners (the so-called banner blindness phenomenon), which is recognized widely as a major problem in advertising (Hervet, Guérard, Tremblay,

and Chtourou, 2010). By incorporating faces and pareidolian images in advertising messages, marketers could increase consumers' recognition of the advertised brands and preference for the advertised messages. Some companies—ranging from car manufacturers (*e.g.*, BMW, Mercedes) to food producers (*e.g.*, Oreo, Nespresso)—already have begun leveraging this strategy, mainly using face advertisements to attract viewers' attention and pareidolian advertisements to stimulate consumers' imagination regarding their products.

Limitations and Future Research

As regards the limitations of this research, the authors note, first of all, that in a limited number of comparisons face and pareidolian advertisements did not work as hypothesized. This probably was due to the fact that faces and facelike elements in some cases were not clearly identifiable. It also is worth noting that although the experimental manipulation used in Study 1B might appear unrepresentative of the earlier study treatments (which opposed face advertisements to product shots *sans* figures), this manipulation technique was the only one that allowed the authors to control for all possible differences in executional style while using real print advertisements.

Second, across the studies, the considered advertisements covered a broad range of products (*e.g.*, handbags, foods, watches), but the authors did not assess whether the product category moderated the effects of face presence in advertising. Future research could investigate this possibility, looking at whether faces improve consumers' evaluations of the advertised product (*e.g.*, in terms of perceived reliability).

Third, the authors tested face and pareidolian advertisements in comparison with no-face and nonpareidolian advertisements. Future research could investigate whether the results hold also when face and pareidolian advertisements are seen individually. Future research also could explore comparisons between face and pareidolian advertisements. If the two were equally effective, advertising strategists could reduce expenditures (*e.g.*, royalties) by using pareidolian advertisements. Scholars could assess whether exposure to face and pareidolian advertisements unconsciously influences consumers' willingness to buy the advertised products (Janiszewski, 1993) and whether the length of exposure moderates this potential effect.

Because the studies were conducted in a controlled environment, future researchers also could replicate the findings in real contexts, such as shopping malls or outdoor advertising, to increase the studies' ecological validity. Finally, the authors note that both samples involved Western consumers. Future research could determine whether the findings translate to different cultural contexts, as in a country where the presence of faces (especially of female endorsers) in print advertisements may be uncommon or even prohibited. JAR

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